Regional Water Plan

Prepared For

Region D – North East Texas Regional Water Planning Group

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Prepared By

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Volume II - Appendix C, Chapters 2 - 4

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Appendix C – Table of Contents

Appendix Chapter 2

POPULATION AND WATER DEMAND PROJECTIONS

TO: Jim Thompson, Chair – Northeast Texas Regional Water Planning Group

THROUGH: Carolyn Brittin, Deputy Executive Administrator, Office of Water Planning and Information
Dan Hardin, Director, Water Resources Planning

FROM: Stuart Norvell, Manager, Water Planning Research and Analysis

DATE: December 2, 2008

SUBJECT: Revision of population and water demand projections for the 2007-2012 planning cycle.

As discussed in the Texas Water Development Board's (TWDB) "*Guidelines for Regional Water Plan Development (2007-2012),*" population and water demand projections from the 2002-2007 planning cycle will serve as default projections in the current round of planning. With the exception of steam-electric water demands, the TWDB is not generating new projections for approval by the Board.[1] However, planning groups may request that the Board consider revisions to 2006 Regional Water Plan and 2007 State Water Plan population and water demand projections if conditions in a given planning area have changed sufficiently to warrant revisions.

The January 2007 population estimates from the Texas State Data Center will be used as the primary standard to determine if changed conditions warrant any revisions to population projections, both at the local and regional level. Spreadsheets providing comparisons of the January 2007 population estimates to the equivalent projections approved for the 2006 Regional Water Plans and 2007 State Water Plan have been provided to your lead consultant.

The Texas State Data Center estimates indicate that current population growth is generally equal to the projected growth for Region D as a whole. While current population growth is exceeding projected growth rates in some local areas, it is falling short of projected growth in other areas. At most, only very small increases (less than one percent) in regional projection totals, commensurate with growth which has

[1] The TWDB will distribute a separate technical memorandum presenting draft thermo-electric projections for the current planning cycle. Planning groups will have the opportunity to review these projections prior to the TWDB submitting them to the Board for approval and adoption.

occurred, ***may*** be considered. Thus, requests to increase projections for selected Water User Groups should generally be offset by decreases for others, subject to TWDB approval.

As specified in Section 357.5 (d)(2), Title 31 of the Texas Administrative Code (TAC), entities wishing to revise population or demand projections address their requests through their respective regional water planning group. If a planning group concurs, they submit requests to the Executive Administrator of the TWDB. TWDB staff coordinates reviews of each request with the Texas Commission on Environmental Quality, the Texas Parks and Wildlife Department, and the Texas Department of Agriculture. Designated representatives from each agency must approve each revision. The TWDB's governing board (Board) is responsible for approving and adopting final population and water demand projections (§357.5 (d)(1), 31 TAC).

Requests to the Board should be submitted to the Executive Administrator in the form of memorandums from planning groups describing: 1) what they wish to revise and how revisions compare to Board-adopted 2006 projections for each decade of the planning horizon, and 2) language clearly describing the justification and methodology for developing revised projections. Memorandums should be accompanied by spreadsheets comparing requested revisions to Board-adopted 2006 estimates. Spreadsheets should be forwarded electronically to Temple McKinnon. Please refer to the "*Guidelines for Regional Water Plan Development (2007-2012)"* (pages 4-5) available at http://www.twdb.state.tx.us/wrpi/rwp/docu.htm for further information regarding criteria for population and water demand projections revisions.

To assist planning groups who wish to change population projections, the TWDB has generated a database of alternative projections for cities and counties that TWDB staff believes are justifiable candidates for revision. Planning groups wishing to access these data may do so by contacting Temple McKinnon. Please be advised that these projections *are not Board approved*. Planning groups who wish to revise population projections and thus municipal water demands must formally do so according to the process described above, but they are welcome to use the TWDB's alternative population projections as the basis for their formal request to the Board.

TWDB staff is not generating: 1) alternative projections for cities or counties that are part of region-specific studies that include reviews of population projections in their scope of work; 2) projections for newly-eligible non-city municipal water use groups (i.e., utilities);[2] and 3) revised figures for Gallons Per Capita per Day (GPCD) for use in municipal water demand projections; however, upon request staff will provide 2000-2006 GPCD figures for city water use groups and 2000-2006 net use volumes for non-city municipal water use groups.

[2] This is not possible without new data from the U.S. Census Bureau.

Population Projections

WUG Name	County Name	Basin Name	P2010	P2020	P2030	P2040	P2050	P2060
CENTRAL BOWIE WSC	BOWIE	RED	1,085	1,156	1,208	1,260	1,247	1,234
CENTRAL BOWIE WSC	BOWIE	SULPHUR	4,340	4,623	4,832	5,040	4,988	4,935
COUNTY-OTHER	BOWIE	RED	9,922	10,561	11,028	11,499	11,379	11,258
COUNTY-OTHER	BOWIE	SULPHUR	17,374	18,482	19,296	20,111	19,904	19,698
DE KALB	BOWIE	RED	396	423	443	463	463	463
DE KALB	BOWIE	SULPHUR	1,524	1,626	1,704	1,783	1,783	1,783
HOOKS	BOWIE	RED	3,228	3,442	3,609	3,775	3,775	3,775
LEARY	BOWIE	RED	603	643	674	705	705	705
MACEDONIA-EYLAU MUD #1	BOWIE	SULPHUR	4,577	4,876	5,096	5,316	5,260	5,205
MAUD	BOWIE	SULPHUR	1,116	1,190	1,248	1,305	1,305	1,305
NASH	BOWIE	SULPHUR	2,355	2,511	2,633	2,754	2,754	2,754
NEW BOSTON	BOWIE	RED	1,664	1,775	1,861	1,947	1,947	1,947
NEW BOSTON	BOWIE	SULPHUR	3,555	3,792	3,975	4,158	4,158	4,158
RED LICK	BOWIE	RED	618	659	691	722	722	722
RED LICK	BOWIE	SULPHUR	308	329	345	361	361	361
RED RIVER COUNTY WSC	BOWIE	RED	34	36	38	39	39	39
REDWATER	BOWIE	SULPHUR	947	1,010	1,058	1,107	1,107	1,107
TEXARKANA	BOWIE	RED	3,938	4,199	4,402	4,605	4,605	4,605
TEXARKANA	BOWIE	SULPHUR	33,823	36,071	37,815	39,559	39,559	39,559
WAKE VILLAGE	BOWIE	SULPHUR	5,546	5,993	6,441	6,888	7,336	7,784
	BOWIE Total		**96,953**	**103,397**	**108,397**	**113,397**	**113,397**	**113,397**
BI-COUNTY WSC	CAMP	CYPRESS	5,694	7,127	8,452	9,501	10,314	11,205
COUNTY-OTHER	CAMP	CYPRESS	2,257	1,726	1,234	844	542	211
PITTSBURG	CAMP	CYPRESS	4,561	4,798	5,018	5,192	5,327	5,475
SHARON WSC	CAMP	CYPRESS	74	84	94	102	108	115
	CAMP Total		**12,586**	**13,735**	**14,798**	**15,639**	**16,291**	**17,006**
ATLANTA	CASS	CYPRESS	5,844	6,080	6,316	6,551	6,551	6,551
ATLANTA	CASS	SULPHUR	5	5	6	6	6	6
COUNTY-OTHER	CASS	CYPRESS	10,881	11,316	11,751	12,185	12,185	12,185
COUNTY-OTHER	CASS	SULPHUR	8,439	8,783	9,128	9,473	9,473	9,473
HUGHES SPRINGS	CASS	CYPRESS	1,882	1,957	2,033	2,109	2,109	2,109
LINDEN	CASS	CYPRESS	2,297	2,390	2,482	2,575	2,575	2,575
QUEEN CITY	CASS	CYPRESS	1,030	1,072	1,113	1,155	1,155	1,155
QUEEN CITY	CASS	SULPHUR	612	637	661	686	686	686
	CASS Total		**30,990**	**32,240**	**33,490**	**34,740**	**34,740**	**34,740**
COOPER	DELTA	SULPHUR	2,312	2,520	2,722	2,924	2,924	2,924
COUNTY-OTHER	DELTA	SULPHUR	3,155	3,439	3,715	3,990	3,990	3,990

WUG Name	County Name	Basin Name	P2010	P2020	P2030	P2040	P2050	P2060
NORTH HUNT WSC	DELTA	SULPHUR	261	285	307	330	330	330
	DELTA Total		**5,728**	**6,244**	**6,744**	**7,244**	**7,244**	**7,244**
COUNTY-OTHER	FRANKLIN	CYPRESS	708	761	798	834	834	834
COUNTY-OTHER	FRANKLIN	SABINE	0	0	0	0	0	0
COUNTY-OTHER	FRANKLIN	SULPHUR	756	883	970	1,056	1,056	1,056
CYPRESS SPRINGS WSC	FRANKLIN	CYPRESS	5,295	6,179	6,783	7,387	7,387	7,387
CYPRESS SPRINGS WSC	FRANKLIN	SULPHUR	862	1,006	1,104	1,203	1,203	1,203
MOUNT VERNON	FRANKLIN	SULPHUR	2,788	3,230	3,532	3,834	3,834	3,834
NORTH HOPKINS WSC	FRANKLIN	SULPHUR	73	85	93	101	101	101
TRI WSC	FRANKLIN	CYPRESS	163	190	208	227	227	227
WINNSBORO	FRANKLIN	CYPRESS	888	1,029	1,125	1,221	1,221	1,221
WINNSBORO	FRANKLIN	SABINE	0	0	0	0	0	0
	FRANKLIN Total		**11,533**	**13,363**	**14,613**	**15,863**	**15,863**	**15,863**
CLARKSVILLE CITY	GREGG	SABINE	903	1,003	1,107	1,227	1,389	1,621
COUNTY-OTHER	GREGG	CYPRESS	1,188	1,293	1,402	1,529	1,701	1,947
COUNTY-OTHER	GREGG	SABINE	7,513	8,327	9,167	10,138	11,459	13,353
EASTON	GREGG	SABINE	584	684	788	908	1,070	1,302
ELDERVILLE WSC	GREGG	SABINE	3,285	3,685	4,098	4,577	5,226	6,157
GLADEWATER	GREGG	SABINE	3,655	3,686	3,717	3,749	3,781	3,813
KILGORE	GREGG	SABINE	9,243	9,783	10,341	10,987	11,862	13,113
LAKEPORT	GREGG	SABINE	1,031	1,207	1,389	1,600	1,885	2,293
LIBERTY CITY WSC	GREGG	SABINE	2,928	3,284	3,652	4,078	4,657	5,487
LONGVIEW	GREGG	SABINE	75,229	78,835	82,562	86,875	92,714	101,063
TRYON ROAD WSC	GREGG	CYPRESS	2,505	2,809	3,124	3,489	3,984	4,694
TRYON ROAD WSC	GREGG	SABINE	2,004	2,247	2,499	2,791	3,188	3,755
WEST GREGG WSC	GREGG	SABINE	2,528	2,835	3,153	3,521	4,021	4,737
WHITE OAK	GREGG	SABINE	6,174	6,743	7,331	8,012	8,934	10,252
	GREGG Total		**118,770**	**126,421**	**134,330**	**143,481**	**155,871**	**173,587**
COUNTY-OTHER	HARRISON	CYPRESS	19,616	21,962	23,658	24,939	26,435	28,634
COUNTY-OTHER	HARRISON	SABINE	7,989	8,861	9,492	9,968	10,524	11,342
DIANA WSC	HARRISON	CYPRESS	255	286	308	325	345	374
GILL WSC	HARRISON	SABINE	1,576	1,768	1,907	2,011	2,133	2,313
GUM SPRINGS WSC	HARRISON	CYPRESS	741	831	897	946	1,003	1,088
GUM SPRINGS WSC	HARRISON	SABINE	5,443	6,106	6,585	6,946	7,368	7,990
HALLSVILLE	HARRISON	SABINE	3,334	3,890	4,292	4,595	4,950	5,472
LONGVIEW	HARRISON	SABINE	1,598	1,598	1,598	1,598	1,598	1,598

WUG Name	County Name	Basin Name	P2010	P2020	P2030	P2040	P2050	P2060
MARSHALL	HARRISON	CYPRESS	4,760	4,817	4,858	4,889	4,925	4,979
MARSHALL	HARRISON	SABINE	19,469	19,703	19,872	19,999	20,148	20,367
TRYON ROAD WSC	HARRISON	CYPRESS	401	449	485	511	542	588
TRYON ROAD WSC	HARRISON	SABINE	0	0	0	0	0	0
WASKOM	HARRISON	CYPRESS	2,365	2,659	2,872	3,032	3,220	3,496
	HARRISON Total		**67,547**	**72,930**	**76,824**	**79,759**	**83,191**	**88,241**
CASH WSC	HOPKINS	SABINE	352	394	420	436	403	370
COMO	HOPKINS	SABINE	480	533	574	608	608	608
COMO	HOPKINS	SULPHUR	218	242	261	276	276	276
COUNTY-OTHER	HOPKINS	CYPRESS	671	753	801	830	759	688
COUNTY-OTHER	HOPKINS	SABINE	3,364	3,773	4,020	4,175	3,854	3,535
COUNTY-OTHER	HOPKINS	SULPHUR	4,502	5,049	5,379	5,588	5,159	4,730
CUMBY	HOPKINS	SABINE	609	676	728	772	772	772
CUMBY	HOPKINS	SULPHUR	83	92	99	105	105	105
CYPRESS SPRINGS WSC	HOPKINS	CYPRESS	850	954	1,016	1,055	974	893
CYPRESS SPRINGS WSC	HOPKINS	SULPHUR	138	155	165	172	159	145
MARTIN SPRINGS WSC	HOPKINS	SABINE	0	0	0	0	0	0
MARTIN SPRINGS WSC	HOPKINS	SULPHUR	2,658	2,982	3,176	3,299	3,046	2,793
NORTH HOPKINS WSC	HOPKINS	SULPHUR	4,902	5,497	5,856	6,083	5,617	5,150
SHARON WSC	HOPKINS	CYPRESS	73	81	87	93	93	93
SULPHUR SPRINGS	HOPKINS	SULPHUR	17,034	18,701	20,369	22,036	23,703	25,370
	HOPKINS Total		**35,934**	**39,882**	**42,951**	**45,528**	**45,528**	**45,528**
ABLE SPRINGS WSC	HUNT	SABINE	418	517	659	896	1,423	2,250
BLACKLAND WSC	HUNT	SABINE	36	45	57	78	124	196
CADDO BASIN SUD	HUNT	SABINE	4,631	5,728	7,311	9,929	15,779	24,950
CADDO BASIN SUD	HUNT	TRINITY	45	56	72	97	155	245
CADDO MILLS	HUNT	SABINE	1,192	1,260	1,352	1,498	1,819	2,318
CAMPBELL	HUNT	SABINE	761	804	862	954	1,156	1,470
CAMPBELL	HUNT	SULPHUR	0	0	0	0	0	0
CAMPBELL WSC	HUNT	SABINE	244	357	521	794	1,406	2,367
CAMPBELL WSC	HUNT	SULPHUR	366	535	782	1,192	2,110	3,550
CASH WSC	HUNT	SABINE	13,401	16,574	21,155	28,728	45,657	72,191
CELESTE	HUNT	SABINE	861	932	1,028	1,180	1,513	2,031
COMBINED CONSUMERS WSC (TAWAKONI)	HUNT	SABINE	6,999	8,656	11,048	15,003	23,844	37,701

WUG Name	County Name	Basin Name	P2010	P2020	P2030	P2040	P2050	P2060
COMMERCE	HUNT	SULPHUR	8,116	8,825	9,785	11,310	14,659	19,860
COMMUNITY WATER COMPANY	HUNT	SABINE	774	774	774	774	774	774
COUNTY-OTHER	HUNT	SABINE	6,536	7,646	9,273	11,979	18,066	27,627
COUNTY-OTHER	HUNT	SULPHUR	3,423	4,235	5,405	7,339	11,665	18,442
COUNTY-OTHER	HUNT	TRINITY	176	217	278	375	598	945
GREENVILLE	HUNT	SABINE	24,431	25,178	26,189	27,796	31,324	36,802
HICKORY CREEK SUD	HUNT	SABINE	394	487	621	844	1,341	2,120
HICKORY CREEK SUD	HUNT	SULPHUR	1,744	2,156	2,752	3,738	5,940	9,393
HICKORY CREEK SUD	HUNT	TRINITY	185	228	291	396	629	995
JOSEPHINE	HUNT	SABINE	21	24	27	32	44	62
LONE OAK	HUNT	SABINE	521	521	521	521	521	521
MAC BEE WSC	HUNT	SABINE	406	502	640	870	1,382	2,185
NORTH HUNT WSC	HUNT	SULPHUR	2,631	3,253	4,153	5,639	8,962	14,171
QUINLAN	HUNT	SABINE	1,375	1,383	1,394	1,412	1,452	1,514
WEST TAWAKONI	HUNT	SABINE	1,663	1,859	2,004	2,169	2,344	2,519
WOLFE CITY	HUNT	SULPHUR	1,598	1,649	1,718	1,828	2,070	2,446
	HUNT Total		**82,948**	**94,401**	**110,672**	**137,371**	**196,757**	**289,645**
BLOSSOM	LAMAR	RED	1,558	1,677	1,789	1,900	1,900	1,900
COUNTY-OTHER	LAMAR	RED	466	496	522	552	540	527
COUNTY-OTHER	LAMAR	SULPHUR	1,483	1,578	1,663	1,759	1,718	1,678
DEPORT	LAMAR	SULPHUR	719	774	825	877	877	877
LAMAR COUNTY WSD	LAMAR	RED	9,102	9,684	10,203	10,790	10,544	10,299
LAMAR COUNTY WSD	LAMAR	SULPHUR	6,070	6,459	6,805	7,196	7,033	6,869
PARIS	LAMAR	RED	11,235	12,093	12,895	13,697	13,697	13,697
PARIS	LAMAR	SULPHUR	16,813	18,097	19,297	20,497	20,497	20,497
RED RIVER COUNTY WSC	LAMAR	RED	0	0	0	0	0	0
RENO	LAMAR	RED	791	890	992	1,070	1,155	1,239
RENO	LAMAR	SULPHUR	3,536	3,979	4,432	4,782	5,159	5,537
ROXTON	LAMAR	SULPHUR	752	809	863	916	916	916
	LAMAR Total		**52,525**	**56,536**	**60,286**	**64,036**	**64,036**	**64,036**
COUNTY-OTHER	MARION	CYPRESS	9,036	9,135	9,135	9,135	9,135	9,135
DIANA WSC	MARION	CYPRESS	170	172	172	172	172	172
JEFFERSON	MARION	CYPRESS	2,089	2,113	2,113	2,113	2,113	2,113
	MARION Total		**11,295**	**11,420**	**11,420**	**11,420**	**11,420**	**11,420**
BI-COUNTY WSC	MORRIS	CYPRESS	862	862	862	862	862	862
COUNTY-OTHER	MORRIS	CYPRESS	2,316	2,316	2,316	2,316	2,316	2,316
COUNTY-OTHER	MORRIS	SULPHUR	2,382	2,382	2,382	2,382	2,382	2,382

Population Projections

WUG Name	County Name	Basin Name	P2010	P2020	P2030	P2040	P2050	P2060
DAINGERFIELD	MORRIS	CYPRESS	2,515	2,515	2,515	2,515	2,515	2,515
HUGHES SPRINGS	MORRIS	CYPRESS	8	8	8	8	8	8
LONE STAR	MORRIS	CYPRESS	1,630	1,630	1,630	1,630	1,630	1,630
NAPLES	MORRIS	CYPRESS	677	677	677	677	677	677
NAPLES	MORRIS	SULPHUR	732	732	732	732	732	732
OMAHA	MORRIS	CYPRESS	569	569	569	569	569	569
OMAHA	MORRIS	SULPHUR	430	430	430	430	430	430
TRI WSC	MORRIS	CYPRESS	918	918	918	918	918	918
	MORRIS Total		**13,039**	**13,039**	**13,039**	**13,039**	**13,039**	**13,039**
BRIGHT STAR-SALEM WSC	RAINS	SABINE	2,700	3,243	3,591	3,686	3,661	3,595
CASH WSC	RAINS	SABINE	668	803	889	913	906	891
COUNTY-OTHER	RAINS	SABINE	4,742	5,681	6,283	6,448	6,404	6,290
EAST TAWAKONI	RAINS	SABINE	886	1,011	1,135	1,259	1,384	1,509
EMORY	RAINS	SABINE	1,228	1,401	1,573	1,745	1,918	2,091
POINT	RAINS	SABINE	949	1,082	1,216	1,349	1,482	1,615
	RAINS Total		**11,173**	**13,221**	**14,687**	**15,400**	**15,755**	**15,991**
BOGATA	RED RIVER	SULPHUR	1,390	1,390	1,390	1,390	1,390	1,390
CLARKSVILLE	RED RIVER	SULPHUR	3,866	3,866	3,866	3,866	3,866	3,866
COUNTY-OTHER	RED RIVER	RED	1,650	1,650	1,650	1,650	1,650	1,650
COUNTY-OTHER	RED RIVER	SULPHUR	2,017	2,017	2,017	2,017	2,017	2,017
DEPORT	RED RIVER	SULPHUR	54	54	54	54	54	54
DETROIT	RED RIVER	SULPHUR	773	773	773	773	773	773
RED RIVER COUNTY WSC	RED RIVER	RED	1,799	1,799	1,799	1,799	1,799	1,799
RED RIVER COUNTY WSC	RED RIVER	SULPHUR	2,702	2,702	2,702	2,702	2,702	2,702
	RED RIVER Total		**14,251**	**14,251**	**14,251**	**14,251**	**14,251**	**14,251**
COUNTY-OTHER	SMITH	SABINE	15,877	17,861	19,843	21,818	25,139	29,533
CRYSTAL SYSTEMS INC	SMITH	SABINE	3,419	3,889	4,357	4,824	5,609	6,649
JACKSON WSC	SMITH	SABINE	476	542	607	672	782	926
LIBERTY CITY WSC	SMITH	SABINE	37	42	47	52	60	72
LINDALE	SMITH	SABINE	3,051	3,627	4,201	4,773	5,736	7,010
LINDALE RURAL WSC	SMITH	SABINE	2,421	2,754	3,086	3,416	3,973	4,709
OVERTON	SMITH	SABINE	83	87	91	95	101	109
SMITH COUNTY WCID #1	SMITH	SABINE	982	1,117	1,251	1,385	1,611	1,909
SOUTHERN UTILITIES COMPANY	SMITH	SABINE	10,207	11,609	13,007	14,401	16,746	19,848
TYLER	SMITH	SABINE	1,239	1,625	2,010	2,394	3,039	3,892

WUG Name	County Name	Basin Name	P2010	P2020	P2030	P2040	P2050	P2060
WEST GREGG WSC	SMITH	SABINE	747	850	953	1,055	1,226	1,454
WINONA	SMITH	SABINE	672	739	806	873	986	1,135
	SMITH Total		**39,211**	**44,742**	**50,259**	**55,758**	**65,008**	**77,246**
BI-COUNTY WSC	TITUS	CYPRESS	349	392	435	465	493	517
COUNTY-OTHER	TITUS	CYPRESS	2,459	2,737	3,022	3,218	3,396	3,549
COUNTY-OTHER	TITUS	SULPHUR	6,609	7,419	8,246	8,814	9,332	9,776
CYPRESS SPRINGS WSC	TITUS	CYPRESS	97	109	122	130	138	144
MOUNT PLEASANT	TITUS	CYPRESS	15,201	16,611	17,870	19,433	20,844	22,255
TALCO	TITUS	SULPHUR	570	570	570	570	570	570
TRI WSC	TITUS	CYPRESS	5,873	6,592	7,328	7,832	8,291	8,686
	TITUS Total		**31,158**	**34,430**	**37,593**	**40,462**	**43,064**	**45,497**
BI-COUNTY WSC	UPSHUR	CYPRESS	2,752	2,993	3,143	3,230	3,298	3,397
BIG SANDY	UPSHUR	SABINE	1,365	1,443	1,496	1,529	1,555	1,589
COUNTY-OTHER	UPSHUR	CYPRESS	8,431	9,153	9,601	9,861	10,063	10,358
COUNTY-OTHER	UPSHUR	SABINE	4,275	4,644	4,874	5,007	5,111	5,262
DIANA WSC	UPSHUR	CYPRESS	3,294	3,583	3,763	3,867	3,948	4,067
EAST MOUNTAIN	UPSHUR	CYPRESS	166	173	186	201	212	222
EAST MOUNTAIN	UPSHUR	SABINE	944	979	1,056	1,137	1,198	1,260
GILMER	UPSHUR	CYPRESS	5,940	6,390	6,763	7,029	7,248	7,467
GLADEWATER	UPSHUR	SABINE	2,584	2,716	2,805	2,861	2,905	2,963
ORE CITY	UPSHUR	CYPRESS	1,261	1,418	1,525	1,592	1,645	1,715
PRICHETT WSC	UPSHUR	CYPRESS	1,976	2,149	2,257	2,319	2,368	2,439
PRICHETT WSC	UPSHUR	SABINE	3,672	3,993	4,194	4,310	4,400	4,532
SHARON WSC	UPSHUR	CYPRESS	1,712	1,862	1,956	2,010	2,052	2,114
	UPSHUR Total		**38,372**	**41,496**	**43,619**	**44,953**	**46,003**	**47,385**
ABLE SPRINGS WSC	VAN ZANDT	SABINE	34	40	44	48	52	57
BETHEL-ASH WSC	VAN ZANDT	NECHES	475	552	617	666	728	797
CANTON	VAN ZANDT	SABINE	3,537	3,795	4,012	4,175	4,382	4,613
COMBINED CONSUMERS WSC (TAWAKONI)	VAN ZANDT	SABINE	1,776	2,064	2,308	2,490	2,722	2,980
COUNTY-OTHER	VAN ZANDT	NECHES	11,224	12,772	14,077	15,059	16,304	17,692
COUNTY-OTHER	VAN ZANDT	SABINE	10,579	12,281	13,717	14,795	16,163	17,692
COUNTY-OTHER	VAN ZANDT	TRINITY	3,349	3,881	4,331	4,669	5,097	5,575
EDGEWOOD	VAN ZANDT	SABINE	1,394	1,442	1,483	1,513	1,552	1,595
GRAND SALINE	VAN ZANDT	SABINE	3,312	3,611	3,863	4,052	4,292	4,560
MAC BEE WSC	VAN ZANDT	SABINE	3,124	3,631	4,058	4,380	4,787	5,241
MAC BEE WSC	VAN ZANDT	TRINITY	4,689	5,450	6,092	6,574	7,185	7,867

Population Projections

WUG Name	County Name	Basin Name	P2010	P2020	P2030	P2040	P2050	P2060
R P M WSC	VAN ZANDT	NECHES	1,556	1,808	2,021	2,181	2,384	2,610
SOUTH TAWAKONI WSC	VAN ZANDT	SABINE	3,789	4,403	4,922	5,311	5,805	6,356
VAN	VAN ZANDT	NECHES	2,050	2,337	2,579	2,761	2,992	3,249
VAN	VAN ZANDT	SABINE	675	769	849	909	985	1,070
WILLS POINT	VAN ZANDT	SABINE	1,487	1,635	1,759	1,853	1,972	2,104
WILLS POINT	VAN ZANDT	TRINITY	2,373	2,608	2,807	2,956	3,145	3,356
	VAN ZANDT Total		**55,423**	**63,079**	**69,539**	**74,392**	**80,547**	**87,414**
BRIGHT STAR-SALEM WSC	WOOD	SABINE	1,330	1,505	1,602	1,613	1,613	1,613
COUNTY-OTHER	WOOD	CYPRESS	199	225	240	241	241	241
COUNTY-OTHER	WOOD	SABINE	23,036	25,963	27,584	27,762	27,762	27,762
CYPRESS SPRINGS WSC	WOOD	CYPRESS	159	180	191	192	192	192
HAWKINS	WOOD	SABINE	1,547	1,746	1,856	1,867	1,867	1,867
MINEOLA	WOOD	SABINE	5,290	5,967	6,343	6,384	6,384	6,384
PRICHETT WSC	WOOD	SABINE	22	25	27	27	27	27
QUITMAN	WOOD	SABINE	2,360	2,662	2,830	2,848	2,848	2,848
RAMEY WSC	WOOD	SABINE	2,372	2,684	2,857	2,876	2,876	2,876
SHARON WSC	WOOD	CYPRESS	727	822	875	881	881	881
SHARON WSC	WOOD	SABINE	2,365	2,676	2,849	2,867	2,867	2,867
WINNSBORO	WOOD	CYPRESS	1,136	1,281	1,362	1,371	1,371	1,371
WINNSBORO	WOOD	SABINE	2,184	2,464	2,620	2,636	2,636	2,636
	WOOD Total		**42,727**	**48,200**	**51,236**	**51,565**	**51,565**	**51,565**
	Grand Total		**772,163**	**843,027**	**908,748**	**978,298**	**1,073,570**	**1,213,095**

County Name	Water User Group	Basin Name	Water Demand Projections (in acft[1])						Base GPCD[2]	Recommended Reduction from Base GPCD for Plumbing Code Savings [3](in gallon)					
			2010	2020	2030	2040	2050	2060	2000	2010	2020	2030	2040	2050	2060
BOWIE	CENTRAL BOWIE WSC	RED	140	149	156	162	161	159	**115**	0	0	0	0	0	0
BOWIE	CENTRAL BOWIE WSC	SULPHUR	559	596	622	649	643	636	**115**	0	0	0	0	0	0
BOWIE	COUNTY-OTHER	RED	1551	1615	1650	1682	1651	1634	**144**	4	7	10	13	14	14
BOWIE	COUNTY-OTHER	SULPHUR	2533	2633	2684	2730	2679	2652	**134**	4	7	10	13	14	14
BOWIE	DE KALB	RED	53	55	57	60	60	60	**124**	4	7	9	9	9	9
BOWIE	DE KALB	SULPHUR	205	213	220	230	230	230	**124**	4	7	9	9	9	9
BOWIE	HOOKS	RED	416	443	465	486	486	486	**115**	0	0	0	0	0	0
BOWIE	LEARY	RED	85	89	91	94	93	93	**129**	3	6	8	10	11	11
BOWIE	MACEDONIA-EYLAU MUD #1	SULPHUR	769	803	822	846	831	822	**153**	3	6	9	11	12	12
BOWIE	MAUD	SULPHUR	144	153	161	168	168	168	**120**	5	5	5	5	5	5
BOWIE	NASH	SULPHUR	303	323	339	355	355	355	**115**	0	0	0	0	0	0
BOWIE	NEW BOSTON	RED	362	380	392	403	401	401	**198**	4	7	10	13	14	14
BOWIE	NEW BOSTON	SULPHUR	773	811	837	862	857	857	**198**	4	7	10	13	14	14
BOWIE	RED LICK	RED	86	90	93	95	95	95	**128**	4	6	8	10	11	11
BOWIE	RED LICK	SULPHUR	43	45	46	48	47	47	**128**	4	6	8	10	11	11
BOWIE	RED RIVER COUNTY WSC	RED	4	5	5	5	5	5	**115**	0	0	0	0	0	0
BOWIE	REDWATER	SULPHUR	128	133	136	143	143	143	**126**	5	8	11	11	11	11
BOWIE	TEXARKANA	RED	675	706	725	743	738	738	**157**	4	7	10	13	14	14
BOWIE	TEXARKANA	SULPHUR	5797	6061	6227	6381	6337	6337	**157**	4	7	10	13	14	14
BOWIE	WAKE VILLAGE	SULPHUR	714	772	830	887	945	1003	**115**	0	0	0	0	0	0
CAMP	BI-COUNTY WSC	CYPRESS	733	918	1089	1224	1329	1443	**115**	0	0	0	0	0	0
CAMP	COUNTY-OTHER	CYPRESS	296	225	159	109	70	27	**118**	1	2	3	3	3	3
CAMP	PITTSBURG	CYPRESS	899	924	950	965	985	1012	**180**	4	8	11	14	15	15
CAMP	SHARON WSC	CYPRESS	10	11	12	13	14	15	**115**	0	0	0	0	0	0
CASS	ATLANTA	CYPRESS	1329	1362	1387	1416	1409	1409	**206**	3	6	10	13	14	14
CASS	ATLANTA	SULPHUR	1	1	1	1	1	1	**206**	3	6	10	13	14	14
CASS	COUNTY-OTHER	CYPRESS	1402	1458	1514	1570	1570	1570	**118**	3	3	3	3	3	3
CASS	COUNTY-OTHER	SULPHUR	1087	1131	1176	1220	1220	1220	**115**	0	0	0	0	0	0
CASS	HUGHES SPRINGS	CYPRESS	441	452	460	470	468	468	**212**	3	6	10	13	14	14
CASS	LINDEN	CYPRESS	347	353	356	361	358	358	**139**	4	7	11	14	15	15
CASS	QUEEN CITY	CYPRESS	145	148	148	150	149	149	**130**	4	7	11	14	15	15
CASS	QUEEN CITY	SULPHUR	86	88	88	89	88	88	**130**	4	7	11	14	15	15
DELTA	COOPER	SULPHUR	391	418	442	465	462	462	**156**	5	8	11	14	15	15
DELTA	COUNTY-OTHER	SULPHUR	428	451	479	514	514	514	**124**	3	7	9	9	9	9
DELTA	NORTH HUNT WSC	SULPHUR	34	37	40	43	43	43	**115**	0	0	0	0	0	0
FRANKLIN	COUNTY-OTHER	CYPRESS	104	111	116	120	120	120	**132**	1	2	2	3	3	3
FRANKLIN	COUNTY-OTHER	SABINE	0	0	0	0	0	0	**128**	1	2	2	3	3	3
FRANKLIN	COUNTY-OTHER	SULPHUR	106	123	135	146	146	146	**127**	1	2	2	3	3	3

County Name	Water User Group	Basin Name	Water Demand Projections (in acft[1])						Base GPCD[2]	Recommended Reduction from Base GPCD for Plumbing Code Savings [3](in gallon)					
			2010	2020	2030	2040	2050	2060	2000	2010	2020	2030	2040	2050	2060
FRANKLIN	CYPRESS SPRINGS WSC	CYPRESS	724	824	889	952	952	952	**126**	4	7	9	11	11	11
FRANKLIN	CYPRESS SPRINGS WSC	SULPHUR	118	134	145	155	155	155	**126**	4	7	9	11	11	11
FRANKLIN	MOUNT VERNON	SULPHUR	397	449	479	511	507	507	**133**	6	9	12	14	15	15
FRANKLIN	NORTH HOPKINS WSC	SULPHUR	9	11	12	13	13	13	**115**	0	0	0	0	0	0
FRANKLIN	TRI WSC	CYPRESS	21	24	27	29	29	29	**120**	4	5	5	5	5	5
FRANKLIN	WINNSBORO	CYPRESS	179	204	221	237	235	235	**184**	4	7	9	11	12	12
FRANKLIN	WINNSBORO	SABINE	0	0	0	0	0	0	**184**	4	7	9	11	12	12
GREGG	CLARKSVILLE CITY	SABINE	116	129	143	158	179	209	**115**	0	0	0	0	0	0
GREGG	COUNTY-OTHER	CYPRESS	153	167	181	197	219	251	**115**	0	0	0	0	0	0
GREGG	COUNTY-OTHER	SABINE	1018	1110	1212	1317	1489	1735	**126**	5	7	8	10	10	10
GREGG	EASTON	SABINE	75	88	102	117	138	168	**115**	0	0	0	0	0	0
GREGG	ELDERVILLE WSC	SABINE	423	475	528	590	673	793	**115**	0	0	0	0	0	0
GREGG	GLADEWATER	SABINE	737	731	720	714	716	722	**184**	4	7	11	14	15	15
GREGG	KILGORE	SABINE	1905	1973	2050	2141	2299	2541	**188**	4	8	11	14	15	15
GREGG	LAKEPORT	SABINE	152	173	196	222	260	316	**136**	4	8	10	12	13	13
GREGG	LIBERTY CITY WSC	SABINE	603	666	728	804	913	1076	**188**	4	7	10	12	13	13
GREGG	LONGVIEW	SABINE	10449	10597	10820	11191	11943	13019	**127**	3	7	10	13	14	14
GREGG	TRYON ROAD WSC	CYPRESS	376	412	448	489	553	652	**138**	4	7	10	13	14	14
GREGG	TRYON ROAD WSC	SABINE	301	330	358	391	443	522	**138**	4	7	10	13	14	14
GREGG	WEST GREGG WSC	SABINE	331	365	406	454	518	610	**120**	3	5	5	5	5	5
GREGG	WHITE OAK	SABINE	1093	1171	1248	1337	1481	1700	**162**	4	7	10	13	14	14
HARRISON	COUNTY-OTHER	CYPRESS	2527	2829	3048	3213	3405	3689	**115**	0	0	0	0	0	0
HARRISON	COUNTY-OTHER	SABINE	1029	1141	1223	1284	1356	1461	**115**	0	0	0	0	0	0
HARRISON	DIANA WSC	CYPRESS	33	37	40	42	44	48	**115**	0	0	0	0	0	0
HARRISON	GILL WSC	SABINE	203	228	246	259	275	298	**115**	0	0	0	0	0	0
HARRISON	GUM SPRINGS WSC	CYPRESS	98	107	116	122	129	140	**124**	6	9	9	9	9	9
HARRISON	GUM SPRINGS WSC	SABINE	719	787	848	895	949	1029	**124**	6	9	9	9	9	9
HARRISON	HALLSVILLE	SABINE	429	501	553	592	638	705	**115**	0	0	0	0	0	0
HARRISON	LONGVIEW	SABINE	222	215	209	206	206	206	**127**	3	7	10	12	12	12
HARRISON	MARSHALL	CYPRESS	640	631	626	630	634	641	**124**	4	7	9	9	9	9
HARRISON	MARSHALL	SABINE	2617	2582	2560	2576	2595	2624	**124**	4	7	9	9	9	9
HARRISON	TRYON ROAD WSC	CYPRESS	60	66	70	72	75	82	**138**	4	7	10	13	14	14
HARRISON	TRYON ROAD WSC	SABINE	0	0	0	0	0	0	**138**	4	7	10	13	14	14
HARRISON	WASKOM	CYPRESS	305	343	370	391	415	450	**115**	0	0	0	0	0	0
HOPKINS	CASH WSC	SABINE	45	51	54	56	52	48	**115**	0	0	0	0	0	0
HOPKINS	COMO	SABINE	62	69	74	78	78	78	**115**	0	0	0	0	0	0
HOPKINS	COMO	SULPHUR	28	31	34	36	36	36	**115**	0	0	0	0	0	0
HOPKINS	COUNTY-OTHER	CYPRESS	105	116	120	123	112	101	**144**	4	7	10	12	13	13
HOPKINS	COUNTY-OTHER	SABINE	541	594	619	634	581	533	**148**	4	7	10	12	13	13

County Name	Water User Group	Basin Name	Water Demand Projections (in acft[1])						Base GPCD[2]	Recommended Reduction from Base GPCD for Plumbing Code Savings [3](in gallon)					
			2010	2020	2030	2040	2050	2060	2000	2010	2020	2030	2040	2050	2060
HOPKINS	COUNTY-OTHER	SULPHUR	647	708	737	753	689	632	**132**	4	7	10	12	13	13
HOPKINS	CUMBY	SABINE	88	95	100	104	103	103	**133**	4	8	10	13	14	14
HOPKINS	CUMBY	SULPHUR	12	13	14	14	14	14	**133**	4	8	10	13	14	14
HOPKINS	CYPRESS SPRINGS WSC	CYPRESS	116	127	133	136	125	115	**126**	4	7	9	11	11	11
HOPKINS	CYPRESS SPRINGS WSC	SULPHUR	19	21	22	22	20	19	**126**	4	7	9	11	11	11
HOPKINS	MARTIN SPRINGS WSC	SABINE	0	0	0	0	0	0	**153**	5	8	11	13	14	14
HOPKINS	MARTIN SPRINGS WSC	SULPHUR	441	484	505	517	474	435	**153**	5	8	11	13	14	14
HOPKINS	NORTH HOPKINS WSC	SULPHUR	631	708	754	784	724	663	**115**	0	0	0	0	0	0
HOPKINS	SHARON WSC	CYPRESS	9	10	11	12	12	12	**115**	0	0	0	0	0	0
HOPKINS	SULPHUR SPRINGS	SULPHUR	3511	3771	4061	4320	4620	4945	**188**	4	8	10	13	14	14
HUNT	ABLE SPRINGS WSC	SABINE	54	67	85	115	183	290	**115**	0	0	0	0	0	0
HUNT	BLACKLAND WSC	SABINE	5	6	7	10	16	25	**115**	0	0	0	0	0	0
HUNT	CADDO BASIN SUD	SABINE	597	738	942	1279	2033	3214	**115**	0	0	0	0	0	0
HUNT	CADDO BASIN SUD	TRINITY	6	7	9	12	20	32	**115**	0	0	0	0	0	0
HUNT	CADDO MILLS	SABINE	174	178	186	201	242	309	**134**	4	8	11	14	15	15
HUNT	CAMPBELL	SABINE	98	104	111	123	149	189	**115**	0	0	0	0	0	0
HUNT	CAMPBELL	SULPHUR	0	0	0	0	0	0	**115**	0	0	0	0	0	0
HUNT	CAMPBELL WSC	SABINE	31	46	67	102	181	305	**115**	0	0	0	0	0	0
HUNT	CAMPBELL WSC	SULPHUR	47	69	101	154	272	457	**115**	0	0	0	0	0	0
HUNT	CASH WSC	SABINE	1726	2135	2725	3701	5881	9299	**115**	0	0	0	0	0	0
HUNT	CELESTE	SABINE	111	120	132	152	195	262	**115**	0	0	0	0	0	0
HUNT	COMBINED CONSUMERS WSC (TAWAKONI)	SABINE	902	1115	1423	1933	3072	4857	**115**	0	0	0	0	0	0
HUNT	COMMERCE	SULPHUR	1418	1503	1644	1862	2397	3248	**159**	3	7	9	12	13	13
HUNT	COMMUNITY WATER COMPANY	SABINE	100	100	100	100	100	100	**115**	0	0	0	0	0	0
HUNT	COUNTY-OTHER	SABINE	848	985	1195	1543	2327	3559	**116**	0	1	1	1	1	1
HUNT	COUNTY-OTHER	SULPHUR	476	584	727	946	1504	2377	**124**	0	1	4	9	9	9
HUNT	COUNTY-OTHER	TRINITY	26	32	40	52	81	128	**134**	0	1	4	9	13	13
HUNT	GREENVILLE	SABINE	5555	5641	5750	6009	6737	7915	**207**	4	7	11	14	15	15
HUNT	HICKORY CREEK SUD	SABINE	67	81	102	137	216	342	**155**	3	6	9	10	11	11
HUNT	HICKORY CREEK SUD	SULPHUR	297	360	450	607	958	1515	**155**	3	6	9	10	11	11
HUNT	HICKORY CREEK SUD	TRINITY	31	38	48	64	101	160	**155**	3	6	9	10	11	11
HUNT	JOSEPHINE	SABINE	3	3	4	4	6	8	**135**	4	9	12	14	14	14
HUNT	LONE OAK	SABINE	68	67	67	67	67	67	**120**	3	5	5	5	5	5
HUNT	MAC BEE WSC	SABINE	52	65	82	112	178	281	**115**	0	0	0	0	0	0
HUNT	NORTH HUNT WSC	SULPHUR	339	419	535	726	1154	1825	**115**	0	0	0	0	0	0
HUNT	QUINLAN	SABINE	177	178	180	182	187	195	**116**	1	1	1	1	1	1

County Name	Water User Group	Basin Name	Water Demand Projections (in acft[1])						Base GPCD[2]	Recommended Reduction from Base GPCD for Plumbing Code Savings [3](in gallon)					
			2010	2020	2030	2040	2050	2060	2000	2010	2020	2030	2040	2050	2060
HUNT	WEST TAWAKONI	SABINE	311	342	364	389	420	451	**171**	4	7	9	11	11	11
HUNT	WOLFE CITY	SULPHUR	206	212	221	235	267	315	**117**	2	2	2	2	2	2
LAMAR	BLOSSOM	RED	201	216	230	245	245	245	**115**	0	0	0	0	0	0
LAMAR	COUNTY-OTHER	RED	60	64	67	71	70	68	**120**	4	5	5	5	5	5
LAMAR	COUNTY-OTHER	SULPHUR	194	203	214	227	221	216	**121**	4	6	6	6	6	6
LAMAR	DEPORT	SULPHUR	93	100	106	113	113	113	**115**	0	0	0	0	0	0
LAMAR	LAMAR COUNTY WSD	RED	1193	1247	1314	1390	1358	1327	**120**	3	5	5	5	5	5
LAMAR	LAMAR COUNTY WSD	SULPHUR	796	832	877	927	906	885	**120**	3	5	5	5	5	5
LAMAR	PARIS	RED	2504	2655	2788	2915	2900	2900	**203**	4	7	10	13	14	14
LAMAR	PARIS	SULPHUR	3748	3973	4172	4362	4339	4339	**203**	4	7	10	13	14	14
LAMAR	RED RIVER COUNTY WSC	RED	0	0	0	0	0	0	**115**	0	0	0	0	0	0
LAMAR	RENO	RED	102	115	128	138	149	160	**115**	0	0	0	0	0	0
LAMAR	RENO	SULPHUR	455	513	571	616	665	713	**115**	0	0	0	0	0	0
LAMAR	ROXTON	SULPHUR	97	104	111	118	118	118	**115**	0	0	0	0	0	0
MARION	COUNTY-OTHER	CYPRESS	1164	1177	1177	1177	1177	1177	**115**	0	0	0	0	0	0
MARION	DIANA WSC	CYPRESS	22	22	22	22	22	22	**115**	0	0	0	0	0	0
MARION	JEFFERSON	CYPRESS	379	376	369	362	357	357	**166**	4	7	10	13	15	15
MORRIS	BI-COUNTY WSC	CYPRESS	111	111	111	111	111	111	**115**	0	0	0	0	0	0
MORRIS	COUNTY-OTHER	CYPRESS	329	322	314	306	301	301	**131**	4	7	10	13	15	15
MORRIS	COUNTY-OTHER	SULPHUR	307	307	307	307	307	307	**115**	0	0	0	0	0	0
MORRIS	DAINGERFIELD	CYPRESS	417	408	400	392	386	386	**152**	4	7	10	13	15	15
MORRIS	HUGHES SPRINGS	CYPRESS	1	1	1	1	1	1	**147**	3	6	10	13	14	14
MORRIS	LONE STAR	CYPRESS	267	261	256	250	246	246	**149**	3	6	9	12	14	14
MORRIS	NAPLES	CYPRESS	90	88	87	87	87	87	**123**	4	7	8	8	8	8
MORRIS	NAPLES	SULPHUR	98	95	94	94	94	94	**123**	4	7	8	8	8	8
MORRIS	OMAHA	CYPRESS	83	81	79	77	76	76	**132**	2	5	8	11	13	13
MORRIS	OMAHA	SULPHUR	63	61	60	58	57	57	**132**	2	5	8	11	13	13
MORRIS	TRI WSC	CYPRESS	119	118	118	118	118	118	**120**	4	5	5	5	5	5
RAINS	BRIGHT STAR-SALEM WSC	SABINE	348	418	463	475	472	463	**115**	0	0	0	0	0	0
RAINS	CASH WSC	SABINE	86	103	115	118	117	115	**115**	0	0	0	0	0	0
RAINS	COUNTY-OTHER	SABINE	744	878	957	975	961	944	**143**	3	5	7	8	9	9
RAINS	EAST TAWAKONI	SABINE	175	196	216	237	259	282	**181**	5	8	11	13	14	14
RAINS	EMORY	SABINE	197	218	240	260	284	309	**147**	4	8	11	14	15	15
RAINS	POINT	SABINE	125	139	157	174	191	208	**123**	5	8	8	8	8	8
RED RIVER	BOGATA	SULPHUR	192	187	182	179	179	179	**126**	3	6	9	11	11	11
RED RIVER	CLARKSVILLE	SULPHUR	728	715	702	689	680	680	**171**	3	6	9	12	14	14
RED RIVER	COUNTY-OTHER	RED	213	213	213	213	213	213	**115**	0	0	0	0	0	0
RED RIVER	COUNTY-OTHER	SULPHUR	280	273	266	260	260	260	**128**	4	7	10	13	13	13
RED RIVER	DEPORT	SULPHUR	7	7	7	7	7	7	**115**	0	0	0	0	0	0

County Name	Water User Group	Basin Name	Water Demand Projections (in acft[1])						Base GPCD[2]	Recommended Reduction from Base GPCD for Plumbing Code Savings [3](in gallon)					
			2010	2020	2030	2040	2050	2060	2000	2010	2020	2030	2040	2050	2060
RED RIVER	DETROIT	SULPHUR	100	100	100	100	100	100	**115**	0	0	0	0	0	0
RED RIVER	RED RIVER COUNTY WSC	RED	232	232	232	232	232	232	**115**	0	0	0	0	0	0
RED RIVER	RED RIVER COUNTY WSC	SULPHUR	348	348	348	348	348	348	**115**	0	0	0	0	0	0
SMITH	COUNTY-OTHER	SABINE	2170	2401	2601	2811	3238	3804	**126**	4	6	9	11	11	11
SMITH	CRYSTAL SYSTEMS INC	SABINE	693	775	859	940	1087	1288	**186**	5	8	10	12	13	13
SMITH	JACKSON WSC	SABINE	61	70	78	87	101	119	**115**	0	0	0	0	0	0
SMITH	LIBERTY CITY WSC	SABINE	5	5	6	7	8	9	**115**	0	0	0	0	0	0
SMITH	LINDALE	SABINE	680	796	913	1027	1227	1500	**204**	5	8	10	12	13	13
SMITH	LINDALE RURAL WSC	SABINE	409	457	505	551	636	754	**156**	5	8	10	12	13	13
SMITH	OVERTON	SABINE	15	15	15	16	17	18	**159**	3	6	9	12	13	13
SMITH	SMITH COUNTY WCID #1	SABINE	310	352	392	433	503	597	**285**	3	4	5	6	6	6
SMITH	SOUTHERN UTILITIES COMPANY	SABINE	1704	1899	2083	2274	2626	3113	**153**	4	7	10	12	13	13
SMITH	TYLER	SABINE	358	464	567	668	844	1081	**261**	3	6	9	12	13	13
SMITH	WEST GREGG WSC	SABINE	98	109	123	136	158	187	**120**	3	5	5	5	5	5
SMITH	WINONA	SABINE	107	115	123	131	147	169	**147**	5	8	11	13	14	14
TITUS	BI-COUNTY WSC	CYPRESS	45	50	56	60	64	67	**115**	0	0	0	0	0	0
TITUS	COUNTY-OTHER	CYPRESS	332	360	391	416	439	459	**124**	4	7	9	9	9	9
TITUS	COUNTY-OTHER	SULPHUR	924	1012	1106	1163	1220	1278	**129**	4	7	9	11	12	12
TITUS	CYPRESS SPRINGS WSC	CYPRESS	13	15	16	17	18	19	**126**	4	7	9	11	11	11
TITUS	MOUNT PLEASANT	CYPRESS	3116	3349	3543	3788	4039	4313	**187**	4	7	10	13	14	14
TITUS	TALCO	SULPHUR	95	93	91	89	88	88	**153**	4	7	10	13	15	15
TITUS	TRI WSC	CYPRESS	763	849	944	1009	1068	1119	**120**	4	5	5	5	5	5
UPSHUR	BI-COUNTY WSC	CYPRESS	355	386	405	416	425	438	**115**	0	0	0	0	0	0
UPSHUR	BIG SANDY	SABINE	202	209	211	211	213	217	**136**	4	7	10	13	14	14
UPSHUR	COUNTY-OTHER	CYPRESS	1086	1179	1237	1270	1296	1334	**115**	0	0	0	0	0	0
UPSHUR	COUNTY-OTHER	SABINE	579	614	628	645	658	678	**123**	2	5	8	8	8	8
UPSHUR	DIANA WSC	CYPRESS	424	462	485	498	509	524	**115**	0	0	0	0	0	0
UPSHUR	EAST MOUNTAIN	CYPRESS	25	25	26	28	29	30	**135**	3	6	9	12	14	14
UPSHUR	EAST MOUNTAIN	SABINE	140	141	149	157	162	171	**135**	3	6	9	12	14	14
UPSHUR	GILMER	CYPRESS	1138	1202	1250	1276	1299	1338	**174**	3	6	9	12	14	14
UPSHUR	GLADEWATER	SABINE	521	538	544	545	550	561	**184**	4	7	11	14	15	15
UPSHUR	ORE CITY	CYPRESS	201	221	232	239	245	255	**147**	5	8	11	13	14	14
UPSHUR	PRICHETT WSC	CYPRESS	255	277	291	299	305	314	**115**	0	0	0	0	0	0
UPSHUR	PRICHETT WSC	SABINE	473	514	540	555	567	584	**115**	0	0	0	0	0	0
UPSHUR	SHARON WSC	CYPRESS	221	240	252	259	264	272	**115**	0	0	0	0	0	0
VAN ZANDT	ABLE SPRINGS WSC	SABINE	4	5	6	6	7	7	**115**	0	0	0	0	0	0
VAN ZANDT	BETHEL-ASH WSC	NECHES	61	71	79	86	94	103	**115**	0	0	0	0	0	0

County Name	Water User Group	Basin Name	Water Demand Projections (in acft[1])						Base GPCD[2]	Recommended Reduction from Base GPCD for Plumbing Code Savings [3](in gallon)					
			2010	2020	2030	2040	2050	2060	2000	2010	2020	2030	2040	2050	2060
VAN ZANDT	CANTON	SABINE	923	978	1020	1048	1095	1152	**238**	5	8	11	14	15	15
VAN ZANDT	COMBINED CONSUMERS WSC (TAWAKONI)	SABINE	229	266	297	321	351	384	**115**	0	0	0	0	0	0
VAN ZANDT	COUNTY-OTHER	NECHES	1452	1652	1821	1948	2109	2289	**116**	1	1	1	1	1	1
VAN ZANDT	COUNTY-OTHER	SABINE	1363	1582	1767	1906	2082	2279	**115**	0	0	0	0	0	0
VAN ZANDT	COUNTY-OTHER	TRINITY	431	500	558	601	657	718	**115**	0	0	0	0	0	0
VAN ZANDT	EDGEWOOD	SABINE	183	186	191	195	200	205	**121**	4	6	6	6	6	6
VAN ZANDT	GRAND SALINE	SABINE	627	671	705	731	769	817	**173**	4	7	10	12	13	13
VAN ZANDT	MAC BEE WSC	SABINE	402	468	523	564	617	675	**115**	0	0	0	0	0	0
VAN ZANDT	MAC BEE WSC	TRINITY	604	702	785	847	926	1013	**115**	0	0	0	0	0	0
VAN ZANDT	R P M WSC	NECHES	216	245	267	283	307	336	**128**	4	7	10	12	13	13
VAN ZANDT	SOUTH TAWAKONI WSC	SABINE	488	567	634	684	748	819	**115**	0	0	0	0	0	0
VAN ZANDT	VAN	NECHES	367	408	445	470	506	550	**164**	4	8	10	12	13	13
VAN ZANDT	VAN	SABINE	121	134	146	155	167	181	**164**	4	8	10	12	13	13
VAN ZANDT	WILLS POINT	SABINE	228	245	258	268	283	302	**141**	4	7	10	12	13	13
VAN ZANDT	WILLS POINT	TRINITY	364	391	412	427	451	481	**141**	4	7	10	12	13	13
WOOD	BRIGHT STAR-SALEM WSC	SABINE	171	194	206	208	208	208	**115**	0	0	0	0	0	0
WOOD	COUNTY-OTHER	CYPRESS	26	29	31	31	31	31	**115**	0	0	0	0	0	0
WOOD	COUNTY-OTHER	SABINE	3251	3577	3739	3701	3669	3669	**130**	4	7	9	11	12	12
WOOD	CYPRESS SPRINGS WSC	CYPRESS	22	24	25	25	25	25	**126**	4	7	9	11	11	11
WOOD	HAWKINS	SABINE	357	395	414	412	410	410	**211**	5	9	12	14	15	15
WOOD	MINEOLA	SABINE	1067	1176	1229	1223	1216	1216	**184**	4	8	11	13	14	14
WOOD	PRICHETT WSC	SABINE	3	3	3	3	3	3	**115**	0	0	0	0	0	0
WOOD	QUITMAN	SABINE	471	522	545	542	539	539	**182**	4	7	10	12	13	13
WOOD	RAMEY WSC	SABINE	306	346	368	370	370	370	**119**	4	4	4	4	4	4
WOOD	SHARON WSC	CYPRESS	94	106	113	113	113	113	**115**	0	0	0	0	0	0
WOOD	SHARON WSC	SABINE	305	345	367	369	369	369	**115**	0	0	0	0	0	0
WOOD	WINNSBORO	CYPRESS	181	199	209	207	206	206	**146**	4	7	9	11	12	12
WOOD	WINNSBORO	SABINE	347	384	402	399	396	396	**146**	4	7	9	11	12	12
Region D Water Demand Total			**120,067**	**128,818**	**136,860**	**145,520**	**158,587**	**178,329**							

1) An acft is an amount of water to cover one acre with one foot of water and equals 325,851 gallons.

2) GPCD: Gallon Per Capita Daily

3) The recommended reductions in Gallons-Per-Capita-Daily from the Base GPCD (2000) are due to the assumed replacement of toilets and faucets with new water-efficient fixtures as mandated in State and Federal legislation. These are recommended savings based on a state-wide formula; individual cities or utilities may have information to calculate a better schedule of savings. Changes in the schedule can be made during the water demand revision period.

WATER USER GROUP	BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	REPORTED BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	RECEIVED SURVEY?	REPORTED WATER LOSS (%)
410 WSC	115			71			Y	19.2
ABLE SPRINGS WSC	115			83			Y	32.0
ANNONA	282	Y	Y	282	Y	Y	N	NOT REPORTED
AQUASOURCE CO - COUNTRY WOOD ESTATES	169	Y		169	Y		Y	10.3
AQUASOURCE CO - BARROW SUBDIVISION	115			99			Y	10.1
AQUASOURCE CO - CRAZY HORSE RANCHEROS	122			122			Y	11.0
AQUASOURCE CO - QUINLAN NORTH SUBDIVISION	115			112			Y	10.8
AQUASOURCE CO - QUINLAN SOUTH SUBDIVISION	115			94			Y	11.5
ATLANTA	206	Y	Y	206	Y	Y		
AVERY	115						N	NOT REPORTED
BEN FRANKLIN WSC	120			120			N	NOT REPORTED
BEN WHEELER WSC	115							
BETHEL-ASH WSC	115			84			Y	NOT REPORTED
BHP WSC	116			116				
BI-COUNTY WSC	115			84			N	NOT REPORTED
BIG SANDY	136			136				
BLACKLAND WSC	115			88			N	NOT REPORTED
BLOSSOM	115			93			N	NOT REPORTED
BOGATA	126			126			Y	NOT REPORTED
BRASHEAR WSC	142	Y		142	Y		Y	20.6
BRIGHT STAR-SALEM WSC	115			108			Y	15.8
BRINKER WSC	124			124			Y	NOT REPORTED
BURNS-REDBANK WSC	141	Y		141	Y			
CADDO BASIN SUD	115			109			Y	17.7
CADDO MILLS	134			134			Y	12.0
CAMPBELL	115			79			Y	NOT REPORTED
CAMPBELL WSC	115			79			Y	NOT REPORTED
CANTON	238	Y	Y	238	Y	Y	Y	NOT REPORTED
CANTON NORTH ESTATES	115			84			Y	NOT REPORTED
CASH WSC	115			105			Y	20.0
CEDAR COVE LANDING	165	Y		165	Y		Y	NOT REPORTED
CELESTE	115			96			Y	14.0
CENTRAL BOWIE WSC	115			94			Y	16.0

WATER USER GROUP	BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	REPORTED BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	RECEIVED SURVEY?	REPORTED WATER LOSS (%)
CHARLESTON WSC	136			136			Y	NOT REPORTED
CHEROKEE POINT WATER COMPANY	125			125			Y	11.7
CLARKSVILLE	171	Y		171	Y		Y	36.1
CLARKSVILLE CITY	115			92				
CODY'S MOBILE HOME PARK	115			71			Y	NOT REPORTED
COMBINED CONSUMERS WSC	115			78			Y	17.0
COMMERCE	159	Y		159	Y		Y	18.5
COMMUNITY WATER COMPANY	115			76			N	NOT REPORTED
COMO	115			102			Y	16.3
COOPER	156	Y		156	Y		Y	12.8
CORINTH WSC	115							
CORNERSVILLE WSC	167	Y		167	Y		Y	NOT REPORTED
CROOKED CREEK WSC	115							
CRYSTAL SYSTEMS INC	186	Y		186	Y			
CUMBY	133			133			N	NOT REPORTED
CYPRESS SPRINGS WSC	126			126			Y	3.7
DAINGERFIELD	152	Y		152	Y			
DEER COVE POA WS	201	Y	Y	201	Y	Y	N	NOT REPORTED
DEKALB	124			124			Y	12.0
DEPORT	115			94			Y	15.8
DETROIT	115			95			Y	10.0
DIANA WSC	115			95				
EAST MOUNTAIN	135			135				
EAST TAWAKONI	181	Y		181	Y		Y	40.1
EASTON	115			115				
EDGEWOOD	121			121			Y	16.6
EDOM WSC	115							
EI CHAPARRAL MOBILE HOME PARK	153	Y		153	Y		N	NOT REPORTED
ELDERVILLE WSC	115			88				
EMORY	147	Y		147	Y		Y	23.1
ENLOE-LAKE CREEK WSC	120			120				11.0
FEDERAL CORRECTION INSTITUTE	153	Y		153	Y		N	NOT REPORTED
FRUITVALE WSC	115							
GAFFORD CHAPEL WSC	150	Y		150	Y		N	NOT REPORTED
GILL WSC	115			103				

WATER USER GROUP	BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	REPORTED BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	RECEIVED SURVEY?	REPORTED WATER LOSS (%)
GILMER	174	Y		174	Y			
GLADEWATER	184	Y		184	Y			
GOLDEN WSC	115							
GRAND SALINE	173	Y		173	Y		Y	NOT REPORTED
GREENVILLE	207	Y	Y	207	Y	Y	Y	17.6
GUM SPRINGS WSC	124			124				
HAB WSC	115						N	NOT REPORTED
HALLSVILLE	115			102				
HAWKINS	211	Y	Y	211	Y	Y		
HICKORY CREEK SUD	155	Y		155	Y		Y	11.2
HOOKS	115			86			Y	22.0
HUGHES SPRINGS	*180*	Y		180	Y			
JACKSON WSC	115			71				
JACOBIA WSC	116			116				
JEFFERSON	166	Y		166	Y			
JONES WSC	115							
JOSEPHINE	135			135			N	NOT REPORTED
KILGORE	188	Y		188	Y			
LAKE BOB SANDLIN STATE PARK	622	Y	Y	622	Y	Y	Y	NOT REPORTED
LAKE FORK WSC	115							
LAKEPORT	136			136				
LAMAR COUNTY WSD	120			120			Y	NOT REPORTED
LEARY	129			129			N	NOT REPORTED
LIBERTY CITY WSC	*152*	Y		152	Y			
LINDALE	204	Y	Y	204	Y	Y		
LINDALE RURAL WSC	156	Y		156	Y			
LINDEN	139			139	Y			
LITTLE CREEK ACRES	115			91			Y	NOT REPORTED
LITTLE HOPE-MOORE WSC	115							
LONE OAK	120			120			Y	NOT REPORTED
LONE STAR	149	Y		149	Y		N	NOT REPORTED
LONE STAR WSC	120			120			N	NOT REPORTED
LONGVIEW	127			127				
MAC BEE WSC	115			82			Y	16.5
MACEDONIA-EYLAU MUD #1	153	Y		153	Y		N	NOT REPORTED
MALOY WSC	116			116			N	NOT REPORTED
MARSHALL	124			124				

WATER USER GROUP	BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	REPORTED BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	RECEIVED SURVEY?	REPORTED WATER LOSS (%)
MARTIN SPRINGS WSC	153	Y		153	Y		Y	NOT REPORTED
MARTIN MILLS WSC	115						Y	NOT REPORTED
MAUD	120			120			Y	14.4
MILLER GROVE WSC	*144*	Y		144	Y			
MINEOLA	184	Y		184	Y			
M-J-C WSC	115							
MOUNT PLEASANT	187	Y		187	Y		Y	1.0
MOUNT VERNON	133			133			Y	4.0
MYRTLE SPRINGS WSC	115							
NAPLES	123			123				
NASH	115			86			N	NOT REPORTED
NEW BOSTON	198	Y	Y	198	Y	Y	Y	NOT REPORTED
NEWSOME WSC	115						N	NOT REPORTED
NORTH HOPKINS WSC	115			90			Y	14.1
NORTH HUNT WSC	115			115			Y	25.0
NORTHEAST TEXAS COMMUNITY COLLEGE	141	Y		141	Y		Y	NOT REPORTED
OAK GROVE WSC	115			92			Y	28.0
OMAHA	132			132				
ORE CITY	147	Y		147	Y			
OVERTON	159	Y		159	Y			
PARIS	203	Y	Y	203	Y	Y	Y	8.5
PARK TERRACE MOBILE HOME PARK	153	Y		153	Y		N	NOT REPORTED
PATTONVILLE WSC	138			138	Y		N	NOT REPORTED
PECAN GAP	120			120			N	NOT REPORTED
PELICAN BAY	201	Y	Y	201	Y	Y	N	NOT REPORTED
PETTY WSC	138			138	Y		N	NOT REPORTED
PICKTON WSC	163	Y		163	Y		Y	NOT REPORTED
PITTSBURG	180	Y		180	Y		Y	NOT REPORTED
PLATTNERS TERRACE MOBILE HOME PARK	141	Y		141	Y		N	NOT REPORTED
PLEASANT HILL WSC #2	150	Y		150	Y		N	NOT REPORTED
POETRY WSC	116			116				
POINT	123			123			Y	NOT REPORTED
PRICHETT WSC	115			109				
PRUITT-SANDFLAT WSC	115							
QUEEN CITY	130			130				

WATER USER GROUP	BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	REPORTED BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	RECEIVED SURVEY?	REPORTED WATER LOSS (%)
QUINLAN	116			116			N	NOT REPORTED
QUITMAN	182	Y		182	Y			
RPM WSC	128			128			Y	39.8
RAMEY WSC	119			119				
RED LICK	128			128			N	NOT REPORTED
RED RIVER COUNTY WSC	115			96			Y	18.0
REDWATER	126			126			Y	23.8
RENO	115			99			Y	15.4
ROXTON	115			99			Y	17.7
SHADY GROVE #2 WSC	150	Y		150	Y			
SHADY GROVE WSC	116			116				
SHARON WSC	115			115			N	NOT REPORTED
SHIRLEY WSC	*158*	Y		158	Y			
SMITH COUNTY WCID #1	285	Y	Y	285	Y	Y		
SOUTH RAINS WSC	165	Y		165	Y			
SOUTH TAWAKONI WSC	115			102			Y	11.3
SOUTHERN UTILITIES COMPANY	153	Y		153	Y			
SULPHUR SPRINGS	188	Y		188	Y		Y	15.3
TALCO	153	Y		153	Y		Y	38.3
TALL OAKS ESTATES WS	115						N	NOT REPORTED
TEXARKANA	157	Y		157	Y		N	NOT REPORTED
TX A & M COMMERCE	115			99			Y	NOT REPORTED
TEXAS WATER SERVICES CALLENDER LAKE SUBDIVISION	115			84			N	NOT REPORTED
SERVICES	115						N	NOT REPORTED
TRI WSC	120			120			N	NOT REPORTED
TRYON ROAD WSC	138			138	Y			
TYLER	261	Y	Y	261	Y	Y		
VAN	164	Y		164	Y		Y	13.6
WAKE VILLAGE	115			108			Y	NOT REPORTED
WASKOM	115			106				
WEST DELTA WSC	120			120				
WEST GREGG WSC	120			120				
WEST LEONARD	116			116				
WEST OAKS PHOENIX CORP WATER SYSTEM	116			116			N	NOT REPORTED
WEST TAWAKONI	171	Y		171	Y		N	NOT REPORTED

WATER USER GROUP	BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	REPORTED BASE GPCD	ABOVE AVERAGE?	ABOVE AVE + STD DEV?	RECEIVED SURVEY?	REPORTED WATER LOSS (%)
WHISPERING OAKS WATER CO-OP 1 & 2	116			116			N	NOT REPORTED
WHITE OAK	162	Y		162	Y			
WILLS POINT	141	Y		141	Y		Y	NOT REPORTED
WINFIELD	115			114			Y	NOT REPORTED
WINNSBORO	*165*	Y		165	Y		Y	28.9
WINONA	147	Y		147	Y			
WOLFE CITY	117			117			N	NOT REPORTED
WOODLAND ESTATES	162	Y		162	Y		Y	NOT REPORTED
WOODLAND HARBOR	115			92			Y	NOT REPORTED
AVERAGE	**141**			**138**				
STANDARD DEVIATION	**47.8**			**54.2**				
AVERAGE + STD DEVIATION	**188.8**			**191.8**				
TOTAL NO. OF SYSTEMS	**184**			**166**				

Appendix Chapter 3

WATER SUPPLY ANALYSIS

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
BOWIE COUNTY										
DE KALB	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	87	87	87	87	87	87	TEXARKANA CITY OF
HOOKS	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	335	335	335	335	335	335	TEXARKANA CITY OF
NEW BOSTON	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	349	349	349	349	349	349	TEXARKANA CITY OF
TEXARKANA	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	6583	5742	5074	4432	3882	2919	OWNS SYSTEM
COUNTY-OTHER	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	435	446	452	457	452	449	VARIOUS
COUNTY-OTHER	RED	BOWIE	CARRIZO-WILCOX AQUIFER	1063	1105	1128	1149	1130	1119	OWNS SYSTEM
LEARY	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	85	89	91	94	93	93	TEXARKANA CITY OF
RED LICK	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	86	90	93	95	95	95	TEXARKANA CITY OF
CENTRAL BOWIE WSC	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	88	88	88	88	88	88	TEXARKANA CITY OF
RED RIVER COUNTY WSC	RED	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	4	5	5	5	5	5	TEXARKANA CITY OF
DE KALB	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	336	336	336	336	336	336	TEXARKANA CITY OF
MAUD	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	144	153	161	168	168	168	TEXARKANA CITY OF
NASH	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	303	323	339	355	355	355	TEXARKANA CITY OF
NASH	SULPHUR	BOWIE	CARRIZO-WILCOX AQUIFER	0	0	0	0	0	0	-
NEW BOSTON	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	741	741	741	741	741	741	TEXARKANA CITY OF
REDWATER	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	56	56	56	56	56	56	TEXARKANA CITY OF
REDWATER	SULPHUR	BOWIE	CARRIZO-WILCOX AQUIFER	73	73	73	73	73	73	OWNS SYSTEM
TEXARKANA	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	54330	46856	40931	35237	29961	21120	OWNS SYSTEM
WAKE VILLAGE	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	358	358	358	358	358	358	TEXARKANA CITY OF
COUNTY-OTHER	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	195	194	193	192	192	192	VARIOUS
COUNTY-OTHER	SULPHUR	BOWIE	CARRIZO-WILCOX AQUIFER	2308	2396	2442	2484	2440	2416	OWNS SYSTEM
RED LICK	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	43	45	46	48	47	47	TEXARKANA CITY OF
CENTRAL BOWIE WSC	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	354	354	354	354	354	354	TEXARKANA CITY OF
MACEDONIA-EYLAU MUD #1	SULPHUR	BOWIE	WRIGHT PATMAN LAKE/RESERVOIR	552	552	552	552	552	552	TEXARKANA CITY OF
County Total - Round III				**68908**	**60773**	**54284**	**48045**	**42149**	**32307**	
County Total - Round II				**14469**	**14944**	**15233**	**15502**	**15383**	**15345**	
Round III minus Round II				**54439**	**45829**	**39051**	**32543**	**26766**	**16962**	
CAMP COUNTY										
PITTSBURG	CYPRESS	CAMP	BOB SANDLIN LAKE/RESERVOIR	1970	1970	1970	1970	1970	1970	NORTHEAST TEXAS MWD
PITTSBURG	CYPRESS	CAMP	O' THE PINES LAKE/RESERVOIR	10618	10618	10618	10618	10618	10618	NORTHEAST TEXAS MWD
PITTSBURG	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER	426	420	414	409	405	401	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER	420	432	444	453	461	469	OWNS SYSTEM
BI-COUNTY WSC	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER	790	790	790	790	790	790	OWNS SYSTEM
SHARON WSC	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER	3	3	3	3	3	3	OWNS SYSTEM
SHARON WSC	CYPRESS	CAMP	CARRIZO-WILCOX AQUIFER	9	9	9	10	11	12	OWNS SYSTEM
County Total - Round III				**14236**	**14242**	**14248**	**14253**	**14258**	**14263**	
County Total - Round II				**3631**	**3634**	**3638**	**3641**	**3644**	**3646**	
Round III minus Round II				**10605**	**10608**	**10610**	**10612**	**10614**	**10617**	
CASS COUNTY										

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
ATLANTA	CYPRESS	CASS	WRIGHT PATMAN LAKE/RESERVOIR	1876	1876	1876	1876	1876	1876	TEXARKANA CITY OF
HUGHES SPRINGS	CYPRESS	CASS	O' THE PINES LAKE/RESERVOIR	2993	2993	2993	2993	2993	2993	NORTHEAST TEXAS MWD
LINDEN	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER	501	501	501	501	501	501	OWNS SYSTEM
QUEEN CITY	CYPRESS	CASS	WRIGHT PATMAN LAKE/RESERVOIR	229	229	229	229	229	229	TEXARKANA CITY OF
QUEEN CITY	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER	169	169	169	169	169	169	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	CASS	WRIGHT PATMAN LAKE/RESERVOIR	0	0	0	0	0	0	-
COUNTY-OTHER	CYPRESS	CASS	O' THE PINES LAKE/RESERVOIR	1406	1406	1406	1406	1406	1406	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	CASS	CARRIZO-WILCOX AQUIFER	1227	1245	1286	1327	1368	1368	OWNS SYSTEM
ATLANTA	SULPHUR	CASS	WRIGHT PATMAN LAKE/RESERVOIR	2	2	2	2	2	2	TEXARKANA CITY OF
QUEEN CITY	SULPHUR	CASS	WRIGHT PATMAN LAKE/RESERVOIR	135	135	135	135	135	135	TEXARKANA CITY OF
QUEEN CITY	SULPHUR	CASS	CARRIZO-WILCOX AQUIFER	100	100	100	100	100	100	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	CASS	WRIGHT PATMAN LAKE/RESERVOIR	44	44	44	44	44	44	TEXARKANA CITY OF
COUNTY-OTHER	SULPHUR	CASS	CARRIZO-WILCOX AQUIFER	1157	1175	1215	1256	1297	1297	OWNS SYSTEM
County Total - Round III				**9839**	**9875**	**9956**	**10038**	**10120**	**10120**	
County Total - Round II				**11628**	**11667**	**11751**	**11836**	**11918**	**11918**	
Round III minus Round II				**-1789**	**-1792**	**-1795**	**-1798**	**-1798**	**-1798**	
DELTA COUNTY										
COOPER	SULPHUR	DELTA	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	710	690	669	647	623	591	SULPHUR RIVER MWD
COOPER	SULPHUR	DELTA	BIG CREEK LAKE/RESERVOIR	980	980	980	980	980	980	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	DELTA	BIG CREEK LAKE/RESERVOIR	453	460	467	477	477	477	DELTA COUNTY MUD
COUNTY-OTHER	SULPHUR	DELTA	TAWAKONI LAKE/RESERVOIR	0	0	0	0	0	0	-
COUNTY-OTHER	SULPHUR	DELTA	NACATOCH AQUIFER	74	74	74	74	74	74	CITY OF COMMERCE
COUNTY-OTHER	SULPHUR	DELTA	TRINITY AQUIFER	83	122	48	48	48	48	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	DELTA	WOODBINE AQUIFER	10	10	11	12	12	12	OWNS SYSTEM
NORTH HUNT WSC	SULPHUR	DELTA	TAWAKONI LAKE/RESERVOIR	28	32	36	40	41	42	COMMERCE WD
NORTH HUNT WSC	SULPHUR	DELTA	WOODBINE AQUIFER	6	5	4	3	2	1	OWNS SYSTEM
County Total - Round III				**2344**	**2373**	**2289**	**2281**	**2257**	**2225**	
County Total - Round II				**2346**	**2336**	**2241**	**2233**	**2209**	**2177**	
Round III minus Round II				**-2**	**37**	**48**	**48**	**48**	**48**	
FRANKLIN COUNTY										
WINNSBORO	CYPRESS	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	971	971	971	971	971	971	FRANKLIN COUNTY WD
COUNTY-OTHER	CYPRESS	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	52	52	52	52	52	52	CYPRESS SPRINGS WSC
COUNTY-OTHER	CYPRESS	FRANKLIN	CARRIZO-WILCOX AQUIFER	55	62	67	72	72	72	OWNS SYSTEM
CYPRESS SPRINGS WSC	CYPRESS	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	2412	2412	2412	2412	2412	2412	FRANKLIN COUNTY WD
CYPRESS SPRINGS WSC	CYPRESS	FRANKLIN	CARRIZO-WILCOX AQUIFER	67	67	67	67	67	67	OWNS SYSTEM
TRI WSC	CYPRESS	FRANKLIN	BOB SANDLIN LAKE/RESERVOIR	21	24	27	29	29	29	MOUNT PLEASANT CITY OF
MOUNT VERNON	SULPHUR	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	3000	3000	3000	3000	3000	3000	FRANKLIN COUNTY WD
COUNTY-OTHER	SULPHUR	FRANKLIN	BOB SANDLIN LAKE/RESERVOIR	12	14	16	17	17	17	MOUNT PLEASANT CITY OF
COUNTY-OTHER	SULPHUR	FRANKLIN	CARRIZO-WILCOX AQUIFER	104	121	133	143	143	143	OWNS SYSTEM
CYPRESS SPRINGS WSC	SULPHUR	FRANKLIN	CYPRESS SPRINGS LAKE/RESERVOIR	393	393	393	393	393	393	FRANKLIN COUNTY WD

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
NORTH HOPKINS WSC	SULPHUR	FRANKLIN	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	9	11	12	13	13	13	SULPHUR SPRINGS CITY OF
County Total - Round III				**7096**	**7127**	**7150**	**7169**	**7169**	**7169**	
County Total - Round II				**7125**	**7156**	**7179**	**7198**	**7198**	**7198**	
Round III minus Round II				**-29**	**-29**	**-29**	**-29**	**-29**	**-29**	
GREGG COUNTY										
COUNTY-OTHER	CYPRESS	GREGG	O' THE PINES LAKE/RESERVOIR	25	25	25	25	0	0	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	GREGG	CARRIZO-WILCOX AQUIFER	186	196	207	220	237	261	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	GREGG	CARRIZO-WILCOX AQUIFER	19	19	19	19	19	19	OWNS SYSTEM
TRYON ROAD WSC	CYPRESS	GREGG	O' THE PINES LAKE/RESERVOIR	1177	1177	1177	1177	1177	1177	NORTHEAST TEXAS MWD
TRYON ROAD WSC	CYPRESS	GREGG	CHEROKEE LAKE/RESERVOIR	30	30	30	30	30	30	LONGVIEW CITY OF
TRYON ROAD WSC	CYPRESS	GREGG	CARRIZO-WILCOX AQUIFER	275	275	275	275	275	275	OWNS SYSTEM
GLADEWATER	SABINE	GREGG	GLADEWATER LAKE/RESERVOIR	772	772	772	772	772	772	GLADEWATER CITY OF
KILGORE	SABINE	GREGG	SABINE RIVER COMBINED RUN-OF-RIVER	2588	2588	2588	2588	2588	2588	SABINE RIVER AUTHORITY
KILGORE	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	927	927	927	927	927	927	OWNS SYSTEM
LAKEPORT	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	112	112	112	112	112	112	CHEROKEE WATER CO.
LAKEPORT	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	341	341	341	341	341	341	OWNS SYSTEM
LONGVIEW	SABINE	GREGG	O' THE PINES LAKE/RESERVOIR	19200	19200	19200	19200	19200	19200	NORTHEAST TEXAS MWD
LONGVIEW	SABINE	GREGG	FORK LAKE/RESERVOIR	15000	15000	15000	15000	15000	15000	SABINE RIVER AUTHORITY
LONGVIEW	SABINE	GREGG	SABINE RIVER COMBINED RUN-OF-RIVER	17588	17464	17341	17218	17095	16971	SABINE RIVER AUTHORITY
LONGVIEW	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	3500	3500	3500	3500	3500	3500	CHEROKEE WATER CO.
WHITE OAK	SABINE	GREGG	BIG SANDY CREEK LAKE/RESERVOIR	3171	3171	3171	3171	3171	3171	LONGVIEW CITY OF
COUNTY-OTHER	SABINE	GREGG	BIG SANDY CREEK LAKE/RESERVOIR	50	50	50	50	50	50	LONGVIEW CITY OF
COUNTY-OTHER	SABINE	GREGG	GLADEWATER LAKE/RESERVOIR	354	354	354	354	354	354	GLADEWATER CITY OF
COUNTY-OTHER	SABINE	GREGG	SABINE RIVER COMBINED RUN-OF-RIVER	249	249	249	249	249	249	SABINE RIVER AUTHORITY
COUNTY-OTHER	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	18	18	18	18	18	18	CHEROKEE WATER CO.
COUNTY-OTHER	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	694	758	825	903	1008	1160	OWNS SYSTEM
COUNTY-OTHER	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	18	18	18	18	18	18	OWNS SYSTEM
EASTON	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	59	59	59	59	59	59	OWNS SYSTEM
EASTON	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	179	179	179	179	179	179	OWNS SYSTEM
ELDERVILLE WSC	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	364	364	364	364	364	364	CHEROKEE WATER CO.
ELDERVILLE WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	1106	1106	1106	1106	1106	1106	OWNS SYSTEM
LIBERTY CITY WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	801	801	801	801	801	801	OWNS SYSTEM
TRYON ROAD WSC	SABINE	GREGG	O' THE PINES LAKE/RESERVOIR	950	950	950	950	950	950	NORTHEAST TEXAS MWD
TRYON ROAD WSC	SABINE	GREGG	CHEROKEE LAKE/RESERVOIR	429	429	429	429	429	429	LONGVIEW CITY OF
TRYON ROAD WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	221	221	221	221	221	221	OWNS SYSTEM
WEST GREGG WSC	SABINE	GREGG	CARRIZO-WILCOX AQUIFER	365	365	365	365	365	365	OWNS SYSTEM
County Total - Round III				**70768**	**70718**	**70673**	**70641**	**70615**	**70667**	
County Total - Round II				**63876**	**63693**	**63771**	**63862**	**63984**	**64160**	
Round III minus Round II				**6892**	**7025**	**6902**	**6779**	**6631**	**6507**	

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
HARRISON COUNTY										
MARSHALL	CYPRESS	HARRISON	CYPRESS RIVER COMBINED RUN-OF-RIVER	2360	2369	2374	2370	2366	2359	MARSHALL, CITY OF
MARSHALL	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	2000	2000	2000	2000	2000	2000	NORTHEAST TEXAS MWD
WASKOM	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER	258	258	258	258	258	258	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	HARRISON	CYPRESS RIVER COMBINED RUN-OF-RIVER	362	362	362	362	362	362	MARSHALL, CITY OF
COUNTY-OTHER	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	315	315	315	315	315	315	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	HARRISON	CHEROKEE LAKE/RESERVOIR	54	54	54	54	54	54	LONGVIEW, CITY OF
COUNTY-OTHER	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER	15	15	15	15	15	15	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER	2531	2657	2747	2816	2896	3014	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER	30	30	30	30	30	30	OWNS SYSTEM
DIANA SUD	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	59	59	59	59	0	0	NORTHEAST TEXAS MWD
DIANA SUD	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER	48	48	48	48	48	48	OWNS SYSTEM
GUM SPRINGS WSC	CYPRESS	HARRISON	CHEROKEE LAKE/RESERVOIR	109	109	109	109	109	109	LONGVIEW CITY OF
GUM SPRINGS WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER	41	41	41	41	41	41	OWNS SYSTEM
TRYON ROAD WSC	CYPRESS	HARRISON	O' THE PINES LAKE/RESERVOIR	136	136	136	136	136	136	NORTHEAST TEXAS MWD
TRYON ROAD WSC	CYPRESS	HARRISON	CHEROKEE LAKE/RESERVOIR	37	37	37	37	37	37	LONGVIEW CITY OF
TRYON ROAD WSC	CYPRESS	HARRISON	CARRIZO-WILCOX AQUIFER	34	34	34	34	34	34	OWNS SYSTEM
HALLSVILLE	SABINE	HARRISON	CHEROKEE LAKE/RESERVOIR	737	737	737	737	737	737	LONGVIEW, CITY OF
HALLSVILLE	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER	116	116	116	116	116	116	OWNS SYSTEM
LONGVIEW	SABINE	HARRISON	O' THE PINES LAKE/RESERVOIR	800	800	800	800	800	800	NORTHEAST TEXAS MWD
LONGVIEW	SABINE	HARRISON	FORK LAKE/RESERVOIR	5000	5000	5000	5000	5000	5000	SABINE RIVER AUTHORITY
LONGVIEW	SABINE	HARRISON	SABINE RIVER COMBINED RUN-OF-RIVER	733	728	723	717	712	707	SABINE RIVER AUTHORITY
LONGVIEW	SABINE	HARRISON	CHEROKEE LAKE/RESERVOIR	10400	10400	10400	10400	10400	10400	CHEROKEE WATER CO.
MARSHALL	SABINE	HARRISON	CYPRESS RIVER COMBINED RUN-OF-RIVER	8383	8418	8440	8424	8405	8376	MARSHALL, CITY OF
MARSHALL	SABINE	HARRISON	O' THE PINES LAKE/RESERVOIR	7000	7000	7000	7000	7000	7000	NORTHEAST TEXAS MWD
COUNTY-OTHER	SABINE	HARRISON	CYPRESS RIVER COMBINED RUN-OF-RIVER	100	100	100	100	100	100	MARHSALL, CITY OF
COUNTY-OTHER	SABINE	HARRISON	CHEROKEE LAKE/RESERVOIR	328	328	328	328	328	328	LONGVIEW, CITY OF
COUNTY-OTHER	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER	669	725	766	796	832	884	OWNS SYSTEM
GILL WSC	SABINE	HARRISON	CYPRESS RIVER COMBINED RUN-OF-RIVER	100	100	100	100	100	100	MARSHALL, CITY OF
GILL WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER	231	231	231	231	231	231	
GUM SPRINGS WSC	SABINE	HARRISON	CHEROKEE LAKE/RESERVOIR	797	797	797	797	797	797	LONGVIEW CITY OF
GUM SPRINGS WSC	SABINE	HARRISON	CARRIZO-WILCOX AQUIFER	302	302	302	302	302	302	OWNS SYSTEM
County Total - Round III				**44085**	**44306**	**44459**	**44532**	**44561**	**44690**	
County Total - Round II				**43163**	**43389**	**43547**	**43626**	**43719**	**43853**	
Round III minus Round II				**922**	**917**	**912**	**906**	**842**	**837**	
HOPKINS COUNTY										
COUNTY-OTHER	CYPRESS	HOPKINS	CARRIZO-WILCOX AQUIFER	3	4	4	3	3	3	OWNS SYSTEM

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
COUNTY-OTHER	CYPRESS	HOPKINS	CARRIZO-WILCOX AQUIFER	175	175	175	175	175	175	OWNS SYSTEM
CYPRESS SPRINGS WSC	CYPRESS	HOPKINS	CYPRESS SPRINGS LAKE/RESERVOIR	441	441	441	441	441	441	FRANKLIN COUNTY WD
SHARON WSC	CYPRESS	HOPKINS	CARRIZO-WILCOX AQUIFER	3	3	3	3	3	3	OWNS SYSTEM
SHARON WSC	CYPRESS	HOPKINS	CARRIZO-WILCOX AQUIFER	9	9	9	9	9	9	OWNS SYSTEM
CUMBY	SABINE	HOPKINS	NACATOCH AQUIFER	88	95	100	104	103	103	OWNS SYSTEM
COUNTY-OTHER	SABINE	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	193	213	222	227	208	191	SULPHUR SPRINGS CITY OF
COUNTY-OTHER	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER	461	464	465	466	464	461	OWNS SYSTEM
COUNTY-OTHER	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER	112	112	112	112	112	112	OWNS SYSTEM
COUNTY-OTHER	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER	7	7	7	7	7	7	OWNS SYSTEM
COMO	SABINE	HOPKINS	CARRIZO-WILCOX AQUIFER	113	112	109	107	107	107	OWNS SYSTEM
CASH SUD	SABINE	HOPKINS	TAWAKONI LAKE/RESERVOIR	45	51	54	56	52	48	SABINE RIVER AUTHORITY
COMO	SULPHUR	HOPKINS	CARRIZO-WILCOX AQUIFER	30	31	34	36	36	36	OWNS SYSTEM
SULPHUR SPRINGS	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	11525	11260	11041	10836	10750	10609	SULPHUR RIVER MWD
SULPHUR SPRINGS	SULPHUR	HOPKINS	SULPHUR SPRINGS LAKE/RESERVOIR	7344	7215	7081	6858	6802	6529	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	155	174	183	189	169	150	SULPHUR SPRINGS CITY OF
COUNTY-OTHER	SULPHUR	HOPKINS	NACATOCH AQUIFER	161	166	143	140	139	137	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	HOPKINS	CARRIZO-WILCOX AQUIFER	121	124	126	127	123	120	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	HOPKINS	CARRIZO-WILCOX AQUIFER	269	269	269	269	269	269	OWNS SYSTEM
CUMBY	SULPHUR	HOPKINS	NACATOCH AQUIFER	84	77	72	68	69	69	OWNS SYSTEM
CYPRESS SPRINGS WSC	SULPHUR	HOPKINS	CYPRESS SPRINGS LAKE/RESERVOIR	72	72	72	72	72	72	FRANKLIN COUNTY WD
MARTIN SPRINGS WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	223	223	223	223	223	223	SULPHUR SPRINGS CITY OF
MARTIN SPRINGS WSC	SULPHUR	HOPKINS	CARRIZO-WILCOX AQUIFER	454	454	454	454	454	454	OWNS SYSTEM
NORTH HOPKINS WSC	SULPHUR	HOPKINS	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	912	910	909	908	908	908	SULPHUR SPRINGS CITY OF
County Total - Round III				**23000**	**22661**	**22308**	**21890**	**21697**	**21236**	
County Total - Round II				**22613**	**22353**	**22047**	**21660**	**21408**	**20885**	
Round III minus Round II				**387**	**308**	**261**	**230**	**289**	**351**	
HUNT COUNTY										
CADDO MILLS	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	174	178	186	201	242	309	GREENVILLE CITY OF
CAMPBELL	SABINE	HUNT	NACATOCH AQUIFER	109	109	111	123	149	189	OWNS SYSTEM
CELESTE	SABINE	HUNT	WOODBINE AQUIFER	199	199	199	199	199	199	OWNS SYSTEM
GREENVILLE	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	18890	18572	18243	17890	17523	17179	SABINE RIVER AUTHORITY
GREENVILLE	SABINE	HUNT	GREENVILLE CITY LAKE/RESERVOIR	3486	3486	3486	3486	3486	3486	OWNS SYSTEM
LONE OAK	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	164	164	164	164	164	164	CASH SUD
QUINLAN	SABINE	HUNT	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	605	605	605	605	605	605	CASH SUD
WEST TAWAKONI	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	1080	1072	1064	1056	1047	1039	SABINE RIVER AUTHORITY

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
COUNTY-OTHER	SABINE	HUNT	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	304	374	477	648	1029	1628	VARIOUS
COUNTY-OTHER	SABINE	HUNT	TERRELL LAKE/RESERVOIR	0	0	0	0	0	0	-
COUNTY-OTHER	SABINE	HUNT	BIG CREEK LAKE/RESERVOIR	4	4	6	8	12	19	DELTA COUNTY MUD
COUNTY-OTHER	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	1064	1064	1064	1064	1064	1064	VARIOUS
COUNTY-OTHER	SABINE	HUNT	NACATOCH AQUIFER	248	248	248	248	248	248	OWNS SYSTEM
COUNTY-OTHER	SABINE	HUNT	WOODBINE AQUIFER	29	29	29	29	29	29	OWNS SYSTEM
JOSEPHINE	SABINE	HUNT	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	3	3	4	4	6	8	NORTH TEXAS MWD
ABLE SPRINGS WSC	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	119	119	119	119	119	119	SABINE RIVER AUTHORITY
BLACKLAND WSC	SABINE	HUNT	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	4	5	7	9	14	23	ROCKWALL CITY OF
CADDO BASIN SUD	SABINE	HUNT	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	597	738	942	1279	2033	3214	NORTH TEXAS MWD
CASH SUD	SABINE	HUNT	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	617	338	203	62	0	0	NORTH TEXAS MWD
CASH SUD	SABINE	HUNT	FORK LAKE/RESERVOIR	3980	3963	3949	3929	3911	3894	SABINE RIVER AUTHORITY
CASH SUD	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	550	520	498	486	484	483	SABINE RIVER AUTHORITY
COMBINED CONSUMERS WSC	SABINE	HUNT	FORK LAKE/RESERVOIR	2240	2240	2240	2240	2240	2240	SABINE RIVER AUTHORITY
COMMUNITY WATER COMPANY	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	189	189	189	189	189	189	EMORY CITY OF
HICKORY CREEK SUD	SABINE	HUNT	WOODBINE AQUIFER	75	75	75	75	75	75	OWNS SYSTEM
MAC BEE WSC	SABINE	HUNT	TAWAKONI LAKE/RESERVOIR	109	109	109	112	178	281	SABINE RIVER AUTHORITY
CAMPBELL WSC	SABINE	HUNT	NACATOCH AQUIFER	28	28	26	14	0	0	OWNS SYSTEM
COMMERCE	SULPHUR	HUNT	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	0	0	0	0	0	0	-
COMMERCE	SULPHUR	HUNT	TAWAKONI LAKE/RESERVOIR	7750	7615	7457	7247	6805	6148	SABINE RIVER AUTHORITY
COMMERCE	SULPHUR	HUNT	NACATOCH AQUIFER	122	122	122	122	122	122	OWNS SYSTEM
COMMERCE	SULPHUR	HUNT	NACATOCH AQUIFER	175	175	175	175	175	175	OWNS SYSTEM
WOLFE CITY	SULPHUR	HUNT	OTHER LOCAL SUPPLY	140	140	120	120	120	120	OWNS SYSTEM
WOLFE CITY	SULPHUR	HUNT	WOODBINE AQUIFER	81	81	81	81	81	81	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	HUNT	TAWAKONI LAKE/RESERVOIR	69	143	241	439	955	1885	COMMERCER CITY OF
COUNTY-OTHER	SULPHUR	HUNT	WOODBINE AQUIFER	116	150	196	216	258	201	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	HUNT	NACATOCH AQUIFER	290	290	290	290	290	290	OWNS SYSTEM
HICKORY CREEK SUD	SULPHUR	HUNT	WOODBINE AQUIFER	0	0	28	64	165	238	OWNS SYSTEM
HICKORY CREEK SUD	SULPHUR	HUNT	WOODBINE AQUIFER	518	505	462	407	264	126	OWNS SYSTEM
NORTH HUNT WSC	SULPHUR	HUNT	TAWAKONI LAKE/RESERVOIR	119	115	111	107	106	105	COMMERCE WD
NORTH HUNT WSC	SULPHUR	HUNT	TRINITY AQUIFER	0	0	0	0	0	0	-
NORTH HUNT WSC	SULPHUR	HUNT	WOODBINE AQUIFER	86	80	78	78	78	78	OWNS SYSTEM
NORTH HUNT WSC	SULPHUR	HUNT	WOODBINE AQUIFER	56	57	58	59	60	61	OWNS SYSTEM
CAMPBELL WSC	SULPHUR	HUNT	NACATOCH AQUIFER	41	41	41	41	29	0	OWNS SYSTEM
COUNTY-OTHER	TRINITY	HUNT	WOODBINE AQUIFER	9	9	9	9	9	9	OWNS SYSTEM

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
COUNTY-OTHER	TRINITY	HUNT	TRINITY AQUIFER	0	0	0	7	37	79	OWNS SYSTEM
COUNTY-OTHER	TRINITY	HUNT	WOODBINE AQUIFER	21	24	30	32	23	16	OWNS SYSTEM
CADDO BASIN SUD	TRINITY	HUNT	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	6	7	9	12	20	32	NORTH TEXAS MWD
HICKORY CREEK SUD	TRINITY	HUNT	WOODBINE AQUIFER	74	72	73	76	82	86	OWNS SYSTEM
County Total - Round III				**44540**	**44057**	**43824**	**43820**	**44724**	**46535**	
County Total - Round II				**43931**	**43458**	**43215**	**43217**	**44127**	**45870**	
Round III minus Round II				**609**	**599**	**609**	**603**	**597**	**665**	
LAMAR COUNTY										
BLOSSOM	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	201	216	230	245	245	245	LAMAR COUNTY WSD
PARIS	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	10501	10352	10234	10119	10023	9839	OWNS SYSTEM
PARIS	RED	LAMAR	CROOK LAKE/RESERVOIR	2916	2916	2916	2916	2916	2916	OWNS SYSTEM
RENO	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	102	115	128	138	149	160	LAMAR COUNTY WSD
COUNTY-OTHER	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	5	5	6	6	6	6	LAMAR COUNTY WSD
COUNTY-OTHER	RED	LAMAR	TRINITY AQUIFER	56	59	62	65	64	62	OWNS SYSTEM
COUNTY-OTHER	RED	LAMAR	WOODBINE AQUIFER	17	17	0	0	0	0	OWNS SYSTEM
LAMAR COUNTY WSD	RED	LAMAR	PAT MAYSE LAKE/RESERVOIR	1400	1400	1400	1400	1400	1400	PARIS CITY OF
DEPORT	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	93	100	106	113	113	113	LAMAR COUNTY WSD
PARIS	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	15752	15528	15351	15179	15035	14759	OWNS SYSTEM
PARIS	SULPHUR	LAMAR	CROOK LAKE/RESERVOIR	4374	4374	4374	4374	4374	4374	OWNS SYSTEM
ROXTON	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	97	104	111	118	118	118	LAMAR COUNTY WSD
COUNTY-OTHER	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	265	269	274	279	277	275	VARIOUS
COUNTY-OTHER	SULPHUR	LAMAR	TRINITY AQUIFER	130	132	134	137	136	135	OWNS SYSTEM
RENO	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	455	513	571	616	665	713	LAMAR COUNTY WSD
LAMAR COUNTY WSD	SULPHUR	LAMAR	PAT MAYSE LAKE/RESERVOIR	6861	6822	6784	6751	6728	6704	PARIS CITY OF
County Total - Round III				**43225**	**42922**	**42681**	**42456**	**42249**	**41819**	
County Total - Round II				**36931**	**36078**	**35537**	**35012**	**34505**	**33775**	
Round III minus Round II				**6294**	**6844**	**7144**	**7444**	**7744**	**8044**	
MARION COUNTY										
JEFFERSON	CYPRESS	MARION	CYPRESS RIVER COMBINED RUN-OF-RIVER	1287	1287	1287	1287	1287	1287	OWNS SYSTEM
JEFFERSON	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	7031	7031	7031	7031	7031	7031	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	828	828	828	828	828	828	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER	1545	1553	1553	1553	1553	1553	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER	35	35	35	35	35	35	OWNS SYSTEM
DIANA SUD	CYPRESS	MARION	O' THE PINES LAKE/RESERVOIR	30	30	30	30	30	30	NORTHEAST TEXAS MWD
DIANA SUD	CYPRESS	MARION	CARRIZO-WILCOX AQUIFER	27	27	27	27	27	27	OWNS SYSTEM
County Total - Round III				**10783**	**10791**	**10791**	**10791**	**10791**	**10791**	
County Total - Round II				**13481**	**13489**	**13489**	**13489**	**13489**	**13454**	
Round III minus Round II				**-2698**	**-2698**	**-2698**	**-2698**	**-2698**	**-2663**	
MORRIS COUNTY										
DAINGERFIELD	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	7375	7375	7375	7375	7375	7375	NORTHEAST TEXAS MWD
HUGHES SPRINGS	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	65	65	65	65	65	65	NORTHEAST TEXAS MWD

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
LONE STAR	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	3482	3482	3482	3482	3482	3482	NORTHEAST TEXAS MWD
NAPLES	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER	101	101	101	101	101	101	OWNS SYSTEM
OMAHA	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER	116	116	116	116	116	116	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	MORRIS	O' THE PINES LAKE/RESERVOIR	1242	1242	1242	1242	1242	1242	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER	233	233	233	233	233	233	OWNS SYSTEM
BI-COUNTY WSC	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER	149	149	149	149	149	149	OWNS SYSTEM
TRI WSC	CYPRESS	MORRIS	CARRIZO-WILCOX AQUIFER	123	123	123	123	123	123	OWNS SYSTEM
NAPLES	SULPHUR	MORRIS	CARRIZO-WILCOX AQUIFER	109	109	109	109	109	109	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	MORRIS	CARRIZO-WILCOX AQUIFER	307	307	307	307	307	307	OWNS SYSTEM
OMAHA	SULPHUR	MORRIS	CARRIZO-WILCOX AQUIFER	88	88	88	88	88	88	OWNS SYSTEM
County Total - Round III				**13390**	**13390**	**13390**	**13390**	**13390**	**13390**	
County Total - Round II				**17741**	**17738**	**17735**	**17732**	**17732**	**17732**	
Round III minus Round II				**-4351**	**-4348**	**-4345**	**-4342**	**-4342**	**-4342**	
RAINS COUNTY										
EAST TAWAKONI	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	552	552	552	552	552	552	EMORY CITY OF
EMORY	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	845	831	817	803	789	776	SABINE RIVER AUTHORITY
POINT	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	261	258	255	252	249	246	SABINE RIVER AUTHORITY
COUNTY-OTHER	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	318	318	318	318	318	318	VARIOUS
COUNTY-OTHER	SABINE	RAINS	NACATOCH AQUIFER	58	69	75	77	76	74	OWNS SYSTEM
COUNTY-OTHER	SABINE	RAINS	CARRIZO-WILCOX AQUIFER	113	113	113	113	113	113	OWNS SYSTEM
COUNTY-OTHER	SABINE	RAINS	CARRIZO-WILCOX AQUIFER	181	204	217	220	218	215	OWNS SYSTEM
COUNTY-OTHER	SABINE	RAINS	CARRIZO-WILCOX AQUIFER	6	7	7	7	7	7	OWNS SYSTEM
BRIGHT STAR-SALEM WSC	SABINE	RAINS	CARRIZO-WILCOX AQUIFER	298	298	298	298	298	298	OWNS SYSTEM
BRIGHT STAR-SALEM WSC	SABINE	RAINS	CARRIZO-WILCOX AQUIFER	187	187	187	187	187	187	OWNS SYSTEM
BRIGHT STAR-SALEM WSC	SABINE	RAINS	FORK LAKE/RESERVOIR	840	840	840	840	840	840	SABINE RIVER AUTHORITY
CASH SUD	SABINE	RAINS	TAWAKONI LAKE/RESERVOIR	86	103	115	118	117	115	SABINE RIVER AUTHORITY
County Total - Round III				**3745**	**3780**	**3794**	**3785**	**3764**	**3741**	
County Total - Round II				**2869**	**2904**	**2918**	**2909**	**2888**	**2865**	
Round III minus Round II				**876**	**876**	**876**	**876**	**876**	**876**	
RED RIVER COUNTY										
COUNTY-OTHER	RED	RED RIVER	PAT MAYSE LAKE/RESERVOIR	118	118	118	118	118	118	VARIOUS
COUNTY-OTHER	RED	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	72	72	72	72	72	72	TEXARKANA CITY OF
COUNTY-OTHER	RED	RED RIVER	TRINITY AQUIFER	23	23	23	23	23	23	OWNS SYSTEM
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	22	21	21	21	21	21	TEXARKANA CITY OF
RED RIVER COUNTY WSC	RED	RED RIVER	BLOSSOM AQUIFER	30	30	30	30	30	30	OWNS SYSTEM
BOGATA	SULPHUR	RED RIVER	NACATOCH AQUIFER	323	323	323	323	323	323	OWNS SYSTEM
CLARKSVILLE	SULPHUR	RED RIVER	LANGFORD LAKE/RESERVOIR	377	377	377	377	377	377	OWNS SYSTEM
CLARKSVILLE	SULPHUR	RED RIVER	BLOSSOM AQUIFER	468	468	468	468	468	468	OWNS SYSTEM
CLARKSVILLE	SULPHUR	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	1120	1120	1120	1120	1120	1120	TEXARKANA CITY OF

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
DETROIT	SULPHUR	RED RIVER	PAT MAYSE LAKE/RESERVOIR	41	41	41	41	41	41	LAMAR COUNTY WSD
DETROIT	SULPHUR	RED RIVER	TRINITY AQUIFER	59	59	59	59	59	59	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	RED RIVER	PAT MAYSE LAKE/RESERVOIR	138	135	132	129	129	129	VARIOUS
COUNTY-OTHER	SULPHUR	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	113	113	113	113	113	113	TEXARKANA CITY OF
COUNTY-OTHER	SULPHUR	RED RIVER	NACATOCH AQUIFER	45	44	43	42	42	42	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	RED RIVER	NACATOCH AQUIFER	12	12	12	12	12	12	OWNS SYSTEM
DEPORT	SULPHUR	RED RIVER	PAT MAYSE LAKE/RESERVOIR	7	7	7	7	7	7	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	SULPHUR	RED RIVER	PAT MAYSE LAKE/RESERVOIR	0	0	0	0	0	0	LAMAR COUNTY WSD
RED RIVER COUNTY WSC	SULPHUR	RED RIVER	WRIGHT PATMAN LAKE/RESERVOIR	41	41	41	41	41	41	TEXARKANA CITY OF
RED RIVER COUNTY WSC	SULPHUR	RED RIVER	BLOSSOM AQUIFER	223	223	223	223	223	223	OWNS SYSTEM
RED RIVER COUNTY WSC	SULPHUR	RED RIVER	NACATOCH AQUIFER	151	151	151	151	151	151	OWNS SYSTEM
County Total - Round III				**3566**	**3561**	**3557**	**3553**	**3553**	**3553**	
County Total - Round II				**2426**	**2421**	**2417**	**2413**	**2413**	**2413**	
Round III minus Round II				**1140**	**1140**	**1140**	**1140**	**1140**	**1140**	
SMITH COUNTY										
LINDALE	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	1126	1126	1126	1126	1126	1126	OWNS SYSTEM
OVERTON	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	18	19	20	22	22	23	OWNS SYSTEM
TYLER	SABINE	SMITH	TYLER LAKE/RESERVOIR	358	464	567	668	844	1081	TYLER, CITY OF
TYLER	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	117	117	117	117	117	117	OWNS SYSTEM
COUNTY-OTHER	SABINE	SMITH	GLADEWATER LAKE/RESERVOIR	23	23	23	23	23	23	GLADEWATER, CITY OF
COUNTY-OTHER	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	2932	3145	3361	3586	3953	4415	OWNS SYSTEM
WINONA	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	118	124	133	141	152	164	OWNS SYSTEM
CRYSTAL SYSTEMS INC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	960	960	960	960	960	960	OWNS SYSTEM
JACKSON WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	38	43	48	53	62	74	OWNS SYSTEM
LIBERTY CITY WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	16	16	16	16	16	16	OWNS SYSTEM
LINDALE RURAL WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	528	528	528	528	528	528	OWNS SYSTEM
SMITH COUNTY WCID #1	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	887	887	887	887	887	887	OWNS SYSTEM
SOUTHERN UTILITIES COMPANY	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	1800	1900	2100	2300	2700	3200	OWNS SYSTEM
WEST GREGG WSC	SABINE	SMITH	CARRIZO-WILCOX AQUIFER	109	109	109	109	109	109	OWNS SYSTEM
County Total - Round III				**9030**	**9461**	**9995**	**10536**	**11499**	**12723**	
County Total - Round II				**9694**	**10025**	**10465**	**10913**	**11711**	**12710**	
Round III minus Round II				**-664**	**-564**	**-470**	**-377**	**-212**	**13**	
TITUS COUNTY										
MOUNT PLEASANT	CYPRESS	TITUS	BOB SANDLIN LAKE/RESERVOIR	4708	4451	4209	4022	3798	3402	TITUS COUNTY FWD #1
MOUNT PLEASANT	CYPRESS	TITUS	CYPRESS SPRINGS LAKE/RESERVOIR	2443	2203	1963	1723	1483	1233	FRANKLIN COUNTY WD
MOUNT PLEASANT	CYPRESS	TITUS	TANKERSLEY LAKE/RESERVOIR	1164	1107	1064	1021	1956	801	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	TITUS	BOB SANDLIN LAKE/RESERVOIR	159	159	159	159	159	159	VARIOUS
COUNTY-OTHER	CYPRESS	TITUS	CARRIZO-WILCOX AQUIFER	393	415	438	457	475	490	OWNS SYSTEM
BI-COUNTY WSC	CYPRESS	TITUS	CARRIZO-WILCOX AQUIFER	151	151	151	151	151	151	OWNS SYSTEM
CYPRESS SPRINGS WSC	CYPRESS	TITUS	CYPRESS SPRINGS LAKE/RESERVOIR	48	48	48	48	48	48	FRANKLIN COUNTY WD
TRI WSC	CYPRESS	TITUS	BOB SANDLIN LAKE/RESERVOIR	763	849	944	1009	1068	1119	MOUNT PLEASANT CITY OF
TALCO	SULPHUR	TITUS	NACATOCH AQUIFER	453	453	453	453	453	453	OWNS SYSTEM

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
COUNTY-OTHER	SULPHUR	TITUS	BOB SANDLIN LAKE/RESERVOIR	547	600	656	689	723	761	VARIOUS
COUNTY-OTHER	SULPHUR	TITUS	NACATOCH AQUIFER	361	395	432	454	477	500	OWNS SYSTEM
COUNTY-OTHER	SULPHUR	TITUS	NACATOCH AQUIFER	76	76	76	76	76	76	OWNS SYSTEM
County Total - Round III				**11266**	**10908**	**10594**	**10263**	**10867**	**9193**	
County Total - Round II				**11266**	**10908**	**10594**	**10263**	**10867**	**9193**	
Round III minus Round II				**0**	**0**	**0**	**0**	**0**	**0**	
UPSHUR COUNTY										
GILMER	CYPRESS	UPSHUR	GILMER LAKE/RESERVOIR	5430	5430	5430	5430	5430	5430	GILMER, CITY OF
GILMER	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	1102	1102	1102	1102	1102	1102	OWNS SYSTEM
ORE CITY	CYPRESS	UPSHUR	O' THE PINES LAKE/RESERVOIR	1869	1869	1869	1869	1869	1869	NORTHEAST TEXAS MWD
ORE CITY	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	218	218	218	218	218	218	OWNS SYSTEM
COUNTY-OTHER	CYPRESS	UPSHUR	O' THE PINES LAKE/RESERVOIR	394	394	394	394	394	394	NORTHEAST TEXAS MWD
COUNTY-OTHER	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	1232	1295	1335	1357	1375	1400	OWNS SYSTEM
EAST MOUNTAIN	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	48	48	48	48	48	48	OWNS SYSTEM
BI-COUNTY WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	445	445	445	445	445	445	OWNS SYSTEM
DIANA SUD	CYPRESS	UPSHUR	O' THE PINES LAKE/RESERVOIR	650	650	650	650	650	650	NORTHEAST TEXAS MWD
DIANA SUD	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	605	605	605	605	605	605	OWNS SYSTEM
PRITCHETT WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	352	352	352	352	352	352	OWNS SYSTEM
SHARON WSC	CYPRESS	UPSHUR	CARRIZO-WILCOX AQUIFER	323	323	323	323	323	323	OWNS SYSTEM
BIG SANDY	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER	328	328	328	328	328	328	OWNS SYSTEM
EAST MOUNTAIN	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER	280	280	280	280	280	280	OWNS SYSTEM
GLADEWATER	SABINE	UPSHUR	GLADEWATER LAKE/RESERVOIR	607	607	607	607	607	607	GLADEWATER, CITY OF
COUNTY-OTHER	SABINE	UPSHUR	BIG SANDY CREEK LAKE/RESERVOIR	190	190	190	190	190	190	LONGVIEW, CITY OF
COUNTY-OTHER	SABINE	UPSHUR	GLADEWATER LAKE/RESERVOIR	112	112	112	112	112	112	GLADEWATER, CITY OF
COUNTY-OTHER	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER	472	472	472	472	472	472	OWNS SYSTEM
PRITCHETT WSC	SABINE	UPSHUR	CARRIZO-WILCOX AQUIFER	654	654	654	654	654	654	OWNS SYSTEM
County Total - Round III				**15311**	**15374**	**15414**	**15436**	**15454**	**15479**	
County Total - Round II				**15960**	**16023**	**16063**	**16085**	**16103**	**16128**	
Round III minus Round II				**-649**	**-649**	**-649**	**-649**	**-649**	**-649**	
VAN ZANDT COUNTY										
VAN	NECHES	VAN ZANDT	CARRIZO-WILCOX AQUIFER	517	514	502	493	481	467	OWNS SYSTEM
COUNTY-OTHER	NECHES	VAN ZANDT	CARRIZO-WILCOX AQUIFER	1664	1785	1887	1964	2061	2170	OWNS SYSTEM
BETHEL-ASH WSC	NECHES	VAN ZANDT	CARRIZO-WILCOX AQUIFER	38	43	47	50	54	59	OWNS SYSTEM
R P M WSC	NECHES	VAN ZANDT	CARRIZO-WILCOX AQUIFER	326	326	326	326	326	326	OWNS SYSTEM
CANTON	SABINE	VAN ZANDT	MILL CREEK LAKE/RESERVOIR	706	706	706	706	706	706	OWNS SYSTEM
CANTON	SABINE	VAN ZANDT	CARRIZO-WILCOX AQUIFER	285	285	285	285	285	285	OWNS SYSTEM
EDGEWOOD	SABINE	VAN ZANDT	EDGEWOOD CITY LAKE/RESERVOIR	110	110	110	110	110	110	OWNS SYSTEM
EDGEWOOD	SABINE	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	793	787	781	776	770	764	SABINE RIVER AUTHORITY
GRAND SALINE	SABINE	VAN ZANDT	CARRIZO-WILCOX AQUIFER	632	632	632	632	632	632	OWNS SYSTEM
VAN	SABINE	VAN ZANDT	CARRIZO-WILCOX AQUIFER	131	134	146	155	167	181	OWNS SYSTEM
WILLS POINT	SABINE	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	648	648	648	648	648	648	SABINE RIVER AUTHORITY
COUNTY-OTHER	SABINE	VAN ZANDT	CARRIZO-WILCOX AQUIFER	1658	1718	1769	1808	1856	1911	OWNS SYSTEM
ABLE SPRINGS WSC	SABINE	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	9	9	9	9	9	9	SABINE RIVER AUTHORITY

Water User Group Name	Basin	County	Source Name	WS2010	WS2020	WS2030	WS2040	WS2050	WS2060	SELLERS_NAME
COMBINED CONSUMERS WSC	SABINE	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	229	266	297	321	351	384	SABINE RIVER AUTHORITY
MAC BEE WSC	SABINE	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	822	822	822	819	753	650	SABINE RIVER AUTHORITY
MAC BEE WSC	SABINE	VAN ZANDT	CARRIZO-WILCOX AQUIFER	75	75	75	75	75	75	OWNS SYSTEM
SOUTH TAWAKONI WSC	SABINE	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	1056	1048	1041	1033	1025	1018	SABINE RIVER AUTHORITY
WILLS POINT	TRINITY	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	1458	1443	1427	1412	1396	1381	SABINE RIVER AUTHORITY
COUNTY-OTHER	TRINITY	VAN ZANDT	CARRIZO-WILCOX AQUIFER	134	134	134	134	134	134	OWNS SYSTEM
COUNTY-OTHER	TRINITY	VAN ZANDT	CARRIZO-WILCOX AQUIFER	405	466	517	555	604	658	OWNS SYSTEM
MAC BEE WSC	TRINITY	VAN ZANDT	TAWAKONI LAKE/RESERVOIR	1152	1136	1120	1104	1088	1072	SABINE RIVER AUTHORITY
County Total - Round III				**12847**	**13086**	**13281**	**13414**	**13531**	**13639**	
County Total - Round II				**12767**	**13000**	**13188**	**13315**	**13425**	**13525**	
Round III minus Round II				**80**	**86**	**93**	**99**	**106**	**114**	
WOOD COUNTY										
WINNSBORO	CYPRESS	WOOD	CYPRESS SPRINGS LAKE/RESERVOIR	300	300	300	300	300	300	FRANKLIN COUNTY WD
COUNTY-OTHER	CYPRESS	WOOD	CARRIZO-WILCOX AQUIFER	26	29	31	31	31	31	OWNS SYSTEM
CYPRESS SPRINGS WSC	CYPRESS	WOOD	CYPRESS SPRINGS LAKE/RESERVOIR	76	76	76	76	76	76	FRANKLIN COUNTY WD
SHARON WSC	CYPRESS	WOOD	CARRIZO-WILCOX AQUIFER	139	139	139	139	139	139	OWNS SYSTEM
HAWKINS	SABINE	WOOD	CARRIZO-WILCOX AQUIFER	1150	1150	1150	1150	1150	1150	OWNS SYSTEM
MINEOLA	SABINE	WOOD	CARRIZO-WILCOX AQUIFER	869	869	869	869	869	869	OWNS SYSTEM
QUITMAN	SABINE	WOOD	FORK LAKE/RESERVOIR	1026	1019	1012	1004	997	990	SABINE RIVER AUTHORITY
WINNSBORO	SABINE	WOOD	CYPRESS SPRINGS LAKE/RESERVOIR	500	500	500	500	500	500	FRANKLIN COUNTY WD
COUNTY-OTHER	SABINE	WOOD	CARRIZO-WILCOX AQUIFER	2	2	2	2	2	2	OWNS SYSTEM
COUNTY-OTHER	SABINE	WOOD	CARRIZO-WILCOX AQUIFER	4668	4748	4792	4795	4794	4794	OWNS SYSTEM
BRIGHT STAR-SALEM WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER	212	212	212	212	212	212	OWNS SYSTEM
PRITCHETT WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER	4	4	4	4	4	4	OWNS SYSTEM
RAMEY WSC	SABINE	WOOD	CARRIZO-WILCOX AQUIFER	758	758	758	758	758	758	OWNS SYSTEM

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
WUG Demands on Cash SUD									
AQUA SOURCE UTILITY, INC.	COUNTY-OTHER	HUNT	SABINE	168	168	168	168	168	168
CASH WSC	CASH SUD	HOPKINS	SABINE	45	51	54	56	52	48
CASH WSC	CASH SUD	HUNT	SABINE	1,726	2,135	2,725	3,701	5,881	9,299
CASH WSC	CASH SUD	RAINS	SABINE	86	103	115	118	117	115
CASH WSC	CASH SUD	ROCKWALL	SABINE	82	111	136	162	194	231
CITY OF LONE OAK	COUNTY-OTHER	RAINS	SABINE	4	4	4	4	4	4
CITY OF LONE OAK	LONE OAK	HUNT	SABINE	164	164	164	164	164	164
CITY OF QUINLAN	QUINLAN	HUNT	SABINE	605	605	605	605	605	605
				2,880	**3,341**	**3,971**	**4,978**	**7,185**	**10,634**
Current Supply									
TAWAKONI LAKE/RESERVOIR				1,622	1,615	1,607	1,600	1,593	1,586
FORK LAKE/RESERVOIR				3,980	3,963	3,946	3,929	3,911	3,894
LAVON LAKE/RESERVOIR				1,255	971	831	733	666	608
				6,857	**6,549**	**6,384**	**6,262**	**6,170**	**6,088**
WUG Demands on Cherokee Water Company									
LONGVIEW	LONGVIEW	GREGG	SABINE	15,360	15,360	15,360	15,360	15,360	15,360
LONGVIEW	LONGVIEW	HARRISON	SABINE	640	640	640	640	640	640
SOUTHWESTERN ELECTRIC POWER COMPANY	STEAM ELECTRIC POWER	GREGG	SABINE	2,000	2,000	2,000	2,000	2,000	2,000
				18,000	**18,000**	**18,000**	**18,000**	**18,000**	**18,000**
Current Supply									
CHEROKEE LAKE/RESERVOIR				**18,000**	**18,000**	**18,000**	**18,000**	**18,000**	**18,000**
WUG Demands on Commerce Water District									
COMMERCE MUNICIPAL	COMMERCE	HUNT	SULPHUR	1,418	1,503	1,644	1,862	2,397	3,248
MALOY WSC	COUNTY-OTHER	HUNT	SULPHUR	34	34	34	34	34	34
MANUFACTURING	MANUFACTURING	HUNT	SULPHUR	129	129	129	129	129	129
NORTH HUNT WSC	NORTH HUNT WSC	DELTA	SULPHUR	10	9	8	6	4	3
NORTH HUNT WSC	NORTH HUNT WSC	HUNT	SULPHUR	137	138	139	141	143	144

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
TEXAS A & M UNIVERSITY COMMERCE	COUNTY-OTHER	HUNT	SULPHUR	35	109	207	356	737	1,335
WEST DELTA WSC	COUNTY-OTHER	DELTA	SULPHUR	74	74	74	74	74	74
				1,837	**1,996**	**2,235**	**2,602**	**3,518**	**4,967**
Current Supply									
TAWAKONI LAKE/RESERVOIR				7,750	7,615	7,457	7,246	6,804	6,148
NACATOCH AQUIFER				315	315	295	295	295	295
				8,065	**7,930**	**7,752**	**7,541**	**7,099**	**6,443**
WUG Demands on City of Emory									
CEDAR COVE LANDING	COUNTY-OTHER	RAINS	SABINE	17	17	17	17	17	17
CITY OF EAST TAWAKONI	EAST TAWAKONI	RAINS	SABINE	552	552	552	552	552	552
CITY OF EMORY	EMORY	RAINS	SABINE	197	218	240	260	284	309
COMMUNITY WATER COMPANY	COMMUNITY WATER COMPANY	HUNT	SABINE	189	189	189	189	189	189
COMMUNITY WATER COMPANY	COUNTY-OTHER	RAINS	SABINE	32	32	32	32	32	32
SOUTH RAINS WSC	COUNTY-OTHER	RAINS	SABINE	265	265	265	265	265	265
				1,252	**1,273**	**1,295**	**1,315**	**1,339**	**1,364**
Current Supply									
TAWAKONI LAKE/RESERVOIR				**1,901**	**1,887**	**1,873**	**1,859**	**1,845**	**1,832**
WUG Demands on Franklin County WD									
CYPRESS SPRINGS WSC	CYPRESS SPRINGS WSC	FRANKLIN	CYPRESS	2,464	2,464	2,464	2,464	2,464	2,464
CYPRESS SPRINGS WSC	CYPRESS SPRINGS WSC	FRANKLIN	SULPHUR	393	393	393	393	393	393
CYPRESS SPRINGS WSC	CYPRESS SPRINGS WSC	HOPKINS	CYPRESS	441	441	441	441	441	441
CYPRESS SPRINGS WSC	CYPRESS SPRINGS WSC	HOPKINS	SULPHUR	72	72	72	72	72	72
CYPRESS SPRINGS WSC	CYPRESS SPRINGS WSC	TITUS	CYPRESS	48	48	48	48	48	48
CYPRESS SPRINGS WSC	CYPRESS SPRINGS WSC	WOOD	CYPRESS	76	76	76	76	76	76
MOUNT VERNON	MOUNT VERNON	FRANKLIN	SULPHUR	3,000	3,000	3,000	3,000	3,000	3,000

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
WINNSBORO	WINNSBORO	FRANKLIN	CYPRESS	971	971	971	971	971	971
WINNSBORO	WINNSBORO	WOOD	CYPRESS	1,305	1,305	1,305	1,305	1,305	1,305
WINNSBORO	WINNSBORO	WOOD	SABINE	1,967	1,727	1,487	1,247	1,007	767
				10,737	**10,497**	**10,257**	**10,017**	**9,777**	**9,537**
Current Supply									
CYPRESS SPRINGS LAKE/RESERVOIR				**10,737**	**10,497**	**10,257**	**10,017**	**9,777**	**9,537**
WUG Demands on City of Greenville									
CITY OF CADDO MILLS	CADDO MILLS	HUNT	SABINE	174	178	186	201	242	309
CITY OF GREENVILLE	GREENVILLE	HUNT	SABINE	5,555	5,641	5,750	6,009	6,737	7,915
JACOBIA WSC	COUNTY-OTHER	HUNT	SABINE	338	338	338	338	338	338
MANUFACTURING	MANUFACTURING	HUNT	SABINE	532	694	862	1,043	1,216	1,335
MINING	MINING	HUNT	SABINE	20	19	20	23	24	29
SHADY GROVE WSC	COUNTY-OTHER	HUNT	SABINE	562	562	562	562	562	562
				7,181	**7,432**	**7,718**	**8,176**	**9,119**	**10,488**
Current Supply									
TAWAKONI LAKE/RESERVOIR				20,515	20,363	20,210	20,057	19,904	19,751
GREENVILLE CITY LAKE/RESERVOIR				3,486	3,486	3,486	3,486	3,486	3,486
				24,001	**23,849**	**23,696**	**23,543**	**23,390**	**23,237**
WUG Demands on Lamar County WSD									
410 WSC	COUNTY-OTHER	LAMAR	RED	5	5	6	6	6	6
410 WSC	COUNTY-OTHER	RED RIVER	RED	116	116	116	116	116	116
410 WSC	COUNTY-OTHER	RED RIVER	SULPHUR	130	127	124	121	121	121
CITY OF BLOSSSOM	BLOSSOM	LAMAR	RED	201	216	230	245	245	245
CITY OF DEPORT	COUNTY-OTHER	RED RIVER	SULPHUR	3	3	3	3	3	3
CITY OF DEPORT	DEPORT	LAMAR	SULPHUR	93	100	106	113	113	113
CITY OF DEPORT	DEPORT	RED RIVER	SULPHUR	7	7	7	7	7	7
CITY OF DETROIT	DETROIT	RED RIVER	SULPHUR	40	41	41	41	41	41
CITY OF RENO	RENO	LAMAR	RED	102	115	128	138	149	160
CITY OF RENO	RENO	LAMAR	SULPHUR	455	513	571	616	665	713
CITY OF ROXTON	ROXTON	LAMAR	SULPHUR	97	104	111	118	118	118
LAMAR COUNTY WSD	COUNTY-OTHER	RED RIVER	RED	2	2	2	2	2	2
LAMAR COUNTY WSD	COUNTY-OTHER	RED RIVER	SULPHUR	5	5	5	5	5	5

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
LAMAR COUNTY WSD	LAMAR COUNTY WSD	LAMAR	RED	1,193	1,247	1,314	1,390	1,358	1,327
LAMAR COUNTY WSD	LAMAR COUNTY WSD	LAMAR	SULPHUR	796	832	877	927	906	885
MANUFACTURING	MANUFACTURING	LAMAR	SULPHUR	18	18	18	18	18	18
PATTONVILLE WSC	COUNTY-OTHER	LAMAR	SULPHUR	184	184	184	184	184	184
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	RED RIVER	RED	184	184	184	184	184	184
				3,631	**3,819**	**4,027**	**4,234**	**4,241**	**4,248**
Current Supply									
PAT MAYSE LAKE/RESERVOIR				**18,795**	**18,795**	**18,795**	**18,795**	**18,795**	**18,795**
WUG Demands on City of Longview									
ELDERVILLE WSC	COUNTY-OTHER	GREGG	SABINE	737	737	737	737	737	737
GUM SPRINGS WSC	GUM SPRINGS WSC	HARRISON	CYPRESS	100	100	100	100	100	100
GUM SPRINGS WSC	GUM SPRINGS WSC	HARRISON	SABINE	1,005	1,005	1,005	1,005	1,005	1,005
HALLSVILLE	HALLSVILLE	HARRISON	SABINE	737	737	737	737	737	737
LONGVIEW	LONGVIEW	GREGG	SABINE	10,449	10,597	10,820	11,191	11,943	13,019
LONGVIEW	LONGVIEW	HARRISON	SABINE	222	215	209	206	206	206
LONGVIEW	MANUFACTURING	GREGG	SABINE	1,367	1,387	1,416	1,464	1,562	1,702
LONGVIEW	MANUFACTURING	HARRISON	SABINE	5,470	5,546	5,662	5,855	6,247	6,810
TRYON ROAD WSC	TRYON ROAD WSC	GREGG	CYPRESS	540	540	540	540	540	540
TRYON ROAD WSC	TRYON ROAD WSC	GREGG	SABINE	430	430	430	430	430	430
TRYON ROAD WSC	TRYON ROAD WSC	HARRISON	CYPRESS	61	61	61	61	61	61
WHITE OAK	COUNTY-OTHER	GREGG	SABINE	50	50	50	50	50	50
WHITE OAK	COUNTY-OTHER	UPSHUR	SABINE	50	50	50	50	50	50
WHITE OAK	WHITE OAK	GREGG	SABINE	3,260	3,260	3,260	3,260	3,260	3,260
				24,478	**24,715**	**25,077**	**25,686**	**26,928**	**28,707**
Current Supply									
CHEROKEE LAKE/RESERVOIR				16,000	16,000	16,000	16,000	16,000	16,000
O' THE PINES LAKE/RESERVOIR				20,000	20,000	20,000	20,000	20,000	20,000
BIG SANDY CREEK LAKE/RESERVOIR				1,120	1,120	1,120	1,120	1,120	1,120
FORK LAKE/RESERVOIR				20,000	20,000	20,000	20,000	20,000	20,000
SABINE RIVER RUN-OF-RIVER				19,337	19,337	19,337	19,337	19,337	19,337
REUSE				6,161	6,161	6,161	6,161	6,161	6,161

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
				82,618	**82,618**	**82,618**	**82,618**	**82,618**	**82,618**
WUG Demands on City of Marshall									
CYPRESS VALLEY WSC	COUNTY-OTHER	HARRISON	CYPRESS	5	5	5	5	5	5
GILL WSC	COUNTY-OTHER	HARRISON	SABINE	100	100	100	100	100	100
LEIGH WSC	COUNTY-OTHER	HARRISON	CYPRESS	184	184	184	184	184	184
MARSHALL	MANUFACTURING	HARRISON	SABINE	2,000	2,000	2,000	2,000	2,000	2,000
MARSHALL	MARSHALL	HARRISON	CYPRESS	640	631	626	630	634	641
MARSHALL	MARSHALL	HARRISON	SABINE	2,617	2,582	2,560	2,576	2,595	2,624
TALLEY WATER SUPPLY CORP	COUNTY-OTHER	HARRISON	CYPRESS	2	2	2	2	2	2
TALLEY WATER SUPPLY CORP	COUNTY-OTHER	HARRISON	SABINE	3	3	3	3	3	3
				5,551	**5,507**	**5,480**	**5,500**	**5,523**	**5,559**
Current Supply									
BIG CYPRESS BAYOU				16,000	16,000	16,000	16,000	16,000	16,000
O' THE PINES LAKE/RESERVOIR				9,000	9,000	9,000	9,000	9,000	9,000
				25,000	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**
WUG Demands on City of Mt. Pleasant									
CITY OF WINFIELD	COUNTY-OTHER	TITUS	CYPRESS	153	153	153	153	153	153
LAKE BOB SANDLIN STATE PARK	COUNTY-OTHER	TITUS	CYPRESS	1	1	1	1	1	1
MANUFACTURING	MANUFACTURING	TITUS	CYPRESS	5,507	5,678	5,807	5,936	6,132	6,598
MOUNT PLEASANT	MOUNT PLEASANT	TITUS	CYPRESS	3,116	3,349	3,543	3,788	4,039	4,313
TRI WSC	COUNTY-OTHER	FRANKLIN	CYPRESS	12	14	16	17	17	17
TRI WSC	COUNTY-OTHER	TITUS	SULPHUR	547	600	656	689	723	758
TRI WSC	TRI WSC	FRANKLIN	CYPRESS	21	24	27	29	29	29
TRI WSC	TRI WSC	MORRIS	CYPRESS	119	118	118	118	118	118
TRI WSC	TRI WSC	TITUS	CYPRESS	763	849	944	1,009	1,068	1,119
				10,239	**10,786**	**11,265**	**11,740**	**12,280**	**13,106**
Current Supply									
TANKERSLEY LAKE/RESERVOIR				3,000	3,000	3,000	3,000	3,000	3,000
CYPRESS SPRINGS LAKE/RESERVOIR				3,598	3,598	3,598	3,598	3,598	3,598
BOB SANDLIN LAKE/RESERVOIR				10,000	10,000	10,000	10,000	10,000	10,000
				16,598	**16,598**	**16,598**	**16,598**	**16,598**	**16,598**

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
WUG Demands on Northeast Texas MWD									
AVINGER	COUNTY-OTHER	CASS	CYPRESS	1,116	1,116	1,116	1,116	1,116	1,116
DAINGERFIELD	COUNTY-OTHER	MORRIS	CYPRESS	231	231	231	231	231	231
DAINGERFIELD	DAINGERFIELD	MORRIS	CYPRESS	7,375	7,375	7,375	7,375	7,375	7,375
DIANA WSC	DIANA WSC	HARRISON	CYPRESS	59	59	59	59	59	59
DIANA WSC	DIANA WSC	MARION	CYPRESS	30	30	30	30	30	30
DIANA WSC	DIANA WSC	UPSHUR	CYPRESS	650	650	650	650	650	650
GLENWOOD WSC	COUNTY-OTHER	GREGG	CYPRESS	25	25	25	25	25	25
GLENWOOD WSC	COUNTY-OTHER	UPSHUR	CYPRESS	394	394	394	394	394	394
HARLETON WSC	COUNTY-OTHER	HARRISON	CYPRESS	50	50	50	50	50	50
HARLETON WSC	COUNTY-OTHER	MARION	CYPRESS	5	5	5	5	5	5
HUGHES SPRINGS	COUNTY-OTHER	CASS	CYPRESS	100	100	100	100	100	100
HUGHES SPRINGS	COUNTY-OTHER	MORRIS	CYPRESS	1,000	1,000	1,000	1,000	1,000	1,000
HUGHES SPRINGS	HUGHES SPRINGS	CASS	CYPRESS	2,993	2,993	2,993	2,993	2,993	2,993
HUGHES SPRINGS	HUGHES SPRINGS	MORRIS	CYPRESS	65	65	65	65	65	65
JEFFERSON	JEFFERSON	MARION	CYPRESS	7,031	7,031	7,031	7,031	7,031	7,031
LONE STAR	LONE STAR	MORRIS	CYPRESS	3,482	3,482	3,482	3,482	3,482	3,482
LONE STAR STEEL	MANUFACTURING	MORRIS	CYPRESS	32,400	32,400	32,400	32,400	32,400	32,400
LONGVIEW	LONGVIEW	GREGG	SABINE	19,200	19,200	19,200	19,200	19,200	19,200
LONGVIEW	LONGVIEW	HARRISON	SABINE	800	800	800	800	800	800
MARSHALL	MARSHALL	HARRISON	CYPRESS	2,000	2,000	2,000	2,000	2,000	2,000
MARSHALL	MARSHALL	HARRISON	SABINE	7,000	7,000	7,000	7,000	7,000	7,000
MIMS WSC	COUNTY-OTHER	CASS	CYPRESS	190	190	190	190	190	190
MIMS WSC	COUNTY-OTHER	MARION	CYPRESS	600	600	600	600	600	600
MIMS WSC	COUNTY-OTHER	MORRIS	CYPRESS	11	11	11	11	11	11
ORE CITY	COUNTY-OTHER	MARION	CYPRESS	125	125	125	125	125	125
ORE CITY	ORE CITY	UPSHUR	CYPRESS	1,869	1,869	1,869	1,869	1,869	1,869
PITTSBURG	PITTSBURG	CAMP	CYPRESS	10,347	10,347	10,347	10,347	10,347	10,347
SWEPCO	STEAM ELECTRIC POWER	HARRISON	SABINE	18,000	18,000	18,000	18,000	18,000	18,000
SWEPCO	STEAM ELECTRIC POWER	MARION	CYPRESS	6,900	6,900	6,900	6,900	6,900	3,501

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
SWEPCO	STEAM ELECTRIC POWER	TITUS	CYPRESS	24,000	24,000	24,000	24,000	24,000	24,000
TRYON ROAD SUD	TRYON ROAD WSC	GREGG	CYPRESS	1,177	1,177	1,177	1,177	1,177	1,177
TRYON ROAD SUD	TRYON ROAD WSC	GREGG	SABINE	950	950	950	950	950	950
TRYON ROAD SUD	TRYON ROAD WSC	HARRISON	CYPRESS	136	136	136	136	136	136
TXU	STEAM ELECTRIC POWER	TITUS	CYPRESS	10,000	10,000	10,000	10,000	10,000	10,000
				160,311	**160,311**	**160,311**	**160,311**	**160,311**	**156,912**
Current Supply									
O' THE PINES LAKE/RESERVOIR				175,892	174,902	173,912	172,922	171,932	170,942
BOB SANDLIN LAKE/RESERVOIR				12,000	12,000	12,000	12,000	12,000	12,000
WATERSHED OF 'O' THE PINES LAKE/RESERVOIR				21,168	21,168	21,168	21,168	21,168	21,168
				209,060	**208,070**	**207,080**	**206,090**	**205,100**	**204,110**
WUG Demands on Sabine River Authority									
ABLES SPRINGS WSC	ABLES SPRINGS WSC	KAUFMAN	TRINITY	992	992	992	992	992	992
ABLES SPRINGS WSC	ABLES SPRINGS WSC	HUNT	SABINE	119	119	119	119	119	119
ABLES SPRINGS WSC	ABLES SPRINGS WSC	VAN ZANDT	SABINE	9	9	9	9	9	9
BRIGHT STAR-SALEM WSC	BRIGHT STAR-SALEM WSC	RAINS	SABINE	840	840	840	840	840	840
CASH SUD	CASH SUD	ROCKWALL	SABINE	42	58	62	40	33	26
CASH SUD	CASH SUD	HOPKINS	SABINE	45	51	54	56	52	48
CASH SUD	CASH SUD	HUNT	SABINE	5,429	5,366	5,325	5,315	5,302	5,291
CASH SUD	CASH SUD	RAINS	SABINE	86	103	115	118	117	115
CITY OF COMMERCE	COMMERCE	HUNT	SULPHUR	8,094	8,033	7,973	7,913	7,852	7,792
CITY OF EDGEWOOD	EDGEWOOD	VAN ZANDT	SABINE	793	787	781	776	770	764
CITY OF EMORY	EMORY	RAINS	SABINE	1,901	1,887	1,873	1,859	1,845	1,832
CITY OF GREENVILLE	GREENVILLE	HUNT	SABINE	20,515	20,363	20,210	20,057	19,904	19,751
CITY OF POINT	POINT	RAINS	SABINE	422	420	416	414	410	408
CITY OF QUITMAN	QUITMAN	WOOD	SABINE	1,026	1,019	1,012	1,004	997	990
CITY OF WEST TAWAKONI	WEST TAWAKONI	HUNT	SABINE	1,080	1,072	1,064	1,056	1,047	1,039
COMBINED CONSUMERS WSC	COMBINED CONSUMERS WSC	HUNT	SABINE	1,439	1,390	1,348	1,312	1,271	1,226

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
COMBINED CONSUMERS WSC	COMBINED CONSUMERS WSC	VAN ZANDT	SABINE	229	266	297	321	351	384
KILGORE	COUNTY-OTHER	GREGG	SABINE	560	556	552	548	544	540
KILGORE	KILGORE	GREGG	SABINE	5,038	5,002	4,966	4,931	4,896	4,861
KILGORE	KILGORE	RUSK	SABINE	672	672	672	672	672	672
LONGVIEW	LONGVIEW	GREGG	SABINE	17,588	17,464	17,341	17,218	17,095	16,971
LONGVIEW	LONGVIEW	HARRISON	SABINE	733	728	723	717	712	707
MAC BEE WSC	MACBEE SUD	HUNT	SABINE	109	109	109	112	178	281
MAC BEE WSC	MACBEE SUD	VAN ZANDT	SABINE	822	822	822	819	753	650
MAC BEE WSC	MACBEE SUD	VAN ZANDT	TRINITY	1,152	1,136	1,120	1,104	1,088	1,072
MACBEE WSC	MACBEE SUD	KAUFMAN	SABINE	71	75	76	76	76	76
SOUTH TAWAKONI WSC	SOUTH TAWAKONI WSC	VAN ZANDT	SABINE	1,056	1,048	1,041	1,033	1,025	1,018
WILLS POINT	WILLS POINT	VAN ZANDT	SABINE	654	654	654	654	654	654
WILLS POINT	WILLS POINT	VAN ZANDT	TRINITY	1,458	1,443	1,427	1,412	1,396	1,381
RELEASE FROM TXU	MINING	HARRISON	SABINE	10,993	10,915	10,838	10,761	10,684	10,607
EASTMAN CHEMICALS	MANUFACTURING	HARRISON	SABINE	3,206	3,184	3,161	3,139	3,116	3,094
OTHER REGIONS				316,499	314,144	313,350	309,434	308,200	310,527
				403,672	**400,727**	**399,342**	**394,831**	**393,000**	**394,737**
Current Supply									
TAWAKONI LAKE/RESERVOIR				229,807	228,093	226,380	224,667	222,953	221,240
FORK LAKE/RESERVOIR				173,035	171,820	170,605	169,390	168,175	166,960
				402,842	**399,913**	**396,985**	**394,057**	**391,128**	**388,200**
WUG Demands on Sulphur River Municipal Water District									
CITY OF COMMERCE	COMMERCE	HUNT	SULPHUR	13,679	13,520	13,355	13,179	12,980	12,725
CITY OF COOPER	COOPER	DELTA	SULPHUR	6,839	6,760	6,678	6,590	6,490	6,362
CITY OF SULPHUR SPRINGS	SULPHUR SPRINGS	HOPKINS	SULPHUR	12,737	12,589	12,435	12,271	12,086	11,849
				33,255	**32,870**	**32,468**	**32,040**	**31,556**	**30,936**
Current Supply									
CHAPMAN/COOPER LAKE/RESERVOIR				**33,255**	**32,870**	**32,468**	**32,040**	**31,556**	**30,936**
WUG Demands on City of Paris									
LAMAR COUNTY WSD	COUNTY-OTHER	RED RIVER	RED	2	2	2	2	2	2
LAMAR COUNTY WSD	COUNTY-OTHER	RED RIVER	SULPHUR	5	5	5	5	5	5

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
LAMAR COUNTY WSD	LAMAR COUNTY WSD	LAMAR	RED	9,398	9,398	9,398	9,398	9,398	9,398
LAMAR COUNTY WSD	LAMAR COUNTY WSD	LAMAR	SULPHUR	9,398	9,398	9,398	9,398	9,398	9,398
MANUFACTURING	MANUFACTURING	LAMAR	RED	805	858	900	941	976	1,042
MANUFACTURING	MANUFACTURING	LAMAR	SULPHUR	4,775	5,091	5,340	5,580	5,787	6,183
MJC WSC	COUNTY-OTHER	LAMAR	SULPHUR	81	85	90	95	93	91
PARIS	PARIS	LAMAR	RED	2,504	2,655	2,788	2,915	2,900	2,900
PARIS	PARIS	LAMAR	SULPHUR	3,748	3,973	4,172	4,362	4,339	4,339
STEAM ELECTRIC	STEAM ELECTRIC POWER	LAMAR	RED	8,961	8,961	8,961	8,961	8,961	8,961
				39,677	**40,426**	**41,054**	**41,657**	**41,859**	**42,319**
Current Supply									
PAT MAYSE LAKE/RESERVOIR				59,670	59,670	59,670	59,670	59,670	59,670
CROOK LAKE/RESERVOIR				7,290	7,290	7,290	7,290	7,290	7,290
				66,960	**66,960**	**66,960**	**66,960**	**66,960**	**66,960**
WUG Demands on City of Sulphur Springs									
BRASHEAR WSC	COUNTY-OTHER	HOPKINS	SABINE	83	92	95	98	90	82
BRASHEAR WSC	COUNTY-OTHER	HOPKINS	SULPHUR	50	54	57	58	53	49
BRINKER WSC	COUNTY-OTHER	HOPKINS	SULPHUR	34	34	34	34	34	34
GAFFORD CHAPEL	COUNTY-OTHER	HOPKINS	SULPHUR	71	86	93	97	82	68
LIVESTOCK	LIVESTOCK	HOPKINS	SULPHUR	1,417	1,474	1,551	1,720	1,730	1,914
MANUFACTURING	MANUFACTURING	HOPKINS	SULPHUR	1,039	1,111	1,168	1,222	1,268	1,357
MARTIN SPRINGS WSC	MARTIN SPRINGS WSC	HOPKINS	SULPHUR	223	223	223	223	223	223
NORTH HOPKINS WSC	NORTH HOPKINS WSC	FRANKLIN	SULPHUR	9	11	12	13	13	13
NORTH HOPKINS WSC	NORTH HOPKINS WSC	HOPKINS	SULPHUR	631	708	754	784	724	663
PLEASANT HILL WSC	COUNTY-OTHER	HOPKINS	SABINE	31	34	36	37	33	31
SHADY GROVE WSC #2	COUNTY-OTHER	HOPKINS	SABINE	79	87	91	93	85	78
SULPHUR SPRINGS	SULPHUR SPRINGS	HOPKINS	SULPHUR	3,511	3,771	4,061	4,320	4,620	4,945
				7,178	**7,685**	**8,175**	**8,699**	**8,955**	**9,457**
Current Supply									
CHAPMAN/COOPER LAKE/RESERVOIR				12,737	12,589	12,435	12,271	12,086	11,849
SULPHUR SPRINGS LAKE/RESERVOIR				9,800	9,800	9,800	9,800	9,800	9,800

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
				22,537	**22,389**	**22,235**	**22,071**	**21,886**	**21,649**
WUG Demands on City of Texarkana									
CENTRAL BOWIE WSC	CENTRAL BOWIE WSC	BOWIE	RED	88	88	88	88	88	88
CENTRAL BOWIE WSC	CENTRAL BOWIE WSC	BOWIE	SULPHUR	354	354	354	354	354	354
CITY OF ANNONA	COUNTY-OTHER	RED RIVER	SULPHUR	68	68	68	68	68	68
CITY OF ATLANTA	ATLANTA	CASS	CYPRESS	1,876	1,876	1,876	1,876	1,876	1,876
CITY OF ATLANTA	ATLANTA	CASS	SULPHUR	2	2	2	2	2	2
CITY OF AVERY	COUNTY-OTHER	RED RIVER	RED	55	55	55	55	55	55
CITY OF AVERY	COUNTY-OTHER	RED RIVER	SULPHUR	37	37	37	37	37	37
CITY OF DEKALB	COUNTY-OTHER	BOWIE	RED	14	14	14	14	14	14
CITY OF DEKALB	COUNTY-OTHER	BOWIE	SULPHUR	33	33	33	33	33	33
CITY OF DEKALB	DE KALB	BOWIE	RED	87	87	87	87	87	87
CITY OF DEKALB	DE KALB	BOWIE	SULPHUR	336	336	336	336	336	336
CITY OF DOMINO	COUNTY-OTHER	CASS	SULPHUR	55	55	55	85	96	104
CITY OF HOOKS	HOOKS	BOWIE	RED	463	463	463	463	463	463
CITY OF MAUD	MAUD	BOWIE	SULPHUR	144	153	161	168	168	168
CITY OF NASH	NASH	BOWIE	SULPHUR	303	323	339	355	355	355
CITY OF NEW BOSTON	NEW BOSTON	BOWIE	RED	349	349	349	349	349	349
CITY OF NEW BOSTON	NEW BOSTON	BOWIE	SULPHUR	741	741	741	741	741	741
CITY OF RED LICK	RED LICK	BOWIE	RED	86	90	93	95	95	95
CITY OF RED LICK	RED LICK	BOWIE	SULPHUR	43	45	46	48	47	47
CITY OF REDWATER	COUNTY-OTHER	BOWIE	SULPHUR	79	79	79	79	79	79
CITY OF REDWATER	REDWATER	BOWIE	SULPHUR	69	69	69	69	69	69
CITY OF TEXARKANA	TEXARKANA	BOWIE	RED	675	706	725	743	738	738
CITY OF TEXARKANA	TEXARKANA	BOWIE	SULPHUR	5,797	6,061	6,227	6,381	6,337	6,337
CITY OF WAKE VILLAGE	WAKE VILLAGE	BOWIE	SULPHUR	358	358	358	358	358	358
FEDERAL CORRECTION INSTITUTE	COUNTY-OTHER	BOWIE	RED	257	268	274	279	274	271
MACEDONIA-EYLAU MUD#1	MUD #1	BOWIE	SULPHUR	552	552	552	552	552	552
MANUFACTURING	MANUFACTURING	BOWIE	RED	8	9	10	11	12	13
MANUFACTURING	MANUFACTURING	BOWIE	SULPHUR	2,251	2,506	2,723	2,933	3,113	3,366
MANUFACTURING CASS	MANUFACTURING	CASS	SULPHUR	107,397	115,160	121,315	127,196	132,283	141,256
OAK GROVE WSC	COUNTY-OTHER	BOWIE	RED	29	29	29	29	29	29
OAK GROVE WSC	COUNTY-OTHER	BOWIE	SULPHUR	36	36	36	36	36	36
OAK GROVE WSC	COUNTY-OTHER	RED RIVER	SULPHUR	8	8	8	8	8	8

Values in Acre-Feet per Year									
Recipient Name	**WUG Name**	**WUG County Name**	**WUG Basin Name**	**WD2010**	**WD2020**	**WD2030**	**WD2040**	**WD2050**	**WD2060**
PARK TERRACE MHP	COUNTY-OTHER	BOWIE	SULPHUR	2	2	2	2	2	2
QUEEN CITY	QUEEN CITY	CASS	CYPRESS	498	498	498	498	498	498
QUEEN CITY	QUEEN CITY	CASS	SULPHUR	135	135	135	135	135	135
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	BOWIE	RED	4	5	5	5	5	5
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	RED RIVER	RED	22	21	21	21	21	21
RED RIVER COUNTY WSC	RED RIVER COUNTY WSC	RED RIVER	SULPHUR	41	41	41	41	41	41
				123,352	**131,712**	**138,304**	**144,630**	**149,854**	**159,086**
Current Supply									
WRIGHT PATMAN LAKE/RESERVOIR				**180,000**	**180,000**	**180,000**	**180,000**	**180,000**	**180,000**
WUG Demands on Titus County FWD #1									
MOUNT PLEASANT	MOUNT PLEASANT	TITUS	CYPRESS	10,000	10,000	10,000	10,000	10,000	10,000
TEXAS UTILITIES	STEAM ELECTRIC	TITUS	CYPRESS	38,500	38,500	38,500	38,500	38,500	38,500
				48,500	**48,500**	**48,500**	**48,500**	**48,500**	**48,500**
Current Supply									
BOB SANDLIN LAKE/RESERVOIR				**48,500**	**48,500**	**48,500**	**48,500**	**48,500**	**48,500**

System Name	Address	City	State	Zip Code	County	Phone Number	Fax Number	Salutation	First Name	Last Name	Title	Date survey mailed	Response	COMMENTS	Follow Up Call #1	Follow Up Call #2
410 WATER SUPPLY CORP.	P.O. BOX 69	DETROIT	TX	75436	RED RIVER	903-674-4555		MR.	RUSSELL	CARPENTER	PRESIDENT	7/16/2009	YES	Curtis cell phone #903-491-6074	9/1/09 filled out over phone with Curtis	
ABLE SPRINGS WSC	P.O. BOX 1567	TERRELL	TX	75160-0030	HUNT	972-563-9704	972-563-7048	MS.	PAULA	WEBER	GENERAL MANAGER	7/16/2009	YES		8/26/09 faxed survey & survey returned!	
B H P WATER SUPPLY CORP.	P.O. BOX 370	ROYCE CITY	TX	75189	HUNT	972-636-2154	972-636-2465	MS.	DENISE	PATE	GENERAL MANAGER	7/16/2009	NO		8/26/09 faxed survey	9/4/09 talked to Denise Pate and she gave survey to owners, it should be returned soon.
BARROW SUBDIVISON C/O AQUA UTILITIES INC DBA AQUA TEXAS INC	20341 HOLLYHILLS DRIVE	LA RUE	TX	75770	HUNT	888-231-2099	903-849-5079	MR.	GARY	DOUGLAS		7/16/2009	YES	Received via fax 8/27/09	8/26/09 faxed survey	
BEN FRANKLIN WATER SUPPLY CORP.	P.O. BOX 513	BEN FRANKLIN	TX	75415	DELTA	903-325-4351		MR.	BENNY	LOVEL	PRESIDENT	7/15/2009	YES	Threw original survey in trash!	Filled out survey over the phone on 8/25/09	
BEN WHEELER WATER SUPPLY CORP.	P.O. BOX 104	BEN WHEELER	TX	75754	VAN ZANDT	903-833-5206		MR.	JAMES	MCGEHEE	PRESIDENT	7/16/2009	YES			
BETHEL ASH WSC	801 N PALESTINE ST	ATHENS	TX	75751	VAN ZANDT	903-675-8466		MR.	JOE	ALLISON	GENERAL MANAGER	7/16/2009	YES			
BI-COUNTY WATER SUPPLY CORP.	P.O. BOX 848	PITTSBURG	TX	75686	CAMP	903-856-5840	903-856-1385	MR.	HORTON	TAYLER	MANAGER	7/14/2009	NO	ext.12 for manager Same # for Newsome WSC	8/20/09 (NA) & 8/21/09 faxed survey	9/14/09 LM
BLACKLAND WSC	P.O. BOX 215	FATE	TX	75132-0215	HUNT	972-771-6375		MR.	JENNIFER	CANNON	MANAGER	7/16/2009	YES			
BRASHEAR WATER SUPPLY CORP.	P.O. BOX 36	BRASHEAR	TX	75420	HOPKINS	903-582-2670		MR.	RICHARD	BUNCH	PRESIDENT	7/15/2009	YES			
BRIGHT STAR-SALEM SUD	P.O. BOX 620	ALBA	TX	75410	RAINS	903-765-2701		MR.	JACK	BELL	PRESIDENT	7/15/2009	YES			
BRINKER WSC	P.O. BOX 9	COMO	TX	75431	HOPKINS	903-488-3835	903-488-2121	MS.	JULIE	PERRY		7/15/2009	YES	Returned via fax 9/3/09	8/26/09 faxed survey	
BURNS REDBANK WATER SUPPLY CORP.	P.O. BOX 907	HOOKS	TX	75561	BOWIE	903-547-3068	903-547-1208	MS.	ANN	HUBBARD	OFFICE MANAGER	7/14/2009	YES	Returned by mail	8/20/09 (not in) & 8/24/09 faxed survey	
CADDO BASIN SPECIAL UTILITY DIST	156 CO. RD. 1118	GREENVILLE	TX	75401	HUNT	903-527-3504		MR.	LEAHMON	BRYANT	GENERAL MANAGER	7/16/2009	YES	Verified by phone 8/28/09, survey also returned by mail.	8/26/09 faxed survey	
CAMPBELL WATER SUPPLY CORP.	P.O. BOX 94	CAMPBELL	TX	75422	HUNT	903-862-3760		MR.	HERB	KING	PRESIDENT	7/16/2009	YES			
CANTON NORTH ESTATES	701 EAST HWY 243	CANTON	TX	75103-2415	VAN ZANDT	903-567-6091		MS.	ELIZABETH	DAY		7/16/2009	YES			
CASH SUD	P.O. BOX 8129	GREENVILLE	TX	75404-8129	HUNT	903-883-2695		MR.	JIMMY	HUMPHRIES	PRESIDENT	7/16/2009	YES			
CEDAR COVE LANDING, JACK HEALD ENT. INC.	565 RAINS CR 1502	POINT	TX	75472	RAINS	903-447-2169		MR.	R.E.	FULLER, SR.		7/15/2009	YES	Returned by mail 9-3-09	8/28/09 mailed survey: Sara Fuller POB 155 Point, TX 75472	
CENTRAL BOWIE WATER SUPPLY CORP.	P.O. BOX 306	NEW BOSTON	TX	75570	BOWIE	903-628-5601		MR.	HAL	HARRIS		7/14/2009	YES			
CHEROKEE POINT WATER COMPANY	20341 HOLLYHILLS DRIVE	LA RUE	TX	75770	CAMP	888-231-2099	903-849-5079	MR.	GARY	DOUGLAS		7/14/2009	YES	Filled out survey over phone w/ Gary Douglas	Faxed survey on 8/21/09	9/3/2009
CITY OF ANNONA	P.O. BOX 107	ANNONA	TX	75550	RED RIVER	903-697-3681		THE HONORABLE	GEORGE	ENGLISH	MAYOR	7/16/2009	YES			
CITY OF AVERY	P.O. BOX 35	AVERY	TX	75554	RED RIVER	903-684-3825		THE HONORABLE	BILL	TRIMM	MAYOR	7/16/2009	YES			
CITY OF BLOSSOM	P.O. BOX 297	BLOSSOM	TX	75416	LAMAR	903-982-5900	903-982-6599	THE HONORABLE	ROGER S.	JOHNSON	MAYOR	7/15/2009	YES			
CITY OF BOGATA	P.O. Box 400	BOGATA	TX	75417-0400	RED RIVER	903-632-5315		THE HONORABLE	VINCENT	LUM	MAYOR	7/16/2009	YES			

System Name	Address	City	State	Zip Code	County	Phone Number	Fax Number	Salutation	First Name	Last Name	Title	Date survey mailed	Response	COMMENTS	Follow Up Call #1	Follow Up Call #2
CITY OF CADDO MILLS	P.O. BOX 490	CADDO MILLS	TX	75135	HUNT	903-527-3116		THE HONORABLE	BUEL R.	BENTLEY	MAYOR	7/16/2009	YES			
CITY OF CAMPBELL	P.O.BOX 27	CAMPBELL	TX	75422	HUNT	903-862-3191		MS.	KAY	LOWREY		7/16/2009	YES	Original survey sent to wrong address!	8/27/09 - filled out survey over the phone	
CITY OF CANTON	P.O. BOX 245	CANTON	TX	75103	VAN ZANDT	903-567-2826	903-567-1793	THE HONORABLE	RUSTY	WILSON	MAYOR	7/16/2009	YES	9/2/09 returend via fax	9/1/09 faxed survey	
CITY OF CELESTE	P.O. BOX 399	CELESTE	TX	75423	HUNT	903-568-4512		THE HONORABLE	PAT	JONES	MAYOR	7/16/2009	YES			
CITY OF CLARKSVILLE	800 W. MAIN	CLARKSVILLE	TX	75426	RED RIVER	903-427-3834		THE HONORABLE	ANN	RUSHING	MAYOR	7/16/2009	YES	Via email 9/1/09 Originally sent by email!	9/1/09 talked with Mayor	
CITY OF COMMERCE	1119 ALAMO ST.	COMMERCE	TX	75428	HUNT	903-886-1100	903-886-8929	MR.	BRYAN	CREED	WTP FOREMAN	7/16/2009	YES	Filled out survey over the phone with Bryan.	8/27/09 LM 8/31/09 Faxed survey	
CITY OF COMO	P.O. BOX 208	COMO	TX	75431	HOPKINS	903-488-3434		THE HONORABLE	JAMES	CARROLL	MAYOR	7/15/2009	YES			
CITY OF COOPER	91 NORTH SIDE SQUARE	COOPER	TX	75432	DELTA	903-395-4433		THE HONORABLE	SCOTTY	STEGALL	MAYOR	7/15/2009	YES			
CITY OF CUMBY	P.O. BOX 349	CUMBY	TX	75433	HOPKINS	903-994-2272	903-994-2650	THE HONORABLE	JEFF	STRICKLAND	MAYOR	7/15/2009	YES			
CITY OF DEKALB	110 EAST GRIZZLY DRIVE	DEKALB	TX	75559	BOWIE	903-667-2410	903-667-2689	THE HONORABLE	PAUL	MEADOWS	MAYOR	7/14/2009	NO		Talked to Abbie Baker, faxed survey 8/20/09	9/3/09 LM 9/14/09 busy 9/15/09 not in
CITY OF DEPORT	P.O. BOX 354-A	DEPORT	TX	75435-0354	LAMAR	903-652-3875	903-652-4086	THE HONORABLE	MIKE	FRANCIES	MAYOR	7/15/2009	YES			
CITY OF DETROIT	190 E. GARNER STREET	DETROIT	TX	75436	RED RIVER	(903) 674-4573		THE HONORABLE	TRAVIS	BRONNER	MAYOR	7/16/2009	NO		9/1/09 NA	9/14/09 & 9/15/09 unable to fax, mailed survey
CITY OF EAST TAWAKONI	288 BRIGGS BLVD.	EAST TAWAKONI	TX	75472-7140	RAINS	903-447-2444	903-447-4289	MR.	WHITE	ROBERT	PUBLIC WORKS DIRECTOR	7/15/2009	YES			
CITY OF EDGEWOOD	P.O. BOX 377	EDGEWOOD	TX	75117	VAN ZANDT	903-896-4448	903-896-7033	THE HONORABLE	CHARLES	PRATER	MAYOR	7/16/2009	YES	9/2/09 survey returned via fax	9/1/09 faxed survey	
CITY OF EMORY	P.O. BOX 100	EMORY	TX	75440	RAINS	903-473-2465	903-473-2110	THE HONORABLE	CAY	HOUSE	MAYOR	7/15/2009	YES			
CITY OF GRAND SALINE	132 E. FRANK STREET	GRAND SALINE	TX	75140	VAN ZANDT	903-962-3122	903-962-3363	THE HONORABLE	SANDRA	BOZEMAN	MAYOR	7/16/2009	YES		9/1/09 faxed survey returned via fax	
CITY OF GREENVILLE	P.O. BOX 1049	GREENVILLE	TX	75403-1049	HUNT	903-457-3100	903-457-0506	THE HONORABLE	THOMAS	OLIVER	MAYOR	7/16/2009	YES	Talked to City Secretary, Debbie to give to Public Works	8/27/09 LM 8/31/09 Faxed survey, returned via fax 9/1/09	
CITY OF HOOKS	P.O. BOX 37	HOOKS	TX	75561	BOWIE	903-547-2261	903-547-1107	MS.	LISA	RUNNELS		7/14/2009	YES	Filled out survey over the phone with Lisa Runnels 9/3/09	Faxed survey 8/20/09	9/3/09 busy
CITY OF JOSEPHINE	P.O. BOX 99	JOSEPHINE	TX	75164	HUNT	972-843-8282	972-943-9377	THE HONORABLE	MIKE	HOLMES	MAYOR	7/16/2009	YES	8/27/09 Survey returned via fax	8/27/09 faxed survey	
CITY OF LEARY	P.O. BOX 1799	HOOKS	TX	75561	BOWIE						MAYOR	7/14/2009	YES			
CITY OF LONE OAK	P.O. BOX 127	LONE OAK	TX	75453	HUNT	903-662-5116	903-662-5334	THE HONORABLE	HAROLD	SLEMMONS	MAYOR	7/16/2009	NO		8/31/09 Faxed survey	9/15/09 LM for Michael Miller
CITY OF MAUD	P.O. BOX 100	MAUD	TX	75567	BOWIE	903-585-2294		MS.	BETTY	HAMILTON		7/14/2009	YES			
CITY OF MOUNT PLEASANT	501 N. MADISON AVE.	MOUNT PLEASANT	TX	75455	TITUS	903-575-4134	903-577-1411	THE HONORABLE	JERRY	BOATNER	MAYOR	7/15/2009	YES			

System Name	Address	City	State	Zip Code	County	Phone Number	Fax Number	Salutation	First Name	Last Name	Title	Date survey mailed	Response	COMMENTS	Follow Up Call #1	Follow Up Call #2
CITY OF MOUNT VERNON	P.O. BOX 597	MOUNT VERNON	TX	75457	FRANKLIN	903-537-2252	903-537-2634	THE HONORABLE	J.D.	BAUMGARDNER	MAYOR	7/15/2009	YES			
CITY OF NASH	P.O. BOX 520	NASH	TX	75569	BOWIE	903-838-0751		MS.	ELIZABETH	LEA		7/14/2009	YES			
CITY OF NEW BOSTON	P.O. BOX 5	NEW BOSTON	TX	75570	BOWIE	903-628-5596	903-628-6034	THE HONORABLE	JOHNNY L.	BRANSON	MAYOR	7/14/2009	YES		Talked to Carol, City Secretary faxed survey 8/20/09	
CITY OF PARIS	P.O. BOX 9037	PARIS	TX	75461-9037	LAMAR	903-784-2464		THE HONORABLE	JESSE JAMES	FREELEN	MAYOR	7/15/2009	YES			
CITY OF PITTSBURG	200 RUSK STREET	PITTSBURG	TX	75686	CAMP	903-856-3621		MR.	NED C.	RUSK	CITY MANAGER	7/14/2009	YES			
CITY OF POINT	P.O. BOX 495	POINT	TX	75472	RAINS	903-598-3296	903-589-3371	THE HONORABLE	MINDA	PAINTER	MAYOR	7/15/2009	YES			
CITY OF QUINLAN	P.O. BOX 2740	QUINLAN	TX	75474	HUNT	903-356-3306		THE HONORABLE	SHARON	ROYAL	MAYOR	7/16/2009	YES			
CITY OF RED LICK	P.O. BOX 870	NASH	TX	75569	BOWIE	903-831-3691		THE HONORABLE	MICHAEL D.	PEEK	MAYOR	7/14/2009	YES		Faxed survey 8/20/09	9/3/09 Filled out survey over phone w/City Sec. Joellen Haire
CITY OF REDWATER	P.O. BOX 209	REDWATER	TX	75573	BOWIE	903-671-2775	903-671-2625	MR.	RICKIE	HENDERSON		7/14/2009	YES			
CITY OF RENO	160 BLACKBURN	RENO	TX	75462	LAMAR	903-785-6581	903-785-0453	THE HONORABLE	WELDON M.	COSTON	MAYOR	7/15/2009	YES		8/31/09 Faxed survey; returned via fax 9/1/09	
CITY OF ROXTON	P.O. BOX 176	ROXTON	TX	75477-0176	LAMAR	903-346-3535	903-346-3759	THE HONORABLE	JAMES	COOPER	MAYOR	7/15/2009	YES			
CITY OF SULPHUR SPRINGS	125 SOUTH DAVIS	SULPHUR SPRINGS	TX	75482	HOPKINS	903-885-7541	903-439-2092	MR.	MARC	MAXWELL	CITY MANAGER	7/15/2009	YES		8/26/09 faxed survey & survey returned!	
CITY OF TALCO	P.O. BOX 365	TALCO	TX	75487	TITUS	903-379-3731	903-379-3311	MR.	RANDY	CARROLL		7/15/2009	YES			
CITY OF TEXARKANA	P.O. BOX 1967	TEXARKANA	TX	75501	BOWIE	903-798-3930	903-798-3448	THE HONORABLE	STEVE	MAYO	MAYOR	7/14/2009	YES	Returned via mail 9/4/09	Talked to Carey Meredith, City Secretary. Faxed survey 8/20/09	
CITY OF VAN	P.O. BOX 487	VAN	TX	75790	VAN ZANDT	903-963-7216	903-963-5643	THE HONORABLE	BILLY	SMITH	MAYOR	7/16/2009	YES			
CITY OF WAKE VILLAGE	P.O. BOX 3776	WAKE VILLAGE	TX	75501	BOWIE	903-838-0515		MR.	BOB	LONG		7/14/2009	YES			
CITY OF WEST TAWAKONI	1533 EAST HWY. 276	WEST TAWAKONI	TX	75474-7007	HUNT	903-447-2285	903-447-4935	THE HONORABLE	PETE	YOHO	MAYOR	7/16/2009	YES		8/27/09 faxed survey	9/4/09 filled out survey over the phone with Cloy Richards, City Administrator.
CITY OF WILLS POINT	P.O. BOX 505	WILLSPOINT	TX	75169	VAN ZANDT	903-873-2578	903-873--5512	MR.	SCOTTY	DRAKE	PUBLIC WORKS DIRECTOR	7/16/2009	YES	9/15/09 returned by fax	9/1/09 LM	9/15/09 faxed survey
CITY OF WINFIELD	P.O. BOX 98	WINFIELD	TX	75493	TITUS	903-524-3611	903-524-3611	THE HONORABLE	JOHN	WALTON	MAYOR	7/15/2009	YES			
CITY OF WINNSBORO	501 SOUTH MAIN	WINNSBORO	TX	75494	FRANKLIN	903-342-3543		MS.	NINA	BROWNING	CITY ADMINISTRATOR	7/15/2009	YES			
CITY OF WOLFE CITY	P.O. BOX 106	WOLFE CITY	TX	75496	HUNT	903-496-7365		THE HONORABLE	BRYAN	CREED	MAYOR	7/16/2009	YES			

System Name	Address	City	State	Zip Code	County	Phone Number	Fax Number	Salutation	First Name	Last Name	Title	Date survey mailed	Response	COMMENTS	Follow Up Call #1	Follow Up Call #2
CODY'S MOBILE HOME PARK	2693 FM 991E	TEXARKANA	TX	75501	BOWIE	903-334-7812			MR.	RAY E.	CODY	7/14/2009	YES	Called home phone 8/24 &25/09 (NA)	8/21/09 disconnected #	9/4/09 talked to Dessie at City of Red Water. They sell water to Cody's MHP which is outside of city limits. All water out side of city limits is bought from the City of Texarakana.
COMBINED CONSUMERS WSC	P.O. BOX 2829	QUINLAN	TX	75474-2829	HUNT	903-356-3321		MR.	RICKY E.	LITTLE	PRESIDENT	7/16/2009	YES			
COMMUNITY WATER CO.	P.O. BOX 730	CORSICANA	TX	75151-0730	HUNT	903-874-8244		MR.	STEVE	STROUBE	OWNER	7/16/2009	YES			
CORINTH WATER SUPPLY CORP.	P.O. BOX 299	GRAND SALINE	TX	75140	VAN ZANDT	903-829-2861		MS.	SANDRA	CURREY	PRESIDENT	7/16/2009	YES			
CORNERSVILLE WATER SUPPLY CORP.	P.O. BOX 9	COMO	TX	75431	HOPKINS	903-488-3835	903-488-2121	MS.	JULIE	PERRY		7/15/2009	YES	Returned via fax 9/3/09	8/26/09 faxed survey	
COUNTRY WOOD ESTATES C/O AQUA UTILITIES INC DBA AQUA TEXAS INC	20341 HOLLYHILLS DRIVE	LA RUE	TX	75770	HUNT	888-231-2099	903-849-5079	MR.	GARY	DOUGLAS		7/16/2009	YES	Received via fax 8/27/09	8/26/09 faxed survey	
CRAZY HORSE SUBDIVISION C/O AQUA TEXAS INC	20342 HOLLYHILLS DRIVE	LA RUE	TX	75770	HUNT	888-231-2100	903-849-5080	MR.	GARY	DOUGLAS		7/16/2009	YES	Recived via fax 8/27/09	8/26/09 faxed survey	
CROOKED CREEK WSC	P.O. BOX 382	CANTON	TX	75103	VAN ZANDT	903-896-7012		MR.	THURMAN	THORN	PRESIDENT	7/16/2009	YES			
CYPRESS SPRINGS WSC	P.O. BOX 591	MT. VERNON	TX	75457	FRANKLIN	903-860-3400	903-860-3062	MR.	RICHARD	ZACHARY	MANAGER	7/15/2009	YES			
DEER COVE POA WS	108 DEER COVE ROAD	SCROGGINS	TX	75480	FRANKLIN	903-860-3915		MR.	DAN	SMITH	VICE PRESIDENT	7/15/2009 & 8/26/09	YES	Jerry Stark no longer active in POA. Survey returned by mail.	8/25/09 LM 8/26/09 mailed letter, no fax	
DELTA COUNTY MUD	P.O. BOX 63	COOPER	TX	75432	DELTA	(903) 395-4471		MR.	ROBERT	DOUGLAS	PRESIDENT	7/15/2009	YES			
EDOM WATER SUPPLY CORP.	P.O. BOX 245	BROWNSBORO	TX	75756	VAN ZANDT	903-852-5055		MS.	CAROLYN	HARGROVE	PRESIDENT	7/16/2009	YES			
EL CHAPARRAL MHP	2810 JONATHAN	TEXARKANA	TX	75501	BOWIE	903-832-1902		MR.	JERRY	CHAPMAN		7/14/2009	YES			
FEDERAL CORRECTION INST.	P.O. BOX 7000	TEXARKANA	TX	75505	BOWIE	903-223-4456						7/14/2009	YES			
FRUITVALE WATER SUPPLY CORP.	P.O. BOX 75	FRUITVALE	TX	75127-0075	VAN ZANDT	903-896-1224		MR.	DALE	SMITH	PRESIDENT	7/16/2009	YES			
GAFFORD CHAPEL WSC	P.O. BOX 1160	SULPHUR SPRINGS	TX	75482	HOPKINS	903-885-6996	no fax	MR.	DANIEL	ROMANS	OPERATOR	7/15/2009	NO	903-439-5049 mobile; unable to open email attachment	8/26/09 LM	9/4/09 emailed survey to drom@rocketmail.com, emailed again 9-15-09; re-mailed 9/16/09
GOLDEN WATER SUPPLY CORP. C/0 WENDELL BAKER, GENERAL MANAGER	P.O. BOX 148	GOLDEN	TX	75444	RAINS	903-768-2861		MR.	KELLY	HAMRICK	PRESIDENT	7/15/2009	YES			
H A B WATER SUPPLY CORP.	P.O. BOX 248	LEESBURG	TX	75451	CAMP			MS.	ALICE	VAUGHN		7/14/2009	YES			
HICKORY CREEK SPECIAL UTILITY DISTRICT	P.O. BOX 540	CELESTE	TX	75423-0540	HUNT	903-568-4760	903-568-4867	MR.	QUENTIN	TURNER	GENERAL MANAGER	7/16/2009	YES	Received via fax 9/11/09	8/27/09 faxed survey	
JACOBIA WATER SUPPLY CORP.	P.O. BOX 411	GREENVILLE	TX	75403-0411	HUNT	903-454-3046		MR.	JERRY	MAINORD	PRESIDENT	7/16/2009	YES	Received via fax 8/28/09	8/27/09 LM	
LAKE BOB SANDLIN STATE PARK	341 STATE PARK ROAD	PITTSBURG	TX	75686	TITUS	903-572-5531	903-572-0185	MR.	PAUL	HARRIS		7/15/2009	YES		9/1/09 Busy	9/15/09 faxed survey

System Name	Address	City	State	Zip Code	County	Phone Number	Fax Number	Salutation	First Name	Last Name	Title	Date survey mailed	Response	COMMENTS	Follow Up Call #1	Follow Up Call #2
LAKE COUNTRY DEVELOPMENT INC. C/O CYPRESS SPRINGS SUD (Pelican Bay, Aplha Utility)	P.O. BOX 599	MT. VERNON	TX	75457-0591	FRANKLIN	903-860-3400	903-588-2085	MR.	RICHARD	ZACHARY	GENERAL MANAGER	7/15/2009	YES	Alpha Utility no longer in business. Cypress Spring SUD took over for Pelican Bay (Lake Country Development)	8/25/09 Faxed survey	9/4/09 filled out survey over phone with Janet.
LAMAR COUNTY WATER SUPPLY DIST.	P.O. BOX 188	BROOKSTON	TX	75421-9715	LAMAR	903-785-5586	903-784-7148	MR.	ALTON	DOCKREY	MANAGER	7/15/2009	YES			
LITTLE CREEK ACRES	7243 CTY RD	QUINLAN	TX	75474-4809	HUNT	903-883-2416		MR.	GEORGE	STEBENS	OWNER	7/16/2009	YES			
LITTLE HOPE-MOORE WTR SPLY CO.	2749 FM 16	CANTON	TX	75103	VAN ZANDT	903-567-5821		MR.	MIKE	JORDAN	PRESIDENT	7/16/2009	NO	10 a.m - 2 p.m. office hours Pam Shitley	9/1/09 LM	9/4/09 emailed survey to lhmwsc@gmail.com 9/15/09 phone busy, resent email
MAC BEE SUD	P.O. BOX 780	WILLS POINT	TX	75169	VAN ZANDT	903-873-2109		MR.	WILLIAM R.	SUMMITT	PRESIDENT	7/16/2009	YES			
MACEDONIA-EYLAU M.U.D. # 1	RT 11, BOX 228-C	TEXARKANA	TX	75501	BOWIE	903-832-1691	903-832-3159	MR.	ROGER	DAVIS		7/14/2009	YES		Faxed survey 8/20/09	9/3/09 Filled out survey over phone w/Diwana Capps
MALOY WATER SUPPLY CORP.	P.O. BOX 394	COMMERCE	TX	75429-0394	HUNT	903-886-4438	903-457-1348	MR.	MICHAEL	KEITH	PRESIDENT	7/16/2009	YES		8/27/09 faxed survey	9/4/09 Filled out survey over phone w/Michael Keith
MARTIN SPRINGS WSC	P.O. BOX 9	COMO	TX	75431	HOPKINS	903-488-3835	903-488-2121	MS.	JULIE	PERRY		7/15/2009	YES	Returned via fax 9/3/09	8/26/09 faxed survey	
MARTINS MILL WSC	13002 FM 858	BEN WHEELER	TX	75754-8070	VAN ZANDT	903-479-4130		MS.	AMY	BECKER	PRESIDENT	7/16/2009	NO		9/1/09 LM	
MILLER GROVE WATER SUPPLY CORP	14966 FARM ROAD 1567 W	CUMBY	TX	75433	HOPKINS	903-459-3383	903-382-2059	MR.	LEWIS	RUSSELL	PRESIDENT	7/15/2009	YES		9/1/09 faxed survey	9/15/09 survey returned via fax
MJC WATER SUPPLY CORP.	P.O. Box 95	PATTONVILLE	TX	75468	LAMAR	903-785-2035		MR.	BOBBY	HARRELL		7/15/2009	YES	903-249-1442 cell for Bobby. Dropped off on 9-2-09	8/28/09 Monda Fults 9/1/09 Bobby Harrell	
MYRTLE SPRINGS WTR SUPPLY CORP	P.O. BOX 265	WILLS POINT	TX	75169	VAN ZANDT	903-865-8402		MS.	ELIZABETH	DAY		7/16/2009	YES			
NEWSOME WATER SUPPLY CORP.	P.O. BOX 848	PITTSBURG	TX	75686	CAMP	903-856-5840		MR.	JAMES P.	DAVIS	PRESIDENT	7/14/2009	NO	ext.12 for manager Same # for Bi-County WSC	8/21/09 - wrong # 8/25/09 (NA) 9/1/09 (NA)	9/14/09 LM
NORTH HOPKINS WSC	P.O. BOX 407	SULPHUR SPRINGS	TX	75482	FRANKLIN	903-945-2619	903-945-2019	MR.	BILLY	EMERSON	MANAGER	7/15/2009	YES		8/25/09 (NA) 8/26/09 faxed survey & survey returned!	
NORTH HUNT WATER SUPPLY CORP	P.O. BOX 1170	COMMERCE	TX	75429	HUNT	903-456-0269		MR.	DON	TALLEY	PRESIDENT	7/16/2009	YES			
NORTHEAST TEXAS COMM. COLLEGE	P.O. BOX 1307	MOUNT PLEASANT	TX	75455-1307	TITUS	903-572-1911	903-572-6712	DR.	BRAD	JOHNSON	PRESIDENT	7/15/2009	YES			
OAK GROVE WATER SUPPLY CORP.	18742 US HIGHWAY 82 WEST	AVERY	TX	75554	BOWIE	903-684-3455		MR.	RICKY	WILSON		7/14/2009	YES			
PARK TERRACE MHP	117 PARKWAY DR.	TEXARKANA	TX	75501	BOWIE	903-832-8015		MR.	ROBERT	NEDOM		7/14/2009	YES			
PATTONVILLE WATER SUPPLY CORP.	P. O. BOX 1	PATTONVILLE	TX	75468	LAMAR	903-652-3668		MR.	ED	RING	PRESIDENT	7/15/2009	YES			
PETTY WATER SUPPLY CORP.	P.O. BOX 88	PETTY	TX	75470	LAMAR	903-378-6701		MR.	JIM	BOYKIN		7/15/2009	YES			
PICKTON WATER SUPPLY CORP.	P.O. BOX 9	COMO	TX	75431	HOPKINS	903-488-3835	903-488-2121	MS.	JULIE	PERRY		7/15/2009	YES	Returned via fax 9/3/09	8/26/09 faxed survey	
PLEASANT HILL WTR. SUP. CORP.	1668 CR 1178	SULPHUR SPRINGS	TX	75483	HOPKINS	903-485-2346		MR.	CLEATUS	JOHNSON	PRESIDENT	7/15/2009	YES			
POETRY WSC	P.O. BOX 392	TERRELL	TX	75160-0005	HUNT	972-563-7471		MR.	WESTLEY	KILLIAN	PRESIDENT	7/16/2009	YES			
PRUITT-SANDFLAT WTR SPLY CORP.	P.O. BOX 310	GRAND SALINE	TX	75140	VAN ZANDT	903-963-8859		MR.	G.L.	CARTER	PRESIDENT	7/16/2009	YES			

System Name	Address	City	State	Zip Code	County	Phone Number	Fax Number	Salutation	First Name	Last Name	Title	Date survey mailed	Response	COMMENTS	Follow Up Call #1	Follow Up Call #2
QUINLAN NORTH SUBDIVISION C/O AQUA UTILITIES INC DBA AQUA TEXAS INC	20341 HOLLYHILLS DRIVE	LA RUE	TX	75770	HUNT	888-231-2099	903-849-5079	MR.	GARY	DOUGLAS		7/16/2009	YES	8/27/09 Survey returned via fax	8/26/09 faxed survey	
QUINLAN SOUTH SUBDIVISION C/O AQUA UTILITIES INC DBA AQUA TEXAS INC	20341 HOLLYHILLS DRIVE	LA RUE	TX	75770	HUNT	888-231-2099	903-849-5079	MR.	GARY	DOUGLAS		7/16/2009	YES	Recevied via fax 8/27/09	8/26/09 faxed survey	
RED RIVER COUNTY WSC	1404 E. MAIN STREET	CLARKSVILLE	TX	75426	RED RIVER	903-427-2891		MR.	BILLY	WHITEMAN	PRESIDENT	7/16/2009	YES			
R-P-M WATER SUPPLY CORP.	200 VZ CR 4913	BEN WHEELER	TX	75754	VAN ZANDT	903-852-3115		MS.	CHARLOTTE	PARKS	PRESIDENT	7/16/2009	YES			
SHADY GROVE # 2 WSC	1701 ARBALA ROAD	SULPHUR SPRINGS	TX	75482	HOPKINS	903-885-7339		MR.	PAT	CHASE	PRESIDENT	7/15/2009	YES			
SHADY GROVE WATER SUPPLY CORP.	3516 FM 499	GREENVILLE	TX	75401-6037	HUNT	903-454-8733		MS.	MELANIE	SHOOK		7/16/2009	YES	Did not know how to fill out original survey	8/27/09 - filled out survey over the phone	
SHIRLEY WATER SUPPLY CORP.	6684 FM 1567 W	SULPHUR SPRINGS	TX	75482	HOPKINS	903-485-5811		MR.	BRAD	HOLLAND	PRESIDENT	7/15/2009	YES			
SOUTH RAINS WSC	P.O. BOX 95	EMORY	TX	75440	RAINS	903-473-5137		MS.	CATHY	STROUD	PRESIDENT	7/15/2009	YES			
SOUTH TAWAKONI WATER SUPPLY CORP	P.O. BOX 485	WILLS POINT	TX	75169	VAN ZANDT	903-873-2509		MS.	PEGGY	ROGERS	PRESIDENT	7/16/2009	YES			
TALL OAKS ESTATES W.S./TOE WSC	1361 VZ CR 2403	CANTON	TX	75103	VAN ZANDT	903-848-7204		MS.	KATHLEEN M.	BULFER	REGISTERED AGENT	7/16/2009	YES			
TEXAS A&M UNIVERSITY COMMERCE	P.O. BOX 3011	COMMERCE	TX	75429-3011	HUNT	903-886-5014	903-886-5010	MS.	RHONDA	FERGUSON		7/16/2009	YES	Survey returned by US mail.	8/27/09 Faxed survey	
TEXAS WATER SYSTEMS, INC./CALLENDER LAKE/MONARCH UTILITIES	9511 RANCH ROAD 620 N	AUSTIN	TX	78726-2908	VAN ZANDT	512-219-2272		MR.	DAVID L.	YOHE	REGULATORY MANAGER	7/16/2009	YES			
THUNDERBIRD BAY WATER SERVICES	P.O. BOX 795399	DALLAS	TX	75379	CAMP	214-702-9694	972-407-1530	MR.	CHARLES	SCHRAM III	PRESIDENT	7/14/2009	NO	Operator has no phone number listed	8/21 &25/09 (busy)	9/4 and 9/15/09 busy 9/15/09 tried to fax - no answer
TRI SUD	300 W 16TH STREET	MT PLEASANT	TX	75455	TITUS	903-572-3676		MR.	RODNEY	GLENN	PRESIDENT	7/15/2009	YES			
WEST DELTA WSC	P.O. BOX 567	KLONDIKE	TX	75448	DELTA	903-886-7117	903-886-2046	MR.	TIM	MARTIN	OPERATOR	10/9/09 FAXED	YES	Returned via fax 10-12-09		
WEST LEONARD WSC	P.O. BOX 179	LEONARD	TX	75452-0179	HUNT	903-587-2172		MR.	JOHNNY	RUSSELL	PRESIDENT	7/16/2009	YES			
WEST OAKS PHOENIX CORP	P.O. BOX 314	MAGNOLIA	TX	77353-0314	HUNT	832-934-2200	281-259-9601	MR.	LONZO J.	GALE	RECEIVER	7/16/2009	YES	Returned via fax 9/1/09.	8/27/09 LM 9/1/09 faxed survey	
WHISPHERING OAKS WATER COOP	P.O. BOX 113	QUINLAN	TX	75474-0002	HUNT	903-356-7745		MS.	CYNTHIA	YOUNG	PRESIDENT	7/16/2009	NO		8/27/09 LM 9/1/09 talked to secretary who said she would fax survey	
WOODLAND ESTATES	3601 SOUTH KINGS HIGHWAY	TEXARKANA	TX	75501	BOWIE	903-838-4044		MR.	VINCE	CLEPPER		7/14/2009	YES			
WOODLAND HARBOR/ALPHA UTILITY OF CAMP COUNTY	P.O. BOX 818	PITTSBURG	TX	75686	CAMP	903-725-5460		MR.	JOE M.	HACKLER	MANAGING MEMBER	7/14/2009	NO	Joe B. said he did not know the phone #, was not helpful	8/21/09 LM 8/25/09 LM 9/1/09 talked to Joe Bass he would not give me a number for Joe Hackler!	
											TOTAL RETURNED		121			

7/14/2009	26
7/15/2009	44
7/16/2009	62
10/12/2009	1
TOTAL	133
Surveys yet to return	12

Entity Name: Alba

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	130	Carrizo-Wilcox		Wood
2	60	Carrizo-Wilcox		Wood

B. Surface Water (Yes_____,No__X__)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No__X__)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No__X__)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__X__, No_____

Entity Name: Atlanta State Recreation

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes____, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	100	Carrizo-Wilcox		Cass
2	70	Carrizo-Wilcox		Cass

B. Surface Water (Yes____, No ✓)

Source(s)	Purchasing (Yes ✓, No____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes____, No ✓)

Source(s)	Amount ~~MG~~/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
Carrizo-Wilcox well	800,000	WESTERN CASS Water Supply	
		P.O Box 150 903-756-8784 Linden, TX 75563	

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No____

Tom Townshed called 8/17/09 Message box was full @ 4:23

903-799-4064

Entity Name: Atlanta

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Cass

B. Surface Water (Yes__X___,No_____)

Source(s)	Purchasing (Yes___X__, No_____), From
	Texarkana Water Utilities

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

August 17, 2009 4:26 pm
Spoke Pam @ City Hall

Entity Name: Avinger

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	96	Cypress		Cass
2	42	Cypress		

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	2.39 million/month Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
	12 million/yr.	Northeast Texas Water District	Month to Month

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Called 8/21/07 9:30 Hollie 903-668-4385

Entity Name: Big Oaks MHP

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	~~50~~ 28	Cypress		Harrison
~~2~~	~~31~~	~~Cypress~~		~~Harrison~~

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
	min 875,000 gal/month	West Harrison	2011 every 5yrs.

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Call 8/21/09 9:40 (903) 636-4343
Sharon

Entity Name: Big Sandy NO CHANGES

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	100	Carrizo-Wilcox		Upshur
2	160	Carrizo-Wilcox		Upshur
3	350	Carrizo-Wilcox		Upshur

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

called (903) 629-7891 on 8/17/09 @ 4:31 left message

Entity Name: Big Wood Springs Water

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	30	Carrizo-Wilcox		Wood
2	55	Carrizo-Wilcox		Wood

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From
Carrizo-Wilcox	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

called 8/17/09 @ 4:33 left message

Entity Name: Blocker-Crossroads WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	42	Wilcox		Harrison
2	14	Wilcox		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Bloomberg WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes✓, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	100	Wilcox		Cass
2	130	Wilcox		

B. Surface Water (Yes_____,No✓)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No✓)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes✓, No_____

Entity Name: BRIGHT STAR-SALEM ~~WSC~~ SUD

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No ____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	40	CARRIZO-WILCOX	SABINE	WOOD
2	370	"	"	WOOD
3	186	"	"	WOOD
4	60	"	"	WOOD
5	100	"	"	RAINS
6	35	"	"	"
7	85	"	"	"
8	35	"	"	"
9	110	"	"	WOOD
10	50	"	"	RAINS
11	85	"	"	"
12	40	"	"	"

B. Surface Water (Yes ✓, No ✓)

Source(s)	Purchasing (Yes ____, No ____), From
Lake Fork	@ Rights from SRA
Building new plant	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes ____, No ____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ____, No ____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ____, No ✓

8/25/09 answered Amy / 9:25 talked w/ Justin 903-769-2811

Entity Name: Brookhaven Retreat Water Supply

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____) 30 connections

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1		Wilcox		Wood

B. Surface Water (Yes__X___,No_____)

Source(s)	Purchasing (Yes_____, No_____), From
Carrizo-Wilcox	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_X__,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
	as needed	Fouke WSC	

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Brookshire's Camp Joy

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	35	Carrizo-Wilcox		Upshur
2	38	Carrizo-Wilcox		Upshur

B. Surface Water (Yes____,No____)

Source(s)	Purchasing (Yes____, No____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes____, No ✓)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes____,No____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes____, No ✓

Entity Name: Caddo Lake State Park

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	60	Carrizo-Wilcox		Harrison

B. Surface Water (Yes_____,No___✓___)

Source(s)	Purchasing (Yes_____, No___✓___), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____) NONE

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_X_

8/25/09 (512)-389-4800 903-566-0535 232

11:20 Mike referred to Tyler Region → Carl

will call back

Entity Name: Caddo Lake ~~State Park~~

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	~~60~~ 75			Harrison

B. Surface Water (Yes ,No)

Source(s)	Purchasing (Yes , No), From
	process of looking into purchasing water

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ,No)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes , No

called 8/17/09 @ 4:38 left message 903-845-2089

Entity Name: Clarkville City

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
	City of Gladewater

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Country Club Estates

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	35	Carrizo/Wilcox		Upshur

B. Surface Water (Yes_____, No X)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____, No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X, No_____

Called 903-755-2353
AquaTexas sold to ←

Entity Name: Crestwood WSC Aquasource

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	20	Carrizo-Wilcox		Marion
2	55	Carrizo-Wilcox		Marion
3	60	Carrizo-Wilcox		Marion
4	100	Carrizo-Wilcox		Marion

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From
Purchase water from	
aqua source.	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Alan
Called (903)-592-8509

Entity Name: Crystal Water Systems

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	1200	Carrizo-Wilcox		Smith
2	450-500	Carrizo-Wilcox		Smith
3	450-500	Carrizo-Wilcox		Smith
4	450-500	Carrizo-Wilcox		Smith
				Smith

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Called 8/17/09 2X 4:30 - 4:42 busy signal 903-938-4426

Entity Name:Cypress Valley WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	100	Wilcox		Harrison
2	50	Wilcox		Harrison
3	50	Wilcox		Harrison
4	150	Wilcox		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Daingerfield

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Morris

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
	Northeast Texas Municipal Water District

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_✓_, No_____

Entity Name: Domino

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No ✓)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Cass

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
	Texarkana Water Utilties

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No ✓)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No_____

Called 8/17/09 Verba Reese Former Sec. for city 903-846-2900

Entity Name:Douglassville

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	40	Cypress		Cass

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From
Cypress	

NO Changes

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name:East Marion County WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	150	Cypress		Marion
2	150	Cypress		Marion
3	150	Wilcox		Marion
4	80	Wilcox		Marion

B. Surface Water (Yes , No X)

Source(s)	Purchasing (Yes , No), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes , No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No

Entity Name: East Mountain

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	325	Carrizo-Wilcox		Upshur
2	150	Carrizo-Wilcox		Upshur
3	110	Carrizo-Wilcox		Upshur
4	100	Carrizo-Wilcox		Upshur

B. Surface Water (Yes_____,No_✓___)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_✓___)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_✓___)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_✓___

Entity Name: Elderville

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
3	270	Wilcox		Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
	City of Longview

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
3	250	Wilcox		Rusk

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Elysian Fields WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	150	Wilcox		Harrison
2	75	Wilcox		Harrison

No Change

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_✓_, No_____

owned by Aqua Texas
Call 512-990-4400

Entity Name: Forest Lake Estates

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	75	Carrizo-Wilcox		Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Fouke WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	225	Carrizo-Wilcox		Wood
2	225	Carrizo-Wilcox		Wood
3	300	Carrizo-Wilcox		Wood
4	120	Carrizo-Wilcox		Wood
5	200	Carrizo-Wilcox		Wood
6	300	Carrizo-Wilcox		Wood
7	700	Carrizo Wilcox		Wood

B. Surface Water (Yes_____,No ✓)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No ✓)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No_____

Entity Name: Friendship

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
2	35			Upshur

B. Surface Water (Yes_____,No__X____)

Source(s)	Purchasing (Yes_____, No_____), From
Contract	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_X_)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_X_)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_X_, No_____

called 8/17/09 @ 4:35 left message

Entity Name: Gill WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	160	Wilcox		Harrison
2	150	Wilcox		Harrison
3	120	Carrizo		Harrison
4	150	Carrizo		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Gilmer

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
3	230	Carrizo-Wilcox		Upshur
4	250	Carrizo-Wilcox		Upshur
5	560	Carrizo-Wilcox		Upshur
6	590	Carrizo-Wilcox		Upshur
7	270	Carrizo-Wilcox		Upshur
8	150	Carrizo-Wilcox		Upshur

B. Surface Water (Yes X ,No)

Source(s)	Purchasing (Yes , No), From
Lake Gilmer	— NO DIVERSION —

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ,No)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X, No Year 2005

JLBSL 7-17-09

Allen. Justin Rutkowski

Entity Name: Glenwood WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	75	Wilcox		Upshur
2	75	Wilcox		Upshur
3	110	Wilcox		Upshur
4	65	Wilcox		Upshur
5	135	Wilcox		Upshur
6	260	Wilcox		Upshur

B. Surface Water (Yes ,No)

Source(s)	Purchasing (Yes , No), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ,No)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes , No

Questions? Bobby Jenkins
903.738-9292

Entity Name: Golden WSC #1 & #2

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	100	Carrizo-Wilcox		Wood
2	150	Carrizo-Wilcox		Wood
3	150	Carrizo-Wilcox		Wood
4	45	Carrizo-Wilcox		Van Zandt
5	208	Carrizo-Wilcox		Wood
6	115	Carrizo-Wilcox		Van Zandt

B. Surface Water (Yes___X__,No_____)

Source(s)	Purchasing (Yes_____, No_____), From
Carrizo-Wilcox	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
7	200	Carrizo-Wilcox		Wood
8	100	Carrizo-Wilcox		Wood

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No_____

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____			

Call (903) 643-3031

Water Shelby 8/26/09 @ 3:48 pm

Entity Name: Gregg County Airport

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From
# Longview City Water	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
		City of Longview	

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Gum Springs WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	250	Carrizo-Wilcox		Harrison
2	130	Carrizo-Wilcox		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
	Cherokee Water Company
	City of Longview
	Sabine River Athority

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	178GPM	CARRIZO-WILCOX		HARRISON
2	160GPM	CARRIZO-WILCOX		HARRISON
3	IN THE WORKS	CARRIZO-WILCOX		HARRISON

B. Surface Water (Yes_____,No_X__)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_X__

Entity Name: Hallsville

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	27 22	CARRIZO		HARRISON
2	106 77	11		11
3	63 58	11		11
4	68 58	11		11

B. Surface Water (Yes X ,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
	Longview

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X , No_____

Called 8/18/09 @ 1:25pm 903-777-3740 Pat McGill

Entity Name: Harleton WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

no longer working

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	175	Wilcox		Harrison
2	60	Carrizo-Wilcox		Harrison
3	120	Carrizo-Wilcox		Harrison
4	150	Wilcox		Harrison
5	60	Wilcox		Harrison

B. Surface Water (Yes_____,No______)

Source(s)	Purchasing (Yes X, No_____), From
	North East Texas Water District
	Minimum 300,000 Gallon/month
	max - 150 gpm

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No______)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Harmony

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	30	Carrizo-Wilcox		Upshur

B. Surface Water (Yes_____,No_X_)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_X_)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_X_)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_X_, No_____

Entity Name: Hawkins

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes ✓ X , No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
~~9~~	~~800~~	~~Carrizo-Wilcox~~		~~Wood~~
~~6~~	~~300~~	~~Carrizo-Wilcox~~		~~Wood~~
8	600	Carrizo-Wilcox		Wood
10	800	Carrizo-Wilcox		Wood
7	125	Carrizo-Wilcox		Wood

B. Surface Water (Yes X ,No ✓)

Source(s)	Purchasing (Yes , No), From
Carrizo-Wilcox	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No ✓)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ,No ✓)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓ , No

Called 903-569-9417-901 from TCEQ website & # is no longer in service.

Entity Name: Heim Water System

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Wood

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Holly Springs

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Gregg

B. Surface Water (Yes___

Source(s)	

Nothing has Changed

2. Changes to Water **r Plan**

A. Ground Water (Yes__

Well No.	Production C	County

B. Surface Water (Yes___

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Hughes Springs

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Cass

B. Surface Water (Yes_____,No X)

Source(s)	Purchasing (Yes X , No_____), From
Contract	Northeast Texas Municipal Water District

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____ (Not sure)

Entity Name: Jefferson

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_X_)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Marion

B. Surface Water (Yes__X__,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
Big Cypress Creek	Northeast Texas Municipal Water District

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_X_)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_X_

Entity Name: Jones

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	90	Carrizo-Wilcox		Wood
2	250	Carrizo-Wilcox		Wood
3	110	Carrizo-Wilcox		Wood
4	250	Carrizo-Wilcox		Wood
5	290	Carrizo-Wilcox		Wood
6	250	Carrizo-Wilcox		Wood

B. Surface Water (Yes X, No X)

Source(s)	Purchasing (Yes , No), From
Carrizo-Wilcox	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ,No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X, No

Manager → Mr. William Powers - 903-935 3742 Called 8/18/09
(1903-920-5947 no answer

Entity Name: Karnack WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	76	Carrizo-Wilcox		Harrison
2	150	Carrizo-Wilcox		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Kellyville-Berea WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	150	Carrizo-Wilcox		Marion
2	15	Carrizo-Wilcox		Marion

B. Surface Water (Yes_____,No__✓__)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No__✓__)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No__✓__)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__✓__, No_____

Entity Name: Kilgore

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	320	Carrizo-Wilcox		Gregg
2	320	Carrizo-Wilcox		Gregg
4	300	Carrizo-Wilcox		Gregg
5	~~310~~ 340	Carrizo-Wilcox		Gregg
8	360 450	Carrizo-Wilcox		Gregg
3	700	"		"
7	380	"		"
9	~~410~~	"		"

B. Surface Water (Yes K, No)

Source(s)	Purchasing (Yes ✓, No), From
SABINE RIVER	SABINE RIVER AUTHORITY
NOTE: THE ADDITIONAL WELLS LISTED AND THE SURFACE WATER SOURCE EXISTED PRIOR TO 2006.	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ,No)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No

Entity Name: Leigh WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	75	Wilcox		Harrison
2	85	Wilcox		Harrison
3	130	Wilcox		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes___X__, No_____), From
	Marshall

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes__✓__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
4	120	WILCOX		HARRISON

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__✓__, No_____

Entity Name: Liberty City

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	100	Carrizo-Wilcox		Gregg
2	120	Carrizo-Wilcox		Gregg
3	80	Carrizo-Wilcox		Gregg
4	420	Carrizo-Wilcox		~~Gregg~~ Smith
5	140	Carrizo-Wilcox		~~Gregg~~ Smith
6	50	Carrizo Wilcox		Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes X, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
7	100	Carrizo - Wilcox	Sabine	Smith
8	50	Carrizo Wilcox	Sabine	Smith
9	110	Carrizo Wilcox	Sabine	Smith
10	350	Carrizo Wilcox	Sabine	Smith

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No_____

Called 8/18/09 2:15pm

903-983-1402 Tawana

Entity Name: Liberty-Danville

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X__, No_____), From
	Kilgore
20,234,830/year	86,000
Kilgore	Tawana Tanner

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Lindale Rural WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	280			Smith
2	265			Smith
3	220			Smith
4	1000			Smith
5	280			Smith

B. Surface Water (Yes_____,No__X__)

Source(s)	Purchasing (Yes__X___, No_____), From
	City of Lindale

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No__X__)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No__X__)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__Y___, No_____

Entity Name: City of Lindale

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
4	550	Carrizo-Wilcox		Smith
5	450	Carrizo-Wilcox		Smith
6	500	Carrizo-Wilcox		Smith
7	800	Carrizo-Wilcox		Smith

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_X_, No_____

Entity Name:Linden

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	100 77	Wilcox		Cass
2	120 90			Cass
3	130 120			Cass
4	140 145			Cass

B. Surface Water (Yes_____,No X)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes X , No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
6	500	Wilcox		Cass

B. Surface Water (Yes_____,No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X , No_____

Entity Name: Lone Star

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Morris

B. Surface Water (Yes__X__,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
Lake O' The Pines	Northeast Texas Municipal Water District

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ✓,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
Lake of Pines	15.75	Northeast Texas Municipal Water District	2098

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No ✓

Entity Name: Marietta

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	135	Wilcox		Cass

B. Surface Water (Yes_____,No__x__)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No__x__)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No__x__)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__x___, No_____

Entity Name: Mims WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes ____, No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Marion

B. Surface Water (Yes X ,No ____)

Source(s)	Purchasing (Yes X , No ____), From
Lake O' The Pines	Northeast Texas Municipal Water District

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes ____, No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes X ,No ____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
Lake O'The Pines	31.500	Northeast Texas Municipal Water District	2025

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes____, No____

Called 8/21/09 903-897-2271

City Hall Secretary

Entity Name: Naples NO Changes

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
2	90	Carrizo-Wilcox		Morris
3	32	Carrizo-Wilcox		Morris
4	75	Carrizo-Wilcox		Morris
5	112	Carrizo-Wilcox		Morris
6	105	Carrizo-Wilcox		Morris

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: New Hope ~~WSC~~ SUD

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	140	Carrizo-Wilcox		Wood
2	235	Carrizo-Wilcox		Wood
3	335	Carrizo-Wilcox		Wood

B. Surface Water (Yes___X__,No___X___)

Source(s)	Purchasing (Yes_____, No_____), From
~~Carrizo~~	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No___✓___)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No___X___

Entity Name: North Harrison WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	130	Carrizo-Wilcox		Harrison
2	115	Carrizo-Wilcox		Harrison
3	100	Carrizo-Wilcox		Harrison

B. Surface Water (Yes_____,No__X__)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No__X__)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No__X__)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No__X__

Entity Name: Omaha

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	0			Morris
2	90 ~~90~~	Carrizo-Wilcox		Morris
3	~~32~~ 90	Carrizo-Wilcox		Morris
4	~~75~~ 40	Carrizo-Wilcox		Morris
5	~~112~~ 75	Carrizo-Wilcox		Morris
6	~~105~~ 85	Carrizo-Wilcox		Morris

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Ore City

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	0			Upshur
2	135	Carrizo-Wilcox		Upshur
3	135	Carrizo-Wilcox		Upshur
4	150	Carrizo-Wilcox		Upshur

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ✓ ,No_____) We are now connected, but not taking yet.

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
Lake O' the Pines - Northeast Texas Mun. Water Dist.	-0-	NETMWD	na

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓ , No_____

Entity Name: Pritchett WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	~~550~~ 60	Carrizo-Wilcox	Upshur	
2	50	Carrizo-Wilcox	Upshur	
4	70	Carrizo-Wilcox	Upshur	
5	58	Carrizo-Wilcox	Upshur	
6	66	Carrizo-Wilcox	Upshur	
8	73	Carrizo-Wilcox	Upshur	
9	100	Carrizo-Wilcox	Upshur	
10	155	Carrizo-Wilcox	Upshur	
12	100	Carrizo-Wilcox	Upshur	
13	35	Carrizo-Wilcox	Upshur	
14	50	Carrizo-Wilcox	Upshur	
15	84	Carrizo-Wilcox	Upshur	
17	42	Carrizo-Wilcox	Upshur	
18	85	Carrizo-Wilcox	Upshur	
~~49~~	~~52~~	~~Carrizo-Wilcox~~	~~Upshur~~	abandoned
20	400	Carrizo-Wilcox	Upshur	
21	107	Carrizo-Wilcox	Upshur	

B. Surface Water (Yes_____,No ✓)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes ✓ , No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
22	350	Carrizo-Wilcox	upshur	

B. Surface Water (Yes_____,No ✓)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No_____

Entity Name: Quitman

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes____, No____) Wells are for emergency back up only

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
#1	200 gpm	Carrizo-Wilcox		Wood
#3	300 gpm	Carrizo-Wilcox		Wood
#4	300 gpm	Carrizo-Wilcox		Wood

B. Surface Water (Yes X, No____)

Source(s)	Purchasing (Yes ✓, No____), From
Lake Fork	We buy our raw water from the
Sabine River Athority	Sabine River Authority

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes____, No____) No changes

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ✓, No____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date
Lake Fork	365 MG/Year	Sabine River Authority	12-31-2013

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No____

Our average for the last 3 years has been 119.8 MG/Year

Entity Name: Ramey Water Supply

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	60	Carrizo		Wood
2	90	Carrizo		Wood
3	120	Wilcox		Wood
4	240	Wilcox		Wood
5	110	Carrizo		Wood
6	130	Carrizo		Wood
7	300	Wilcox		Wood

B. Surface Water (Yes__X___,No__X___)

Source(s)	Purchasing (Yes_____, No__X__), From
Carrizo-Wilcox	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes__X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
8	130 GPM.	Carrizo - NOT in Service		Wood.
9	240 GPM.	W. Cox		Wood

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__X___, No_____

Entity Name: Rosewood System

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	~~30~~ 40	Carrizo / Wilcox		Upshur

B. Surface Water (Yes , No X)

Source(s)	Purchasing (Yes X, No), From
	Texas Water Systems 1

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes , No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X, No

Entity Name: Shadowood Water Co.

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes___X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	70	Wilcox		Harrison
2	30	Wilcox		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_✓_)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_✓_, No_____

Entity Name: Shady Shores Water System

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	80 GPM	Carrizo-Wilcox	N/A	Marion

B. Surface Water (Yes X, No X)

Source(s)	Purchasing (Yes , No), From
Cypress	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes , No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes ,No)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes ✓, No

Entity Name: Sharon WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X__, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	175	Carrizo-Wilcox		Wood
2	150	Carrizo-Wilcox		Wood
3	175	Carrizo-Wilcox		Wood
4	160	Carrizo-Wilcox		Wood
5	100	Carrizo-Wilcox		Wood
6	250	Carrizo-Wilcox		Wood
7	210	Carrizo-Wilcox		Wood

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X___, No_____), From
	City of Winnsboro

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__X__, No_____

Entity Name: Star Mountain

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	70 GPM	Wilcox		Smith
2	120 GPM	Wilcox		Smith
3	160 GPM	Wilcox		Smith

B. Surface Water (Yes____, No ✓)

Source(s)	Purchasing (Yes____, No____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No____) No changes since 2006

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes____, No ✓)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes____, No____

Entity Name: Sun Acres MHP

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Gregg

B. Surface Water (Yes_____, No X)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No X)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____, No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No X

Entity Name: Talley WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes__X___, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	170	Cypress		Harrison
2	0	Cypress		Harrison
3	50	Cypress		Harrison

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____) No Change

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Warren City No Changes!

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes___X__, No_____), From
	City of Glade Water

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__✓__, No_____

Entity Name: Waskom Rural WSC

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes Y, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	110	Cypress		Harrison
2	130	Cypress		Harrison

B. Surface Water (Yes X, No)

Source(s)	Purchasing (Yes , No), From
Cypress	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes Y, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	80	Cypress		Harrison
2	130	Cypress		Harrison

B. Surface Water (Yes , No Y)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes Y, No

Entity Name: Waskom

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	30	Wilcox		Harrison
2	160	Wilcox		Harrison
4	39	Wilcox		Harrison
5	63	Wilcox		Harrison
6	145	Wilcox		Harrison
7	62	Wilcox		Harrison
8	120	Wilcox		Harrison
9	116	Wilcox		Harrison

B. Surface Water (Yes , No X)

Source(s)	Purchasing (Yes , No X), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes X, No)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
5	73	Wilcox		Harrison
6	44	Wilcox		Harrison
8	83	Wilcox		Harrison
9	95	Wilcox		Harrison

B. Surface Water (Yes , No X)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X, No_____

Entity Name: West Gregg

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes X X, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1	131	Carrizo-Wilcox		~~Gregg~~ Smith
2	135	Carrizo-Wilcox		~~Gregg~~ Smith
3	141	Carrizo-Wilcox		Gregg
4	96	Carrizo-Wilcox		Gregg
5	137	Carrizo-Wilcox		Gregg
6	80	Carrizo-Wilcox		Smith
7	105	Carrizo-Wilcox		Smith

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes X, No____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
~~6~~	~~80~~	~~Carrizo-Wilcox~~		~~Smith~~
~~7~~	~~105~~	~~Carrizo-Wilcox~~		~~Smith~~

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes X, No____

Entity Name: White Oak

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Gregg

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes__X__, No_____), From
	City of Longview

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_✓__, No_____

Entity Name: Winnsboro

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No ✓)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
				Wood

B. Surface Water (Yes__X__,No_____)

Source(s)	Purchasing (Yes ✓, No_____), From
Cypress Springs	

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes_____, No_____

Entity Name: Yantis

1. Existing Water Supply Sources - Based on the January 2006 Regional Water Plan

A. Ground Water (Yes_____, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
1		Carrizo-Wilcox		Wood
2		Carrizo-Wilcox		Wood
3	22	Carrizo-Wilcox		Wood
4	100	Carrizo-Wilcox		Wood

B. Surface Water (Yes_____,No_____)

Source(s)	Purchasing (Yes_____, No_____), From

2. Changes to Water Supply Sources - After the January 2006 Regional Water Plan

A. Ground Water (Yes ✓, No_____)

Well No.	Production Capacity GPM	Source Aquifer	River Basin	County
3	0	Carrizo-Wilcox		WOOD
6	110	Carrizo-Wilcox		WOOD

B. Surface Water (Yes_____,No_____)

Source(s)	Amount MG/Year	If Purchasing, From Whom	If Purchasing, Contract Expiration Date

3. Have you have filled out the TWDB Water Audit Worksheet (Texas Water Development Board Report 367 Appendix 1.1)? Yes__✓__, No_____

Appendix Chapter 4

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

Table C4.1 - Region D - North East Texas
STRATEGY RECOMMENDATION SUMMARY to 2060

County	WUG/ CO	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) By Year						Strategy	Supply Source				Reliability of Source
			2010	2020	2030	2040	2050	2060		Ground Water	Surface Water	County	Basin	
Bowie	WUG	Central Bowie WSC	-257 257	-303 303	-336 336	-369 369	-362 362	-353 353	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	WUG	Hooks, City of	-81 81	-108 108	-130 130	-151 151	-151 151	-151 151	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	WUG	Macedonia-Eylau MUD	-217 217	-251 251	-270 270	-294 294	-279 279	-270 270	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	WUG	New Boston, City of	-45 45	-101 101	-139 139	-175 175	-168 168	-168 168	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	WUG	Redwater, City of		-4 4	-7 7	-14 14	-14 14	-14 14	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	WUG	Wake Village	-356 356	-414 414	-472 472	-529 529	-587 587	-645 645	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	CO	Burns-Redbank WSC	-80 80	-89 89	-94 94	-99 99	-95 95	-92 92	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	CO	Oak Grove WSC	-44 44	-48 48	-50 50	-52 52	-50 50	-49 49	Contract		Lake Wright Patman	Bowie	Sulphur	High
Bowie	CO	Red River Redevelopment Authority				-21 21	-567 567	-1114 1114	Contract		Caney Creek Lake / Elliott Creek Lake	Bowie	Sulphur	High
Bowie	CO	Redwater, City of	-146 146	-155 155	-160 160	-164 164	-160 160	-157 157	Contract		Lake Wright Patman	Bowie	Sulphur	High
Camp	WUG	Bi-County WSC		-128 128	-299 299	-434 434	-539 539	-653 653	Contract		NETMWD, Lake Bob Sandlin	Titus	Cypress	High
Camp	CO	Woodland Harbor	-61 65	-60 65	-60 65	-60 65	-60 65	-60 65	2 wells	Carrizo-Wilcox		Camp	Cypress	High
Cass	WUG	*None*												
Cass	CO	*None*												
Delta	WUG	*None*												
Delta	CO	Ben Franklin WSC			-33 33	-36 36	-36 36	-36 36	Contract		Big Creek Lake	Delta	Sulphur	High
Franklin	WUG	*None*												
Franklin	CO	*None*												
Gregg	WUG	Clarksville City, City of	-120 162	-134 162	-148 162	-164 242	-186 242	-217 242	3 wells	Carrizo-Wilcox		Gregg	Sabine	High
Gregg	WUG	Liberty City WSC				-53 94	-177 188	-353 376	4 wells	Carrizo-Wilcox		Gregg	Sabine	High

Table C4.1 - Region D - North East Texas
STRATEGY RECOMMENDATION SUMMARY to 2060

County	WUG/ CO	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) By Year						Strategy	Supply Source				Reliability of Source
			2010	2020	2030	2040	2050	2060		Ground Water	Surface Water	County	Basin	
Gregg	WUG	West Gregg SUD			-56 70	-119 140	-208 210	-333 350	5 wells	Carrizo-Wilcox		Gregg	Sabine	High
Gregg	CO	Liberty-Danville FWSD No. 2				-1 1	-17 17	-40 40	Contract		Sabine Run of the River	Gregg	Sabine	High
Gregg	CO	Starrville-Friendship WSC				-19 108	-54 108	-101 108	1 well	Carrizo-Wilcox		Smith	Sabine	High
Harrison	WUG	Waskom, City of	-55 92	-101 138	-134 138	-159 185	-188 231	-231 231	4 wells	Carrizo-Wilcox		Harrison	Cypress	High
Harrison	WUG	Steam Electric				-3122 3122	-8107 8107	-14184 14184	Contract		Lake O' The Pines	Marion	Cypress	High
Harrison	CO	Blocker-Crossroads WSC	-78 86	-91 86	-100 129	-107 129	-116 129	-128 129	3 wells	Carrizo-Wilcox		Harrison	Sabine	High
Harrison	CO	Caddo Lake WSC	-10 43	-6 43	-19 43	-27 43	-37 43	-52 86	2 wells	Carrizo-Wilcox		Harrison	Cypress	High
Harrison	CO	Waskom Rural WSC #1 & 2						-5 43	1 well	Carrizo-Wilcox		Harrison	Cypress	High
Harrison	CO	Leigh WSC						-1 43	1 well	Carrizo-Wilcox		Harrison	Cypress	High
Harrison	CO	Scottsville, City of						-7 65	1 well	Carrizo-Wilcox		Harrison	Cypress	High
Harrison	CO	Talley WSC	-59 59	-81 118	-97 118	-109 118	-122 177	-142 177	3 wells	Carrizo-Wilcox		Harrison	Sabine	High
Hopkins	WUG	*None*												
Hopkins	CO	Miller Grove WSC			-24 35	-30 35	-17 35	-6 35	1 well	Nacatoch		Hopkins	Sulphur	High
Hunt	WUG	Able Springs WSC					-47 47	-143 143	Contract		SRA, Toledo Bend Transfer	-	-	High
Hunt	WUG	Campbell WSC	-9 108	-46 108	-101 108	-201 108 93	-424 108 316	-773 108 665	2 wells / Contract	Nacatoch	City of Commerce, Lake Tawakoni	Hunt	Sabine	High High
Hunt	WUG	Cash SUD	 537	 821	 961	 1059	-798 1126	-4305 3865 1184	Contract Contract		SRA, Toledo Bend Transfer NTMWD, Future Allocation	- -	- -	High
Hunt	WUG	Celeste, City of						-63 63	Contract		City of Greenville, Lake Tawakoni	Hunt	Sabine	High
Hunt	WUG	Combined Consumers WSC					-832 832	-2617 2617	Contract		SRA, Toledo Bend Transfer	-	-	High
Hunt	WUG	Hickory Creek SUD				-198 269	-670 807	-1418 1613	6 Wells	Woodbine		Hunt	-	High
Hunt	WUG	North Hunt WSC	-164 164	-247 247	-366 366	-560 560	-988 988	-1659 1659	Contract		City of Commerce, Lake Tawakoni	Hunt	Sabine	High
Hunt	WUG	Steam Electric	-8639 8639	-12366 12366	-14457 14457	-17006 17006	-20114 20114	-23902 23902	Contract		SRA, Toledo Bend Transfer	-	-	High

Table C4.1 - Region D - North East Texas
STRATEGY RECOMMENDATION SUMMARY to 2060

County	WUG/ CO	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) By Year						Strategy	Supply Source				Reliability of Source
			2010	2020	2030	2040	2050	2060		Ground Water	Surface Water	County	Basin	
Hunt	WUG	Wolfe City			-20 20	-34 34	-66 66	-114 114	Contract		City of Commerce, Lake Tawakoni	Hunt	Sabine	High
Hunt	CO	Jacobia WSC					-84 84	-328 328	Contract		City of Greenville, Lake Tawakoni	Hunt	Sabine	High
Hunt	CO	Little Creek Acres	-20 20	-27 27	-37 37	-54 54	-93 93	-153 153	Contract		Cash WSC, Lake Tawakoni	Hunt	Sabine	High
Hunt	CO	Maloy WSC	-26 26	-39 39	-57 57	-84 84	-154 154	-263 263	Contract		City of Commerce, Lake Tawakoni	Hunt	Sabine	High
Hunt	CO	Poetry WSC				-1 1	-14 14	-46 46	Contract		City of Terrell, Lake Tawakoni	Hunt	Sabine	High
Hunt	CO	Shady Grove WSC						-280 280	Contract		City of Greenville, Lake Tawakoni	Hunt	Sabine	High
Hunt	CO	West Leonard WSC			-1 81	-5 81	-12 81	-24 81	1 well	Woodbine		Fannin	Trinity	High
Lamar	WUG	Steam Electric			-980 980	-2733 2733	-4870 4870	-7474 7474	Contract		City of Paris, Pat Mayse Lake	Lamar	Red River	High
Lamar	CO	Petty WSC	-1 1	-2 2	-20 20	-21 21	-20 20	-20 20	Contract		LCWSD, Pat Mayse Lake	Lamar	Red River	High
Marion	WUG	*None*												
Marion	CO	*None*												
Morris	WUG	*None*												
Morris	CO	*None*												
Rains	WUG	*None*												
Rains	CO	South Rains WSC	-160 160	-239 239	-284 284	-295 295	-287 287	-277 277	Contract		City of Emory, Lake Tawakoni	Hunt	Sabine	High
Red River	WUG	*None*												
Red River	CO	*None*												
Smith	WUG	Crystal Systems Inc.				-45 269	-209 269	-425 538	2 wells	Carrizo-Wilcox		Smith	Sabine	High
Smith	WUG	Lindale Rural WSC					-77 215	-189 215	1 well	Carrizo-Wilcox		Smith	Sabine	High
Smith	WUG	Lindale, City of					-101 376	-374 376	1 well	Carrizo-Wilcox		Smith	Sabine	High
Smith	WUG	Winona, City of						-5 5	Contract	Carrizo-Wilcox		Smith	Sabine	High

Table C4.1 - Region D - North East Texas
STRATEGY RECOMMENDATION SUMMARY to 2060

County	WUG/ CO	Entity	Projected Deficit (-) / Recommendation (ac-ft/yr) By Year						Strategy	Supply Source				Reliability of Source
			2010	2020	2030	2040	2050	2060		Ground Water	Surface Water	County	Basin	
Smith	CO	Star Mountain WSC				-1 108	-36 108	-83 108	1 well	Carrizo-Wilcox		Smith	Sabine	High
Titus	WUG	Steam Electric				-4535 4,535	-17,738 17,738	-31,909 31,909	Contract		NETMWD, Lake O' the Pines	Cass	Cypress	High
Titus	CO	*None*												
Upshur	WUG	*None*												
Van Zandt	WUG	Canton, City of			-29 97	-57 97	-104 194	-161 194	4 wells	Carrizo-Wilcox		Van Zandt	Sabine	High
Van Zandt	WUG	Grand Saline, City of		-39 161	-73 161	-107 161	-137 161	-185 323	2 wells	Carrizo-Wilcox		Van Zandt	Sabine	High
Van Zandt	WUG	R-P-M WSC						-10 65	2 wells	Carrizo-Wilcox		Van Zandt	Neches	High
Van Zandt	WUG	City of Van					-25 134	-83 134	1 well	Carrizo-Wilcox		Van Zandt	Neches	High
Van Zandt	CO	Corinth WSC					-6 27	-23 27	1 well	Carrizo-Wilcox		Van Zandt	Sabine	High
Van Zandt	CO	Crooked Creek WSC		-8 59	-21 59	-30 59	-42 59	-56 59	1 well	Carrizo-Wilcox		Van Zandt	Sabine	High
Van Zandt	CO	Edom WSC		-16 43	-34 43	-48 86	-66 86	-86 86	2 wells	Carrizo-Wilcox		Van Zandt	Sabine	High
Van Zandt	CO	Fruitvale WSC		-64 86	-119 129	-159 172	-211 215	-269 301	7 wells	Carrizo-Wilcox		Van Zandt	Sabine	High
Van Zandt	CO	Little Hope-Moore WSC	-13 38	-48 75	-78 113	-101 113	-129 151	-161 188	5 wells	Carrizo-Wilcox		Van Zandt	Sabine / Neches	High
Wood	WUG	Mineola, City of	-203 403	-318 403	-374 403	-367 403	-360 403	-360 403	1 well	Carrizo-Wilcox		Wood	Sabine	High
Wood	CO	*None*												

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

BOWIE COUNTY

WUGs:

Central Bowie WSC
City of Hooks
Mecedonia-Eylau MUD #1
City of New Boston
Red River Redevelopment Authority
City of Redwater
Wake Village

County Other:

Burns Red Bank WSC
Oak Grove WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CENTRAL BOWIE WATER SUPPLY CORPORATION IN BOWIE COUNTY

Description of Water User Group:

Central Bowie WSC provides water service in Bowie County. The WUG population is projected to be 5,425 in 2010 and 6,169 in the year 2060. The WSC has a contract for water supply with the City of Texarkana for 442 ac-ft/yr. The WSC is projected to have a deficit of 257 ac-ft in 2010 and increasing to a deficit of 353 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	5425	5779	6040	6300	6235	6169
Projected Water Demand	699	745	778	811	804	795
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	442	442	442	442	442	442
Projected Supply Surplus (+) / Deficit (-)	**-257**	**-303**	**-336**	**-369**	**-362**	**-353**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Central Bowie WSC's water supply shortages as summarized 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. 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.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**369**	**$0**	**$159,146**	**$482**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	257	303	336	369	362	353

Surface water purchase from City of Texarkana is the recommended strategy to meet Central Bowie WSC's needs.

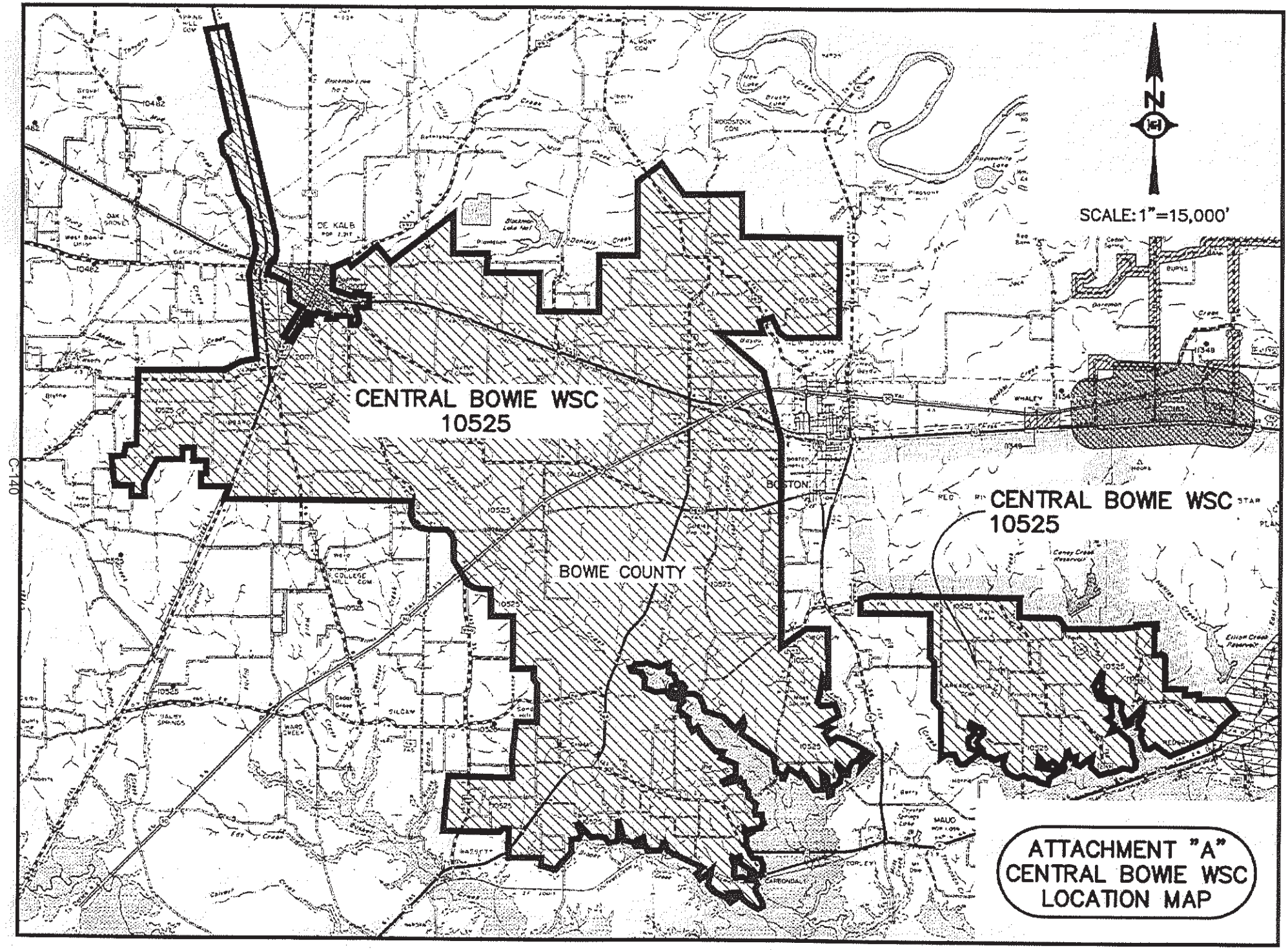

N
SCALE: 1"=15,000'
CENTRAL BOWIE WSC
10525
BOWIE COUNTY
CENTRAL BOWIE WSC
10525
ATTACHMENT "A"
CENTRAL BOWIE WSC
LOCATION MAP

Table C4.2 - Surface Water Worksheet
Central Bowie WSC
Bowie County

Water Purchase Contract With City of Texarkana:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
329,422	**369.0**	$ 1.48

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	257	303	336	369	362	353	330
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 123,940.69	$ 146,124.62	$ 162,039.19	$ 177,953.75	$ 174,577.93	$ 170,237.60	$ 159,145.63
							Average
TOTAL ANNUALIZED COST	**$ 123,940.69**	**$ 146,124.62**	**$ 162,039.19**	**$ 177,953.75**	**$ 174,577.93**	**$ 170,237.60**	**$ 159,145.63**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr) **$ 482.26**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF HOOKS IN BOWIE COUNTY

Description of Water User Group:

City of Hooks provides water service in Bowie County. The WUG population is projected to be 3,228 in 2010 and 3,775 in the year 2060. The city has a contract for water supply with the City of Texarkana for 463 ac-ft/yr. Hooks is projected to have a deficit of 81 ac-ft in 2010 and increasing to a deficit of 151 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	3228	3442	3609	3775	3775	3775
Projected Water Demand	416	443	465	486	486	486
Water Demand from other entities	128	128	128	128	128	128
Current Water Supply	463	463	463	463	463	463
Projected Supply Surplus (+) / Deficit (-)	**-81**	**-108**	**-130**	**-151**	**-151**	**-151**

Evaluation of Potentially Feasible Water Management Strategies:

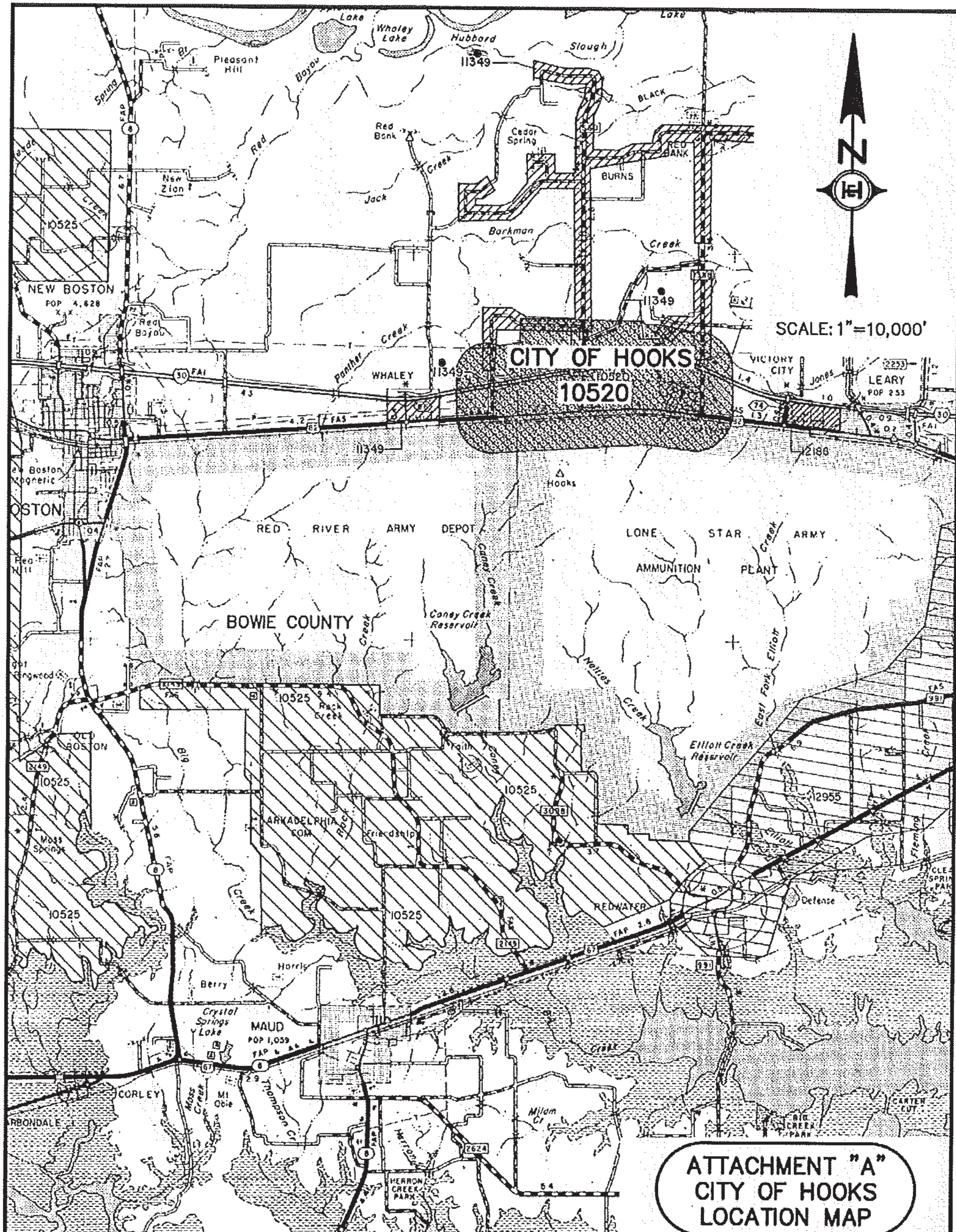
There were four alternative strategies considered to meet City of Hooks's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option 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.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**151**	**$0**	**$27,671**	**$215**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	81	108	130	151	151	151

Surface water purchase from City of Texarkana is the recommended strategy to meet City of Hooks's needs.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CITY OF HOOKS
10520
NEW BOSTON
POP 4,628
RED RIVER ARMY DEPOT
LONE STAR ARMY AMMUNITION PLANT
BOWIE COUNTY
MAUD
POP 1,059
ARKADELPHIA COM
REDWATER
LEARY
POP 253
VICTORY CITY
WHALEY
BURNS
RED BANK
CORLEY
Berry
Hooks
10525
11349
12955
12186
ATTACHMENT "A"
CITY OF HOOKS
LOCATION MAP

Table C4.3 - Surface Water Worksheet
City of Hooks
Bowie County

Water Purchase Contract With City of Texarkana:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
134,804	**151.0**	$ 0.66

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	81	108	130	151	151	151	129
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 17,419.99	$ 23,226.66	$ 27,958.02	$ 32,474.31	$ 32,474.31	$ 32,474.31	$ 27,671.27
							Average
TOTAL ANNUALIZED COST	**$ 17,419.99**	**$ 23,226.66**	**$ 27,958.02**	**$ 32,474.31**	**$ 32,474.31**	**$ 32,474.31**	**$ 27,671.27**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 215.06**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MACEDONIA-EYLAU MUD#1 IN BOWIE COUNTY

Description of Water User Group:

Macedonia-Eylau MUD provides water service in Bowie County. The WUG population is projected to be 4,577 in 2010 and 5,205 in the year 2060. 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 217 ac-ft in 2010 and increasing to a deficit of 270 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	4577	4876	5096	5316	5260	5205
Projected Water Demand	769	803	822	846	831	822
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	552	552	552	552	552	552
Projected Supply Surplus (+) / Deficit (-)	**-217**	**-251**	**-270**	**-294**	**-279**	**-270**

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 considered because the per capita use per day was more 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 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
Advanced Water Conservation	**42**	**276,610**	-	**$717**	**Minimal**
Water Reuse					
Ground Water					
Surface Water	**294**	**$0**	**$127,075**	**$482**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	217	251	270	294	279	270

Savings from water conservation is minimal and has a higher unit cost. Surface water purchase from City of Texarkana is the recommended strategy to meet Macedonia-Eylau MUD's needs.

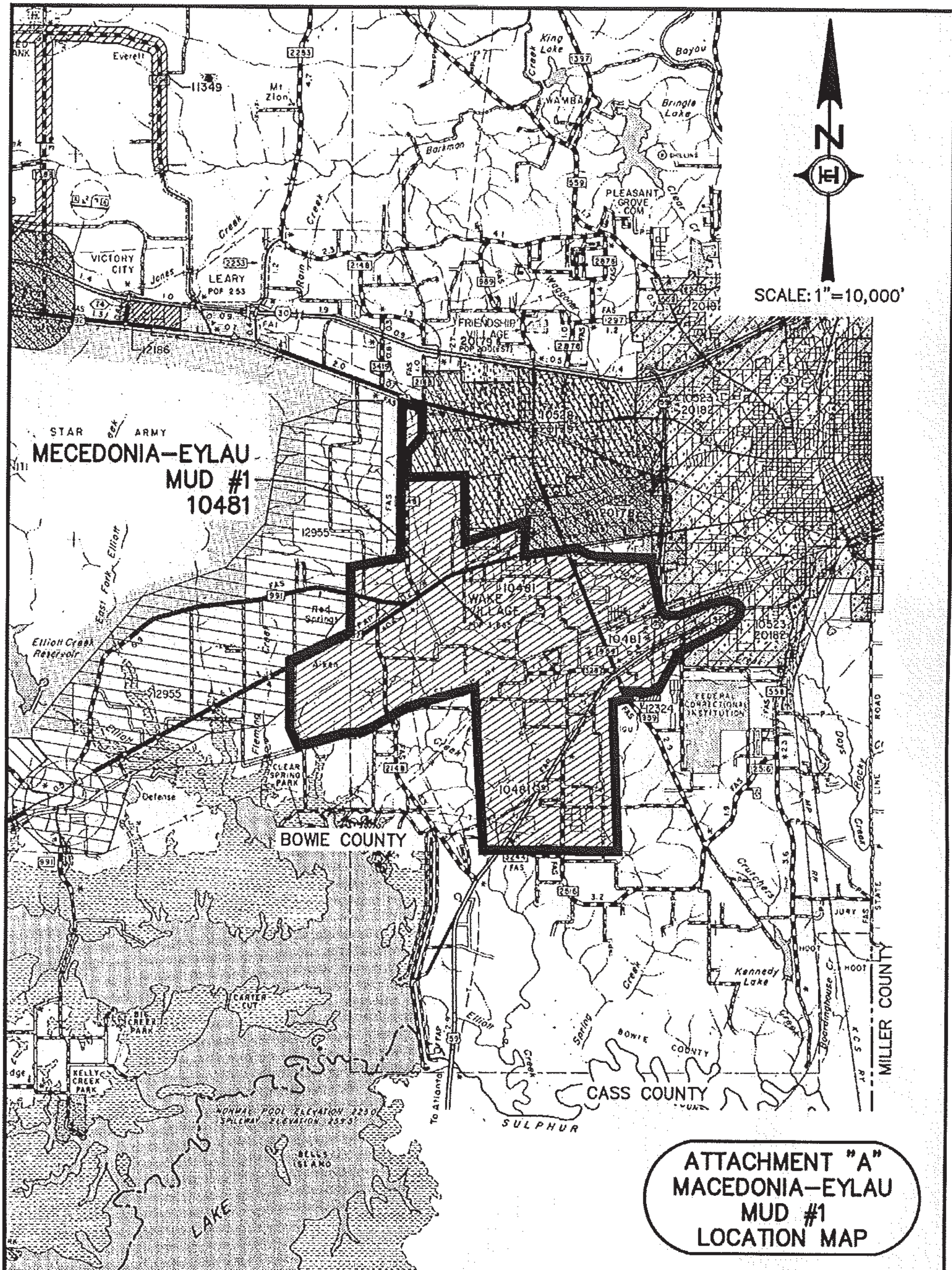

MECEDONIA-EYLAU
MUD #1
10481
SCALE: 1"=10,000'
BOWIE COUNTY
CASS COUNTY
MILLER COUNTY
WAKE VILLAGE
FRIENDSHIP VILLAGE
VICTORY CITY
LEARY
PLEASANT GROVE COM
FEDERAL CORRECTIONAL INSTITUTION
ATTACHMENT "A"
MACEDONIA-EYLAU
MUD #1
LOCATION MAP

Table C4.4 - Surface Water Worksheet
Macedonia-Eylau MUD#1
Bowie County

Water Purchase Contract With City of Texarkana:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
262,466	**294.0**	$ 1.48

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	217	251	270	294	279	270	264
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 104,650.31	$ 121,047.13	$ 130,210.06	$ 141,784.29	$ 134,550.39	$ 130,210.06	$ 127,075.37
							Average
TOTAL ANNUALIZED COST	**$ 104,650.31**	**$ 121,047.13**	**$ 130,210.06**	**$ 141,784.29**	**$ 134,550.39**	**$ 130,210.06**	**$ 127,075.37**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 482.26**

Conservation Worksheet

Table C4.5 - Cost-Savings Analysis for Region D - Macedonia-EylauMUD#1

Regional Data	
Population	5,055
SF Population	5,055
MF Population	-
Institutional Population	-
SF Units	2,022
MF Units	-
Average Yearly Rainfall (inches)	45.3
SF Household Size	2.50
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	-
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit	10.5	26.3	2.0	13.1	10%	50%	-	-	-	$ -	$ -	$ -	free or rebate
SF Showerheads and Aerators	5.5	13.8	2.0	6.9	10%	50%	-	-	-	$ -	$ -	$ -	kits picked up by customer
SF Clothes Washer Rebate	5.6	14.0	1.0	14.0	0%	90%	1,820	25,477	28.54	$ 120	$ 218,376	$ 815	rebate from water utility only
SF Irrigation Audit-High User	20.0	50.0	1.0	50.0	1%	5%	81	4,044	4.53	$ 70	$ 5,662	$ 459	staff
SF Rainwater Harvesting	19.9	49.8	1.0	49.8	0%	5%	101	5,039	5.64	$ 250	$ 25,275	$ 431	rebate
SF Rain Barrels	2.2	5.4	1.0	5.4	0%	30%	607	3,273	3.67	$ 45	$ 27,297	$ 717	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate													
MF Irrigation Audit													
MF Rainwater Harvesting													
								37,834	**42**		**$ 276,610**	**$717.13**	
Commercial													
Commercial Toilet Retrofit													
Coin-Operated Clothes Washer Rebate													
Irrigation Audit													
Commercial General Rebate													
Commercial Rainwater Harvesting													

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:

City of New Boston provides water service in Bowie County. The WUG population is projected to be 5,219 in 2010 and 6,105 in the year 2060. The city has a contract for water supply with the City of Texarkana for 1090 ac-ft/yr. New Boston is projected to have a deficit of 45 ac-ft in 2010 and increasing to a deficit of 168 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	5219	5567	5836	6105	6105	6105
Projected Water Demand	1135	1191	1229	1265	1258	1258
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	1090	1090	1090	1090	1090	1090
Projected Supply Surplus (+) / Deficit (-)	**-45**	**-101**	**-139**	**-175**	**-168**	**-168**

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 considered because the per capita use per day was more 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.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**24**	**$159,290**	-	**$717**	**Minimal**
Water Reuse					
Ground Water					
Surface Water	**175**	**$0**	**$28,532**	**$215**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	45	101	139	175	168	168

Savings from water conservation is minimal and has a higher unit cost. Surface water purchase from City of Texarkana is the recommended strategy to meet City of New Boston's needs.

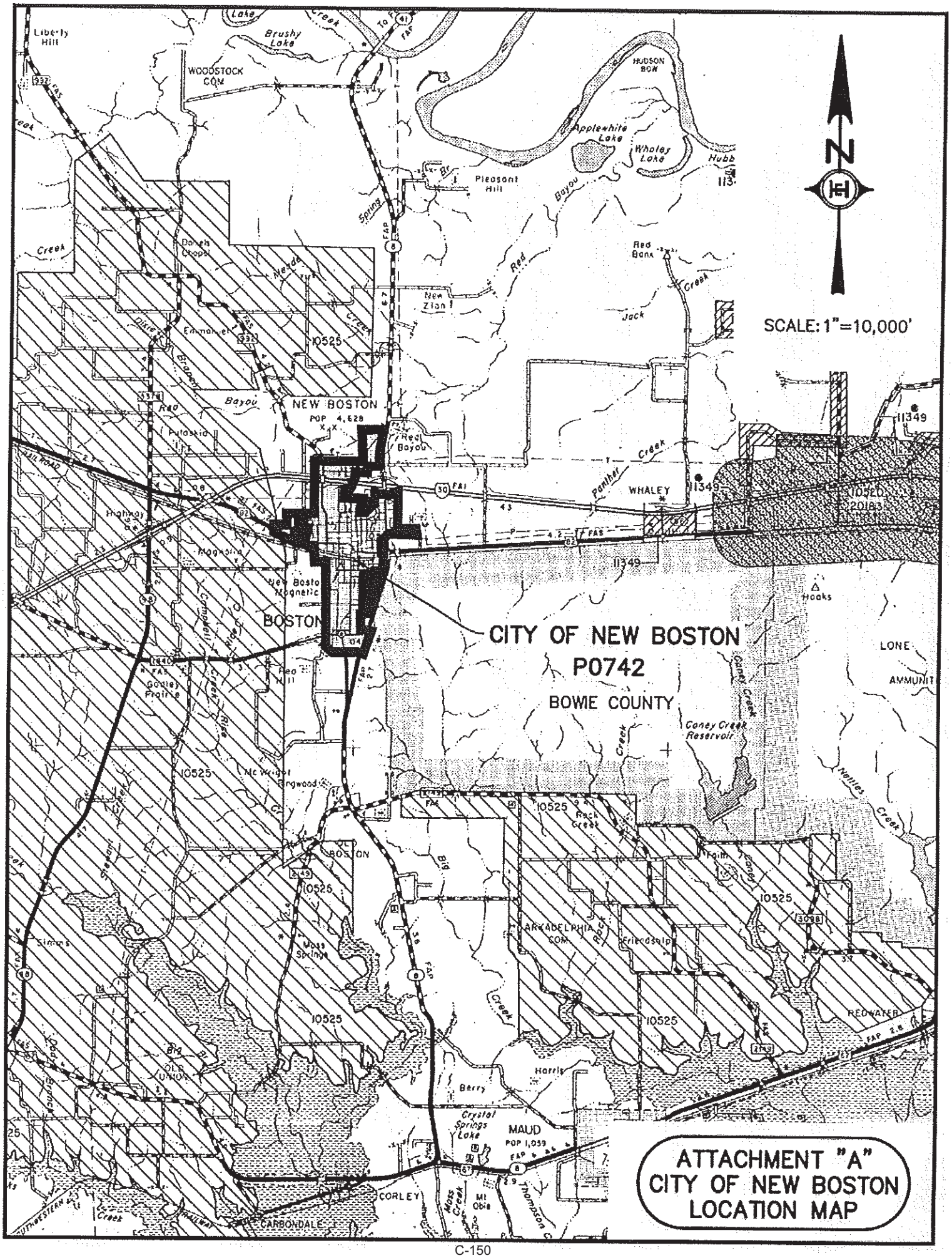

N
SCALE: 1"=10,000'
CITY OF NEW BOSTON
P0742
BOWIE COUNTY
NEW BOSTON
POP 4,528
WHALEY
MAUD
POP 1,039
BOSTON
CORLEY
CARBONDALE
ARKADELPHIA COM
REDWATER
Liberty Hill
WOODSTOCK COM
Brushy Lake
Pleasant Hill
Applewhite Lake
Wholey Lake
Red Bank Creek
New Zion
Jack
Red Bayou
Panther Creek
Coney Creek
Coney Creek Reservoir
Rock Creek
Friendship
Harris
Berry
Crystal Springs Lake
Moss Creek
Mt Obie
Thompson Cr
Hooks
LONE
AMMUNIT
Hughes Springs
Simms
Old Union
Redwood
Mc Kenzie
Red Hill
Gourley Prairie
Magnolia
Highway
Dixie
Emmanuel
Dorcas Chapel
Nevada
Stewart Creek
Big Creek
Cowhorn Creek
Sulphur River
Red River
Texarkana
Ashdown
Hope
Prescott
Gurdon
Arkadelphia
Camden
Fordyce
Malvern
Hot Springs
Benton
Bryant
Little Rock
Pine Bluff
Stuttgart
DeWitt
Dumas
Monticello
Crossett
El Dorado
Magnolia
Texarkana
Hope
Prescott
Gurdon
Arkadelphia
Camden
Fordyce
Malvern
Hot Springs
Benton
Bryant
Little Rock
Pine Bluff
Stuttgart
DeWitt
Dumas
Monticello
Crossett
El Dorado
ATTACHMENT "A"
CITY OF NEW BOSTON
LOCATION MAP

Table C4.6 - Surface Water Worksheet
City of New Boston
Bowie County

Water Purchase Contract With City of Texarkana:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
156,230	**175.0**	$ 0.66

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	45	101	139	175	168	168	133
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 9,677.77	$ 21,721.23	$ 29,893.57	$ 37,635.79	$ 36,130.36	$ 36,130.36	$ 28,531.51
							Average
TOTAL ANNUALIZED COST	**$ 9,677.77**	**$ 21,721.23**	**$ 29,893.57**	**$ 37,635.79**	**$ 36,130.36**	**$ 36,130.36**	**$ 28,531.51**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 215.06**

Conservation Worksheet

Table C4.7 - Cost-Savings Analysis for Region D - City of New Boston

Regional Data	
Population	2,911
SF Population	2,911
MF Population	-
Institutional Population	-
SF Units	1,164
MF Units	-
Average Yearly Rainfall (inches)	45.3
SF Household Size	2.50
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	-
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit	10.5	26.3	2.0	13.1	10%	50%	-	-	-	$ -	$ -	$ -	free or rebate
SF Showerheads and Aerators	5.5	13.8	2.0	6.9	10%	50%	-	-	-	$ -	$ -	$ -	kits picked up by customer
SF Clothes Washer Rebate	5.6	14.0	1.0	14.0	0%	90%	1,048	14,671	16.43	$ 120	$ 125,755	$ 815	rebate from water utility only
SF Irrigation Audit-High User	20.0	50.0	1.0	50.0	1%	5%	47	2,329	2.61	$ 70	$ 3,260	$ 459	staff
SF Rainwater Harvesting	19.9	49.8	1.0	49.8	0%	5%	58	2,902	3.25	$ 250	$ 14,555	$ 431	rebate
SF Rain Barrels	2.2	5.4	1.0	5.4	0%	30%	349	1,885	2.11	$ 45	$ 15,719	$ 717	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate													
MF Irrigation Audit													
MF Rainwater Harvesting													
								21,787	**24**		**$ 159,290**	**$717.13**	
Commercial													
Commercial Toilet Retrofit													
Coin-Operated Clothes Washer Rebate													
Irrigation Audit													
Commercial General Rebate													
Commercial Rainwater Harvesting													

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF RED WATER IN BOWIE COUNTY

Description of Water User Group:

City of Red Water provides water service in Bowie County. The WUG population is projected to be 2,489 in 2010 and 2,861 in the year 2060. The city has a contract for water supply with the City of Texarkana for 147 ac-ft/yr. The city also has a well that produces 73 ac-ft/yr. The city is projected to have a deficit of 146 ac-ft in 2010 and increasing to a deficit of 171 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	2489	2653	2775	2898	2880	2861
Projected Water Demand	352	365	373	384	380	377
Water Demand from other entities	14	14	14	14	14	14
Current Water Supply	220	220	220	220	220	220
Projected Supply Surplus (+) / Deficit (-)	**-146**	**-159**	**-167**	**-178**	**-174**	**-171**

Evaluation of Potentially Feasible Water Management Strategies:

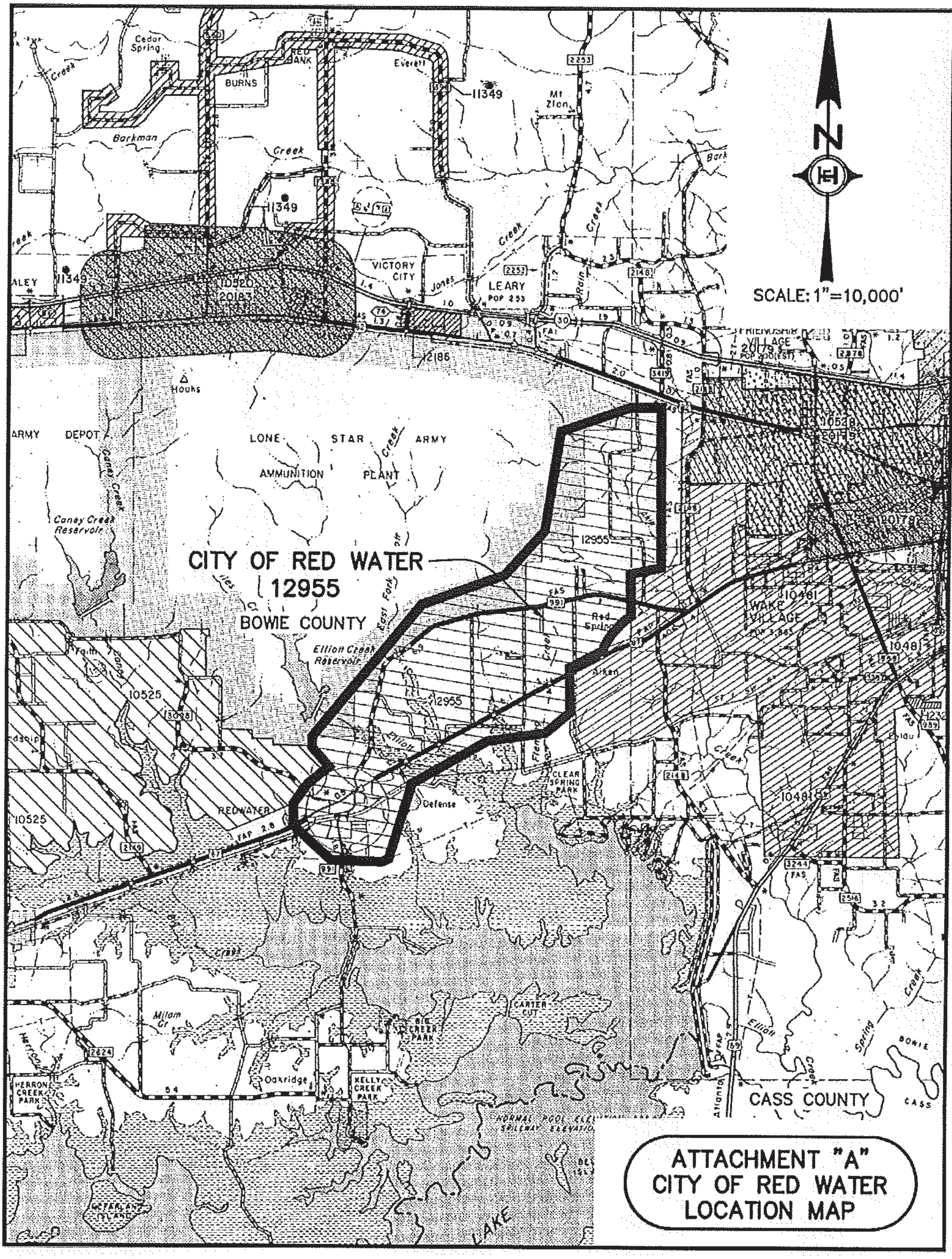
There were four alternative strategies considered to meet the City of Red Water's supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible 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.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**178**	**$0**	**$79,975**	**$482**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	**146**	**159**	**167**	**178**	**174**	**171**

Surface water purchase from City of Texarkana is the recommended strategy to meet City of Red Water's needs.



SCALE: 1"=10,000'
N
CITY OF RED WATER
12955
BOWIE COUNTY
LONE STAR ARMY
AMMUNITION PLANT
ARMY DEPOT
Hooks
VICTORY CITY
LEARY
BURNS
Barkman
Caney Creek Reservoir
Elliott Creek Reservoir
REDWATER
Defense
CLEAR SPRING PARK
WAKE VILLAGE
FRIENDSHIP VILLAGE
Oakridge
KELLY CREEK PARK
HERRON CREEK PARK
CARTER CUT
CASS COUNTY
ATTACHMENT "A"
CITY OF RED WATER
LOCATION MAP

Table C4.8 - Surface Water Worksheet
City of Red Water
Bowie County

Water Purchase Contract With City of Texarkana:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
158,908	**178.0**	$ 1.48

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	146	159	167	178	174	171	166
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 70,409.88	$ 76,679.26	$ 80,537.33	$ 85,842.19	$ 83,913.15	$ 82,466.37	$ 79,974.70
							Average
TOTAL ANNUALIZED COST	**$ 70,409.88**	**$ 76,679.26**	**$ 80,537.33**	**$ 85,842.19**	**$ 83,913.15**	**$ 82,466.37**	**$ 79,974.70**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 482.26**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF RED RIVER REDEVELOPMENT AUTHORITY IN BOWIE COUNTY

Description of Water User Group:

The Red River Redevelopment Authority (RRRA) is an instrumentality of and political sub-division of the State of Texas. The RRRA operates and maintains the wet utilities at the Red River Commerce Park (RRCP) and Red River Army Depot (RRAD) and is located in New Boston, Texas (Bowie County). The Commerce Park and RRAD are approximately 17 miles west of Texarkana, Texas.

The RRRA was formed as a direct result of the 1995 Base Realignment and Closure (BRAC) as part of the Department of Defense's goal to privatize utility systems. Approximately 700 acres, many buildings, and all of the wet utility systems have been transferred over to the RRRA. The RRRA's charter is to attract new industry and jobs to the Commerce Park in addition to providing reliable wet utility services to both the Depot and commercial clients.

The RRRA water system consists of a 3 MGD water treatment plant and water distribution lines and appurtenances within the Depot and the Commerce Park. The water sources are Caney Creek Lake and Elliott Creek Lake. Both lakes are within the boundaries of RRAD and were built to support the RRAD mission. The combined capacity of both lakes is 4,074 acre-feet.

The Red River Redevelopment Authority requests that the Regional Water Plan be revised to reflect the water allocation needs of RRRA to support the Red River Army Depot's mission and to attract new industrial and commercial clients. The 50-year allocation requirement for RRRA is listed below.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Projected Water Demand	1343	1890	2435	2981	3527	4074
Current Water Supply	2960	2960	2960	2960	2960	2960
Projected Supply Surplus (+)/Deficit(-)	**1617**	**1070**	**525**	**-21**	**-577**	**-1114**

Evaluation of Potentially Feasible Water Management Strategies:

RRRA's has acquired a surface water right permit from TCEQ to utilize surface water from Caney Creek Lake and Elliott Creek Lake in Bowie County. The total permitted water use for both lakes is 2,960 ac-ft/yr. RRRA is not considering utilization of other strategies other than surface water from the two lakes, and additional surface water from Riverbend Water Resources District, to meet projected demands. A surface water worksheet is included as Attachment A.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**1,114**	-	**137,605**	**$482**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)				**21**	**567**	**1114**

The recommended strategy for the Red River Redevelopment Authority to meet projected deficit of 21 ac-ft in 2040 and 1,114 ac-ft in 2060 is to enter into contract for surface water supply from the Riverbend Water Resources District, the source being Wright Patman Lake.

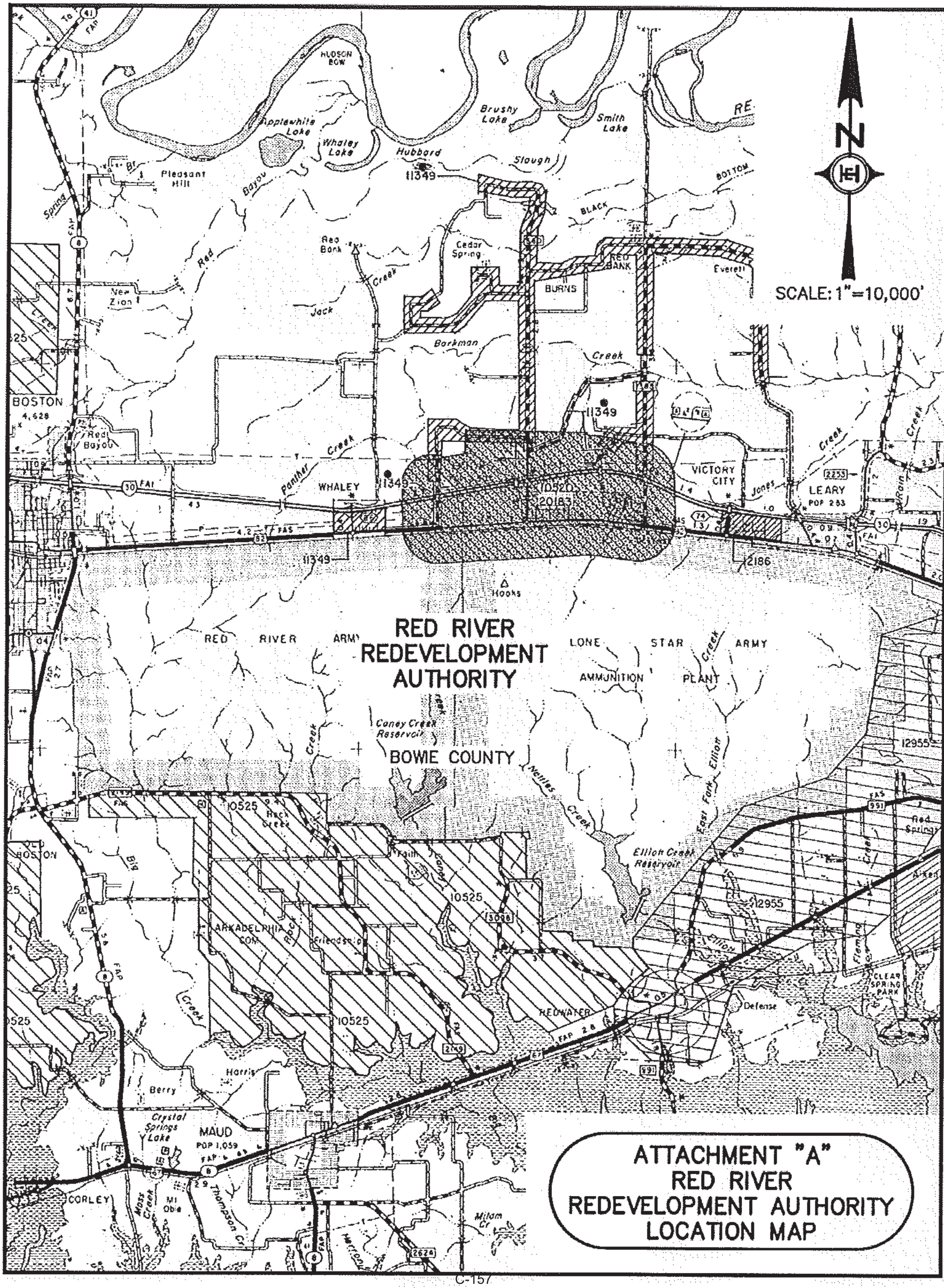

ATTACHMENT "A"
RED RIVER
REDEVELOPMENT AUTHORITY
LOCATION MAP
SCALE: 1"=10,000'
N
RED RIVER
REDEVELOPMENT
AUTHORITY
RED RIVER ARMY
LONE STAR ARMY
AMMUNITION PLANT
BOWIE COUNTY
BOSTON
WHALEY
VICTORY CITY
LEARY
HOOKS
MAUD
CORLEY
REDWATER
BURNS
Red Bank
Cedar Spring
Pleasant Hill
New Zion
Applewhite Lake
Whaley Lake
Hubbard Slough
Brushy Lake
Smith Lake
Hudson Bow
Coney Creek Reservoir
Elliott Creek Reservoir
Crystal Springs Lake
Berry
Harris
Arkadelphia Com
Friendship
Defense
Clear Spring Park
11349
10520
20183
12186
10525
12955

Table C4.9 - Surface Water Worksheet
Red River Redevelopment Authority
Bowie County

Water Purchase Contract With Riverbend Water Resources District:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
994,515	**1114**	$ 1.48

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	21	577	1114	285
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ 10,127.45	$ 278,263.72	$ 537,237.06	$ 137,604.70
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ 10,127.45**	**$ 278,263.72**	**$ 537,237.06**	**$ 137,604.70**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 482.26**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF WAKE VILLAGE IN BOWIE COUNTY

Description of Water User Group:

City of Wake Village provides water service in Bowie County. The WUG population is projected to be 5,546 in 2010 and 7,784 in the year 2060. The city has a contract for water supply with the City of Texarkana for 358 ac-ft/yr. Wake Village is projected to have a deficit of 356 ac-ft in 2010 and increasing to a deficit of 645 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	5546	5993	6441	6888	7336	7784
Projected Water Demand	714	772	830	887	945	1003
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	358	358	358	358	358	358
Projected Supply Surplus (+) / Deficit (-)	**-356**	**-414**	**-472**	**-529**	**-587**	**-645**

Evaluation of Potentially Feasible Water Management Strategies:

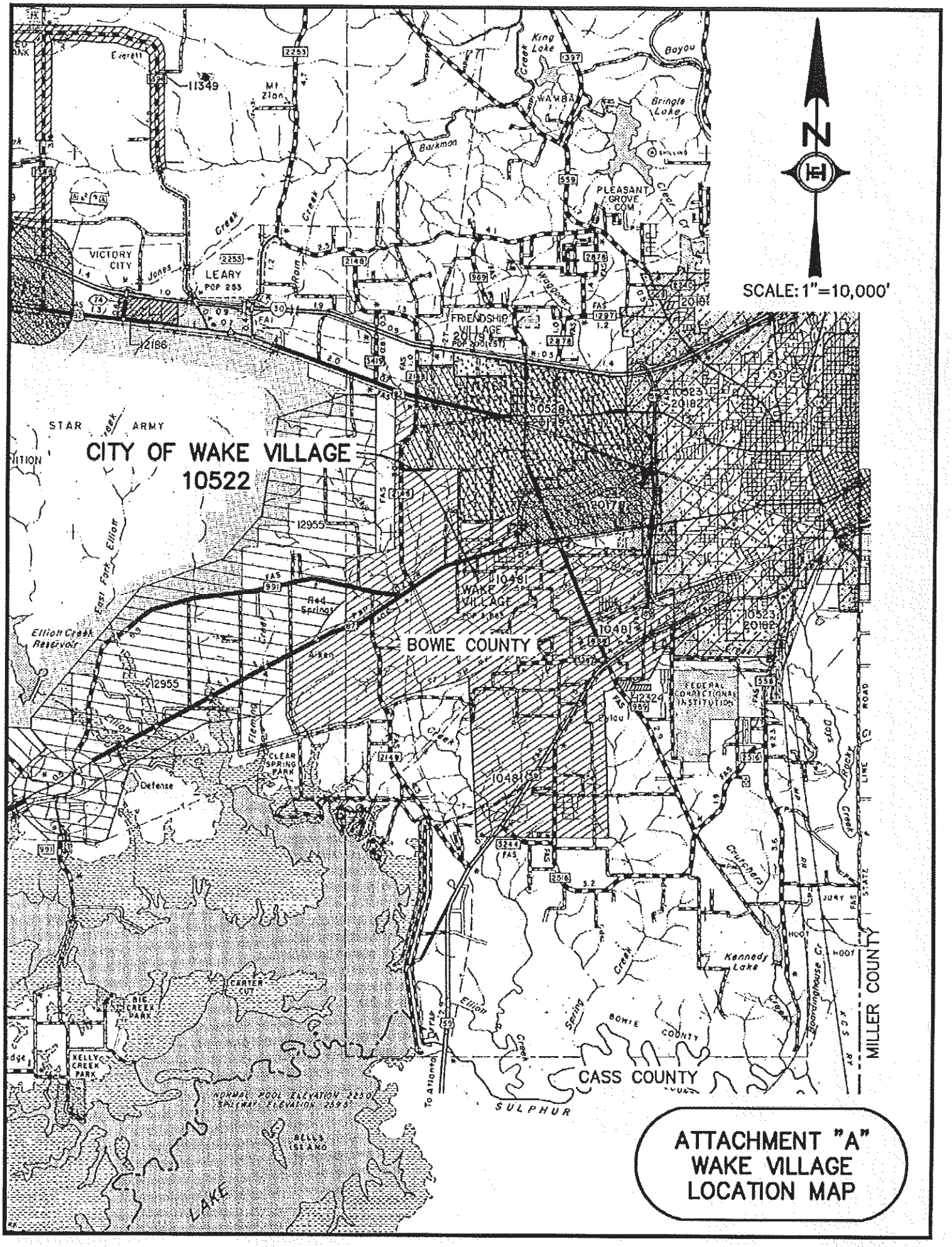
There were four alternative strategies considered to meet Wake Village's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option 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.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**645**	**$0**	**$107,638**	**$215**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	356	414	472	529	587	645

Surface water purchase from City of Texarkana is the recommended strategy to meet City of Wake Village's needs.



ATTACHMENT "A"
WAKE VILLAGE
LOCATION MAP

Table C4.10 - Surface Water Worksheet
City of Wake Village
Bowie County

Water Purchase Contract With City of Texarkana:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
575,819	**645.0**	$ 0.66

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost		**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)		**1.0**
Other Capital Costs		
ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)		$ -
ENVIRONMENTAL (LUMP SUM)		$ -
Total Borrowed Funds		**$ -**
INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**
TOTAL CAPITAL COST		**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	356	414	472	529	587	645	501
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 76,561.95	$ 89,035.53	$ 101,509.10	$ 113,767.62	$ 126,241.19	$ 138,714.77	$ 107,638.36
							Average
TOTAL ANNUALIZED COST	**$ 76,561.95**	**$ 89,035.53**	**$ 101,509.10**	**$ 113,767.62**	**$ 126,241.19**	**$ 138,714.77**	**$ 107,638.36**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 215.06**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BURNS REDBANK WATER SUPPLY CORPORATION IN BOWIE COUNTY

Description of Water User Group:

Burns RedBank WSC provides water service in Bowie County. The WUG population is projected to be 1,407 in 2010 and 1,600 in the year 2060. The WSC has a contract for water supply with the City of Hooks for 140 ac-ft/yr. The WSC is projected to have a deficit of 80 ac-ft in 2010 and increasing to a deficit of 92 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1407	1499	1567	1635	1618	1600
Projected Water Demand	220	229	234	239	235	232
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	140	140	140	140	140	140
Projected Supply Surplus (+) / Deficit (-)	**-80**	**-89**	**-94**	**-99**	**-95**	**-92**

Evaluation of Potentially Feasible Water Management Strategies:

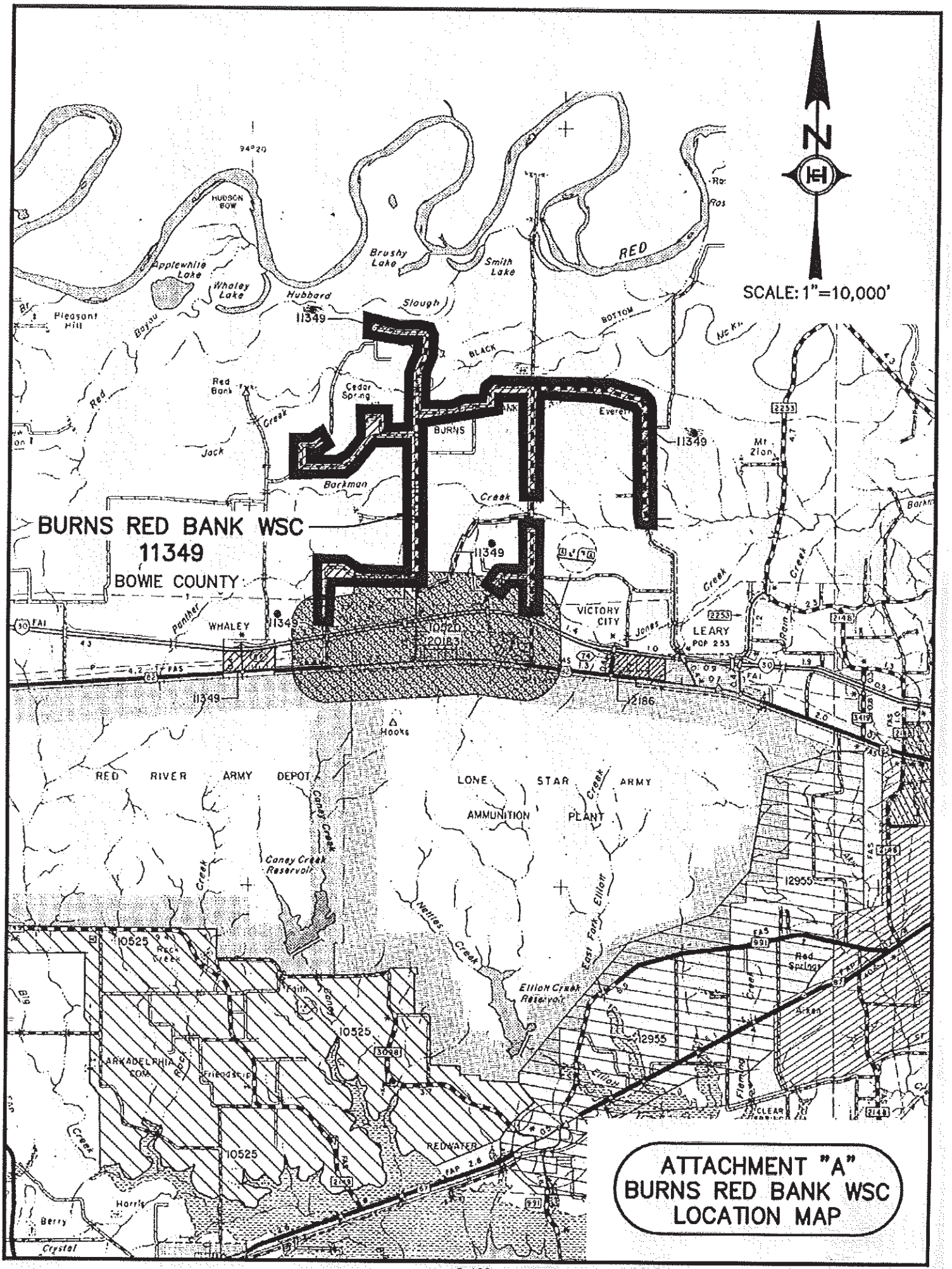
There were four alternative strategies considered to meet the WSC's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on continuing to purchase surface water from the City of Hooks.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**99**	**$0**	**$25,939**	**$283**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	80	89	94	99	95	92

Surface water purchase from City of Hooks is the recommended strategy to meet Burns RedBank WSC's needs.



ATTACHMENT "A"
BURNS RED BANK WSC
LOCATION MAP

Table C4.11 - Surface Water Worksheet
Burns RedBank WSC
Bowie County

Water Purchase Contract With City of Hooks:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
98,202	**110.0**	$ 0.87

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	80	89	94	99	95	92	92
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 22,679.23	$ 25,230.64	$ 26,648.09	$ 28,065.55	$ 26,931.59	$ 26,081.11	$ 25,939.37
							Average
TOTAL ANNUALIZED COST	**$ 22,679.23**	**$ 25,230.64**	**$ 26,648.09**	**$ 28,065.55**	**$ 26,931.59**	**$ 26,081.11**	**$ 25,939.37**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 283.49**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF OAK GROVE WATER SUPPLY CORPORATION IN BOWIE COUNTY

Description of Water User Group:

Oak Grove WSC provides water service in Bowie County and Red River County. The WUG population is projected to be 703 in 2010 and 791 in the year 2060. The WSC has a contract for water supply with the City of Texarkana for 61 ac-ft/yr. The WSC is projected to have a deficit of 44 ac-ft in 2010 and increasing to a deficit of 49 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	703	745	775	806	798	791
Projected Water Demand	105	109	111	113	111	110
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	61	61	61	61	61	61
Projected Supply Surplus (+) / Deficit (-)	**-44**	**-48**	**-50**	**-52**	**-50**	**-49**

Evaluation of Potentially Feasible Water Management Strategies:

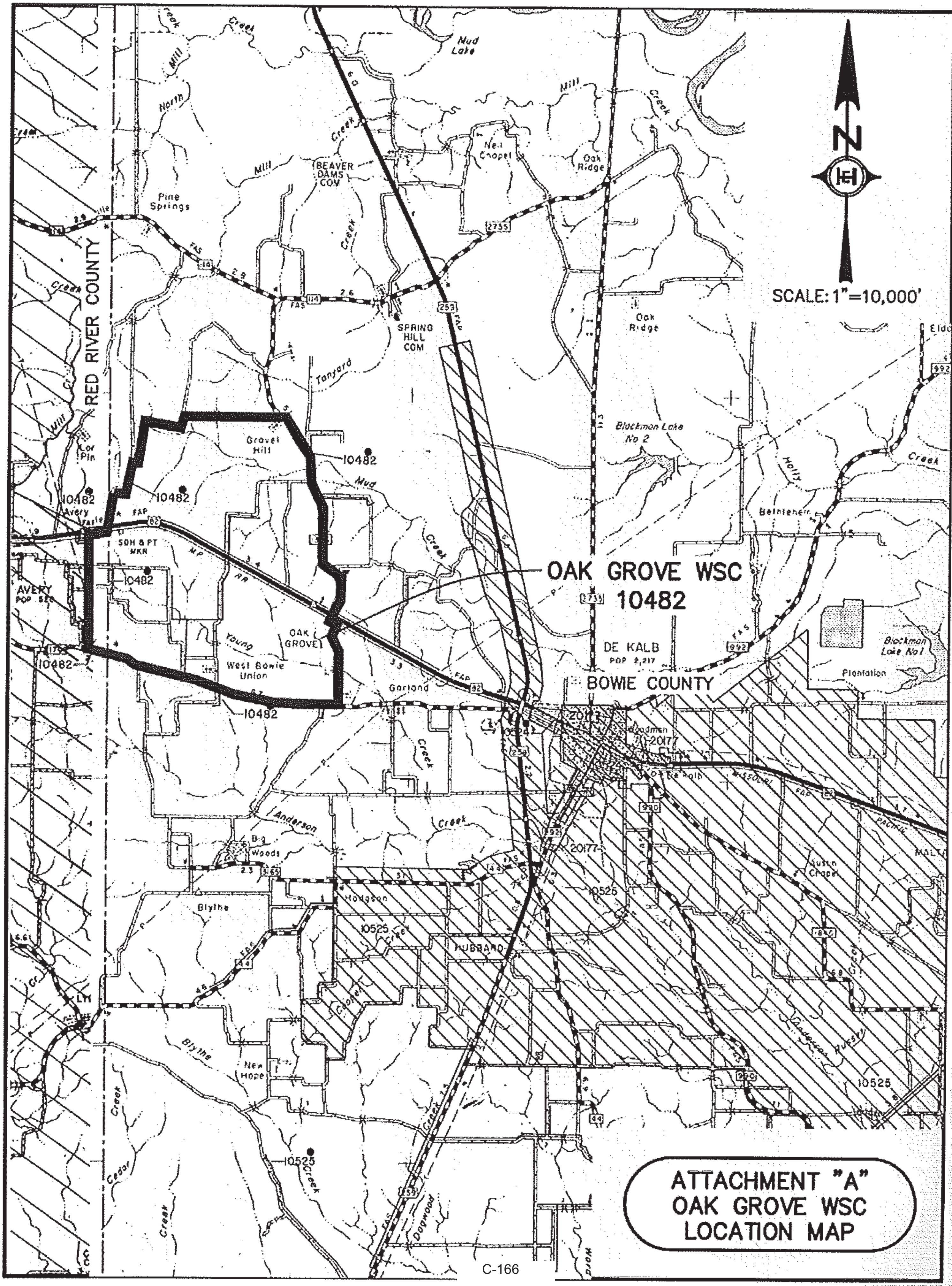
There were four alternative strategies considered to meet the WSC's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC 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
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**52**	**$0**	**$23,550**	**$482**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	44	48	50	52	50	49

Surface water purchase from City of Texarkana is the recommended strategy to meet Oak Grove WSC's needs.



OAK GROVE WSC
10482
SCALE: 1"=10,000'
RED RIVER COUNTY
BOWIE COUNTY
DE KALB
AVERY
ATTACHMENT "A"
OAK GROVE WSC
LOCATION MAP

Table C4.12 - Surface Water Worksheet
Oak Grove WSC
Bowie County

Water Purchase Contract With City of Texarkana:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
34,817	**39.0**	$ 1.48

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	44	48	50	52	50	49	49
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 21,219.42	$ 23,148.46	$ 24,112.97	$ 25,077.49	$ 24,112.97	$ 23,630.71	$ 23,550.34
							Average
TOTAL ANNUALIZED COST	**$ 21,219.42**	**$ 23,148.46**	**$ 24,112.97**	**$ 25,077.49**	**$ 24,112.97**	**$ 23,630.71**	**$ 23,550.34**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 482.26**

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

CAMP COUNTY

WUGs:

Bi-County WSC

County Other:

Woodland Harbor

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BI-COUNTY WATER SUPPLY CORPORATION IN CAMP COUNTY

Description of Water User Group:

Bi-County WSC provides water service in Camp, Morris, Titus and Upshur Counties. The WUG population in Camp County is projected to be 5,694 in 2010 and 11,205 in the year 2060. Bi-County relies on twenty-four wells in the Carrizo-Wilcox Aquifer with a total rated pumping capacity of approximately 2,761 gpm, or 1,485 ac-ft/yr. The portion of water supply available to the users in Camp County was estimated as 1,470 gpm or 790 ac-ft/yr. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	**2020**	**2030**	**2040**	**2050**	**2060**
Population	5694	7127	8452	9501	10314	11205
Projected Water Demand	733	918	1089	1224	1329	1443
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	790	790	790	790	790	790
Projected Supply Surplus (+) / Deficit (-)	**57**	**-128**	**-299**	**-434**	**-539**	**-653**

Evaluation of Potentially Feasible Water Management Strategies:

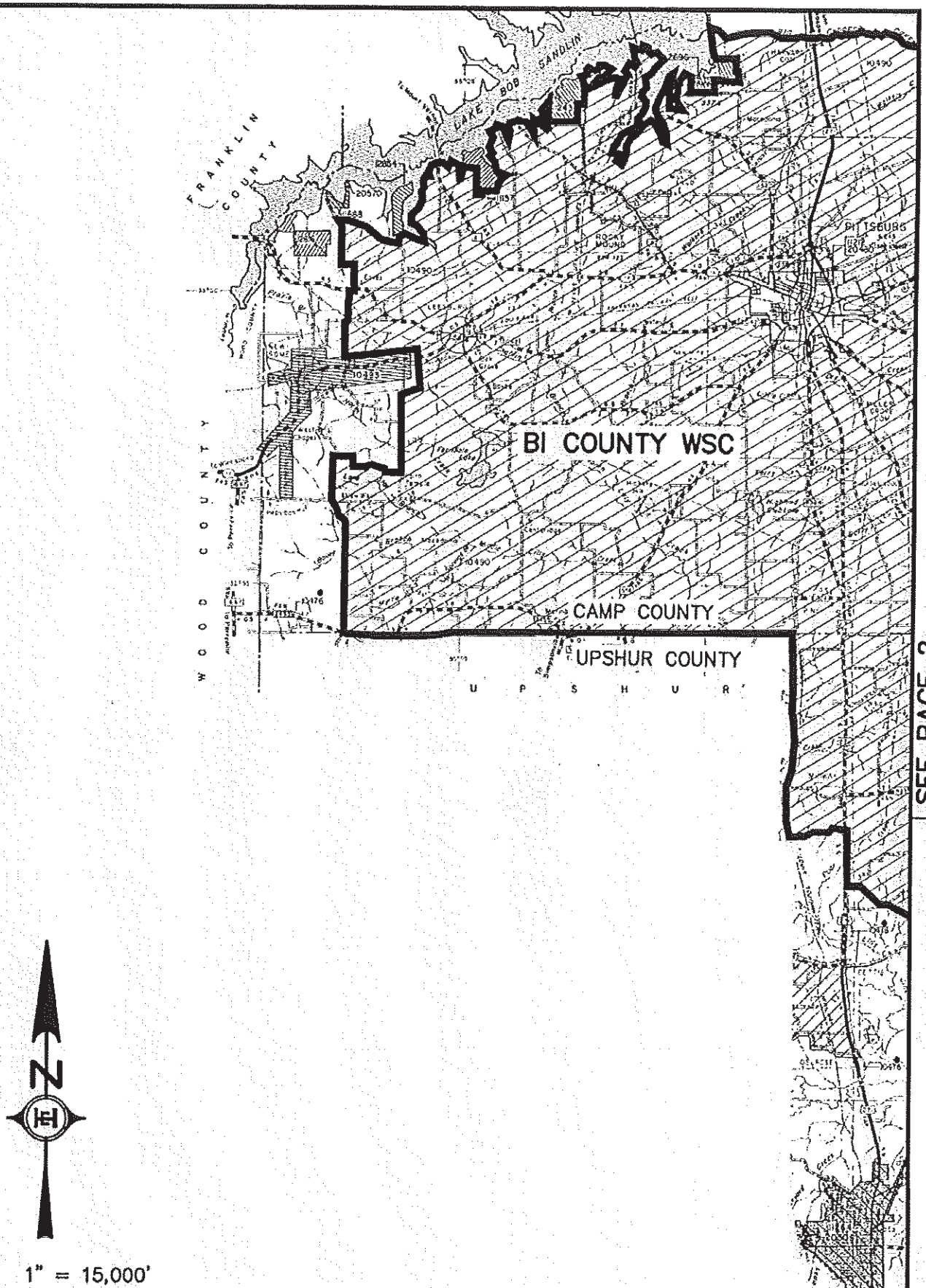
There were four alternative strategies considered to meet Bi-County's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because there is no centralized wastewater collection system. Groundwater was not selected because the WSC is planning on acquiring surface water from the Northeast Texas Municipal Water District. A surface water purchase worksheet has been included as Attachment B.

Strategy	**Firm Yield (ac-ft)**	**Total Capital Cost**	**Total Annualized Cost**	**Unit Cost**	**Environmental Impact**
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**653**	**$51,585**	**$224,863**	**$657**	**Minimal**

Recommendations:

	2010	**2020**	**2030**	**2040**	**2050**	**2060**
Surface Water (ac-ft/yr)		128	299	434	539	653

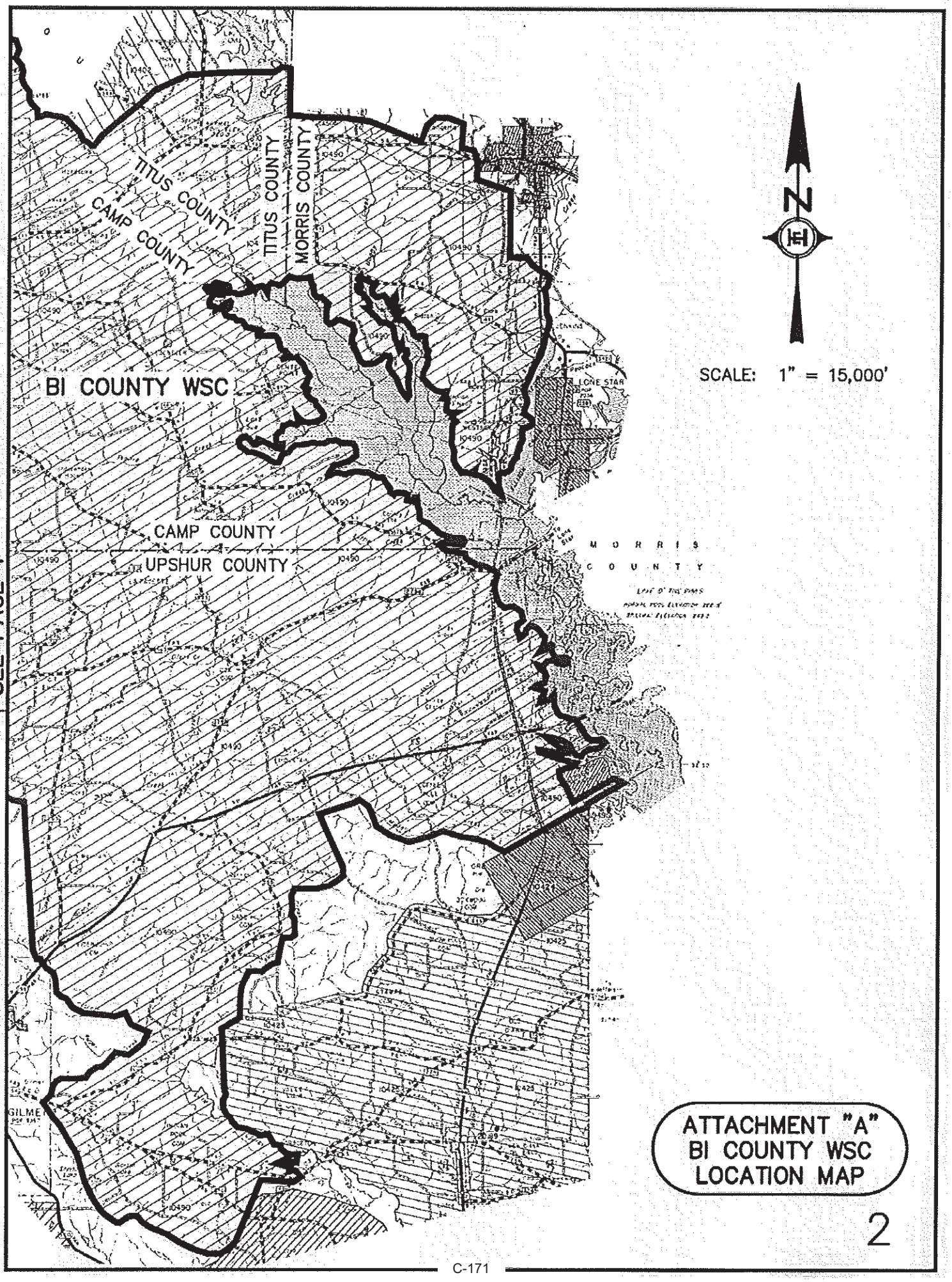
Surface water from Northeast Texas MWD is the recommended strategy to meet Bi-County's needs, and the source of the surface water will be Lake Bob Sandlin in the Cypress Creek basin.



SCALE: 1" = 15,000'

ATTACHMENT "A"
BI COUNTY WSC
LOCATION MAP

1



ATTACHMENT "A"
BI COUNTY WSC
LOCATION MAP

2

Table C4.13 - Surface Water Worksheet
Bi-County WSC
Hunt County

Water Purchase Contract With Northeast Texas Municipal Water District:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
582,961	**653.0**	$ 2.00

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
1,000	10	$ 2.20	$ 22,000.00	$ 770.00	$ 22,770.00

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 22,770.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 6,831.00
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 49,601.00**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 2,976.06
	4% Rate of Return on Investment of Unspent Funds	$ 992.02
	Net Interest	**$ 1,984.04**

TOTAL CAPITAL COST	**$ 51,585.04**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	128	299	434	539	653	342
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ 83,417.86	$ 194,858.90	$ 282,838.67	$ 351,267.38	$ 425,561.41	$ 222,990.70
							Average
TOTAL ANNUALIZED COST	**$ 3,745.07**	**$ 87,162.93**	**$ 198,603.97**	**$ 282,838.67**	**$ 351,267.38**	**$ 425,561.41**	**$ 224,863.24**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 657.17**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF WOODLAND HARBOR

Description of Water User Group:

Woodland Harbor, which is within the County Other systems in Camp County, is a small water system located in north Camp County. The system serves 588 people and is not projected to grow over the planning period. The current source of supply is a single well into the Carrizo-Wilcox with a tested capacity of 30 gpm. No sustained decline in water quantity or quality has been experienced in the existing well. Woodland Harbor is projected to have a water supply deficit of 60 ac-ft/yr beginning 2010. The system does not have either a water conservation plan or a drought management plan.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	588	588	588	588	588	588
Projected Water Demand	76	76	76	76	76	76
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	16	16	16	16	16	16
Projected Supply Surplus (+) / Deficit (-)	-60	-60	-60	-60	-60	-60

Evaluation of Potentially Feasible Water Management Strategies:

The four alternative strategies considered to meet Woodland Harbor's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcpd. Reuse is not a feasible option because there is no centralized wastewater collection system. Surface water alternatives were omitted since surface water treatment is not economically feasible for a system of this size. Groundwater from the Carrizo-Wilcox Aquifer was the alternative selected for this entity.

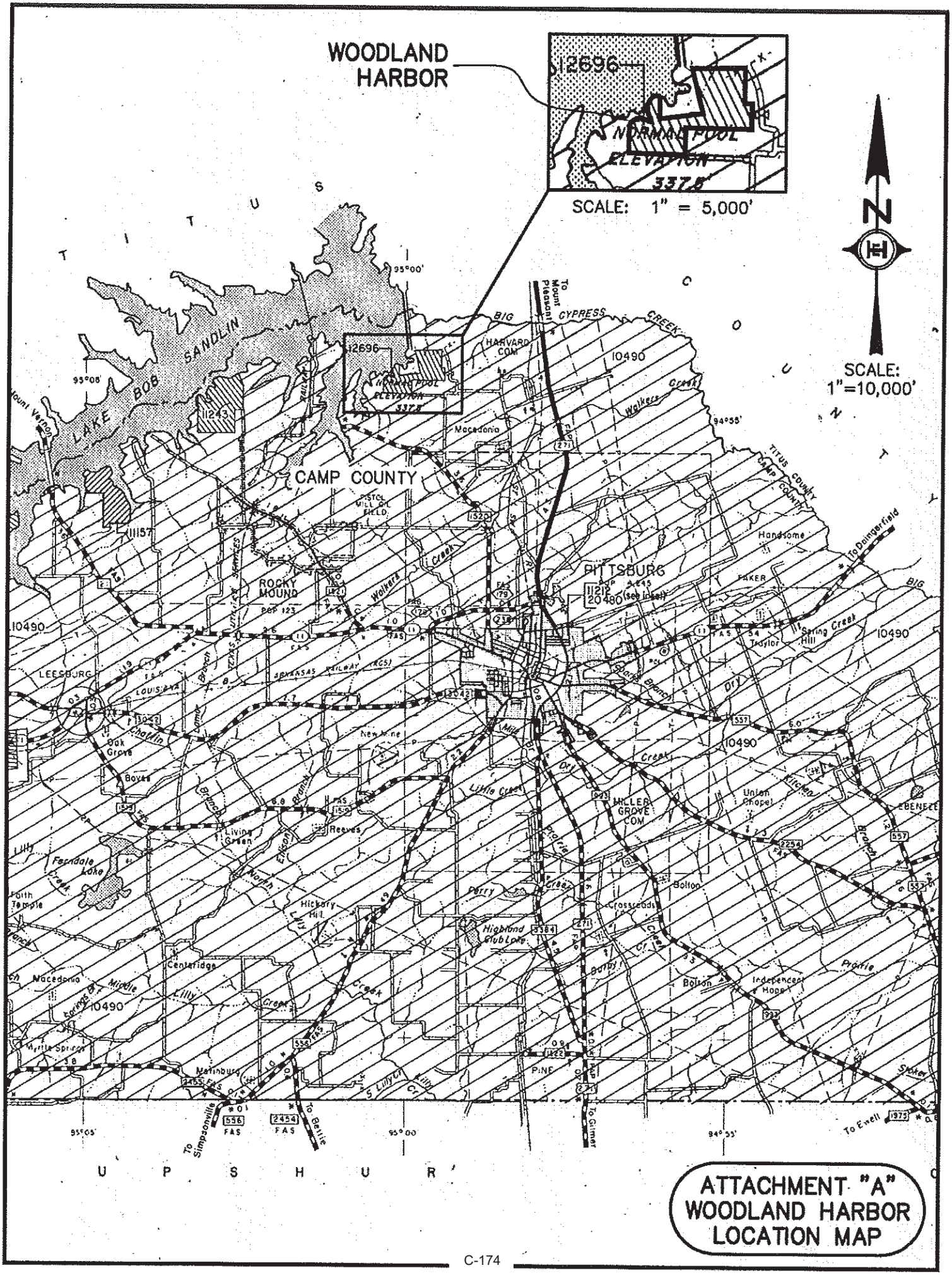
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**65**	**$1,014,865**	**$86,531**	**$764**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	65	65	65	65	65	65

The recommended strategy for Woodland Harbor to meet their projected deficit in 2010 is to construct two new wells into the Carrizo-Wilcox with a rated capacity of 60 gpm each, which would provide a total of 65 ac-ft/yr. Supply from these additional wells is sufficient to meet Woodland Harbor needs till 2060.

Additional storage is needed to meet the TCEQ's total storage requirement of 200 gallons/connection. This translates to a total storage of approximately 0.040 MG for the existing 200 connections. The existing system does not meet this requirement since it only has a total storage of 0.010 MG. An additional 0.030 MG of ground storage should be constructed as part of the project.



ATTACHMENT "A"
WOODLAND HARBOR
LOCATION MAP

Table C4.14 - Groundwater Worksheet
Woodland Harbor
Camp County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
2	700	60	**65**	$ 440.00	$ 616,000.00	$ 6,160.00	$ 622,160.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
5,000	6	$ 2.93	$ 87,900.00	$ 3,076.50	$ 90,976.50

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
1	30000	$ 0.73	$ 21,900.00	$ 219.00	$ 22,119.00

Total Construction Cost	**$ 735,255.50**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 220,576.65
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 975,832.15**
INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 58,549.93
4% Rate of Return on Investment of Unspent Funds	$ 19,516.64
Net Interest	**$ 39,033.29**
TOTAL CAPITAL COST	**$ 1,014,865.44**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 11,143.36

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	60	150	70%	2	0.09	$ 1,708.22

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 86,530.81**
WUG Total WMS Cost Per Acre-Foot	**$ 764.48**

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

CASS COUNTY

WUGs:

None

County Other:

None

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

DELTA COUNTY

WUGs:

None

County Other:

Ben Franklin WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BEN FRANKLIN WATER SUPPLY CORPORATION

Description of Water User Group:

Ben Franklin WSC, which is within the County Other area in Delta County, is a small public water supply located in northern Delta County. The system served 205 people in 2000 and is projected to grow to 279 people by the year 2060. The current source of supply is a single 158 gpm well into the Trinity Aquifer. Ben Franklin WSC provides water to its own customers and also has a supply contract with the Enloe-Lake Creek WSC. Enloe-Lake Creek is planning on entering into surface water supply contract with Delta County MUD and will stop using water from Ben Franklin WSC before 2010. Ben Franklin WSC's well does not meet TCEQ secondary water quality standards and is expected to fail sometime after 2020. BFWSC is projected to have a water supply deficit of 33 ac-ft/yr by 2030 and increasing to a deficit of 36 ac-ft/yr in 2060. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	220	240	259	279	279	279
Projected Water Demand	30	32	33	36	36	36
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	85	85	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**55**	**53**	**-33**	**-36**	**-36**	**-36**

Evaluation of Potentially Feasible Water Management Strategies:

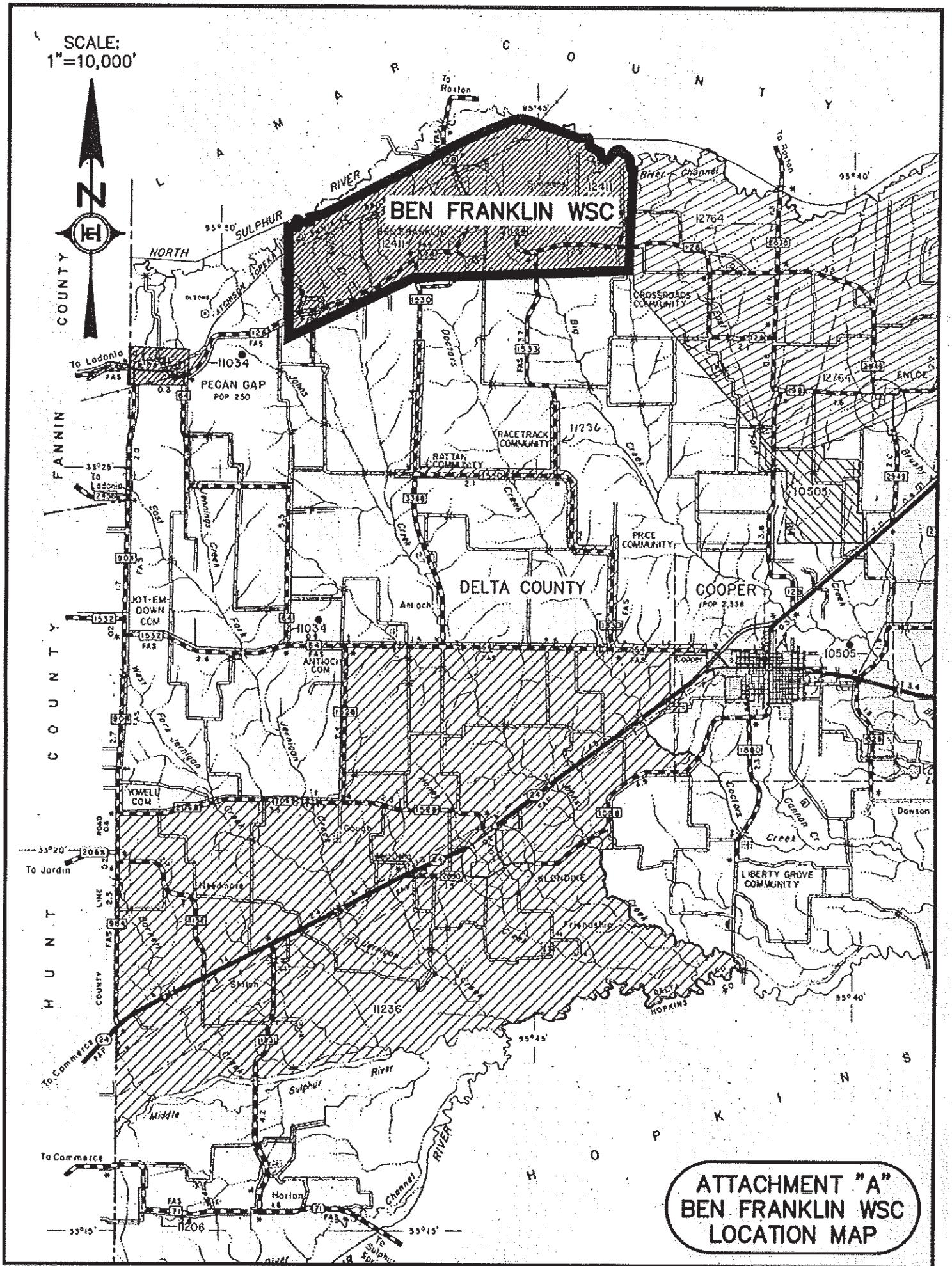
The four alternative strategies considered to meet Ben Franklin's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcpd. Reuse is not a feasible option because there is no centralized wastewater collection system. Groundwater is not of appropriate quality, as noted above. Operation of a reverse osmosis or similar treatment would not satisfy TCEQ requirements for two wells minimum, and is considered overly complex for a system of this size. Conversion to surface water by contracting or merging with Delta County MUD was the alternative selected for this entity. It should be noted that the system could also be served by surface water from Lamar County Water Supply District. The Delta County MUD strategy appears superior due to lesser construction requirements and lower unit costs.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**36**	**$440,647**	**$54,283**	**$2,310**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)			33	36	36	36

The recommended strategy for Ben Franklin WSC is to enter into a contract for treated surface water with Delta County MUD. The MUD has adequate supply available, and has an expansion project underway which could deliver water to the Ben Franklin area before 2006. Since Delta County MUD already has water available, and since there would be no significant construction, environmental impact would be negligible. The alternative strategy is for Ben Franklin WSC to purchase water from Lamar County WSD.



ATTACHMENT "A"
BEN FRANKLIN WSC
LOCATION MAP

Table C4.15 - Purchased Supply Worksheet
Ben Franklin WSC
Delta County - County Other Category

Attachment B-1, Connect to Delta County MUD

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
32,139	**36.0**	$ 5.00

Pump Station

Number (ea)	Size-MGD	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
1	Rework Existing	$ 73,000.00	$ 73,000.00	$ 730.00	$ 73,730.00

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
13,000	8	$ 2.20	$ 228,800.00	$ 8,008.00	$ 236,808.00

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost **$ 310,538.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS) **1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 93,161.40
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 423,699.40**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 25,421.96
	4% Rate of Return on Investment of Unspent Funds	$ 8,473.99
	Net Interest	**$ 16,947.98**

TOTAL CAPITAL COST **$ 440,647.38**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	33	36	36	36	24
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ 53,765.42	$ 58,653.18	$ 58,653.18	$58,653.18	$ 38,287.49
							Average
TOTAL ANNUALIZED COST	**$ 31,991.00**	**$ 31,991.00**	**$ 85,756.41**	**$ 58,653.18**	**$ 58,653.18**	**$58,653.18**	**$ 54,282.99**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 2,309.91**
($ / ac-ft / yr)

Table C4.16 - Purchased Supply Worksheet
Ben Franklin WSC
Delta County - County Other Category

Attachment B-2, Connect to LCWSD

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
32,139	**36.0**	$ 2.82

Pump Station

Number (ea)	Size-MGD	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	
1	Rework Existing	$ 73,000.00	$ 73,000.00	$ 730.00	$ 73,730.00

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
24,000	8	$ 2.20	$ 422,400.00	$ 14,784.00	$ 437,184.00

Bore Sulphur River	Total Cost	Subtotal
	$ 40,000.00	$ 40,000.00

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 550,914.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 165,274.20
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 736,188.20**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 44,171.29
	4% Rate of Return on Investment of Unspent Funds	$ 14,723.76
	Net Interest	**$ 29,447.53**

TOTAL CAPITAL COST	**$ 765,635.73**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	33	36	36	36	24
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ 30,323.69	$ 33,080.39	$ 33,080.39	$ 33,080.39	$ 21,594.15
							Average
TOTAL ANNUALIZED COST	**$ 55,585.15**	**$ 55,585.15**	**$ 85,908.85**	**$ 33,080.39**	**$ 33,080.39**	**$ 33,080.39**	**$ 49,386.72**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 2,101.56**
($ / ac-ft / yr)

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

FRANKLIN COUNTY

WUGs:

None

County Other:

None

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

GREGG COUNTY

WUGs:

City of Clarksville
Liberty City WSC
West Gregg SUD

County Other:

Liberty-Danville FWSD No. 2
Starrville-Friendship WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CLARKSVILLE CITY

Description of Water User Group:

The City of Clarksville City is located along the western end of the Gregg / Upshur county line. The city provides water service to city residents and to residents in Gregg County outside of the city. In 2003, the city served 307 connections in the city and 10 connections in the county. The city population is projected to increase from 903 persons in 2010 to 1,621 persons in 2060 and the county other population is projected to increase from 33 persons in 2010 to 61 persons in 2060. The city relies on water purchased from the City of Gladewater, which utilizes surface water from Lake Gladewater that is owned and operated by the City of Gladewater. The city has a water conservation plan in place, which includes universal metering and education and information. The city does not have a drought contingency plan. The system is bounded on the east by the City the City of White Oak; the south by the Sabine River; the west by the City of Gladewater, and on the north by Union Grove Water Supply Corporation. The City of Gladewater and the City of Clarksville City have mutually agreed to not renew their water purchase contract so Clarksville City must develop a new supply source. The City of Clarksville City and the county residents it serves are projected to have a water supply deficit of 120 ac-ft/yr beginning in 2010 and increasing to a deficit of 217 ac-ft/yr in 2060. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	936	1039	1148	1272	1441	1682
Projected Water Demand	120	134	148	164	186	217
Current Water Supply						
Projected Supply Surplus(+)/Deficit(-)	**-120**	**-134**	**-148**	**-164**	**-186**	**-217**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City of Clarksville City water supply shortages as summarized in the following table. Advanced water conservation was not considered as a strategy because the per capita use per day is less than the 140 gallons per capita per day threshold set by the water planning group and they have no supply at all with the expiration of the contract with Gladewater. Water reuse was not considered because there are no potential users of reclaimed water in Clarksville City. Surface water was considered, however, the closest surface water source is from Lake Gladewater and mutually agreeable terms for renewal of their contract could not be reached. 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	**242**	**$1,686,493**	**$ 162,243**	**$ 803**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	162	162	162	242	242	242

The City of Clarksville City has applied for funding to construct a well field in the Carrizo-Wilcox Aquifer in Gregg County with an expected yield of 162 ac-ft/yr. The recommended strategy that is cost effective and reliable for the city to meet their projected needs is to develop this well field by constructing two 150-gpm water wells and constructing water treatment facilities as necessary to attain water quality and quantity required to meet current demands and projected demands to 2040. An additional 150 gpm well will need to be added prior to 2040 to add 80 ac-ft/yr. The recommended supply source, Carrizo-Wilcox or Queen City Aquifers, Sabine Basin, in Gregg or Upshur Counties, both have ample supply to provide for the future needs of the City of Clarksville City.

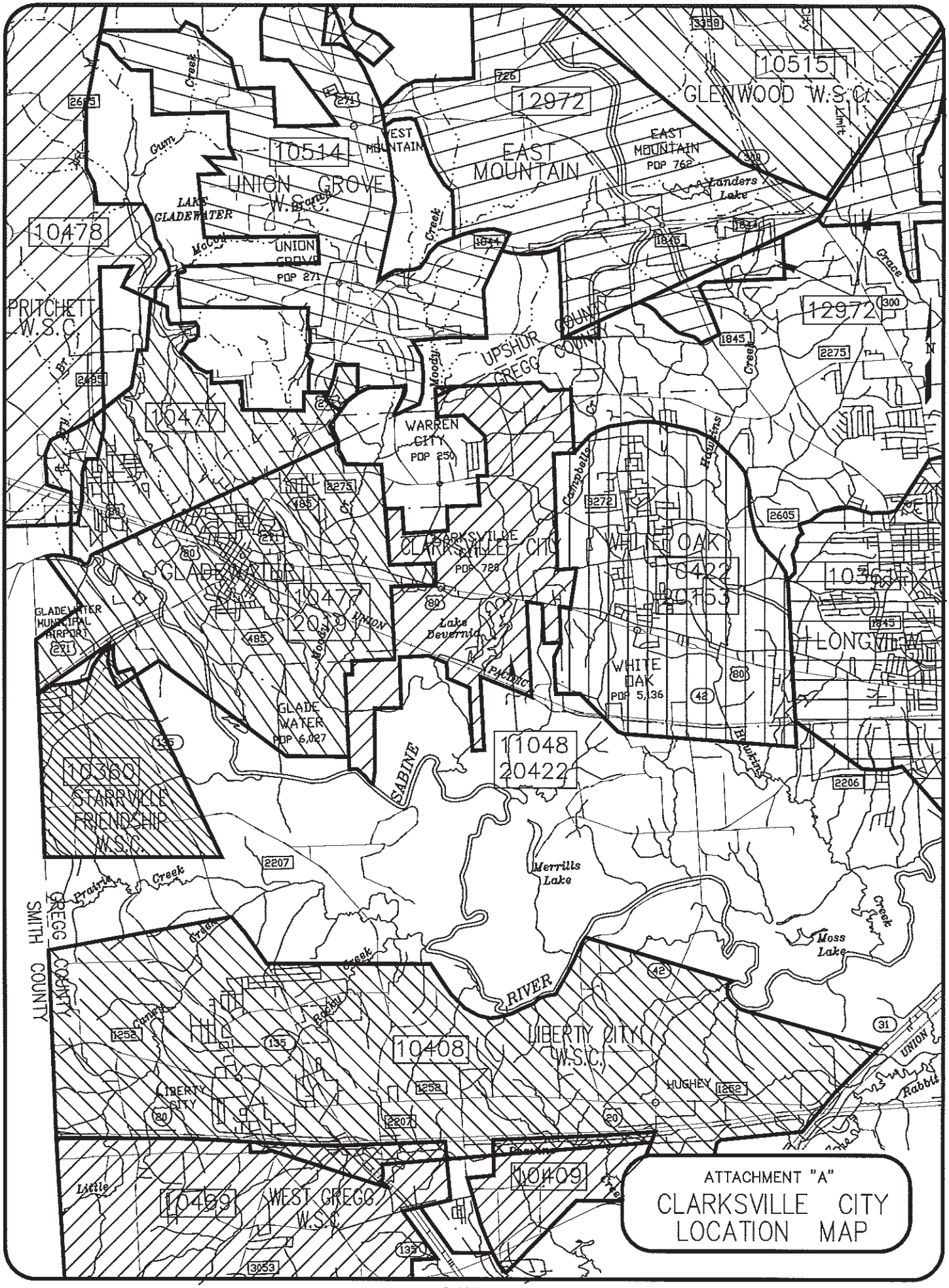

10515
GLENWOOD W.S.C.
12972
EAST MOUNTAIN
EAST MOUNTAIN POP 762
10514
UNION GROVE W.S.C.
LAKE GLADEWATER
UNION GROVE POP 271
10478
PRITCHETT W.S.C.
12972
UPSHUR COUNTY
GREGG COUNTY
10477
WARREN CITY POP 250
CLARKSVILLE CITY
CLARKSVILLE CITY POP 728
WHITE OAK
10422
20753
10361
LONGVIEW
GLADEWATER
10477
20199
GLADEWATER MUNICIPAL AIRPORT
Lake Devernia
WHITE OAK POP 5,136
GLADE WATER POP 6,027
10360
STARRVILLE FRIENDSHIP W.S.C.
11048
20422
SABINE
Merrills Lake
Moss Lake
SMITH COUNTY
GREGG COUNTY
RIVER
10408
LIBERTY CITY W.S.C.
LIBERTY CITY
HUGHEY
10469
WEST GREGG W.S.C.
10409
ATTACHMENT "A"
CLARKSVILLE CITY
LOCATION MAP

Table C4.17 - Groundwater Worksheet
City of Clarksville City
Gregg County
WUG

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
3	850	150.2	**242**	$ 440.00	$ 1,122,000.00	$ 28,050.00	$ 1,150,050.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
6,000	6	$ 2.20	$ 79,200.00	$ 2,772.00	$ 81,972.00

Total Construction Cost	**$ 1,232,022.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 369,606.60
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
TOTAL BORROWED FUNDS	**$ 1,621,628.60**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 97,297.72
	4% Rate of Return on Investment of Unspent Funds	$ 32,432.57
	Net Interest	**$ 64,865.14**

TOTAL CAPITAL COST	**$ 1,686,493.74**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.45/ 1,000)	$ 35,527.35

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	150.2	150	70%	3	0.06	$ 4,276.24

TOTAL ANNUALIZED COST (O & M Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))	**$ 162,243.04**
WUG Total WMS Cost Per Acre-Foot ($ / AC-FT / yr)	**$ 803.18**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIBERTY CITY WSC

Description of Water User Group:

Liberty City WSC provides water service in the rural southwestern portion of Gregg County and eastern Smith County. In 2003, the WSC served 1,574 connections. The population is projected to increase from 4,526 persons in 2010 to 8,485 persons in 2060. The City of Liberty City is served by the WSC. The WSC is included in the City and the County Other WUG for Gregg County and County Other WUG for Smith County. The system relies on 10 wells with a total rated capacity of 1520 GPM, or 817 ac-ft/yr. The system currently has a leak detection program for water conservation. The system is bounded on the north by Prairie Creek and the Sabine River; the east by SH 31; the south by Liberty-Danville FWSD #1 and West Gregg WSC; and on the west by the Starville WSC. LCWSC does not have a water conservation plan or a drought management plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	4526	5077	5647	6305	7201	8485
Projected Water Demand	625	701	779	870	994	1170
Current Water Supply	817	817	817	817	817	817
Projected Supply Surplus(+)/Deficit(-)	**192**	**116**	**38**	**-53**	**-177**	**-353**

Five alternative strategies were considered to meet the Liberty City WSC water supply shortages as summarized in the following table. Advanced water conservation was eliminated for LCWSC because after further review the per capita use per day of 128 gpcpd was below the 140 gpcpd threshold set by the water planning group. Water reuse was not considered because the Liberty City area does not have a centralized wastewater collection system. Surface water alternatives were omitted since no supply source is within close proximity to the area, and surface water treatment is not economically feasible for a system of this size. LCWSC has purchased water from the City of Kilgore in the recent past, so a purchase agreement alternative was considered. A worksheet for the groundwater alternative is included as Attachment B. A worksheet for the water purchase alternative is included as Attachment C.

Evaluation of Potentially Feasible Water Management Strategies:

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater (wells)	**376**	**$ 1,535,841**	**$ 183,148**	**$ 853**	**Minimal**
Groundwater (purchased)	**353**	**$ 1,271,932**	**$ 361,886**	**$962**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr) (wells)	0	0	0	94	188	376

The recommended strategy for LCWSC to meet their projected deficits would be to construct 4 additional water wells similar to their largest existing well. The recommended supply source for the wells would be the Carrizo-Wilcox Aquifer in Gregg County, which is projected to have an adequate supply availability for Liberty City WSC. A total of two additional wells with a rated capacity of 175 GPM each would provide approximately 376 additional ac-ft/yr. The wells should be constructed in the decades when the deficits are projected to occur. Due to the high unit cost of purchasing water from the City of Kilgore, the purchase agreement option is not recommended unless better terms can be negotiated with the City of Kilgore.

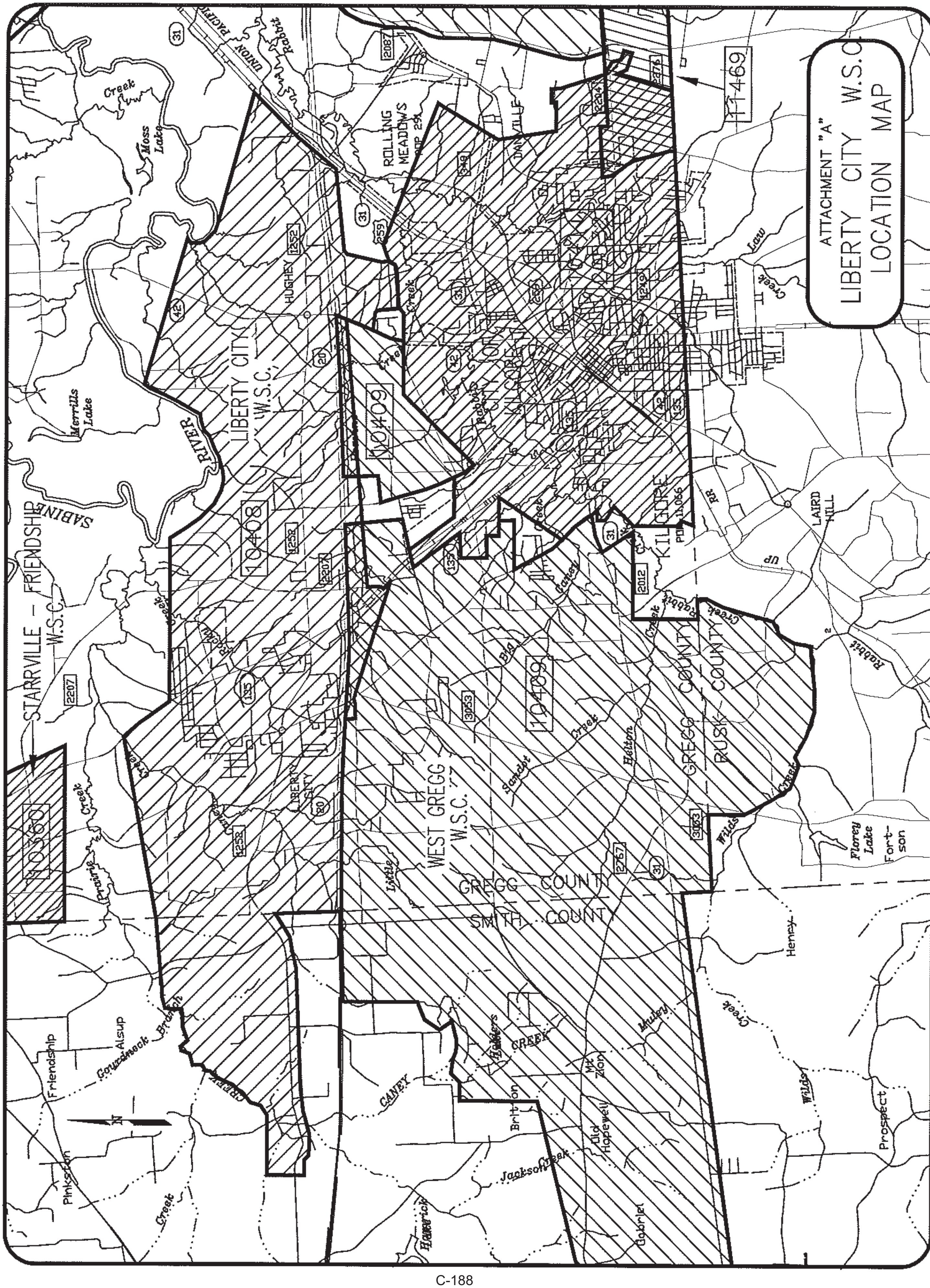

ATTACHMENT "A"
LIBERTY CITY W.S.C.
LOCATION MAP
LIBERTY CITY W.S.C.
10408
10409
10409
11469
10360
STARRVILLE – FRIENDSHIP W.S.C.
WEST GREGG W.S.C.
GREGG COUNTY
SMITH COUNTY
GREGG COUNTY
RUSK COUNTY
KILGORE
LAIRD HILL
ROLLING MEADOWS
DANVILLE
HUGHEY
LIBERTY CITY
SABINE RIVER
Merrills Lake
Moss Lake
Florey Lake
Fort-son
Henry
Prospect
Gabriel
Old Hopewell
Mt Zion
Britton
Pinkston
Friendship
Alsup
UNION PACIFIC
UP
RR

Table C4.18 - Groundwater Worksheet
Liberty City WSC (includes City of Liberty City)
Gregg County
City and County Other Category

Water Well Development:
CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
4	500	175	**376**	$ 440.00	$ 880,000.00	$ 22,000.00	$ 902,000.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
16,000	6	$ 2.20	$ 211,200.00	$ 7,392.00	$ 218,592.00

Total Construction Cost	**$ 1,120,592.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 336,177.60
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 1,476,770.60**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 88,606.24
	4% Rate of Return on Investment of Unspent Funds	$ 29,535.41
	Net Interest	**$ 59,070.82**

TOTAL CAPITAL COST	**$ 1,535,841.42**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 65,002.94

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	175	100	70%	4	0.09	$ 6,643.07

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 183,148.10**
WUG Total WMS Cost Per Acre-Foot	**$ 835.02**

Table C4.19 - Purchase Groundwater Worksheet
Liberty City WSC (includes City of Liberty City)
Gregg and Smith Counties
City and County Other Category

Water Purchase Contract With City of Kilgore:

Yield (gpm)	Total Yield (AF/YR)	Unit Cost ($ / 1000GAL)
	376.0	$ 2.20

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
35,000	12	$ 2.20	$ 924,000.00	$ 32,340.00	$ 956,340.00

Total Construction Cost	**$ 956,340.00**
Other Capital Costs	
ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 286,902.00
INTEREST DURING CONSTRUCTION (3%)	$ 28,690.20
ENVIRONMENTAL (LUMP SUM)	$ -
TOTAL CAPITAL COST	**$ 1,271,932.20**
ANNUAL WATER PURCHASE COST (Yield (AF/yr) * 325,851 * $ / 1,000)	$ 269,543.95
TOTAL ANNUALIZED COST (Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))	**$ 361,886.22**
UNIT COST ($ / AC-FT / yr)	**$ 962.46**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF WEST GREGG SUD

Description of Water User Group:

West Gregg SUD provides water service in the rural southwestern corner of Gregg County, a portion of eastern Smith County, and a small portion of Rusk County. Approximately 3% of the system is outside of Region D. In 2003, the system served approximately 1,287 connections. The population is projected to increase from 3,376 persons in 2010 to 6,382 persons in 2060. The SUD is included in the WUGs for Gregg, Smith, and Rusk Counties. The system relies on seven wells with a total rated capacity of 910 gpm, or 489 ac-ft/yr. Approximately 19 ac-ft of this capacity is allocated to users outside of Region D. The system currently has a water conservation plan and a leak detection program. The system is bounded on the north by Liberty City WSC; the east by Liberty-Danville FWSD #1; the south by the City of Kilgore, and the west by the Browning community in Smith County. WG SUD has a water conservation plan but does not have a drought management plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	3376	3799	4233	4718	5409	6382
Projected Water Demand	442	489	545	608	697	822
Current Water Supply	489	489	489	489	489	489
Projected Supply Surplus(+)/Deficit(-)	+47	0	**-56**	**-119**	**-208**	**-333**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the West Gregg SUD water supply shortages as summarized in the following table. Advanced water conservation was not considered because the per capita use per day of 120 gpcpd is less than the 140 gpcpd threshold set by the water planning group. Water reuse was not considered because the West Gregg service area does not have a centralized wastewater collection system. Surface water alternatives were omitted since no supply source is within close proximity to the area, and surface water treatment is not economically feasible for a system of this size. A ten-year master plan was recently completed for this system and the supply improvements specified in that plan were considered and listed on the groundwater worksheet. The worksheet for the groundwater alternative 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	**350**	**$ 1,973,197**	**$ 203,756**	**$ 378**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr) (wells)			70	140	210	350

The recommended strategy for West Gregg SUD to meet their projected deficits would be to construct five additional water wells similar to their existing wells. The recommended supply source for the wells would be the Carrizo-Wilcox Aquifer in Gregg County, which is projected to have an ample supply availability for WG SUD. A total of five additional wells at 130 gpm each would provide approximately 350 additional ac-ft/yr. The wells should be constructed in the decades when the deficits are projected to occur.

Given the increasing costs to comply with more stringent regulations and 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.

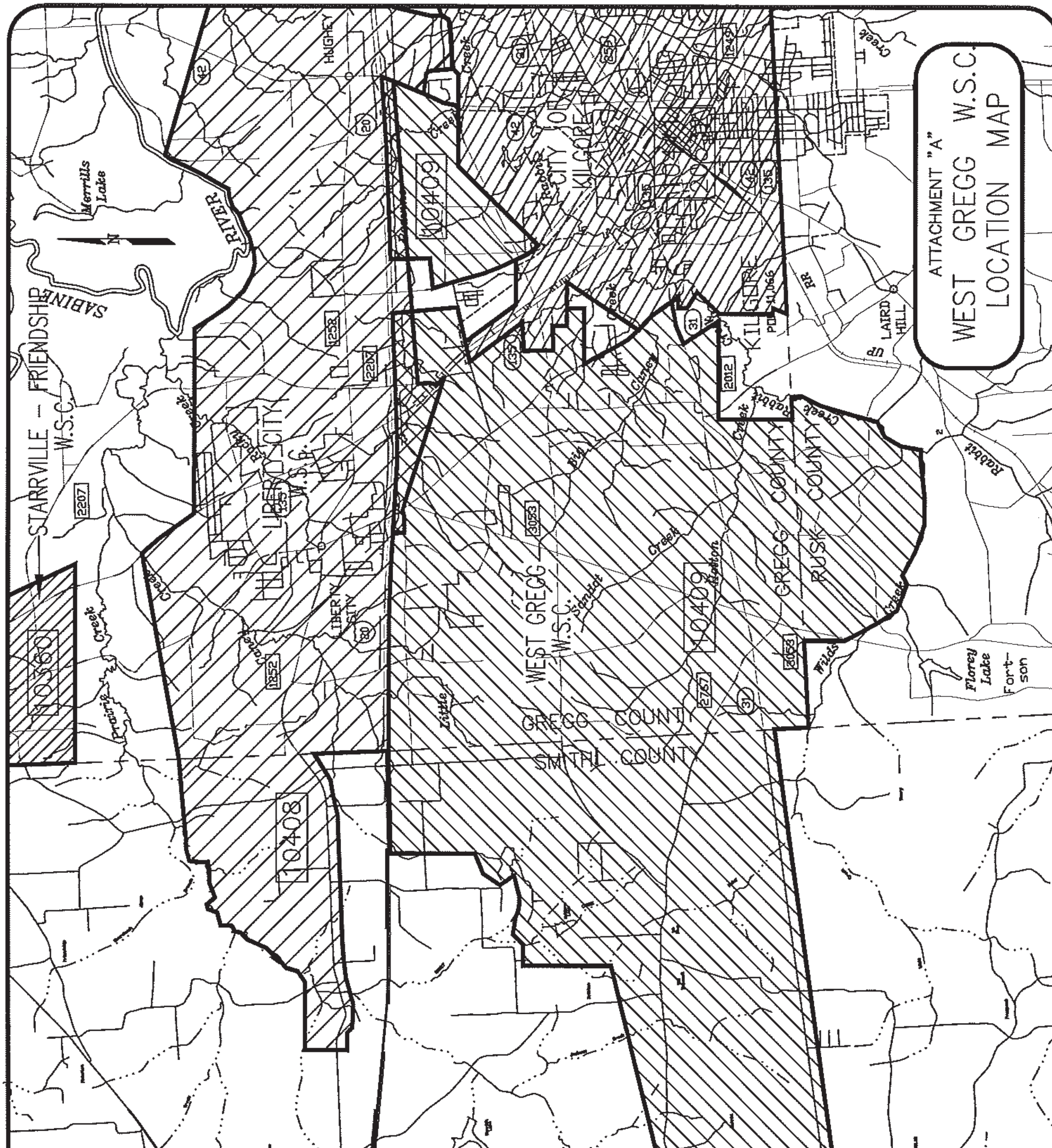

ATTACHMENT "A"
WEST GREGG W.S.C.
LOCATION MAP
STARRVILLE – FRIENDSHIP W.S.C.
LIBERTY CITY W.S.C.
WEST GREGG W.S.C.
STAR MOUNTAIN W.S.C.
CITY OF KILGORE
SABINE RIVER
Merrills Lake
GREGG COUNTY
SMITH COUNTY
RUSK COUNTY
10409
10408
10360
11720
LIBERTY CITY
LAIRD HILL
Florey Lake
Fort-son
HUGHEY

Table C4.20 - Groundwater Worksheet
West Gregg SUD
Gregg, Smith, and Rusk County
WUG

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
5	600	130	**350**	$ 440.00	$ 1,320,000.00	$ 33,000.00	$ 1,353,000.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
10,000	4	$ 2.20	$ 88,000.00	$ 3,080.00	$ 91,080.00

Total Construction Cost	**$ 1,444,080.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 433,224.00
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 1,897,305.00**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 113,838.30
	4% Rate of Return on Investment of Unspent Funds	$ 37,946.10
	Net Interest	**$ 75,892.20**

TOTAL CAPITAL COST	**$ 1,973,197.20**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.45/ 1,000)	$ 51,248.95

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	130	150	70%	5	0.09	$ 9,252.85

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 203,755.92**
WUG Total WMS Cost Per Acre-Foot	**$ 378.05**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LIBERTY-DANVILLE FWSD 2

Description of Water User Group:

Liberty-Danville FWSD 2 provides water service in the rural southwestern portion of Gregg County east of the City of Kilgore. In 2003, the FWSD served 215 connections. The population is projected to increase from 618 persons in 2010 to 1,158 persons in 2060. The Liberty-Danville FWSD 2 is included in the County Other WUG for Gregg County. The system has a water purchase contract with the City of Kilgore for 36 MG/yr or 111 ac-ft/yr. The system is bounded on the north by I-20 and the Sabine River; the east by Elderville WSC; the south by Cross Roads WSC; and on the west by the City of Kilgore. LCWSC does not have a water conservation plan or a drought management plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	618	693	771	861	983	1158
Projected Water Demand	84	92	102	112	128	151
Current Water Supply	111	111	111	111	111	111
Projected Supply Surplus(+)/Deficit(-)	+27	+19	+9	**-1**	**-17**	**-40**

Evaluation of Potentially Feasible Water Management Strategies:

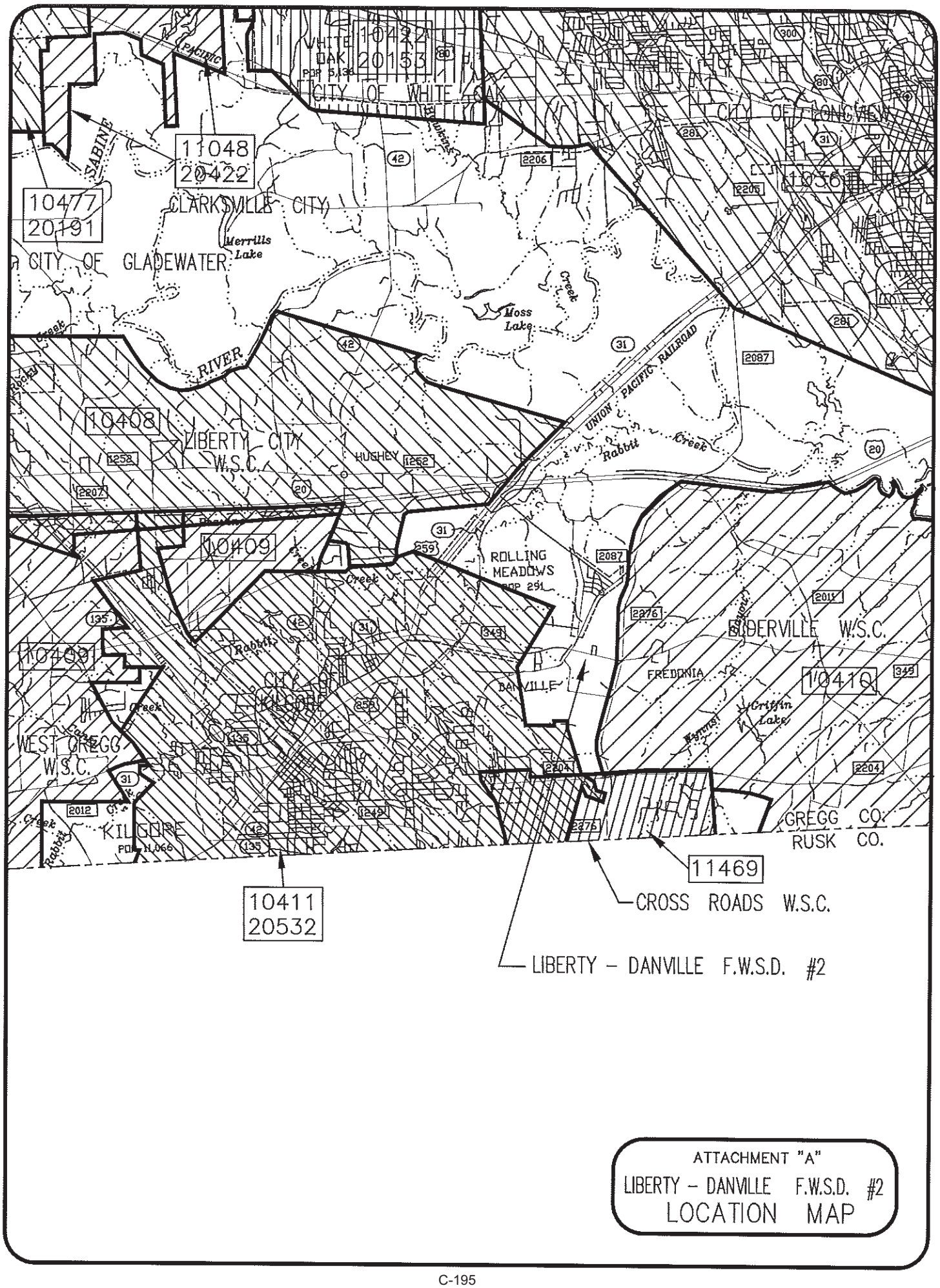
Four alternative strategies were considered to meet the Liberty-Danville FWSD 2 water supply shortages as summarized in the following table. Advanced water conservation was eliminated for LDFWSD 2 because the per capita use per day of 104 gpcpd was below the 140 gpcpd threshold set by the water planning group. Water reuse was not considered because the Liberty-Danville FWSD 2 area does not have a centralized wastewater collection system. Surface water alternatives were omitted since no supply source is within close proximity to the area, and surface water treatment is not economically feasible for a system of this size. Liberty-Danville FWSD 2 currently purchases treated water from the City of Kilgore, so a purchase agreement alternative was considered. A worksheet for the groundwater alternative is included as Attachment B. A worksheet for the water purchase alternative is included as Attachment C.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater (wells)	**40**	**$ 550,789**	**$ 46,612**	**$ 660**	**Minimal**
Surface Water (purchased)	**40**	**$ 0**	**$ 32,585**	**$ 815**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)				1	17	40

The recommended strategy for Liberty-Danville FWSD 2 to meet their projected deficits would be to extend and increase their water purchase contract with the City of Kilgore. The recommended supply source for the water purchase would be the Sabine Run of the River (ROR) in Gregg County, which is projected to have an adequate supply availability for Liberty-Danville FWSD 2. The water purchase contract should be amended as deficits arise yielding 40 ac-ft/yr by 2060.



ATTACHMENT "A"

LIBERTY - DANVILLE F.W.S.D. #2

LOCATION MAP

Table C4.21 - Groundwater Worksheet
Liberty-Danville FWSD 2
Gregg County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	500	75	**40**	$ 334.00	$ 167,000.00	$ 4,175.00	$ 171,175.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	4	$ 1.67	$ 13,360.00	$ 467.60	$ 13,827.60

Pump station w/storage tank

Const. Cost	Land & Easements -3.50%	Subtotal
$ 200,000.00	$ 7,000.00	$ 207,000.00

Total Construction Cost	**$ 392,002.60**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 117,600.78
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 529,604.38**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 31,776.26
	4% Rate of Return on Investment of Unspent Funds	$ 10,592.09
	Net Interest	**$ 21,184.18**

TOTAL CAPITAL COST	**$ 550,788.56**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.45/ 1,000)	$ 5,913.34

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	75	150	70%	1	0.06	$ 711.76

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 46,612.35**
WUG Total WMS Cost Per Acre-Foot	**$ 660.06**

Table C4.22 - Purchase Surface Water Worksheet
Liberty-Danville FWSD 2
Gregg County
County Other Category

Water Purchase Contract With City of Kilgore:

Yield (gpm)	Total Yield (AF/YR)	Unit Cost ($ / 1000GAL)
	40.0	$ 2.50

ANNUAL WATER PURCHASE COST (Yield (AF/yr) * 325,851 * $ / 1,000)	$ 32,585.10
TOTAL ANNUALIZED COST (Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))	**$ 32,585.10**
UNIT COST ($ / AC-FT / yr)	**$ 814.63**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF STARRVILLE-FRIENDSHIP WSC

Description of Water User Group:

Starrville-Friendship WSC provides water service in western Gregg County and northeastern Smith County. The SFWSC service area is bounded on the west by Star Mountain WSC, on the north and east by the Sabine River, and on the south by Liberty City WSC. In 2003, the WSC served 530 connections. The projected population is 1,247 in the year 2010 and is projected to be 2,386 in the year 2060. Starrville-Friendship WSC is included in the County Other water user group for Gregg and Smith Counties. The system is served by three wells from the Carrizo-Wilcox Aquifer with a total pumping capacity of 385 gpm, or 207 ac-ft/yr on an average annual basis. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1247	1409	1574	1750	2018	2386
Projected Water Demand	170	189	207	226	261	308
Current Water Supply	207	207	207	207	207	207
Projected Supply Surplus (+) / Deficit (-)	+37	+18	0	**-19**	**-54**	**-101**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the Starrville-Friendship WSC water supply shortages as summarized in the table below. Advanced water conservation was not considered because the per capita use per day did not exceed the 140 gpcpd threshold set the water planning group. Water reuse was omitted from consideration because the WSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since surface water treatment for an entity of this size is not practical. A ground water worksheet is included as Attachment B.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater	**108**	**$ 316,158**	**$ 39,355**	**$ 259**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)				108	108	108

The recommended strategy for Starrville-Friendship WSC to meet their projected deficit of 19 ac-ft in the year 2040 and 101 ac-ft in the year 2060 would be to construct one additional water well in the Carrizo-Wilcox Aquifer. One well with a total rated capacity of 200 gpm would provide approximately 108 ac-ft/yr. The well will need to be constructed by the year 2040. The supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin, Smith County. The aquifer has an adequate supply to meet the projected needs of SF WSC.

Given the increasing costs to comply with more stringent regulations and 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 recommendation previously discussed should be disregarded and a re-evaluation completed.

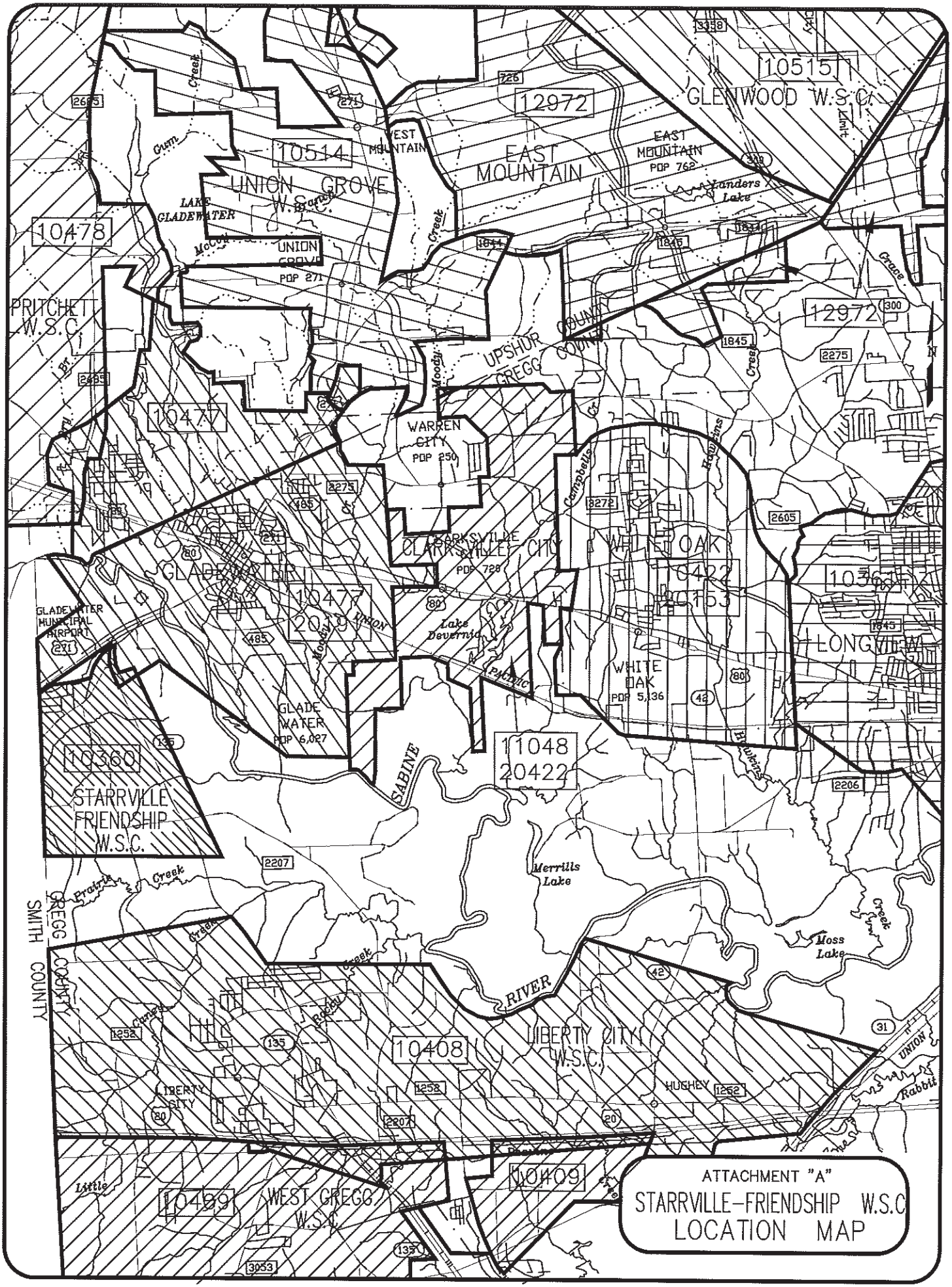

10515
GLENWOOD W.S.C.
12972
EAST MOUNTAIN
EAST MOUNTAIN POP 762
10514
UNION GROVE W.S.C.
LAKE GLADEWATER
UNION GROVE POP 271
10478
PRITCHETT W.S.C.
12972
UPSHUR COUNTY
GREGG COUNTY
WARREN CITY POP 250
10477
20199
CLARKSVILLE CITY
CLARKSVILLE POP 728
WELLS OAK
10422
20153
LONGVIEW
WHITE OAK
WHITE OAK POP 5,136
GLADEWATER
GLADEWATER POP 6,027
GLADEWATER MUNICIPAL AIRPORT
10360
STARRVILLE FRIENDSHIP W.S.C.
11048
20422
Lake Devernia
Merrills Lake
Moss Lake
SABINE RIVER
SMITH COUNTY
GREGG COUNTY
10408
LIBERTY CITY W.S.C.
LIBERTY CITY
HUGHEY
10409
10499
WEST GREGG W.S.C.
ATTACHMENT "A"
STARRVILLE-FRIENDSHIP W.S.C
LOCATION MAP

Table C4.23 - Groundwater Worksheet
Starrville-Friendship WSC
Gregg and Smith County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	600	200	**108**	$ 440.00	$ 264,000.00	$ 6,600.00	$ 270,600.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	6	$ 2.20	$ 26,400.00	$ 924.00	$ 27,324.00

Total Construction Cost	**$ 297,924.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 89,377.20
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 397,302.20**

INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 23,838.13
4% Rate of Return on Investment of Unspent Funds	$ 7,946.04
Net Interest	**$ 15,892.09**

TOTAL CAPITAL COST	**$ 413,194.29**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.45/ 1,000)	$ 15,768.91

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	200	50	70%	1	0.09	$ 949.01

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 46,715.82**
WUG Total WMS Cost Per Acre-Foot	**$ 294.93**

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

HARRISON COUNTY

WUGs:

City of Waskom
Steam Electric

County Other:

Blocker-Crossroads WSC
Caddo Lake WSC
Leigh WSC
City of Scottsville
Talley WSC
Waskom Rural WSC #1 & 2

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF STEAM ELECTRIC IN HARRISON COUNTY

Description of Water User Group:

The Steam Electric WUG in Harrison County has a demand that is projected to grow from 18,438 ac-ft/yr in 2010 to38,345 ac-ft/yr in 2060. Steam electric is projected to have a deficit of 3,122 ac-ft/yr in 2040 and increasing to a deficit of 14,184 ac-ft/yr in 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Projected Water Demand	18,438	19,838	23,193	27,283	32268	38,345
Current Water Supply	24,161	24,161	24,161	24,161	24,161	24,161
Projected Supply Surplus(+)/Deficit(-)	5,723	4,323	968	-3,122	-8,107	-14,184

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Harrison County Steam Electric WUG's water supply shortages. In this round of planning, estimates were not made for electric power water conservation because data on operating strategies for each power plant was not available. Groundwater is also not feasible due to questionable reliability and the large quantity required for a steam electric facility. Surface water from surrounding lakes was considered as a viable alternative to meet projected demands. A surface water purchase worksheet is included as Attachment A.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater					
Surface Water	**14,184**	**$ 0**	**$2,153,021**	**$ 508**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	0	0	0	3,122	8,107	14,184

The recommended strategy for the Harrison County Steam Electric WUG to meet projected demands during the planning period is to purchase raw water from the Northeast Texas MWD. The MWD receives supplies from several lakes, and Lake O the Pines has the largest yield. At this stage it is assumed that the steam electric water needs will be met from this lake. A capital cost cannot be included for this alternative since the location of the future generator facilities is unknown.

Table C4.24 - Surface Water Worksheet
Steam Electric
Harrison County

Water Purchase from Northeast Texas Water Supply District:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
12,662,659	**14184**	$ 1.56

Total Construction Cost		**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)		**1.0**
Other Capital Costs		
ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)		$ -
ENVIRONMENTAL (LUMP SUM)		$ -
Total Borrowed Funds		**$ -**
INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**
TOTAL CAPITAL COST		**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	3122	8107	14184	4,236
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ 1,586,998.64	$ 4,121,011.53	$ 7,210,118.11	$ 2,153,021.38
							Average
TOTAL ANNUALIZED COST (Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))	**$ -**	**$ -**	**$ -**	**$ 1,586,998.64**	**$ 4,121,011.53**	**$ 7,210,118.11**	**$ 2,153,021.38**

UNIT COST **$ 508.33**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE CITY OF WASKOM

Description of Water User Group:

The City of Waskom is located in southeastern Harrison County and serves the incorporated city limits and an area immediately north, east, and south of the City of Waskom. In 2003, the system had 957 residential connections. The population is projected to increase from 2,872 persons in 2010 to 4,240 persons in 2060. The City is included in the County Other W.U.G. for Harrison County. The system's current water supply consists of eight water wells from the Carrizo-Wilcox Aquifer. The total rated capacity of these wells is 586 GPM, or 315 ac-ft/yr. The system is bounded on the east, south, and west by the Waskom Rural Water WSC #1. The City does not have a water conservation plan. The City of Waskom is projected to have a water supply deficit of 55 ac-ft/yr in 2010 increasing to a deficit of 231 ac-ft/yr in 2060. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	2872	3228	3485	3679	3907	4240
Projected Water Demand	370	416	449	474	503	546
Current Water Supply	315	315	315	315	315	315
Projected Supply Surplus (+)/Deficit(-)	**-55**	**-101**	**-134**	**-159**	**-188**	**-231**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City of Waskom 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 demand for non-potable water. 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. 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	**231**	**$ 718,665**	**$ 98,227**	**$ 581**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	92	138	138	185	231	231

The recommended strategy for the City of Waskom to meet their projected deficit of 55 ac-ft/yr in 2010 and 231 ac-ft/yr in 2060 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 Harrison County. Five wells with rated capacity of 86 gpm each would provide approximately 46 acre-feet each or 231 ac-ft/yr. The Carrizo-Wilcox Aquifer in Harrison County is projected to have a more than ample supply availability to meet the needs of the City of Waskom 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.

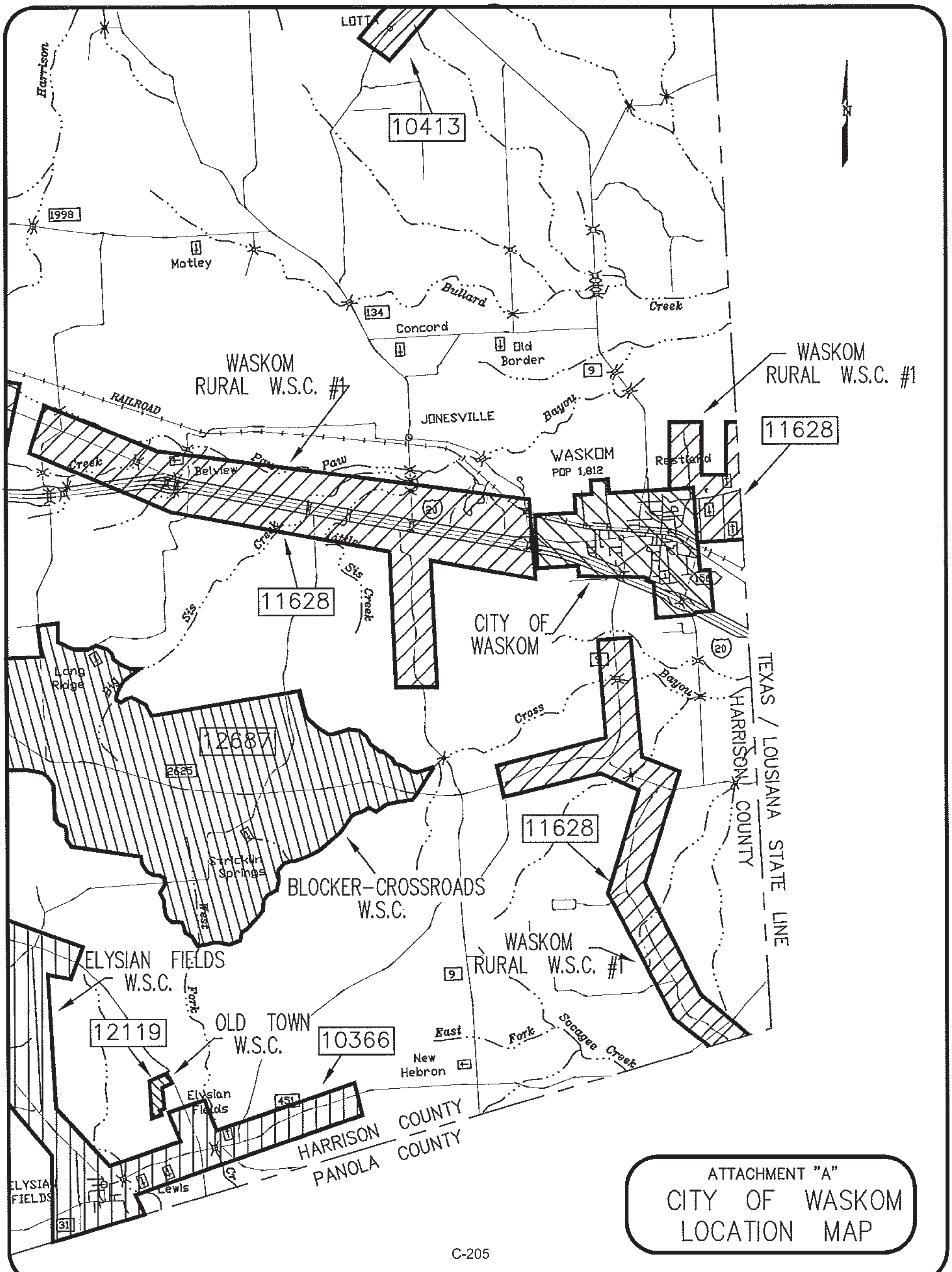

LOTTA
10413
Harrison
1998
Motley
Bullard
Creek
134
Concord
Old Border
9
WASKOM RURAL W.S.C. #1
RAILROAD
JONESVILLE
Bayou
WASKOM RURAL W.S.C. #1
11628
WASKOM
POP 1,812
Restland
Creek
Belview
Paw
Paw
20
Little
Sis
Creek
11628
Sis
Creek
CITY OF WASKOM
156
20
Long Ridge
Big
12687
2625
Cross
Bayou
TEXAS / LOUSIANA STATE LINE
HARRISON COUNTY
11628
Strickln Springs
BLOCKER-CROSSROADS W.S.C.
West
WASKOM RURAL W.S.C. #1
ELYSIAN FIELDS W.S.C.
9
Fork
12119
OLD TOWN W.S.C.
10366
East
Fork
Socagee
Creek
New Hebron
Elysian Fields
451
HARRISON COUNTY
PANOLA COUNTY
Lewis
Cr.
ELYSIAN FIELDS
31
ATTACHMENT "A"
CITY OF WASKOM
LOCATION MAP

Table C4.25 - Groundwater Worksheet
City of Waskom
Harrison County
City and County Other Category

Water Well Development:
CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
5	200	86	**231**	$ 440.00	$ 440,000.00	$ 11,000.00	$ 451,000.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
8,000	4	$ 2.20	$ 70,400.00	$ 2,464.00	$ 72,864.00

Total Construction Cost	**$ 523,864.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 157,159.20
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 691,024.20**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 41,461.45
	4% Rate of Return on Investment of Unspent Funds	$ 13,820.48
	Net Interest	**$ 27,640.97**

TOTAL CAPITAL COST	**$ 718,665.17**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 39,930.38

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	86	150	70%	5	0.09	$ 6,121.12

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 98,226.59**
WUG Total WMS Cost Per Acre-Foot	**$ 580.65**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF BLOCKER-CROSSROADS WSC

Description of Water User Group:

Blocker-Crossroads WSC is located in southeastern Harrison County and serves an area east of US Hwy. 59 and south of Interstate Highway 20. In 2003 the system had 383 members. The population is projected to increase from 835 persons in 2010 to 1,225 persons in 2060. The BCWSC is included in the County Other water user group for Harrison County. The system's current water supply consists of two water wells that provide water from the Carrizo-Wilcox Aquifer. The total rated capacity of these two wells is 56 GPM, which equates to 30 ac-ft/yr on an annual average basis. The system is bounded on the west by Gill WSC, on the north by the City of Scottsville, on the east by Waskom Rural WSC, and on the south by Elysian Fields WSC. BCWSC does not have a water conservation plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	835	936	1010	1065	1130	1225
Projected Water Demand	108	121	130	137	146	158
Current Water Supply	30	30	30	30	30	30
Projected Supply Surplus(+)/Deficit(-)	**-78**	**-91**	**-100**	**-107**	**-116**	**-128**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the BCWSC water supply shortages as summarized in the following table. Advanced conservation was omitted from consideration because the per capita use per day was below the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because the BCWSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the BCWSC 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	**129**	**$ 633,062**	**$ 72,802**	**$ 386**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	86	86	129	129	129	129

The recommended strategy for the Blocker-Crossroads WSC to meet their projected deficit of 78 acre-feet in the year 2010 and 128 acre-feet in the year 2060 would be to construct two additional water wells prior to 2010 and one additional well prior to 2030. The three wells will need to average 80 gpm each. The recommended supply source woiuld be the Carrizo-Wilcox Aquifer in Harrison County. A well with rated capacity of 80 gpm would provide approximately 43 acre-feet on an annualized basis. The Carrizo-Wilcox Aquifer in Harrison County is projected to have a more than ample supply availability to meet the needs of BCWSC for the planning period. BCWSC has already applied for funding for two additional wells.

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.

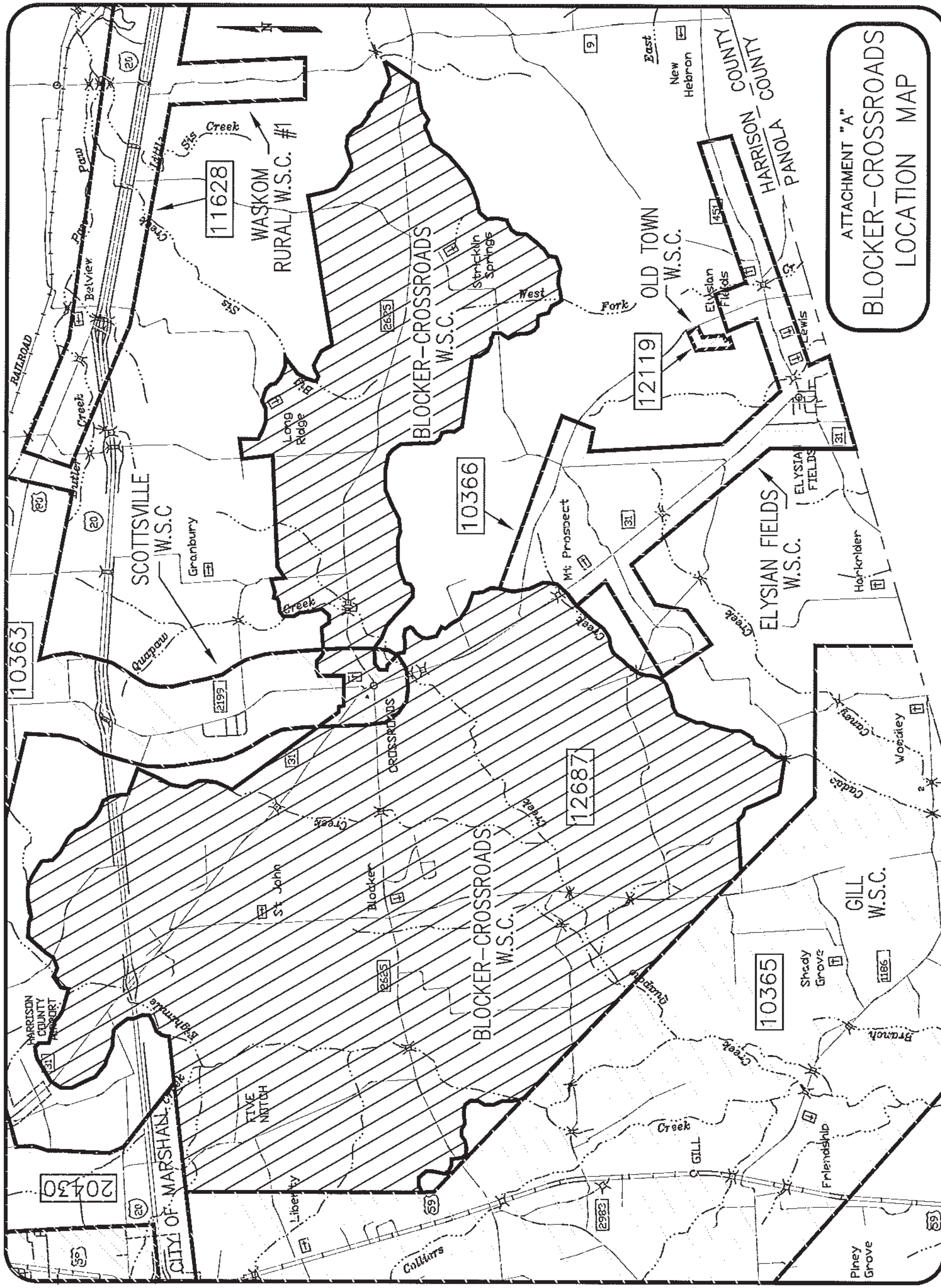

ATTACHMENT "A"
BLOCKER-CROSSROADS
LOCATION MAP
BLOCKER-CROSSROADS W.S.C.
12687
BLOCKER-CROSSROADS W.S.C.
WASKOM RURAL W.S.C. #1
11628
SCOTTSVILLE W.S.C
10363
OLD TOWN W.S.C.
12119
10366
ELYSIAN FIELDS W.S.C.
GILL W.S.C.
10365
20430
CITY OF MARSHALL
HARRISON COUNTY
PANOLA COUNTY
HARRISON COUNTY AIRPORT
CROSSROADS
Blocker
St John
FIVE NOTCH
Long Ridge
Stricklin Springs
Granbury
Mt Prospect
Elysian Fields
ELYSIAN FIELDS
Harkrider
Woodley
Shady Grove
Friendship
GILL
Liberty
Piney Grove
New Hebron
Belview
RAILROAD

Table C4.26 - Groundwater Worksheet
Blocker-Crossroads WSC
Harrison County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
3	300	80	**129**	$ 440.00	$ 396,000.00	$ 9,900.00	$ 405,900.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
6,000	4	$ 2.20	$ 52,800.00	$ 1,848.00	$ 54,648.00

Total Construction Cost	**$ 460,548.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 138,164.40
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 608,713.40**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 36,522.80
	4% Rate of Return on Investment of Unspent Funds	$ 12,174.27
	Net Interest	**$ 24,348.54**

TOTAL CAPITAL COST	**$ 633,061.94**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 22,286.72

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	80	200	70%	3	0.09	$ 4,555.25

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 72,802.27**
WUG Total WMS Cost Per Acre-Foot	**$ 386.07**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CADDO LAKE WSC

Description of Water User Group:

Caddo Lake WSC is located in northeastern Harrison County and serves the community of Uncertain east of Karnack and west of Caddo Lake. In 2003, the system had 427 members. The population is projected to increase from 1,032 persons in 2010 to 1,515 persons in 2060. The CLWSC is included in the County Other water user group for Harrison County. The system's current water supply consists of four water wells that provide water from the Carrizo-Wilcox Aquifer. The total rated capacity of these four wells is 267 gpm, which equates to 143 ac-ft/year on an annual average basis. The system is bounded on the west by Karnack WSC, on the north by the Big Cypress Bayou, on the east by Caddo Lake, and on the south by the Longhorn Army Ammunition Plant. The CLWSC does not have a water conservation plan or a drought management plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1032	1158	1249	1318	1398	1515
Projected Water Demand	133	149	161	170	180	195
Current Water Supply	143	143	143	143	143	143
Projected Supply Surplus(+)/Deficit(-)	+10	**-6**	**-19**	**-27**	**-37**	**-52**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the CLWSC water supply shortages as summarized in the following table. Advanced conservation was omitted from consideration because the per capita use per day was below the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because the CLWSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the CLWSC 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	**86**	**$ 298,358**	**$ 38,796**	**$ 325**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)		43	43	43	43	86

The recommended strategy for the Caddo Lake WSC to meet their projected deficit of 6 acre-feet in the year 2020 and 52 acre-feet in the year 2060 would be to construct two 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 Harrison County. One well with rated capacity of 80 gpm would provide approximately 43 acre-feet on an annualized basis and 86 acre-feet total. The Carrizo-Wilcox Aquifer in Harrison County is projected to have a more than ample supply availability to meet the needs of CLWSC 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.

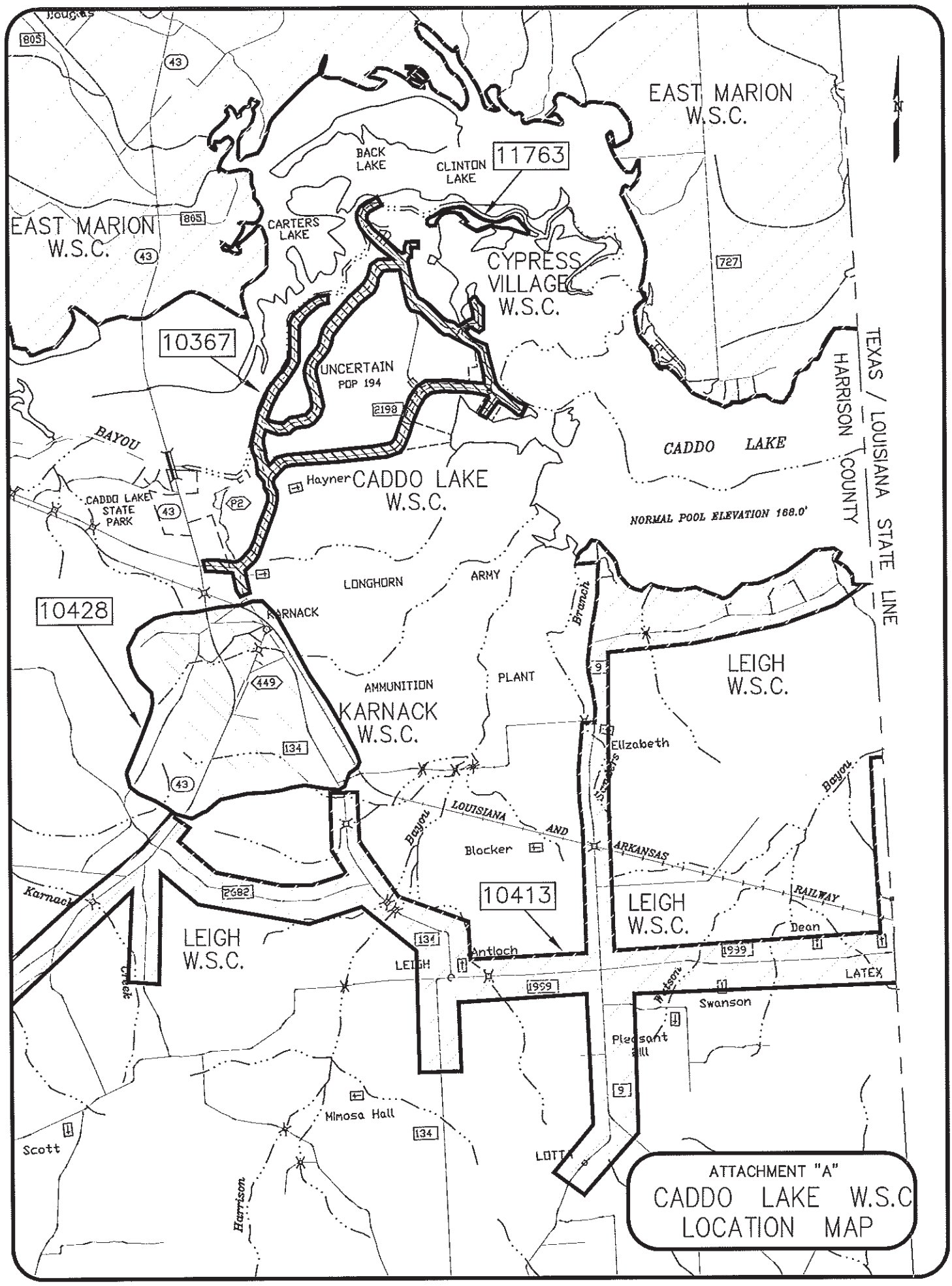

EAST MARION W.S.C.
BACK LAKE
CLINTON LAKE
11763
EAST MARION W.S.C.
CARTERS LAKE
CYPRESS VILLAGE W.S.C.
10367
UNCERTAIN POP 194
TEXAS / LOUISIANA STATE LINE
HARRISON COUNTY
CADDO LAKE
NORMAL POOL ELEVATION 168.0'
BAYOU
CADDO LAKE STATE PARK
Hayner
CADDO LAKE W.S.C.
LONGHORN ARMY AMMUNITION PLANT
10428
KARNACK
KARNACK W.S.C.
LEIGH W.S.C.
Ellzabeth
Bayou
LOUISIANA AND ARKANSAS RAILWAY
Blocker
10413
LEIGH W.S.C.
Dean
Karnack
LEIGH W.S.C.
Antioch
LEIGH
LATEX
Swanson
Pleasant Hill
Mimosa Hall
Scott
Harrison
LOTT
ATTACHMENT "A"
CADDO LAKE W.S.C
LOCATION MAP

Table C4.27 - Groundwater Worksheet
Caddo Lake WSC
Harrison County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
2	200	80	**86**	$ 440.00	$ 176,000.00	$ 4,400.00	$ 180,400.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
4,000	4	$ 2.20	$ 35,200.00	$ 1,232.00	$ 36,432.00

Total Construction Cost	**$ 216,832.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 65,049.60
ENVIRONMENTAL (LUMP SUM)	$ 5,000.00
Total Borrowed Funds	**$ 286,882.60**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 17,212.96
	4% Rate of Return on Investment of Unspent Funds	$ 5,737.65
	Net Interest	**$ 11,475.30**

TOTAL CAPITAL COST	**$ 298,357.90**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 14,857.82

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	80	150	70%	2	0.09	$ 2,277.63

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 38,796.22**
WUG Total WMS Cost Per Acre-Foot	**$ 325.06**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LEIGH WSC

Description of Water User Group:

Leigh WSC is located in northeastern Harrison County and serves an area south of Karnack and Caddo Lake, east of the City of Marshall, and North of the City of Waskom. In 2003, the system had 824 members. The population is projected to increase from 1,032 persons in 2010 to 1,515 persons in 2060. The CLWSC is included in the County Other water user group for Harrison County. The system's current water supply consists of three water wells that provide water from the Carrizo-Wilcox Aquifer and a contract with the City of Marshall for 184 ac-ft/year. The total rated capacity of the three wells is 290 gpm, which equates to 156 ac-ft/year on an annual average basis. The system is bounded on the west by the City of Marshall, on the north by Karnack WSC and Caddo Lake, on the east by Caddo Lake, and on the south by the City of Waskom. The LWSC does not have a water conservation plan or a drought management plan. Leigh WSC is projected to have a water supply deficit of 1 ac-ft/yr in 2060.
. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	2139	2398	2161	2729	2895	3139
Projected Water Demand	276	310	334	352	374	405
Current Water Supply	404	404	404	404	404	404
Projected Supply Surplus(+)/Deficit(-)	+128	+94	+70	+52	+30	-1

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the LWSC water supply shortages as summarized in the following table. Advanced conservation was omitted from consideration because the per capita use per day was below the 140 gpcpd threshold set by the water planning group. Water reuse was omitted because the LWSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the LWSC and surface water treatment is not economically feasible for a system of this size. Leigh WSC currently purchases treated surface water from the City of Marshall so increasing that contract was considered. A groundwater worksheet is included as Attachment B and a purchase surface water worksheet is included as Attachment C.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater	**43**	**$ 182,267**	**$ 21,800**	**$ 353**	**Minimal**
Surface Water (purchased)	**43**	**$ 0**	**$ 54,225**	**$ 1,261**	

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)						43

The recommended strategy for the Leigh WSC to meet their projected deficit of 1 acre-feet in the year 2060 would be to construct one additional water well similar to their existing wells just prior to 2060. The recommended supply source will be the Carrizo-Wilcox aquifer in Harrison County. One well with rated capacity of 80 gpm would provide approximately 43 acre-feet on an annualized basis. The Carrizo-Wilcox Aquifer in Harrison County is projected to have a more than ample supply availability to meet the needs of LWSC 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.

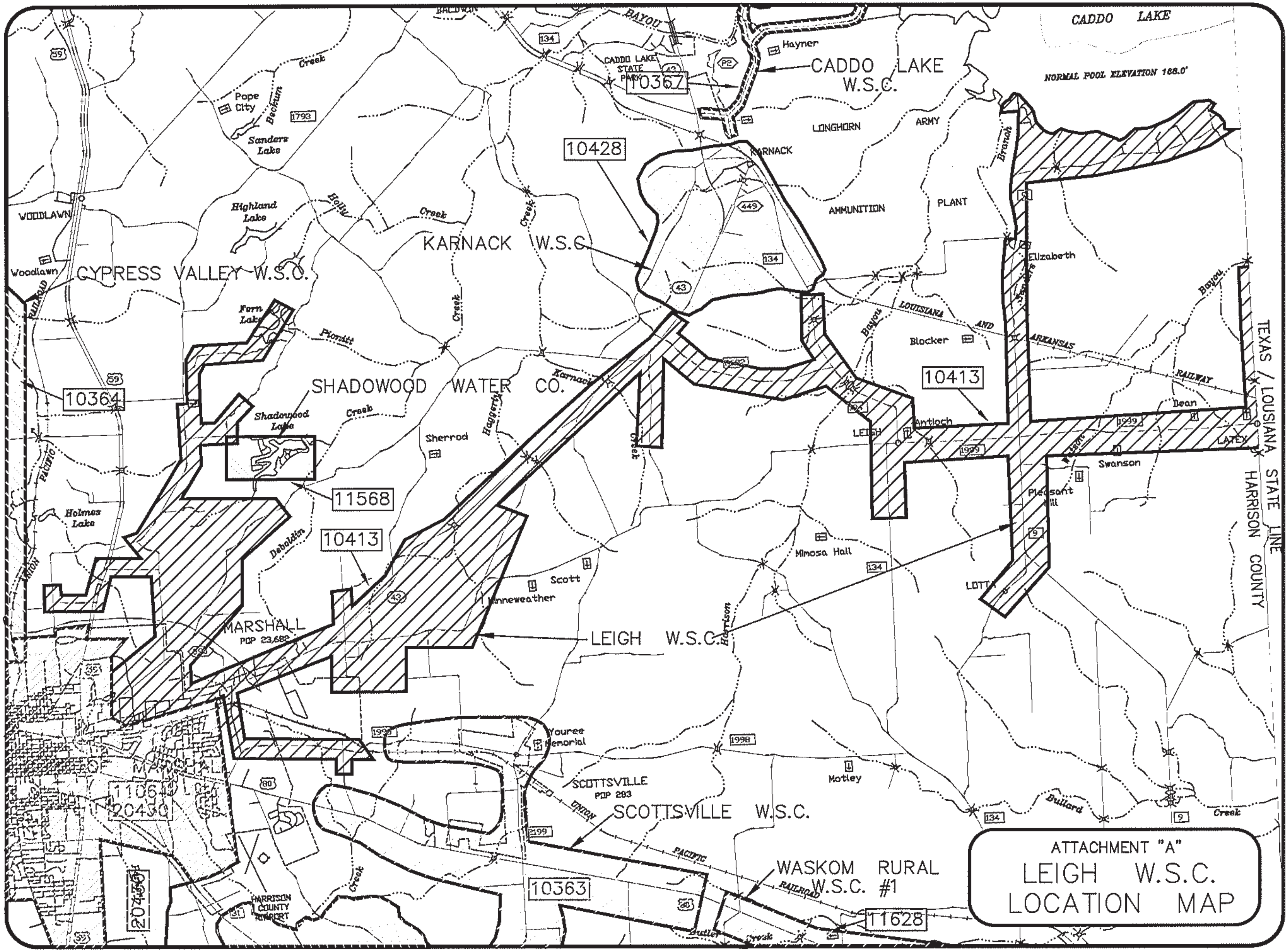

ATTACHMENT "A"
LEIGH W.S.C.
LOCATION MAP
CADDO LAKE
NORMAL POOL ELEVATION 168.0'
CADDO LAKE W.S.C.
TEXAS / LOUISIANA STATE LINE
HARRISON COUNTY
KARNACK W.S.C.
CYPRESS VALLEY W.S.C.
SHADOWOOD WATER CO.
LEIGH W.S.C.
SCOTTSVILLE W.S.C.
WASKOM RURAL W.S.C. #1
10367
10428
10413
10364
11568
10363
11628
11064
20430
LONGHORN
ARMY
AMMUNITION
PLANT
KARNACK
Hayner
CADDO LAKE STATE PARK
Pope City
Sanders Lake
Highland Lake
WOODLAWN
Woodlawn
Fern Lake
Shadowood Lake
Sherrod
Holmes Lake
MARSHALL
POP 23,682
Scott
Anneweather
Elizabeth
Blocker
Antioch
LEIGH
Dean
LATEX
Swanson
Pleasant Hill
LOTT
Mimosa Hall
Youree Memorial
SCOTTSVILLE
POP 283
Motley
HARRISON COUNTY AIRPORT
LOUISIANA AND ARKANSAS RAILWAY
UNION PACIFIC RAILROAD
Bullard Creek
Harrison
Haggerty
Karnack
Pionitt
Deboldin
Holly
Branch
Bayou
Creek

Table C4.28 - Groundwater Worksheet
Leigh WSC
Harrison County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	250	80	**43**	$ 440.00	$ 110,000.00	$ 2,750.00	$ 112,750.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	4	$ 2.20	$ 17,600.00	$ 616.00	$ 18,216.00

Total Construction Cost	**$ 130,966.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 39,289.80
ENVIRONMENTAL (LUMP SUM)	$ 5,000.00
Total Borrowed Funds	**$ 175,256.80**

INTEREST DURING CONSTRUCTION(IDC) 6% Annual Interest on Total Borrowed Funds	$ 10,515.41
4% Rate of Return on Investment of Unspent Funds	$ 3,505.14
Net Interest	**$ 7,010.27**

TOTAL CAPITAL COST	**$ 182,267.07**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 7,428.91

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	80	150	70%	1	0.09	$ 1,138.81

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 21,800.31**
WUG Total WMS Cost Per Acre-Foot	**$ 352.99**

Table C4.29 - Purchase Surface Water Worksheet
Leigh WSC
Harrison County
County Other Category

Water Purchase Contract With City of Marshall:

Yield (gpm)	Total Yield (AF/YR)	Unit Cost ($ / 1000GAL)
	43.0	$ 3.87

ANNUAL WATER PURCHASE COST
(Yield (AF/yr) * 325,851 * $ / 1,000) $ 54,224.86

UNIT COST
($ / AC-FT / yr) **$ 1,261.04**

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 2003 the system had 277 residential connections. The population is projected to increase from 720 persons in 2010 to 1,057 persons in 2060. The City is included in the County Other WUG for Harrison 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 240 gpm, or 129 ac-ft/yr. The system is bounded on the east by Waskom Rural Water WSC #1, on the south by Blocker-Crossroads WSC, on the west by the City of Marshall, and on the north by Leigh WSC. The City does not have a water conservation plan or a drought contingency plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	720	808	871	919	975	1057
Projected Water Demand	93	104	112	118	126	136
Current Water Supply	129	129	129	129	129	129
Projected Supply Surplus (+)/Deficit(-)	+36	+25	+17	+11	+3	-7

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City of Scottsville water supply shortages as summarized in the following table. Advanced conservation was considered because the per capita use per day of 155 is above the 140 gpcpd threshold set by the planning group. Water reuse was not considered because the City 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 City and surface water treatment is not economically feasible for a system of this size. A groundwater worksheet is included as Attachment B. A worksheet for advanced water conservation is included as Attachment C.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	7	$ 44,876		$ 685	Minimal
Water Reuse					
Groundwater	65	$ 217,955	$ 29,225	$ 331	Minimal
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)						65

The recommended strategy for the City of Scottville to meet their projected deficit of 7 ac-ft/yr in 2060 would be construct one additional water well prior to 2060. The recommended supply source will be the Carrizo-Wilcox Aquifer in Harrison County. A well with rated capacity of 120 gpm would provide approximately 65 acre-feet on an annualized basis. The Carrizo-Wilcox Aquifer in Harrison County is projected to have a more than ample supply availability to meet the needs of the City of Scottsville for the planning period.

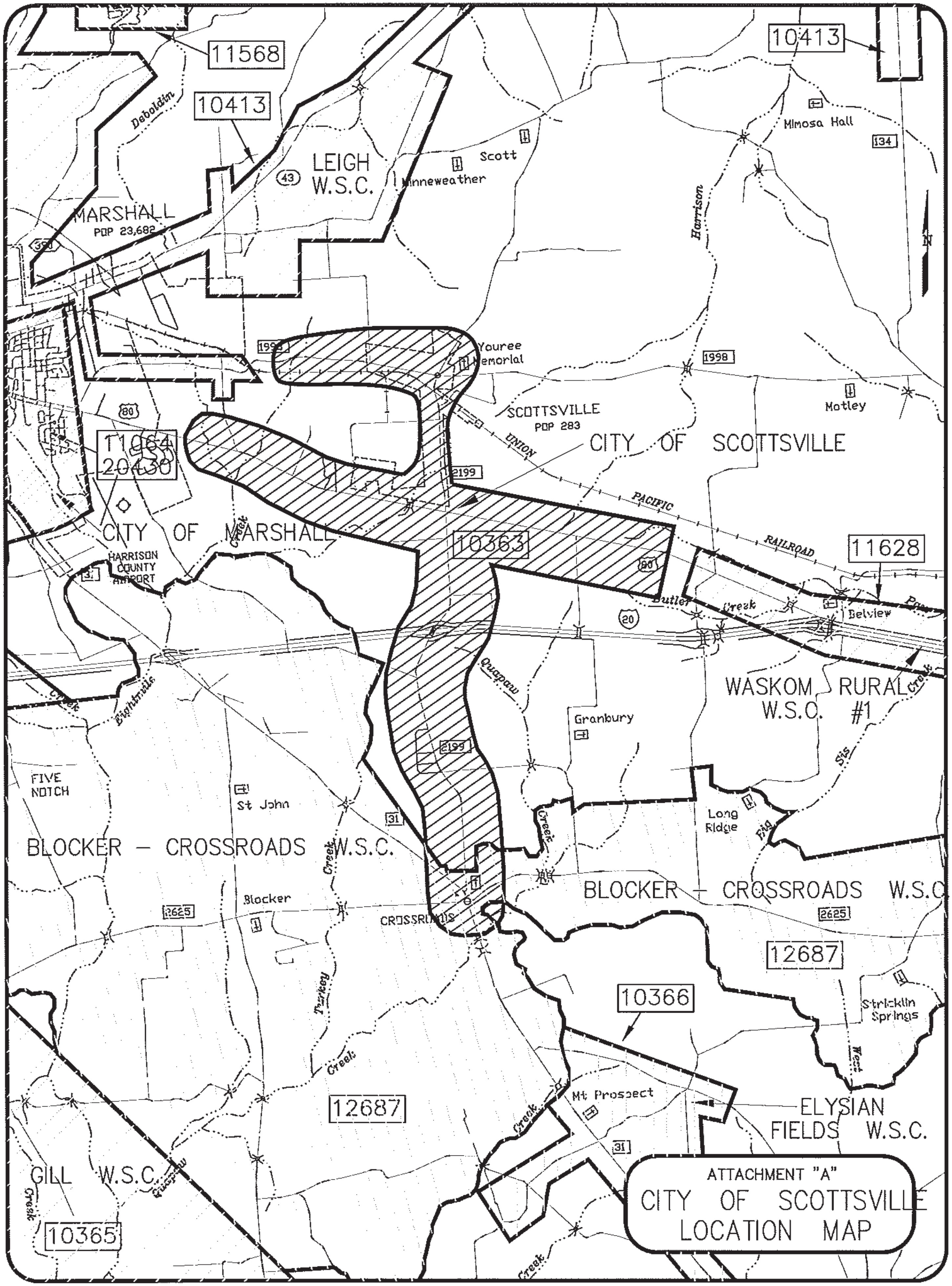

ATTACHMENT "A"
CITY OF SCOTTSVILLE
LOCATION MAP
11568
10413
10413
LEIGH W.S.C.
MARSHALL
POP 23,682
Scott
Minneweather
Mimosa Hall
Harrison
Deboldin
Youree Memorial
SCOTTSVILLE
POP 283
CITY OF SCOTTSVILLE
Motley
T1064
20430
CITY OF MARSHALL
HARRISON COUNTY AIRPORT
UNION PACIFIC RAILROAD
10363
11628
Butler Creek
Belview
WASKOM RURAL W.S.C. #1
Quapaw
Granbury
Eightmile
FIVE NOTCH
St John
Long Ridge
BLOCKER - CROSSROADS W.S.C.
Blocker
CROSSROADS
BLOCKER - CROSSROADS W.S.C.
12687
10366
Strickiln Springs
Turkey Creek
12687
Mt Prospect
ELYSIAN FIELDS W.S.C.
GILL W.S.C.
10365

Table C4.30 - Groundwater Worksheet
City of Scottsville
Harrison County
City and County Other Categories

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	300	120	**65**	$ 440.00	$ 132,000.00	$ 3,300.00	$ 135,300.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	4	$ 2.20	$ 17,600.00	$ 616.00	$ 18,216.00

Total Construction Cost	**$ 153,516.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 46,054.80
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 209,571.80**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 12,574.31
	4% Rate of Return on Investment of Unspent Funds	$ 4,191.44
	Net Interest	**$ 8,382.87**

TOTAL CAPITAL COST	**$ 217,954.67**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 11,143.36

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	120	200	70%	1	0.09	$ 2,277.63

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 29,244.50**
WUG Total WMS Cost Per Acre-Foot	**$ 330.62**

Table C4.31 - City of Scottsville Cost-Savings Analysis for Region D - Rural

Attachment C - Advanced Water Conservation Worksheet

WUG Data	
Population	889
SF Population	889
MF Population	-
Institutional Population	-
SF Units	328
MF Units	-
Average Yearly Rainfall (inches)	43.3
SF Household Size	2.71
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	1.2
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

	For Participating Customers												
	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit													
SF Showerheads and Aerators													
SF Clothes Washer Rebate	5.6	15.2	1.0	15.2	0%	90%	295	4,481	5.02	$ 120	$ 35,429	$ 751	rebate from water utility only
SF Irrigation Audit-High User	18.5	50.0	1.0	50.0	1%	5%	13	656	0.73	$ 70	$ 919	$ 459	staff
SF Rainwater Harvesting	17.6	47.6	1.0	47.6	0%	5%	16	781	0.88	$ 250	$ 4,101	$ 451	rebate
SF Rain Barrels	1.9	5.2	1.0	5.2	0%	30%	98	508	0.57	$ 45	$ 4,429	$ 750	rebate or distribution
MF Toilet Retrofit	N/A												
MF Showerheads and Aerators	N/A												
MF Clothes Washer Rebate	N/A												
MF Irrigation Audit	N/A												
MF Rainwater Harvesting	N/A												
									7		$ 44,876.46	$ 685.02	
Commercial													
Commercial Toilet Retrofit	N/A												
Coin-Operated Clothes Washer Rebate	N/A												
Irrigation Audit	N/A												
Commercial General Rebate	N/A												
Commercial Rainwater Harvesting	N/A												

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF TALLEY WSC

Description of Water User Group:

Talley WSC is located in central Harrison County on the west side of the City of Marshall and serves an area west along SH 154 and US Hwy 80. In 2003, the system had 536 members. The population is projected to increase from 1,376 persons in 2010 to 2,020 persons in 2060. The TWSC is included in the County Other water user group for Harrison County. The system's current water supply consists of two water wells that provide water from the Carrizo-Wilcox Aquifer. The total rated capacity of these two wells is 220 GPM, which equates to 118 ac-ft/yr on an annual average basis. The system is bounded on the west by West Harrison WSC and Gum Springs WSC, on the north by Harleton WSC and Cypress Valley WSC, on the east by the City of Marshall, and on the south by Gill WSC. TWSC does not have a water conservation plan or a drought management plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1376	1543	1664	1756	1862	2020
Projected Water Demand	177	199	215	227	240	260
Current Water Supply	118	118	118	118	118	118
Projected Supply Surplus(+)/Deficit(-)	**-59**	**-81**	**-97**	**-109**	**-122**	**-142**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the TWSC water supply shortages as summarized in the following table. Advanced conservation was omitted from consideration because the per capita use per day was below the 140 gpcpd threshold set by the water planning group. Water reuse was omitted because the TWSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the BCWSC 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	**177**	**$ 998,913**	**$ 107,863**	**$ 404**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	59	118	118	118	177	177

The recommended strategy for the Talley WSC to meet their projected deficit of 59 acre-feet in the year 2010 and 142 acre-feet in the year 2060 would be to construct one additional water well prior to 2010, one additional well prior to 2020, and one additional well prior to 2050. The three wells will need to average 110 gpm each. The recommended supply source will be the Carrizo-Wilcox Aquifer in Harrison County. A well with rated capacity of 110 gpm would provide approximately 59 acre-feet on an annualized basis. The Carrizo-Wilcox Aquifer in Harrison County is projected to have a more than ample supply availability to meet the needs of TWSC for the planning period. TWSC has been evaluating well sites and plans to construct one additional well in the near future.

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.

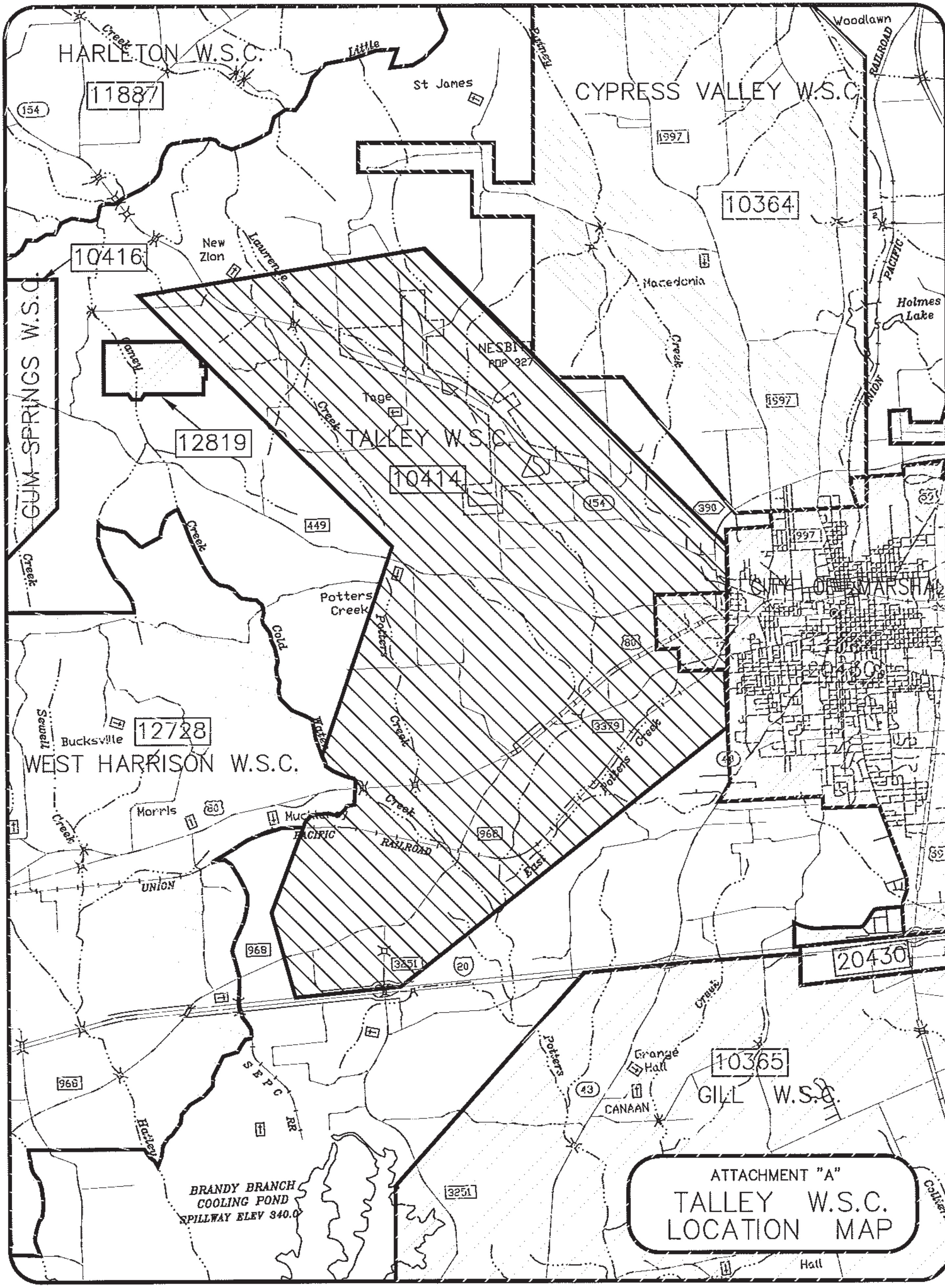

HARLETON W.S.C.
11887
CYPRESS VALLEY W.S.C.
10364
10416
GUM SPRINGS W.S.C.
12819
TALLEY W.S.C.
10414
NESBITT
POP 327
CITY OF MARSHALL
20430
12728
WEST HARRISON W.S.C.
10365
GILL W.S.C.
St James
New Zion
Tage
Macedonia
Woodlawn
Holmes Lake
Potters Creek
Bucksville
Morris
Grange Hall
CANAAN
Hall
BRANDY BRANCH
COOLING POND
SPILLWAY ELEV 340.0
UNION PACIFIC RAILROAD
SEPC RR
ATTACHMENT "A"
TALLEY W.S.C.
LOCATION MAP

Table C4.32 - Groundwater Worksheet
Talley WSC
Harrison County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
3	500	110	**177**	$ 440.00	$ 660,000.00	$ 16,500.00	$ 676,500.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
6,000	4	$ 2.20	$ 52,800.00	$ 1,848.00	$ 54,648.00

Total Construction Cost	**$ 731,148.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 219,344.40
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 960,493.40**

INTEREST DURING CONSTRUCTION(IDC) 6% Annual Interest on Total Borrowed Funds	$ 57,629.60
4% Rate of Return on Investment of Unspent Funds	$ 19,209.87
Net Interest	**$ 38,419.74**

TOTAL CAPITAL COST	**$ 998,913.14**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 30,644.24

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	110	150	70%	3	0.09	$ 4,697.60

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 107,862.94**
WUG Total WMS Cost Per Acre-Foot	**$ 403.53**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF WASKOM RURAL WSC #1 & #2

Description of Water User Group:

Waskom Rural WSC #1 is located in southeastern Harrison County and serves an area around the city limits of Waskom. In 2003, the system had 240 members. The population is projected to increase from 624 persons in 2010 to 916 persons in 2060. Waskom Rural WSC is included in the County Other water user group for Harrison County. The system's current water supply consists of two water wells that provide water from the Carrizo-Wilcox Aquifer. The total rated capacity of the three wells is 210 gpm, which equates to 113 ac-ft/year on an annual average basis. Waskom Rural WSC does not have a water conservation plan or a drought management plan. Waskom Rural WSC is projected to have a water supply deficit of 5 ac-ft/yr in 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	624	700	755	797	845	916
Projected Water Demand	80	90	97	103	109	118
Current Water Supply	113	113	113	113	113	113
Projected Supply Surplus (+)/Deficit(-)	+33	+23	+16	+10	+4	**-5**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet Waskom Rural #1 & #2 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 demand for non-potable water. 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. A groundwater worksheet is included as Attachment B.

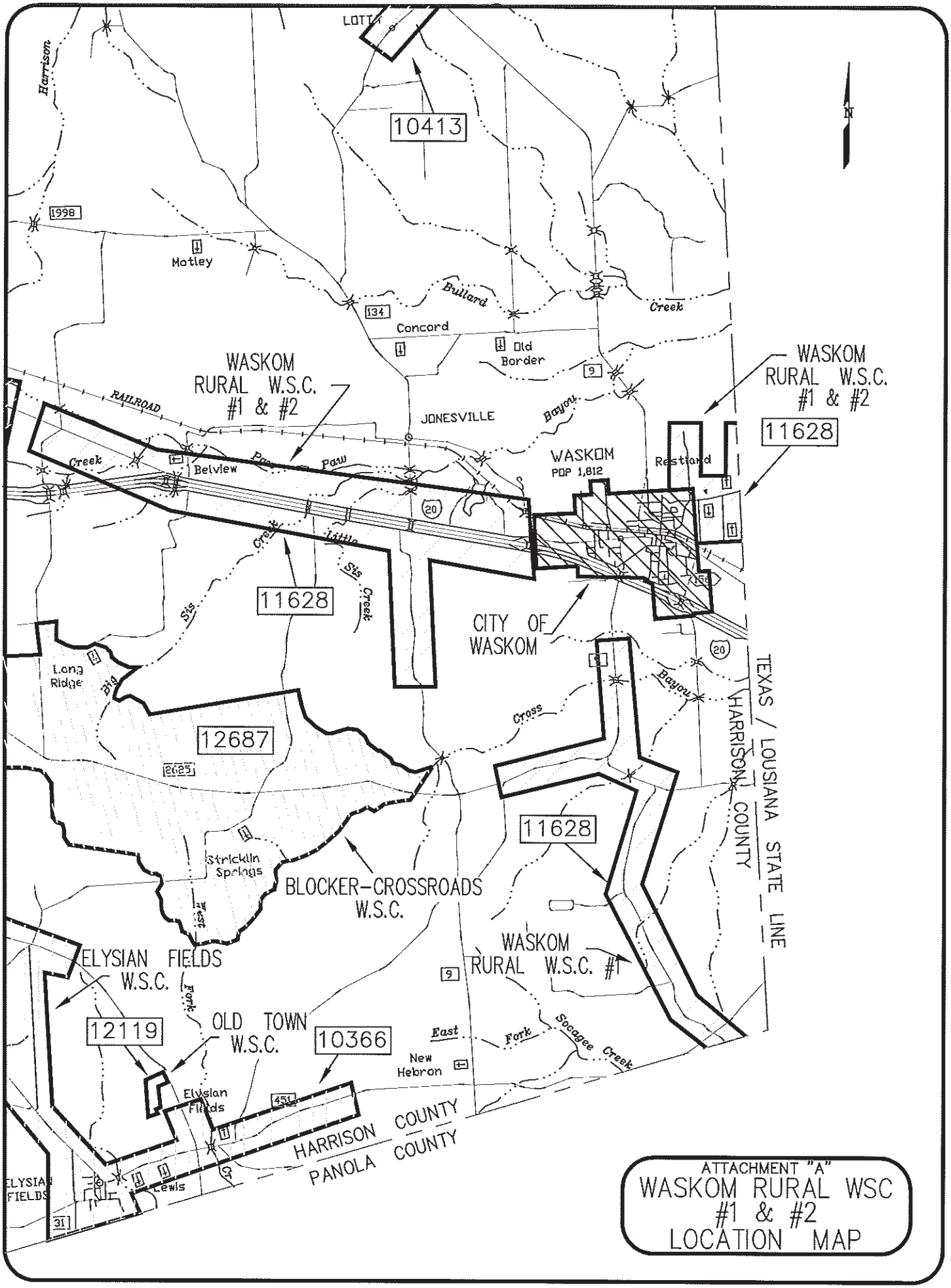
Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Groundwater	43	$ 121,291	$ 17,373.51	$ 301.53	Minimal
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)						43

The recommended strategy for Waskom Rural WSC to meet their projected deficit of 5 acre-feet in the year 2060 would be to construct one additional water well similar to their existing wells just prior to 2060. The recommended supply source will be the Carrizo-Wilcox aquifer in Harrison County. One well with rated capacity of 80 gpm would provide approximately 43 acre-feet on an annualized basis. The Carrizo-Wilcox Aquifer in Harrison County is projected to have a more than ample supply availability to meet the needs of Waskom Rural 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"
WASKOM RURAL WSC
#1 & #2
LOCATION MAP

Table C4.33 - Groundwater Worksheet
Waskom Rural WSC #1 & #2
Harrison County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	150	80	**43**	$ 440.00	$ 66,000.00	$ 1,650.00	$ 67,650.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	4	$ 2.20	$ 17,600.00	$ 616.00	$ 18,216.00

Total Construction Cost	**$ 85,866.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 25,759.80
ENVIRONMENTAL (LUMP SUM)	$ 5,000.00
Total Borrowed Funds	**$ 116,626.80**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 6,997.61
	4% Rate of Return on Investment of Unspent Funds	$ 2,332.54
	Net Interest	**$ 4,665.07**

TOTAL CAPITAL COST	**$ 121,291.87**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 7,428.91

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	80	150	70%	1	0.09	$ 1,138.81

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 17,373.51**
WUG Total WMS Cost Per Acre-Foot	**$ 301.53**

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

HOPKINS COUNTY

WUGs:

None

County Other:

Miller Grove WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MILLER GROVE WATER SUPPLY CORPORATION IN HOPKINS COUNTY

Description of Water User Group:

Miller Grove WSC, which is within the County Other systems in Hopkins County, is a small public water supply located primarily in southwestern Hopkins County. The system serves customers in Hopkins, Hunt and Rains counties. The population served in Hopkins County is projected to be 1019 persons in 2010 and increasing to 1071 persons in 2060. Current sources of supply for the WSC are seven wells into the Nacatoch aquifer with a total rated capacity of 412 gpm, which equates to 222 ac-ft/yr on an annual average basis. All wells are located in Hopkins County. The portion of the WUG in Hopkins County is projected to have a water supply deficit of 24 ac-ft/yr beginning in 2030. No shortage is projected for users in Hunt and Rains County. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1019	1143	1218	1265	1168	1071
Projected Water Demand	146	160	167	170	156	143
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	161	166	143	140	139	137
Projected Supply Surplus (+) / Deficit (-)	**15**	**6**	**-24**	**-30**	**-17**	**-6**

Evaluation of Potentially Feasible Water Management Strategies:

Advanced conservation was not selected for Miller Grove WSC since per capita water use is less than 140 gallons per capita per day. The system is too small to treat its own surface water in a cost-effective manner, but a purchased water supply was considered, from the City of Sulphur Springs. Water reuse was not considered a viable alternative since there is no centralized wastewater collection system. Ground water was considered as the system's primary source to meet the projected deficit. A ground water worksheet, Attachment B, and a surface water purchase worksheet, Attachment C, are included.

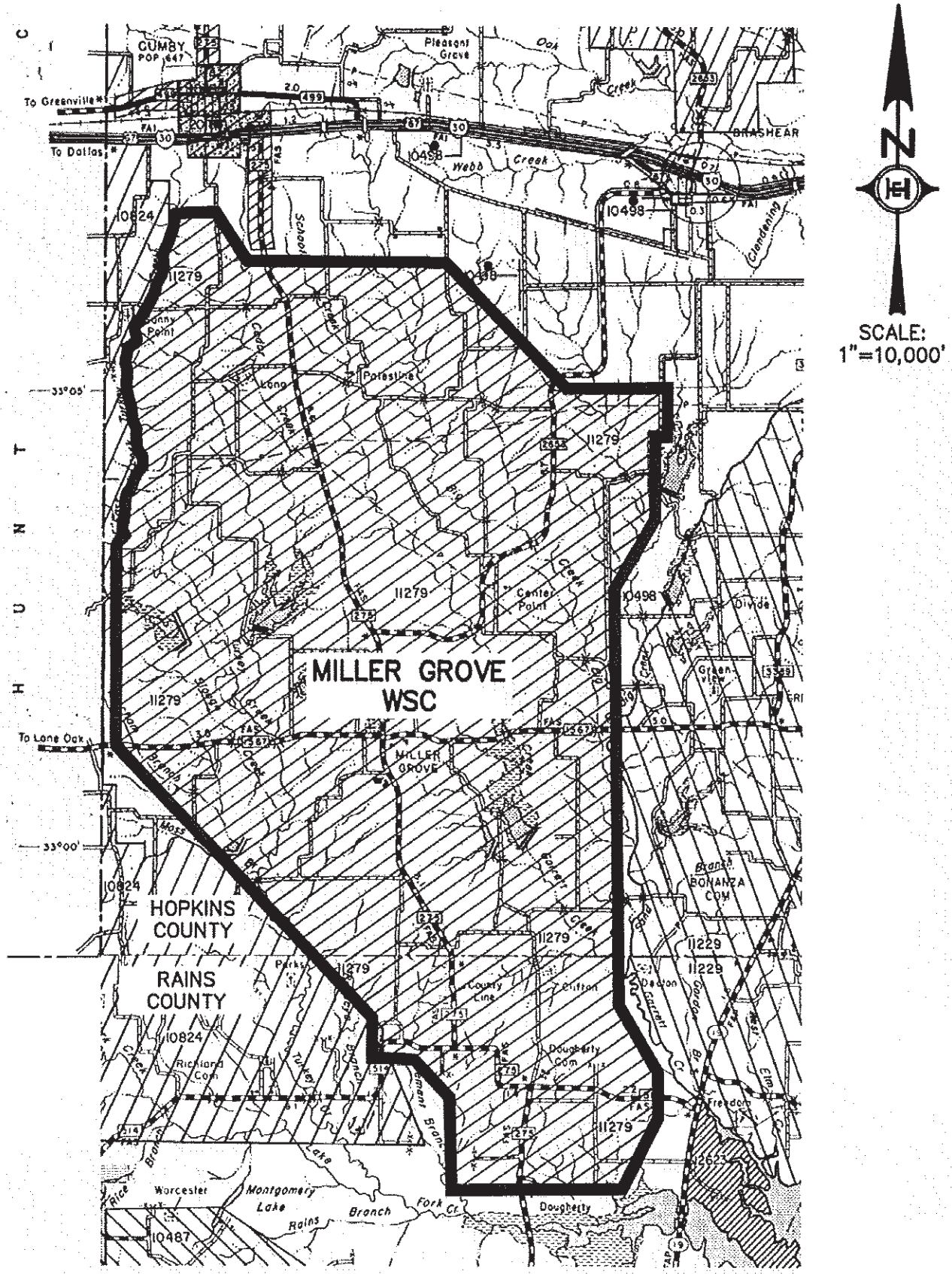
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**35**	**$625,506**	**$52,496**	**$1,226**	**Minimal**
Surface Water	**30**	**$1,116,451**	**$58,853**	**$3,098**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	0	0	35	35	35	35

Additional ground water from the Nacatoch aquifer is the recommended strategy for Miller Grove WSC to meet the projected deficit in 2030. One additional well with a rated capacity of 65 gpm would provide approximately 35 ac-ft/y. This additional well, plus the supply from the existing wells, is sufficient to meet the demand till 2060. The WSC has a total storage of 0.191 MG This storage meets the TCEQ's total storage requirement of 200 gallons/connection and is adequate for the projected growth of the WSC.

Given the increasing costs to comply with more stringent regulations and 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 re-evaluated.



ATTACHMENT "A"
MILLER GROVE WSC
LOCATION MAP

Table C4.34 - Groundwater Worksheet
Miller Grove WSC
Hopkins County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
1	900	65	**35**	$ 440.00	$ 396,000.00	$ 3,960.00	$ 399,960.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,600	6	$ 2.93	$ 45,708.00	$ 1,599.78	$ 47,307.78

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 447,267.78**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 134,180.33
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 601,448.11**
INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 36,086.89
4% Rate of Return on Investment of Unspent Funds	$ 12,028.96
Net Interest	**$ 24,057.92**
TOTAL CAPITAL COST	**$ 625,506.04**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 6,035.99

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	65	170	70%	1	0.09	$ 1,048.66

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 52,496.38**
WUG Total WMS Cost Per Acre-Foot	**$ 1,226.13**

Table C4.35 - Purchased Supply Worksheet
Miller Grove WSC
Hopkins County

Water Purchase Contract With City of Sulphur Springs:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
26,782	**30.0**	$ 2.96

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	
1	$ 231,000.00	$ 231,000.00	$ 2,310.00	$ 233,310.00

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
42,240	6	$ 2.20	$ 557,568.00	$ 19,514.88	$ 577,082.88

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 810,392.88**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 243,117.86
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 1,073,510.74**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 64,410.64
	4% Rate of Return on Investment of Unspent Funds	$ 21,470.21
	Net Interest	**$ 42,940.43**

TOTAL CAPITAL COST **$ 1,116,451.17**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	24	30	30	30	19
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ 23,148.46	$ 28,935.57	$ 28,935.57	$ 28,935.57	$ 18,325.86
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ 81,054.36**	**$ 104,202.81**	**$ 109,989.92**	**$ 28,935.57**	**$ 28,935.57**	**$ 58,853.04**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 3,097.53**
($ / ac-ft / yr)

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

HUNT COUNTY

WUGs:

Ables Springs
Campbell WSC
Cash SUD
City of Celeste
Combined Consumers WSC
Hickory Creek SUD
North Hunt WSC
Wolfe City
Steam Electric

County Other:

Jacobia WSC
Little Creek Acres
Maloy WSC
Poetry WSC
Shady Grove WSC
West Leonard WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF ABLE SPRINGS WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

Able Springs Water Supply Corporation is a public water supply located primarily in Kaufman County and supplies consumers in Kaufman, Hunt and Van Zandt counties. Approximately 11% of Able Springs's consumer demand is located in Hunt County. Current water supply is from the Sabine River Authority (SRA) and City of Terrell. Approximately 91% of the supply is from the SRA. In Hunt County, the WSC is projected to have a supply deficit of 47 ac-ft/yr in 2050 and increasing to a deficit of 143 in 2060. Able Springs WSC will need a contract increase in order to supply this projected shortage. Normally, the WSC would request a contract increase from SRA, but the authority has allocated all Lake Tawakoni and Lake Fork water to its existing customers. SRA is proposing to transfer water from the Toledo Bend Reservoir to meet anticipated needs of its customers in the upper Sabine basin. Water from Toledo Bend will be used to meet Able Springs's needs beginning 2050. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	418	517	659	896	1423	2250
Projected Water Demand	44	62	78	104	166	262
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	119	119	119	119	119	119
Projected Supply Surplus (+) / Deficit (-)	**75**	**57**	**41**	**15**	**-47**	**-143**

Evaluation of Potentially Feasible Water Management Strategies:

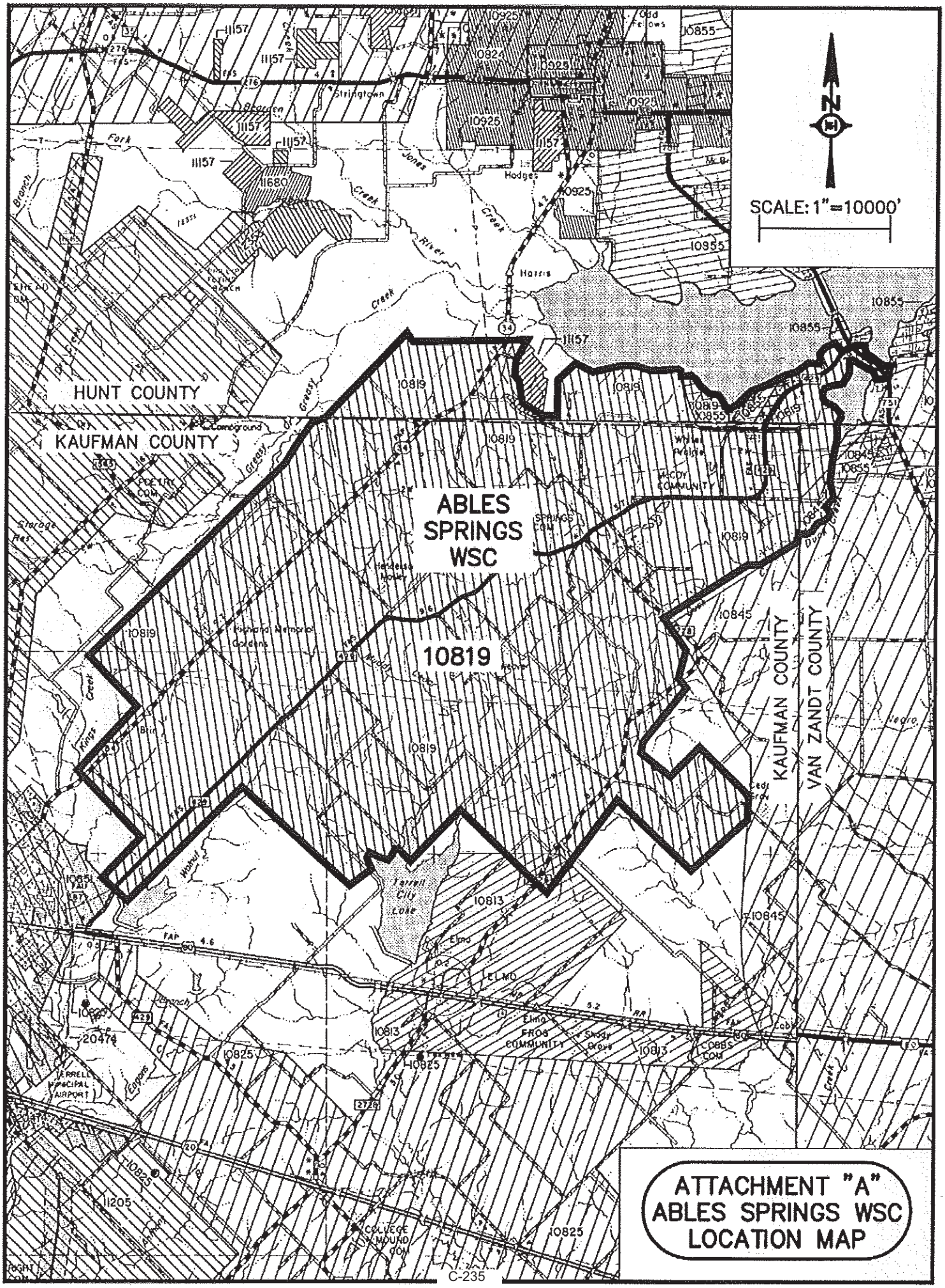
The four alternative strategies considered to meet Able Springs WSC's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcpd. There are no significant current water needs that could be met by water reuse. Groundwater was not selected because the WSC plans to continue using surface water for its needs. Consequently, surface water was considered as the alternative to meet projected demands. Surface water worksheet is included as Attachment B.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**143**	-	**$2,992**	**$95**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	**0**	**0**	**0**	**0**	**47**	**143**

The recommended strategy for Able Springs WSC to meet their projected deficit from 2050 is to purchase raw water from the Sabine River Authority's proposed Toledo Bend Transfer.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HUNT COUNTY
KAUFMAN COUNTY
ABLES SPRINGS WSC
10819
KAUFMAN COUNTY
VAN ZANDT COUNTY
ATTACHMENT "A"
ABLES SPRINGS WSC
LOCATION MAP

Table C4.36 - Purchased Supply Worksheet
Able Springs WSC
Hunt County

Water Purchase Contract With Sabine River Authority (proposed Toledo Bend tranfer):

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)	
127,662	**143**	$ 0.83	Pre-Amortization 2010 to 2040
		$ 0.29	After Amortization 2050 to 2060

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
-	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Ground Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	0	47	143	32
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ -	$ 4,441.35	$ 13,513.04	$ 2,992.40
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4,441.35**	**$ 13,513.04**	**$ 2,992.40**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 94.50**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CAMPBELL WATER SUPPLY CORPORATION

Description of Water User Group:

Campbell WSC is a small public water supply located in eastern Hunt County. The system is projected to serve 610 people in 2010 and 5917 people by the year 2060. The current sources of supply are four wells into the Nacatoch Aquifer with a production capacity ranging from 60 gpm to 120 gpm. The WSC provides water to its own customers in the Sulphur and Sabine basins and also supplies the City of Campbell. Campbell WSC is projected to have a water supply deficit of 9 ac-ft/yr by 2010. The deficit is projected to increase to 773 ac-ft/yr by 2060. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	610	892	1303	1986	3516	5917
Projected Water Demand	78	115	168	256	453	762
Water Demand from other entities	109	109	111	123	149	189
Current Water Supply	178	178	178	178	178	178
Projected Supply Surplus (+) / Deficit (-)	**-9**	**-46**	**-101**	**-201**	**-424**	**-773**

Evaluation of Potentially Feasible Water Management Strategies:

The four alternative strategies considered to meet Campbell's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcpd. There are no significant current water needs in Campbell that could be met by water reuse. Groundwater from the Nacatoch Aquifer and purchase of surface water from the City of Commerce were the alternatives selected for this entity. Groundwater worksheet - Attachment B, and surface water work sheet - Attachment C, are included herein.

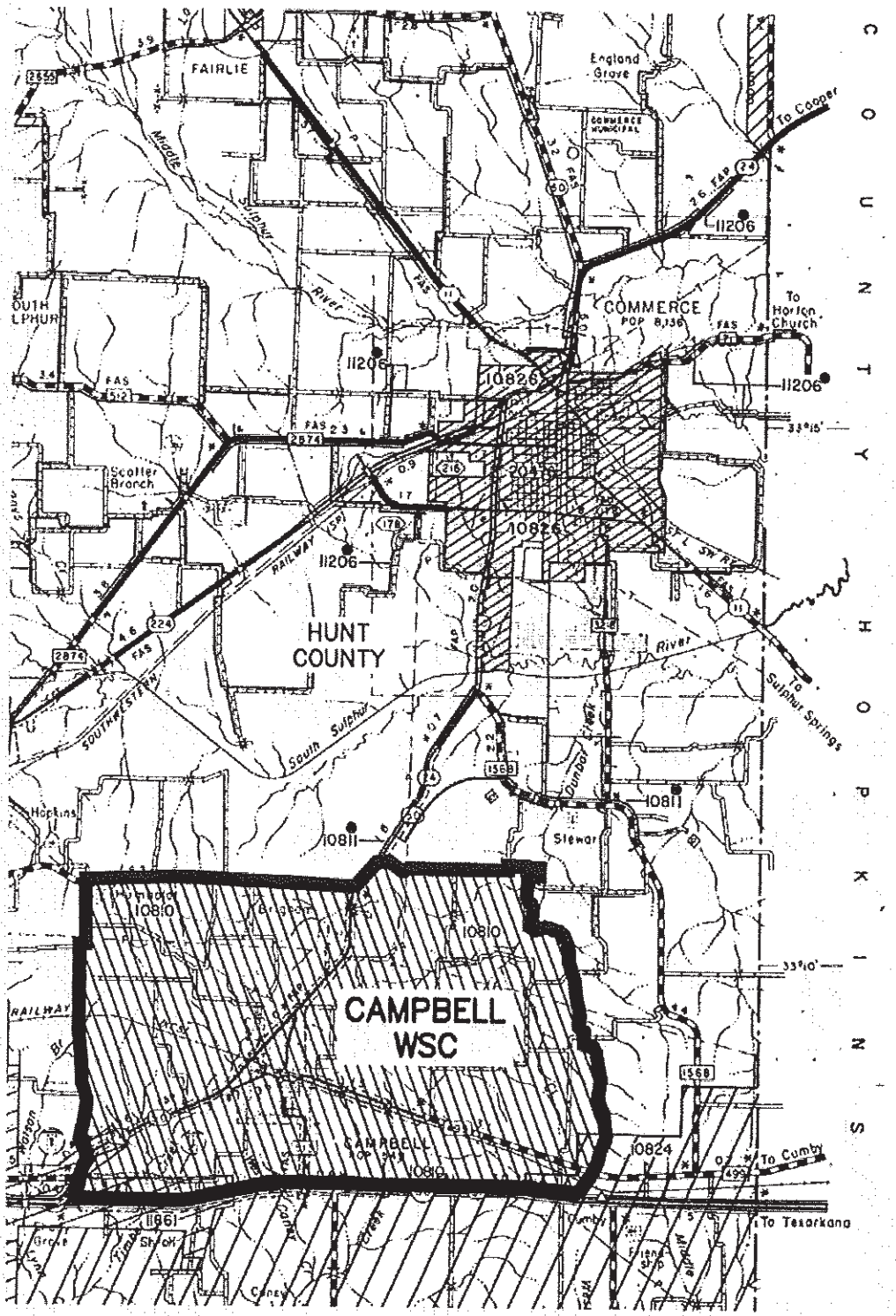
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**108**	**$805,668**	**$78,962**	**$460**	**Minimal**
Surface Water	**665**	**$934,926**	**$228,168**	**$1,275**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	108	108	108	108	108	108
Surface Water (ac-ft/yr)				93	316	665

The recommended strategy for Campbell WSC to meet their projected deficit from 2010 till 2030 is to construct two new wells, each with a rated capacity of 100 gpm, which would provide approximately 108 ac-ft/yr. To meet demand from 2040 till 2060, it is recommended that Campbell WSC enter into a treated water contract with the City of Commerce, the source of water being Lake Tawakoni.

Given the increasing costs to comply with more stringent regulations and 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 re-evaluated.



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COUNTY HOPKINS

ATTACHMENT "A"
CAMPBELL WSC
LOCATION MAP

Table C4.37 - Groundwater Worksheet
Campbell WSC
Hunt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
2	360	100	**108**	$ 440.00	$ 316,800.00	$ 3,168.00	$ 319,968.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
5,000	6	$ 2.93	$ 87,900.00	$ 3,076.50	$ 90,976.50

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
1	230000	$ 0.73	$ 167,900.00	$ 1,679.00	$ 169,579.00

Total Construction Cost	**$ 580,523.50**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 174,157.05
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 774,680.55**
INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 46,480.83
4% Rate of Return on Investment of Unspent Funds	$ 15,493.61
Net Interest	**$ 30,987.22**
TOTAL CAPITAL COST	**$ 805,667.77**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 18,572.27

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	100	100	70%	2	0.09	$ 1,898.02

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 78,961.77**
WUG Total WMS Cost Per Acre-Foot	**$ 460.33**

Table C4.38 - Purchased Supply Worksheet
Campbell WSC
Hunt County

Water Purchase Contract With City of Commerce:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
593,674	**665.0**	$ 3.33

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
1	$ 231,000.00	$ 231,000.00	$ 2,310.00	$ 233,310.00

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
15,000	8	$ 2.20	$ 264,000.00	$ 9,240.00	$ 273,240.00

Ground Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
1	230000	$ 0.73	$ 167,900.00	$ 1,679.00	$ 169,579.00

Total Construction Cost	**$ 676,129.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 202,838.70
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 898,967.70**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 53,938.06
	4% Rate of Return on Investment of Unspent Funds	$ 17,979.35
	Net Interest	**$ 35,958.71**

TOTAL CAPITAL COST	**$ 934,926.41**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	93	316	665	179
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ 100,912.80	$ 342,886.49	$ 721,580.75	$ 194,230.01
							Average
TOTAL ANNUALIZED COST	**$ 67,875.66**	**$ 67,875.66**	**$ 67,875.66**	**$ 100,912.80**	**$ 342,886.49**	**$ 721,580.75**	**$ 228,167.83**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 1,274.68**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CASH SPECIAL UTILITIES DISTRICT

Description of Water User Group:

Cash Special Utilities District is a public water supply located primarily in Hunt County. The water supply corporation sells water to Aqua Source Utility, City of Lone Oak and City of Quinlan. In addition to meeting the needs of its retail customers, Cash supplies water to consumers in Hunt, Hopkins, Rains and Rockwall counties. Approximately 90% of Cash's demand is located in Hunt County. Current water supply is from the Sabine River Authority (SRA) and North Texas Municipal Water District (NTMWD). Approximately 76% of water supply to Cash SUD is from SRA, and Cash plans to buy additional water from this source to meet their future needs. Cash is projected to have a supply deficit of 4305 ac-ft/yr around 2060, and will need a contract increase in order to supply this projected shortage. Normally, Cash would request a contract increase from SRA, but the authority has allocated all Lake Tawakoni and Lake Fork water to its existing customers. SRA is proposing to transfer water from Toledo Bend Reservoir to meet anticipated needs of its customers. Water from Toledo Bend will be used to meet Cash SUD needs in 2060.

Cash SUD has a contract with NTMWD for 1792 ac-ft/yr. Region C's tabulations show NTMWD as not having sufficient water to meet all their contractual obligation to Cash SUD. Consequently, Region C has developed tables to show current and future allocation to Cash SUD from NTMWD. A location map for Cash SUD is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	13401	16574	21155	28728	45657	72191
Projected Water Demand	1939	2400	3030	4037	6244	9693
Water Demand from other entities	1025	1025	1025	1025	1025	1025
Current Water Supply	7060	6776	6636	6538	6471	6413
Projected Supply Surplus (+) / Deficit (-)	**4096**	**3351**	**2581**	**1476**	**-798**	**-4305**

Evaluation of Potentially Feasible Water Management Strategies:

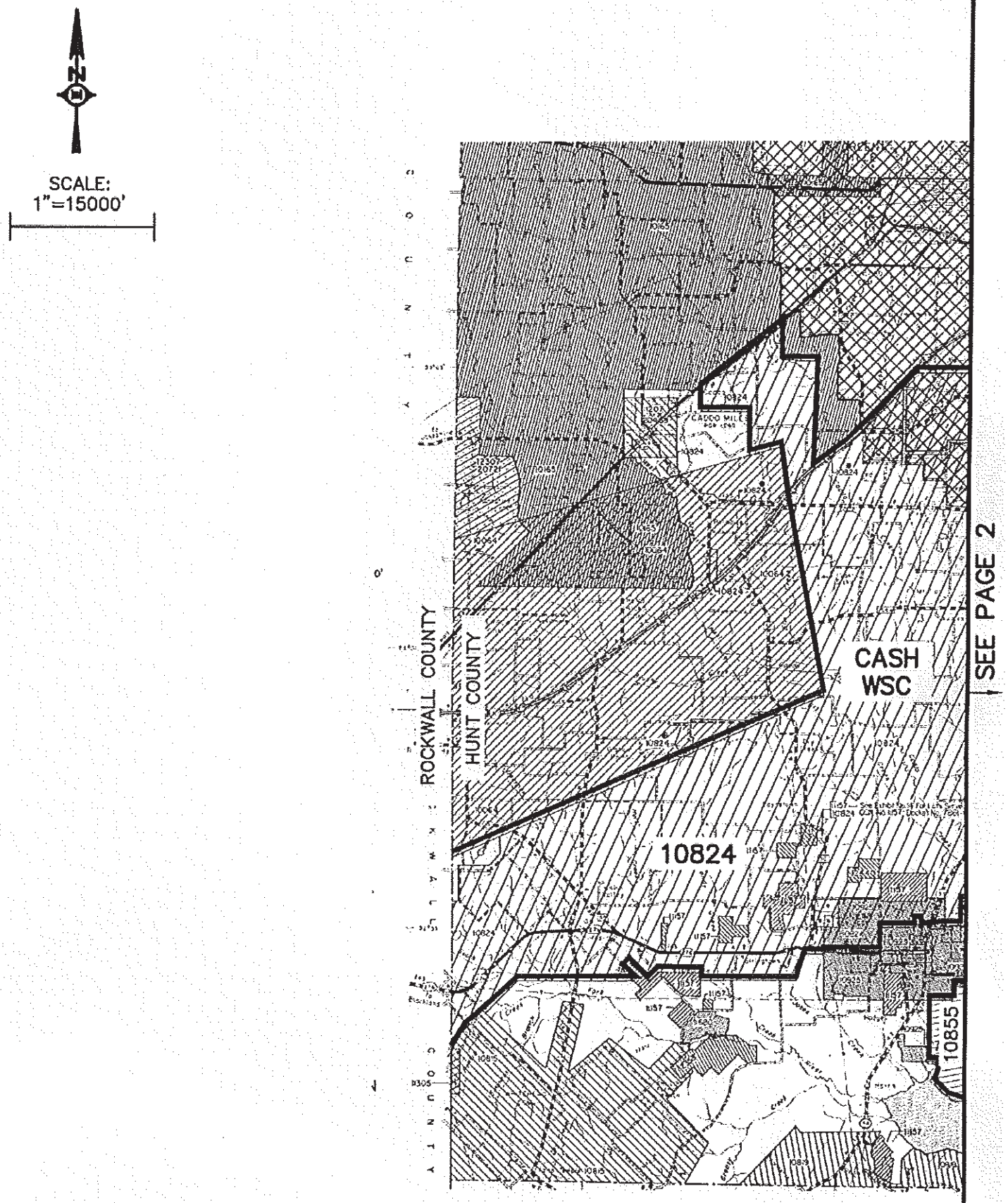
The four alternative strategies considered to meet Cash SUD's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcpd. There are no significant current water needs in Cash that could be met by water reuse. Groundwater was not selected because it is inadequate in quality and quantity for supplies of this size. Consequently, surface water was selected as the alternative to meet projected demands. Surface water worksheet for region D strategy is included as Attachment B.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water (NTMWD)	**1184**	-	-	-	-
Surface Water (Toledo Bend)	**3865**	-	**$67,943**	**$95**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water - Toledo Bend (ac-ft/yr)	**0**	**0**	**0**	**0**	**0**	**3121**
Surface Water - NTMWD future allocation (ac-ft/yr)	**537**	**821**	**961**	**1059**	**1126**	**1184**

The recommended strategy for Cash SUD to meet their projected deficit in 2060 is to purchase raw water from the Sabine River Authority's proposed Toledo Bend Transfer. Also, Region C has developed strategies to meet NTMWD's contractual obligation to Cash SUD.



ATTACHMENT "A"
CASH WSC
LOCATION MAP

1

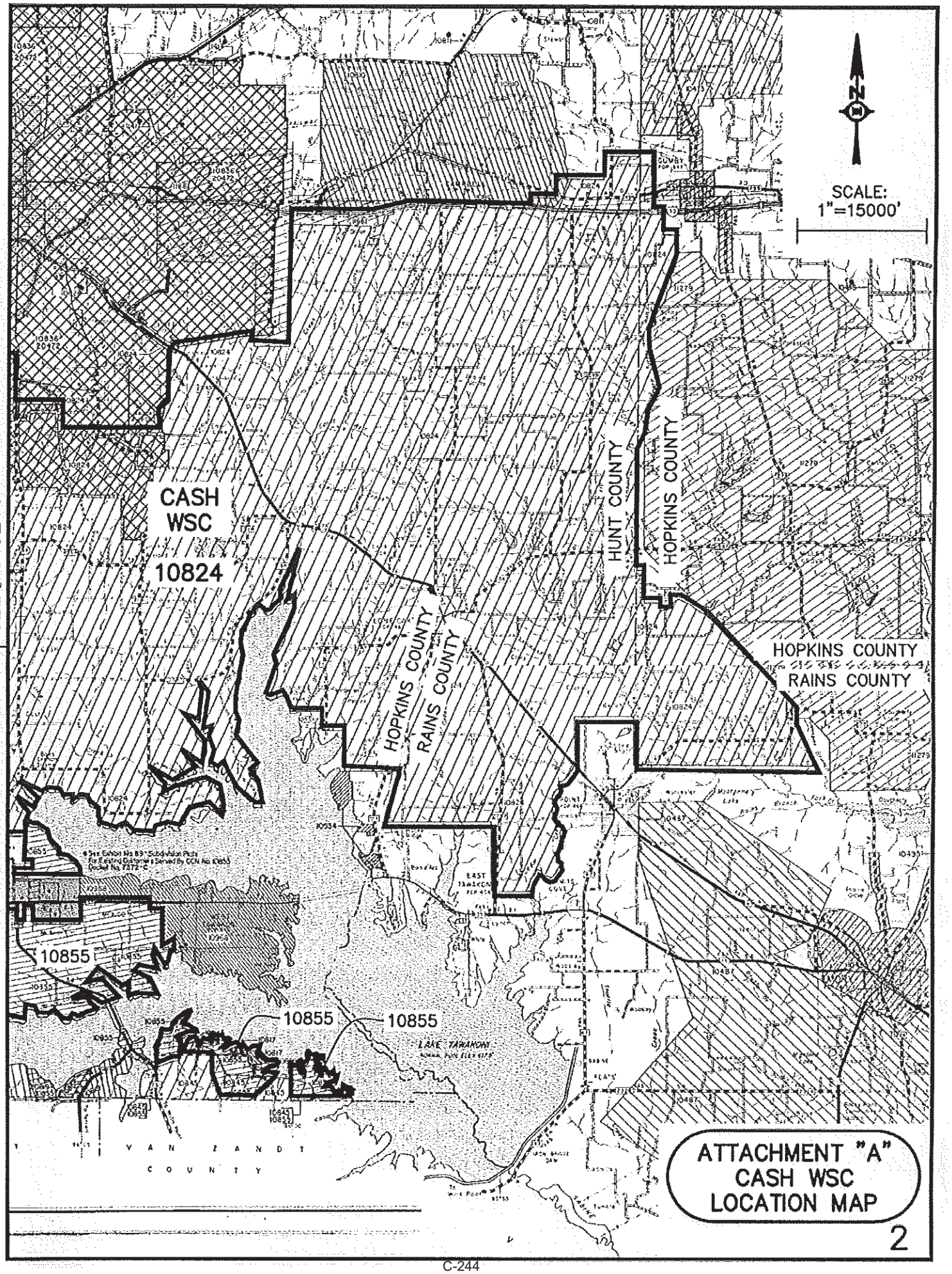

SEE PAGE 1
N
SCALE:
1"=15000'
CASH
WSC
10824
HUNT COUNTY
HOPKINS COUNTY
HOPKINS COUNTY
RAINS COUNTY
HOPKINS COUNTY
RAINS COUNTY
10855
10855
10855
LAKE TAWAKONI
VAN ZANDT
COUNTY
ATTACHMENT "A"
CASH WSC
LOCATION MAP
2

Table C4.39 - Purchased Supply Worksheet
Cash SUD
Hunt County

Water Purchase Contract With Sabine River Authority (proposed Toledo Bend tranfer):

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)	
3,450,450	**3865**	$ 0.83	Pre-Amortization 2010 to 2040
		$ 0.29	After Amortization 2050 to 2060

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
-	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	8	$ 2.20	$ -	$ -	$ -

Ground Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost **$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS) **1.0**

Other Capital Costs
ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%) $ -
ENVIRONMENTAL (LUMP SUM) $ -
Total Borrowed Funds **$ -**

INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds $ -
4% Rate of Return on Investment of Unspent Funds $ -
Net Interest **$ -**

TOTAL CAPITAL COST **$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	0	449	3865	719
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ -	$ 42,429.06	$ 365,230.09	$ 67,943.19
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ -**	**$ 42,429.06**	**$ 365,230.09**	**$ 67,943.19**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 94.50**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF CELESTE

Description of Water User Group:

City of Celeste is a small public water supply located in northwest Hunt County. The system is projected to serve 861 people in 2010 and 2031 people by the year 2060. The current sources of supply are two wells into the Woodbine Aquifer, each with a production capacity of 170 gpm and 200 gpm. The City provides water to its own customers in the Sabine basin and is projected to have a water supply deficit of 63 ac-ft/yr in 2060. The system does have a water conservation and drought management plan in place. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	861	932	1028	1180	1513	2031
Projected Water Demand	111	120	132	152	195	262
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	199	199	199	199	199	199
Projected Supply Surplus (+) / Deficit (-)	**88**	**79**	**67**	**47**	**4**	**-63**

Evaluation of Potentially Feasible Water Management Strategies:

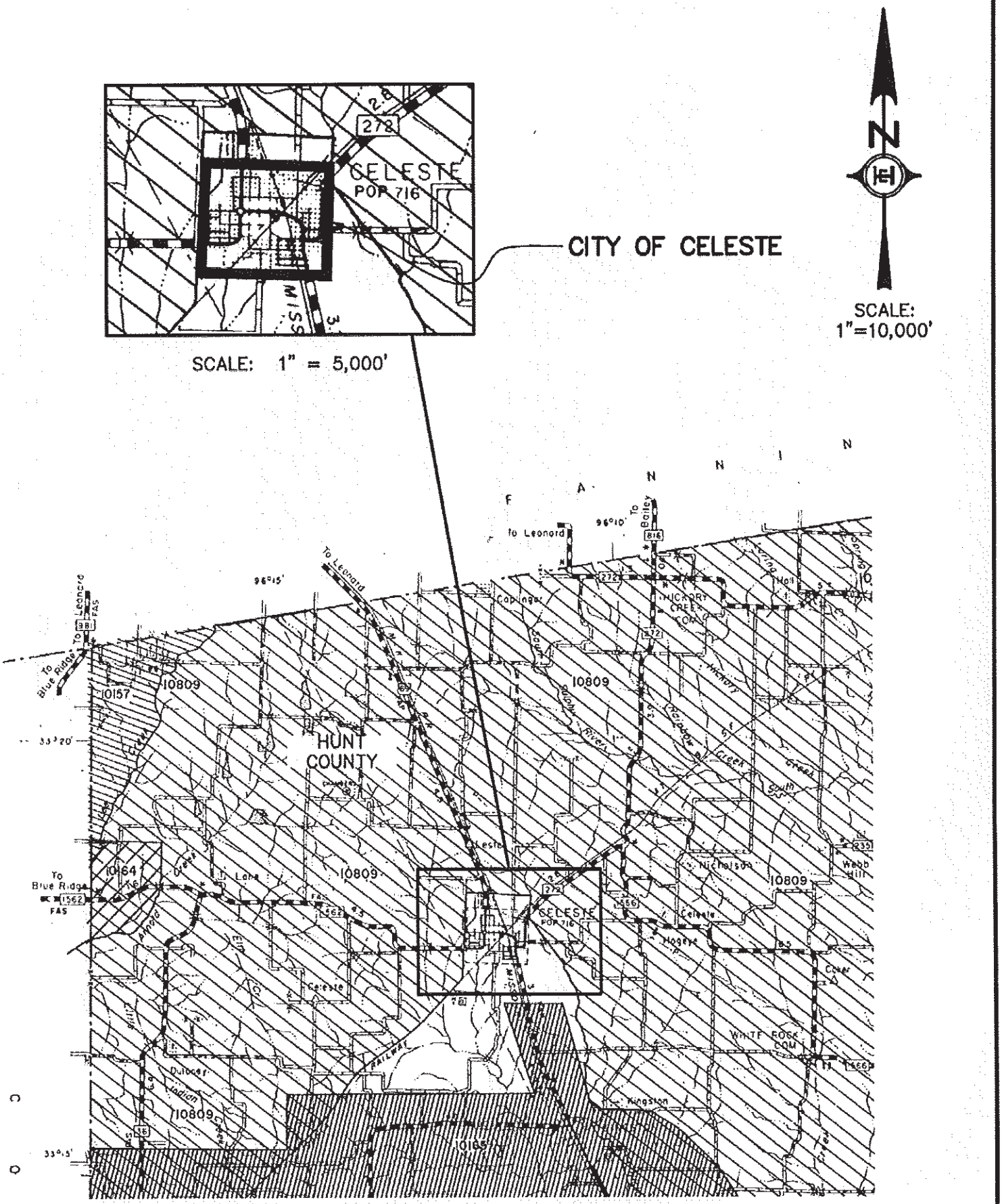
The four alternative strategies considered to meet Celeste's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcpd. There are no significant current water needs in Celeste that could be met by water reuse. The system is not large enough to treat surface water in a cost-effective manner; however a surface water alternative using purchased water from the City of Greenville was considered. Surface water may also be available by the time needed from the North Texas Municipal Water District. Groundwater from the Woodbine Aquifer was also considered as an alternative for this entity. A groundwater worksheet is included as Attachment B, and a surface water purchase worksheet as Attachment C.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**108**	**$2,547,115**	**$206,384**	**$2,866**	**Minimal**
Surface Water	**63**	**$1,741,204**	**$74,223**	**$7,069**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)					0	63

Because of the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source, surface water alternative was selected as the strategy to meet Celeste's needs. To meet the City's projected deficit in 2060 it is recommended that Celeste enter into a surface water purchase contract with the City of Greenville. In this round of planning, Greenville is projected to have adequate surplus that could be used to meet Celeste's needs.



ATTACHMENT "A"
CITY OF CELESTE
LOCATION MAP

Table C4.40 - Groundwater Worksheet
City of Celeste
Hunt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
2	2000	100	**108**	$ 440.00	$1,760,000.00	$ 17,600.00	$ 1,777,600.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
5,000	6	$ 2.93	$ 87,900.00	$ 3,076.50	$ 90,976.50

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 1,868,576.50**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 560,572.95
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 2,449,149.45**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 146,948.97
	4% Rate of Return on Investment of Unspent Funds	$ 48,982.99
	Net Interest	**$ 97,965.98**

TOTAL CAPITAL COST	**$ 2,547,115.43**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.45/ 1,000)	$ 15,768.91

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	100	300	70%	2	0.09	$ 5,694.06

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 206,383.55**
WUG Total WMS Cost Per Acre-Foot	**$ 2,866.44**

NB. START CONSTRUCTION IN 2050, ADDITIONAL WATER IS NEEDED IN 2060

Table C4.41 - Purchased Supply Worksheet
City of Celeste
Hunt County

Water Purchase Contract With City of Greenville:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
56,243	**63.0**	$ 3.22

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
1	$ 231,000.00	$ 231,000.00	$ 2,310.00	$ 233,310.00

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
53,000	8	$ 2.20	$ 932,800.00	$ 32,648.00	$ 965,448.00

Ground Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
1	100000	$ 0.73	$ 73,000.00	$ 730.00	$ 73,730.00

Total Construction Cost	**$ 1,272,488.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 381,746.40
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 1,674,234.40**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 100,454.06
	4% Rate of Return on Investment of Unspent Funds	$ 33,484.69
	Net Interest	**$ 66,969.38**

TOTAL CAPITAL COST	**$ 1,741,203.78**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	0	0	63	11
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ -	$ -	$ 66,102.13	$ 11,017.02
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ 126,411.39**	**$ 126,411.39**	**$ 192,513.53**	**$ 74,222.72**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 7,068.83**
($ / ac-ft / yr)

NB. START CONSTRUCTION IN 2050, ADDITIONAL WATER IS NEEDED IN 2060

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF COMBINED CONSUMERS WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

Combined Consumers Water Supply Corporation is a public water supply located primarily in Hunt County and supplies consumers in both Hunt and Van Zandt counties. Approximately 80% of the WSC's consumer demand is located in Hunt County. Current water supply is from the Sabine River Authority (SRA). The WSC is projected to have a supply deficit of 832 ac-ft/yr in 2050 and increasing to a deficit of 2617 in 2060. Combined Consumers WSC will need a contract increase in order to supply this projected shortage. Normally, the WSC would request a contract increase from SRA, but the authority has allocated all Lake Tawakoni and Lake Fork water to its existing customers. SRA is proposing to transfer water from the Toledo Bend Reservoir to meet anticipated needs of its customers. Water from Toledo Bend will be used to meet Combined Consumers needs beginning in 2050. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	6999	8656	11048	15003	23844	37701
Projected Water Demand	902	1115	1423	1933	3072	4857
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	2240	2240	2240	2240	2240	2240
Projected Supply Surplus (+) / Deficit (-)	**1338**	**1125**	**817**	**307**	**-832**	**-2617**

Evaluation of Potentially Feasible Water Management Strategies:

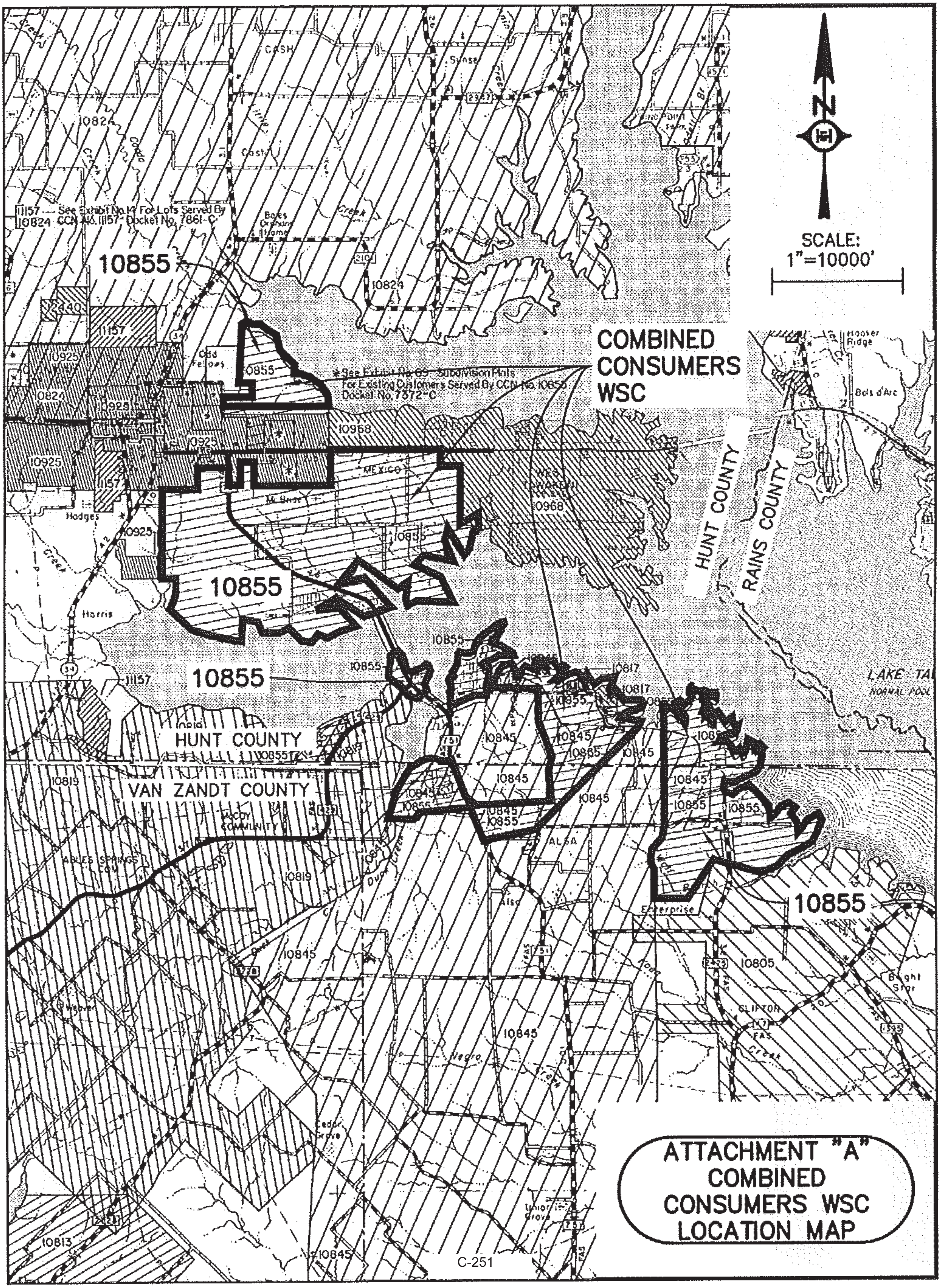
The four alternative strategies considered to meet Combined Consumers WSC's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita use is less than 140 gpcpd. There are no significant current water needs that could be met by water reuse. Groundwater was not selected because it is inadequate in quality and quantity. Consequently, surface water was considered as a viable alternative to meet projected demands. Surface water worksheet is included as Attachment B.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**2617**	**-**	**$54,320**	**$95**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	**0**	**0**	**0**	**0**	**832**	**2617**

The recommended strategy for Combined Consumers WSC to meet their projected deficit from 2050 is to purchase raw water from the Sabine River Authority's proposed Toledo Bend Transfer.



SCALE:
1"=10000'
COMBINED
CONSUMERS
WSC
11157 -- See Exhibit No.14 For Lots Served By
10824 CCN No.11157 - Docket No. 7861-C
* See Exhibit No. 69 - Subdivision Plats
For Existing Customers Served By CCN No.10855
Docket No.7372-C
10855
10824
10925
11157
10968
10845
10817
10819
10813
10805
HUNT COUNTY
RAINS COUNTY
VAN ZANDT COUNTY
LAKE TA
NORMAL POOL
Hodges
Harris
MEXICO
Enterprise
ALSA
ATTACHMENT "A"
COMBINED
CONSUMERS WSC
LOCATION MAP

Table C4.42 - Purchased Supply Worksheet
Combined Consumers WSC
Hunt County

Water Purchase Contract With Sabine River Authority (proposed Toledo Bend tranfer):

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)	
2,336,307	**2617**	$ 0.83	Pre-Amortization 2010 to 2040
		$ 0.29	After Amortization 2050 to 2060

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
-	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Ground Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	0	832	2617	575
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ -	$ 78,621.33	$ 247,298.10	$ 54,319.90
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ -**	**$ 78,621.33**	**$ 247,298.10**	**$ 54,319.90**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 94.50**

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 is currently supplied by four wells in the Woodbine aquifer. All wells are located in Hunt County and have a total rated capacity of 1240 gpm or 667 ac-ft/yr. 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 2,567 people in 2010 and 12,923 people by the year 2060. The population and demand projections for the portion of the system in Hunt County are given in the table bellow. In Hunt County, Hickory Creek is projected to have a water supply deficit of 198 ac-ft/yr by 2040. The deficit is projected to increase to 1418 ac-ft/yr by 2060. The system does not have either a water conservation plan or a drought management plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	2323	2871	3664	4978	7910	12508
Projected Water Demand	395	479	600	808	1275	2017
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	624	618	613	610	605	599
Projected Supply Surplus (+) / Deficit (-)	**229**	**139**	**13**	**-198**	**-670**	**-1418**

Evaluation of Potentially Feasible Water Management Strategies:

The four alternative strategies considered to meet Hickory Creek's water supply shortages are listed in the table below. Advanced conservation was considered because per capita use of 155 gpcpd is more than the 140 gpcpd set by the regional planning group. However, the projected savings is minimal in comparison to the predicted shortage. There are no significant current water needs in Hickory Creek that could be met by water reuse. No surface water alternatives were evaluated because the SUD advised that it would continue adding wells to meet future demands. Groundwater from the Woodbine Aquifer was considered since it is currently the source of supply for the system. A groundwater worksheet is included as Attachment B, and a water conservation worksheet as Attachment C.

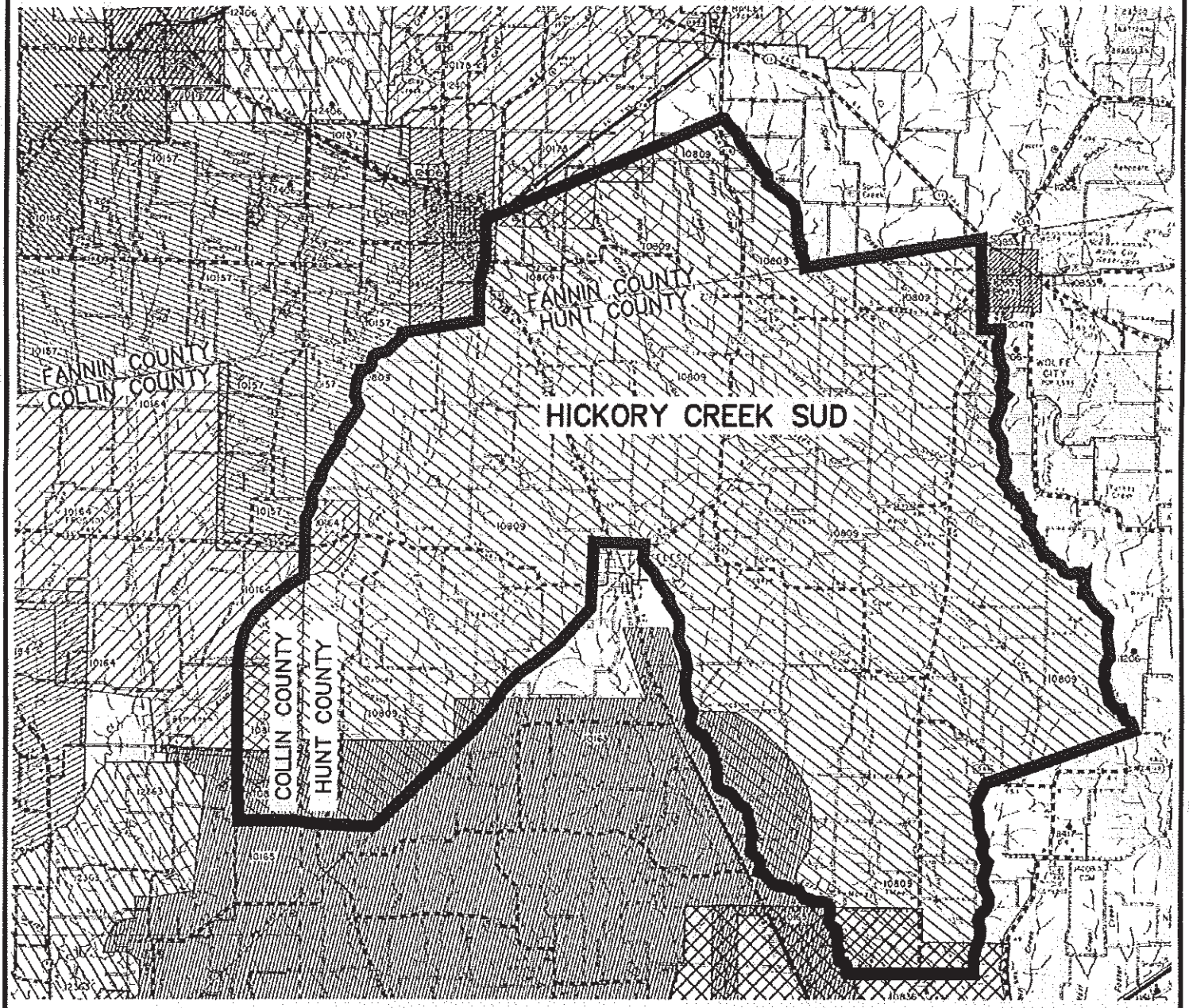
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	47	$312,396	-	$730	Minimal
Water Reuse					
Ground Water	1613	$7,831,144	$889,831	$985	Minimal
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)				269	807	1613

Six additional wells will have to be drilled during successive decades to ensure that a deficit is not encountered by the SUD.

Given the increasing costs to comply with more stringent regulations and 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 re-evaluated.



ATTACHMENT "A"
HICKORY CREEK SUD
LOCATION MAP

Table C4.43 - Groundwater Worksheet
Hickory Creek SUD
Hunt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
6	2000	500	**1613**	$ 440.00	$5,280,000.00	$ 52,800.00	$ 5,332,800.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
18,400	6	$ 2.93	$ 323,472.00	$ 11,321.52	$ 334,793.52

Storage

No of Tanks	Size-Gals	Cost per gallon	(1%)	Subtotal
-		$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 5,667,593.52**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.5**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 1,700,278.06
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 7,387,871.58**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 664,908.44
	4% Rate of Return on Investment of Unspent Funds	$ 221,636.15
	Net Interest	**$ 443,272.29**

TOTAL CAPITAL COST	**$ 7,831,143.87**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 278,584.03

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	500	150	70%	6	0.09	$ 42,705.47

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 889,830.55**
WUG Total WMS Cost Per Acre-Foot	**$ 984.65**

Attachment C - Conservation Worksheet

Table C4.44 - Cost-Savings Analysis for Region D - Hickory Creek SUD

Regional Data	
Population	5,709
SF Population	5,709
MF Population	-
Institutional Population	-
SF Units	2,284
MF Units	-
Average Yearly Rainfall (inches)	41.6
SF Household Size	2.50
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	-
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit	10.5	26.3	2.0	13.1	10%	50%	-	-	-	$ -	$ -	$ -	free or rebate
SF Showerheads and Aerators	5.5	13.8	2.0	6.9	10%	50%	-	-	-	$ -	$ -	$ -	kits picked up by customer
SF Clothes Washer Rebate	5.6	14.0	1.0	14.0	0%	90%	2,055	28,773	32.23	$ 120	$ 246,629	$ 815	rebate from water utility only
SF Irrigation Audit-High User	20.0	50.0	1.0	50.0	1%	5%	91	4,567	5.12	$ 70	$ 6,394	$ 459	staff
SF Rainwater Harvesting	18.3	45.8	1.0	45.8	0%	5%	114	5,226	5.85	$ 250	$ 28,545	$ 470	rebate
SF Rain Barrels	2.0	5.0	1.0	5.0	0%	30%	685	3,395	3.80	$ 45	$ 30,829	$ 781	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate													
MF Irrigation Audit													
MF Rainwater Harvesting													
								41,962	**47**		**$ 312,396**	**$730.23**	
Commercial													
Commercial Toilet Retrofit													
Coin-Operated Clothes Washer Rebate													
Irrigation Audit													
Commercial General Rebate													
Commercial Rainwater Harvesting													

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF NORTH HUNT WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

North Hunt WSC provides water service in Hunt County, Fannin County and Delta County. It is projected that the users in Hunt County will have a shortage in 2010. In Hunt County, the WUG population is projected to be 2,631 in 2010 and 14,171 by the year 2060. The WSC has a contract for water supply with the City of Commerce for 147 ac-ft/yr, a well in Hunt county with a rating of 115 gpm , and a well in Fannin County that is rated at 350 gpm. In Hunt County, the WSC is projected to have a deficit of 164 ac-ft in 2010 and increasing to a deficit of 1659 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	2631	3253	4153	5639	8962	14171
Projected Water Demand	339	419	535	726	1154	1825
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	175	172	169	166	166	166
Projected Supply Surplus (+) / Deficit (-)	**-164**	**-247**	**-366**	**-560**	**-988**	**-1659**

Evaluation of Potentially Feasible Water Management Strategies:

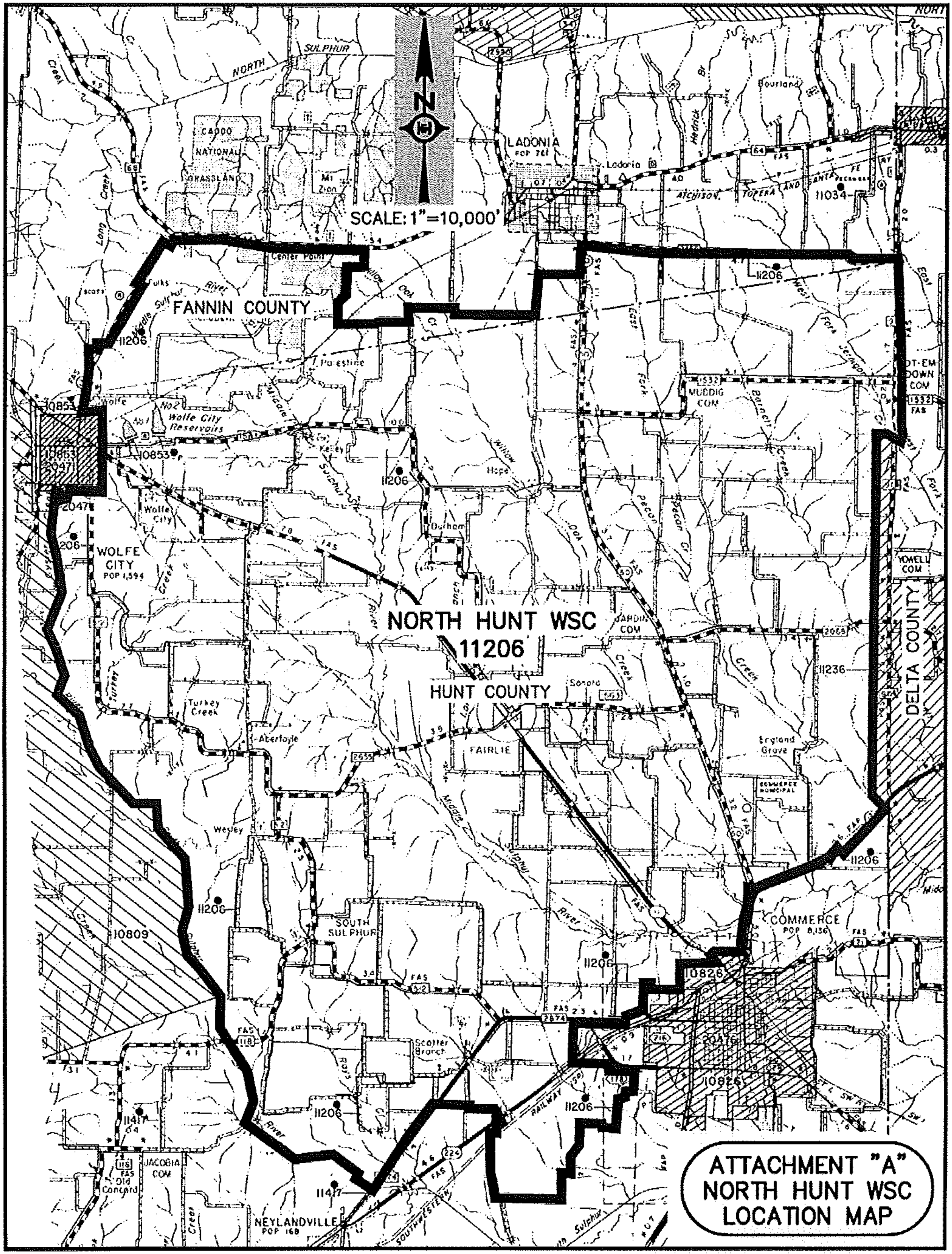
There were four alternative strategies considered to meet the WSC's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on meeting its future needs from water purchase from the City of Commerce.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**1659**	**$0**	**$720,496**	**$1,085**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	164	247	366	560	988	1659

Surface water purchase from City of Commerce is the recommended strategy to meet North Hunt WSC's needs.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LADONIA
FANNIN COUNTY
NORTH HUNT WSC
11206
HUNT COUNTY
DELTA COUNTY
WOLFE CITY
COMMERCE
NEYLANDVILLE
ATTACHMENT "A"
NORTH HUNT WSC
LOCATION MAP

Table C4.45 - Surface Water Worksheet
North Hunt WSC
Hunt County

Water Purchase Contract With City of Commerce:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
1,481,060	**1659.0**	$ 3.33

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	164	247	366	560	988	1659	664
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 177,953.75	$ 268,015.71	$ 397,140.68	$ 607,646.94	$ 1,072,062.82	$ 1,800,154.07	$ 720,495.66
							Average
TOTAL ANNUALIZED COST	**$ 177,953.75**	**$ 268,015.71**	**$ 397,140.68**	**$ 607,646.94**	**$ 1,072,062.82**	**$ 1,800,154.07**	**$ 720,495.66**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 1,085.08**

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 1598 people by 2010, and the population is expected to increase to 2446 by the year 2060. 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 which has been brought back to reuse. Safe yield from the local lakes is estimated as 140 ac-ft/yr up to 2020 and then reducing to 120 ac-ft/yr thereafter. Based on this yields, water quantity from the lakes will not be sufficient to meet projected demands. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1598	1649	1718	1828	2070	2446
Projected Water Demand	206	212	221	235	267	315
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	221	221	201	201	201	201
Projected Supply Surplus (+) / Deficit (-)	**15**	**9**	**-20**	**-34**	**-66**	**-114**

Evaluation of Potentially Feasible Water Management Strategies:

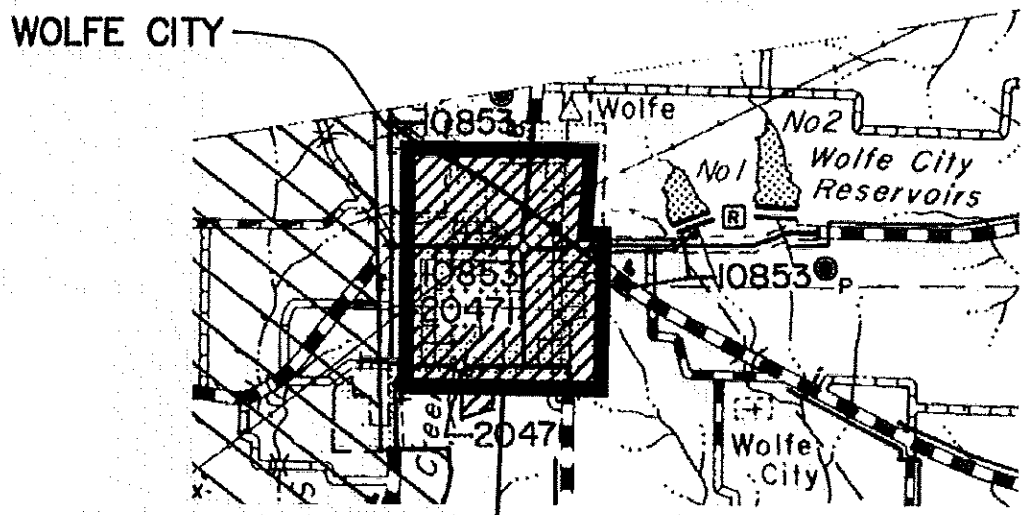
Listed in the table below are the four strategies that were considered to meet water supply needs in Wolfe City. There are no significant current water needs that could be met by water reuse. Advanced conservation was not selected since per capita use is less than 140 gpcpd. The system has a number of surface water options, including connection to the City of Commerce, City of Greenville, and the proposed Ralph Hall Reservoir in Region C. Groundwater is also an alternative for this entity. A groundwater worksheet is included as Attachment B, and a surface water purchase worksheet as Attachment C.

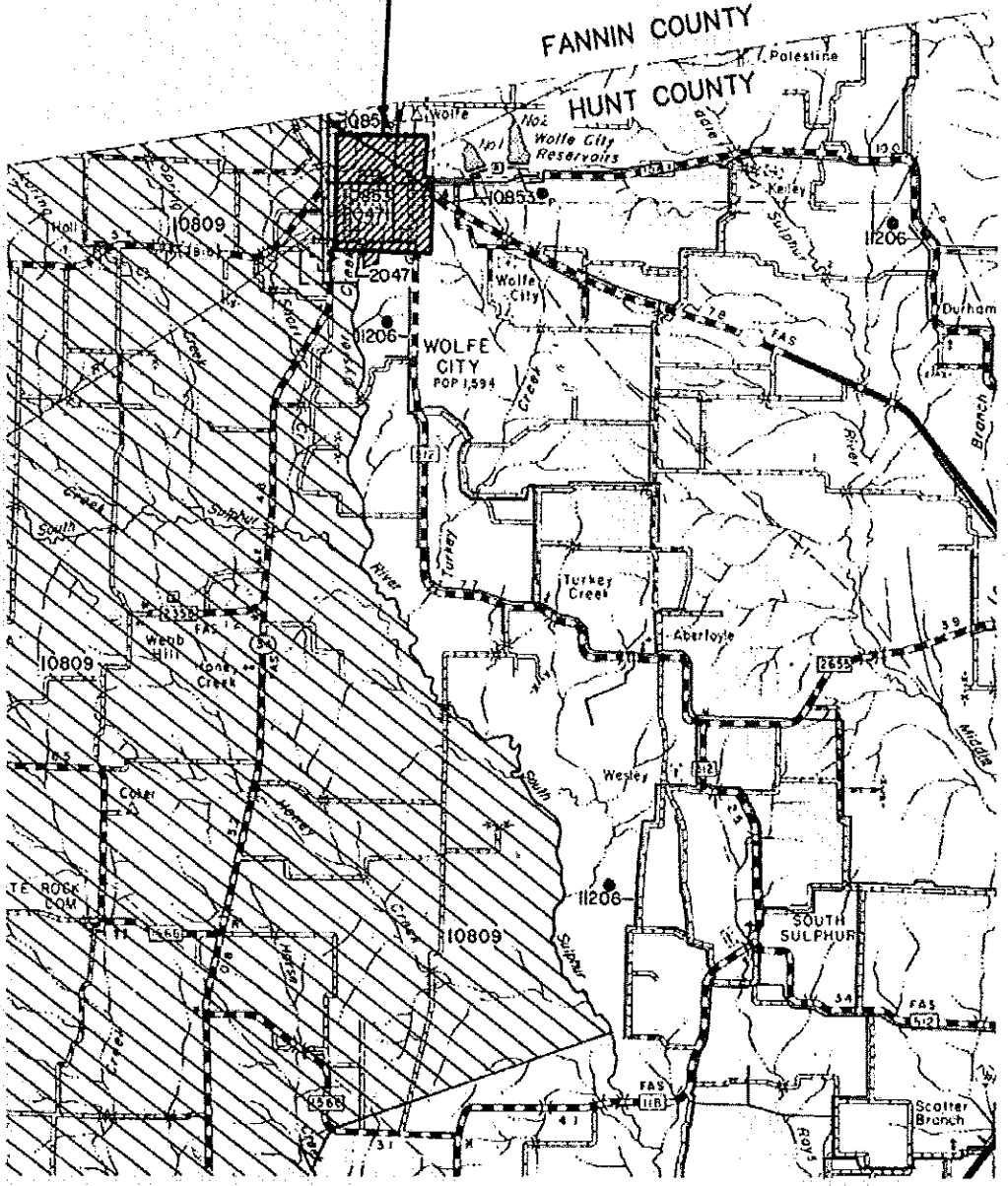
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**161**	**$3,652,074**	**$297,335**	**$1,420**	**Minimal**
Surface Water	**114**	**$2,910,914**	**$147,984**	**$3,794**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)			20	34	66	114

The capital cost of well construction is much higher than that of surface water purchase, while the unit cost of groundwater is slightly lower than that of surface water strategy. Given the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source due to quality issues, it is recommended that Wolf City purchase treated surface water from the City of Commerce. This recommendation is made based on limited knowledge of firm yield of the Wolf City lakes. No in-depth studies were available indicating either the current firm yield of the reservoirs, or whether dredging or similar enhancements to the storage capacity could improve the firm yield. It is recommended that the City pursue such a study. The City currently operates its own surface water treatment to treat water from the existing local lakes.





ATTACHMENT "A"
WOLFE CITY
LOCATION MAP

Table C4.46 - Groundwater Worksheet
City of Wolfe City
Hunt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
2	1750	150	**161**	$ 440.00	$ 1,540,000.00	$ 15,400.00	$ 1,555,400.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
36,960	8	$ 2.20	$ 650,496.00	$ 22,767.36	$ 673,263.36

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
1	300,000	$ 0.73	$ 219,000.00	$ 2,190.00	$ 221,190.00

Pump Station

No of Stations	Size MGD	Cost per station	Total Constr	Land & Easements	Subtotal
1	0.432	$ 231,000.00	$ 231,000.00	$ 5,000.00	$ 236,000.00

Total Construction Cost	**$ 2,685,853.36**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 805,756.01
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 3,511,609.37**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 210,696.56
	4% Rate of Return on Investment of Unspent Funds	$ 70,232.19
	Net Interest	**$ 140,464.37**

TOTAL CAPITAL COST	**$ 3,652,073.74**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.45/ 1,000)	$ 23,653.36

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	150	300	70%	2	0.09	$ 8,541.09

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 297,335.01**
WUG Total WMS Cost Per Acre-Foot	**$ 1,420.39**

Table C4.47 - Purchased Supply Worksheet
Wolfe City
Hunt County

Water Purchase Contract With City of Commerce:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
101,774	**114.0**	$ 3.33

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
1	$ 231,000.00	$ 231,000.00	$ 2,310.00	$ 233,310.00

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
73,920	10	$ 2.20	$ 1,626,240.00	$ 56,918.40	$ 1,683,158.40

Ground Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
1	300000	$ 0.73	$ 219,000.00	$ 2,190.00	$ 221,190.00

Total Construction Cost	**$ 2,137,658.40**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 641,297.52
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 2,798,955.92**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 167,937.36
	4% Rate of Return on Investment of Unspent Funds	$ 55,979.12
	Net Interest	**$ 111,958.24**

TOTAL CAPITAL COST	**$ 2,910,914.16**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)			20	34	66	114	59
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ 21,701.68	$ 36,892.85	$ 71,615.53	$ 123,699.56	$ 42,318.27
							Average
TOTAL ANNUALIZED COST	**$ 211,332.37**	**$ 211,332.37**	**$ 233,034.04**	**$ 36,892.85**	**$ 71,615.53**	**$ 123,699.56**	**$ 147,984.45**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 3,794.47**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF STEAM ELECTRIC IN HUNT COUNTY

Description of Water User Group:

The Steam Electric WUG in Hunt County has a demand that is projected to grow from 8,639 ac-ft/yr in 2010 to 23,902 ac-ft/yr in 2060. This demand is projected as a result of a proposed Cobisa power plant near Greenville. Greenville currently contracts with the Sabine River Authority for its supply. All SRA water from Lake Tawakoni and Lake Fork has been contracted and there is no water available from these lakes to meet the projected steam electric demands. SRA is proposing to transfer water from the Toledo Bend Reservoir to the North Texas region to meet anticipated future needs of its customers. Since there is no other wholesale water provider in the area with adequate amounts of water to meet steam electric demands in Hunt County, SRA water from the Toledo Bend Reservoir will be used to meet future shortages.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Projected Water Demand	8639	12366	14457	17006	20114	23902
Current Water Supply	0	0	0	0	0	0
Projected Supply Surplus (+)/Deficit(-)	**-8639**	**-12366**	**-14457**	**-17006**	**-20114**	**-23902**

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Hunt County Steam Electric WUG's watersupply shortages. In this round of planning, estimates were not made for electric power water conservation because data on operating strategies for each power plant was not available. Groundwater is not feasible due to the limited capacity of aquifers in the Greenville area. Surface water was considered as a viable alternative to meet projected demands. A surface water purchase worksheet is included as Attachment A.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**23,902**	-	**$ 3,058,279**	**$ 190**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	**8639**	**12366**	**14457**	**17006**	**20114**	**23902**

The recommended strategy for the Hunt County Steam Electric WUG to meet projected demands during the planning period is to purchase raw water from the Sabine River Authority's proposed Toledo Bend transfer.

Table C4.48 - Surface Water Worksheet
Steam Electric
Hunt County

Water Purchase from Sabine River Authority (Supply from proposed Toledo Bend transfer) :

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)	
21,338,330	**23902**	$ 0.83	Pre-Amortization 2010 to 2040
		$ 0.29	After Amortization 2050 to 2060

Total Construction Cost	**$**	**-**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)		**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$	-
ENVIRONMENTAL (LUMP SUM)	$	-
Total Borrowed Funds	**$**	**-**
INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$	-
4% Rate of Return on Investment of Unspent Funds	$	-
Net Interest	**$**	**-**
TOTAL CAPITAL COST	**$**	**-**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	8639	12366	14457	17006	20114	23902	16,081
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 2,336,472.23	$ 3,344,462.98	$ 3,909,987.16	$ 4,599,380.35	$ 1,900,708.43	$ 2,258,662.27	$ 3,058,278.91
							Average
TOTAL ANNUALIZED COST	**$ 2,336,472.23**	**$ 3,344,462.98**	**$ 3,909,987.16**	**$ 4,599,380.35**	**$ 1,900,708.43**	**$ 2,258,662.27**	**$ 3,058,278.91**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 190.18**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF JACOBIA WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

Jacobia WSC provides water service in Hunt County. The WUG population is projected to be 957 in 2010 and 5,153 in the year 2060. The WSC has a contract for water supply with the City of Greenville for 336 ac-ft/yr. The WSC is projected to have a deficit of 84 ac-ft in 2050 and increasing to a deficit of 328 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	957	1183	1510	2051	3259	5153
Projected Water Demand	124	152	195	264	420	664
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	336	336	336	336	336	336
Projected Supply Surplus (+) / Deficit (-)	**212**	**184**	**142**	**72**	**-84**	**-328**

Evaluation of Potentially Feasible Water Management Strategies:

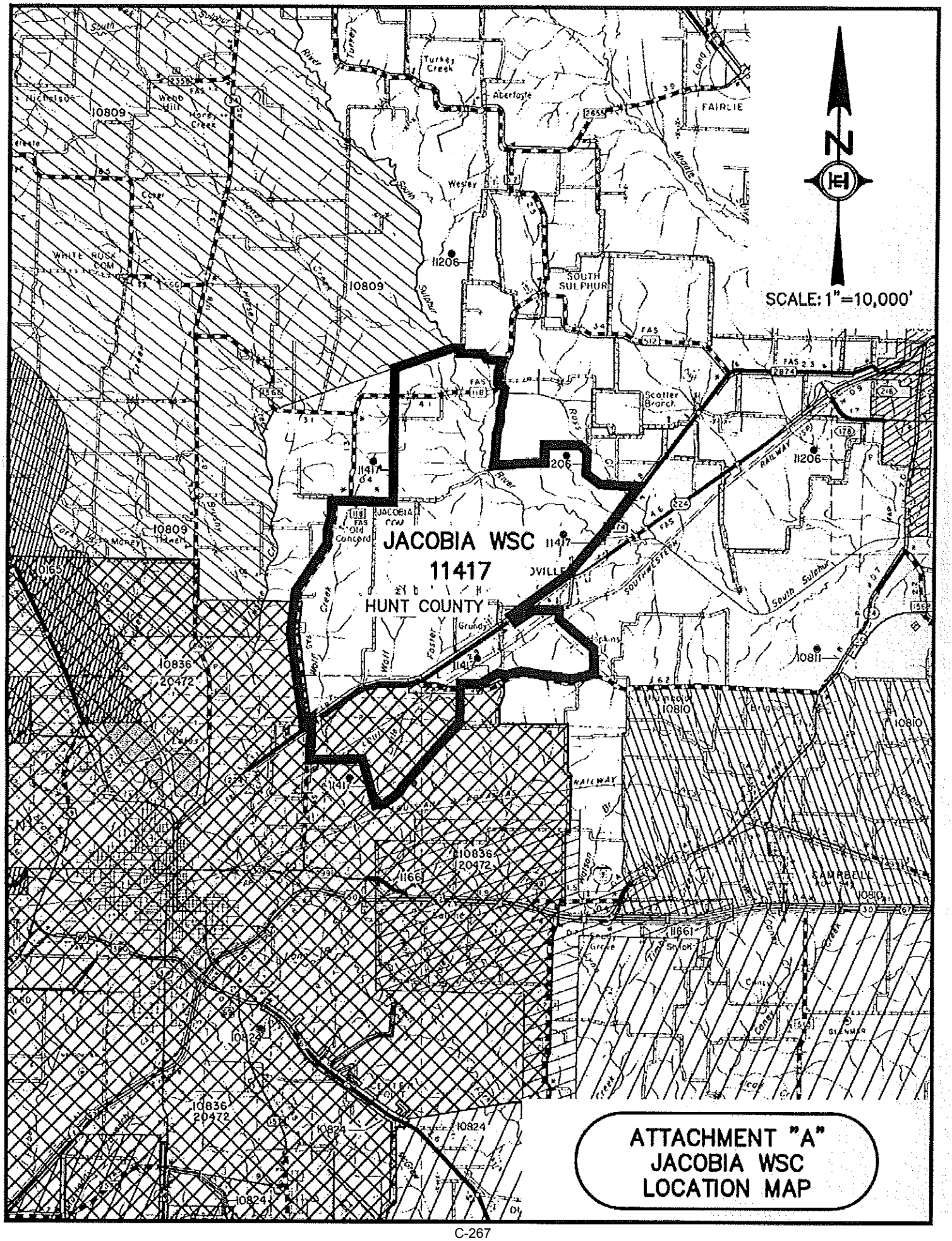
There were four alternative strategies considered to meet the WSC's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option because water supply is mainly used for public consumption. Groundwater was not selected because the WSC is planning on continuing to purchase surface water from the City of Greenville.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**328**	**$0**	**$72,048**	**$1,049**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)					84	328

Surface water purchase from City of Greenville is the recommended strategy to meet Jacobia WSC's needs.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SCALE: 1"=10,000'
JACOBIA WSC
11417
HUNT COUNTY
ATTACHMENT "A"
JACOBIA WSC
LOCATION MAP

Table C4.49 - Surface Water Worksheet
Jacobia WSC
Hunt County

Water Purchase Contract With City of Greenville:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
292,820	**328.0**	$ 3.22

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	0	84	328	69
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ -	$ 88,136.18	$ 344,150.79	$ 72,047.83
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ -**	**$ 88,136.18**	**$ 344,150.79**	**$ 72,047.83**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 1,049.24**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LITTLE CREEK ACRES

Description of Water User Group:

Little Creek Acres, which is within the County Other systems in Hunt County, is a small water supply system located in southern Hunt County. The population served is projected to be 236 persons in 2010 and increasing to 1272 persons in 2060. Current source of supply for the system is a well into the Nacatoch aquifer with a total rated capacity of 20 gpm, which equates to 11 ac-ft/yr on an annual average basis. Little Creek Acres is projected to have a water supply deficit of 20 ac-ft/yr beginning 2010 and increasing to a deficit of 153 ac-ft/yr by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	236	292	373	506	804	1272
Projected Water Demand	31	38	48	65	104	165
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	11	11	11	11	11	11
Projected Supply Surplus (+) / Deficit (-)	**-20**	**-27**	**-37**	**-54**	**-93**	**-153**

Evaluation of Potentially Feasible Water Management Strategies:

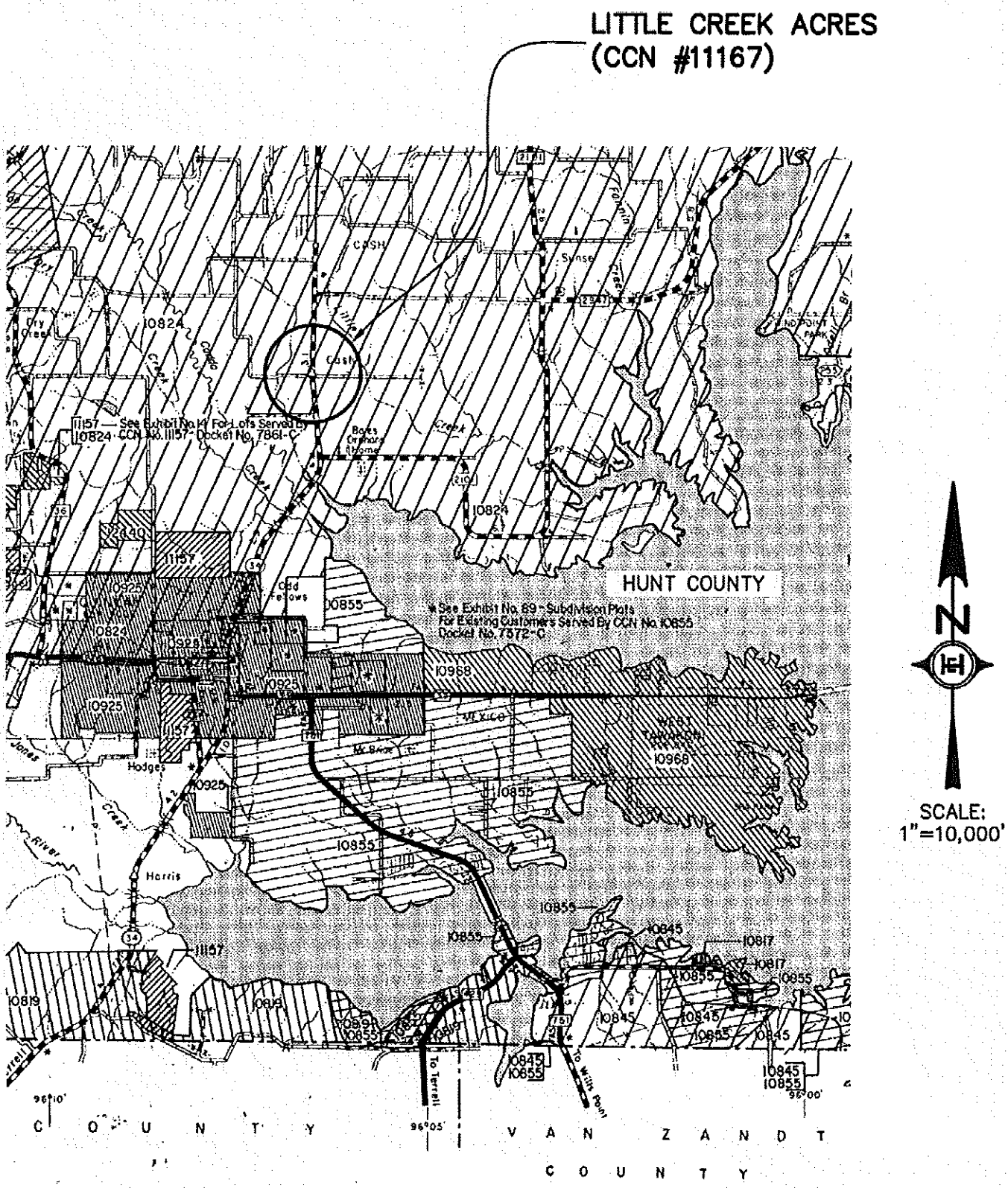
The four alternative strategies considered to meet Little Creek Acres's water supply shortages are listed in the table below. Advanced conservation was not selected since per capita water use is less than 140 gallons per capita per day. Reuse is not a feasible option because there is no centralized wastewater collection system. Existing wells into the Nacatoch Aquifer have a very small capacity of 20 gpm and it would require approximately 15 wells to meet the shortage in 2060. Little Creek Acres is very small geographically and it would not be feasible to drill this many wells within the existing area. Consequently, groundwater is not a suitable alternative to meet Little Creek Acres needs. The system is surrounded by Cash WSC, and a purchased water alternative from Cash was also considered. A surface water purchase worksheet is included as Attachment B.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**153**	**$125,174**	**$98,389**	**$1,537**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	20	27	37	54	93	153

Purchase of treated surface water from Cash WSC is the recommended strategy that is cost effective and reliable for Little Creek Acres to meet the deficit beginning in 2010. A supply of 20 ac-ft/yr in 2010 and increasing to 153 ac-ft/yr in 2060 should be adequate to meet estimated demand. Little Creek Acres has total water storage of 0.004 MG. This storage does not meet the TCEQ's total storage requirement of 200 gallons/connection and will not be adequate for the projected growth of the system. The cost of constructing additional ground storage is included in the water purchase worksheet.



ATTACHMENT "A"
LITTLE CREEK ACRES
LOCATION MAP

Table C4.50 - Purchased Supply Worksheet
Little Creek Acres
Hunt County

Water Purchase Contract With Cash SUD:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
136,590	**153.0**	$ 4.50

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
1,000	8	$ 2.20	$ 17,600.00	$ 616.00	$ 18,216.00

Ground Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
1	80000	$ 0.73	$ 58,400.00	$ 584.00	$ 58,984.00

Total Construction Cost	**$ 77,200.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 23,160.00
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 120,360.00**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 7,221.60
	4% Rate of Return on Investment of Unspent Funds	$ 2,407.20
	Net Interest	**$ 4,814.40**

TOTAL CAPITAL COST	**$ 125,174.40**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	20	27	37	54	93	153	64
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 29,326.59	$ 39,590.90	$ 54,254.19	$ 79,181.79	$ 136,368.64	$ 224,348.41	$ 93,845.09
							Average
TOTAL ANNUALIZED COST	**$ 38,414.25**	**$ 48,678.56**	**$ 63,341.85**	**$ 79,181.79**	**$ 136,368.64**	**$ 224,348.41**	**$ 98,388.92**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 1,537.33**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF MALOY WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

Maloy WSC provides water service in Hunt County. The WUG population is projected to be 427 in 2010 and 2,299 in the year 2060. The WSC has a contract for water supply with the City of Commerce for 34 ac-ft/yr. The WSC is projected to have a deficit of 26 ac-ft in 2010 and increasing to a deficit of 263 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	427	528	674	915	1454	2299
Projected Water Demand	59	73	91	118	188	297
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	34	34	34	34	34	34
Projected Supply Surplus (+) / Deficit (-)	**-26**	**-39**	**-57**	**-84**	**-154**	**-263**

Evaluation of Potentially Feasible Water Management Strategies:

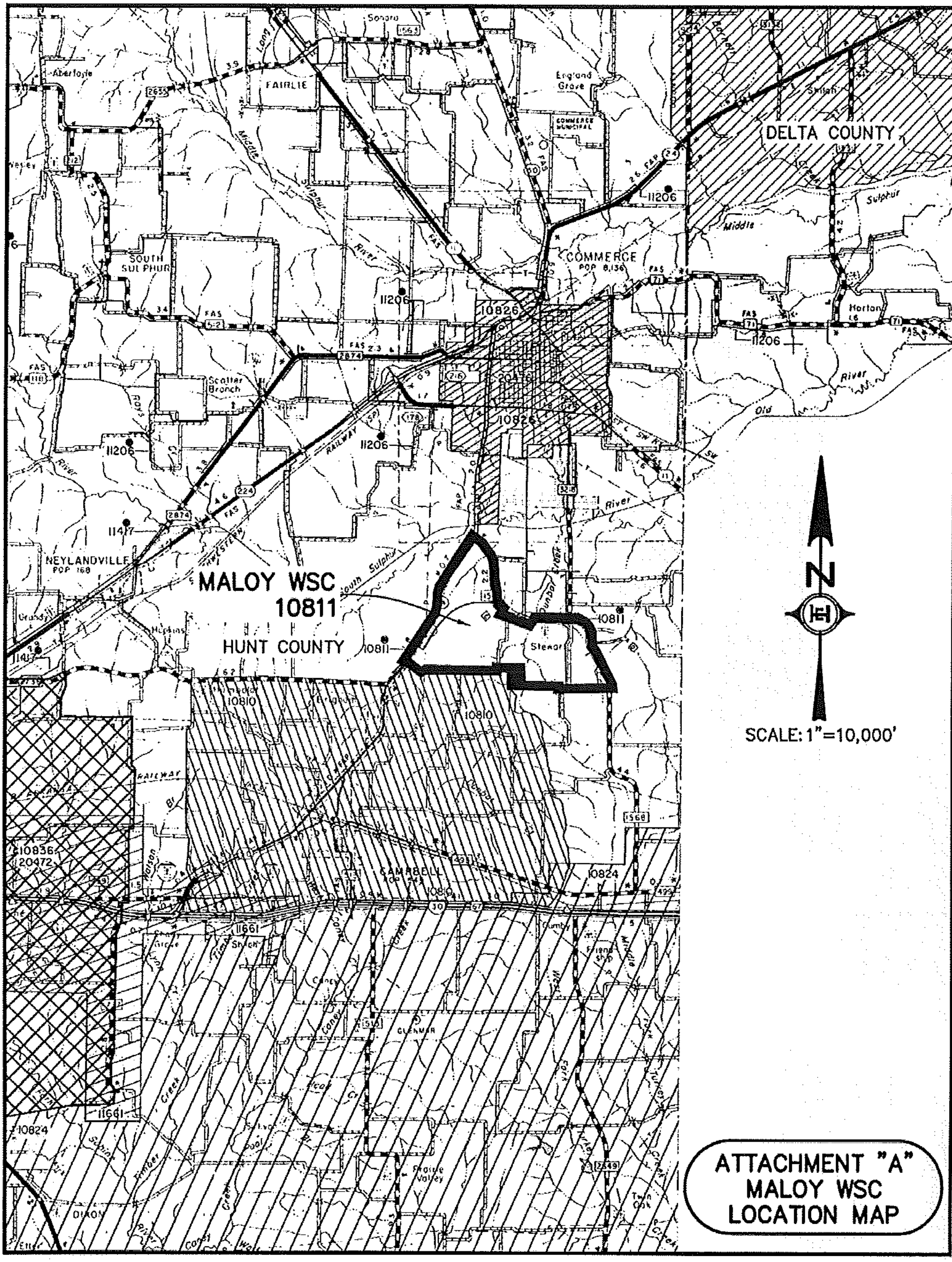
There were four alternative strategies considered to meet Maloy WSC's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was less than the 140 gpcd threshold set by the water planning group. Reuse is not a feasible option 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 Commerce.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**263**	**$0**	**$112,668**	**$1,085**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	26	39	57	84	154	263

Surface water purchase from City of Commerce is the recommended strategy to meet Maloy WSC's needs.



MALOY WSC
10811
HUNT COUNTY
DELTA COUNTY
COMMERCE
POP 8,136
NEYLANDVILLE
POP 168
SOUTH SULPHUR
FAIRLIE
CAMPBELL
10826
10810
10824
11206
11417
10836
20472
11661
N
SCALE: 1"=10,000'
ATTACHMENT "A"
MALOY WSC
LOCATION MAP

Table C4.51 - Surface Water Worksheet
Maloy WSC
Hunt County

Water Purchase Contract With City of Commerce:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
234,791	**263.0**	$ 3.33

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	26	39	57	84	154	263	104
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 28,212.18	$ 42,318.27	$ 61,849.78	$ 91,147.04	$ 167,102.91	$ 285,377.05	$ 112,667.87
							Average
TOTAL ANNUALIZED COST	**$ 28,212.18**	**$ 42,318.27**	**$ 61,849.78**	**$ 91,147.04**	**$ 167,102.91**	**$ 285,377.05**	**$ 112,667.87**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 1,085.08**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF POETRY WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

Poetry WSC provides water service in Hunt County and Kaufman County. In Hunt County, the WUG population is projected to be 333 in 2010 and 1794 in the year 2060. The WSC has a contract for water supply with the City of Terrell, and the supplies available to portion of Poetry WSC in Hunt County are given in the table below. In Hunt County, the WSC is projected to have a deficit of 1 ac-ft in 2040 and increasing to a deficit of 46 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	333	412	526	714	1134	1794
Projected Water Demand	43	53	68	92	146	231
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	66	68	75	91	132	185
Projected Supply Surplus (+) / Deficit (-)	**23**	**15**	7	**-1**	**-14**	**-46**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Poetry WSC's water supply shortages as summarized 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. 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 Terrell.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**46**	**$0**	**$16,962**	**$1,668**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)				1	14	46

Surface water purchase from City of Terrell is the recommended strategy to meet Poetry WSC's needs.

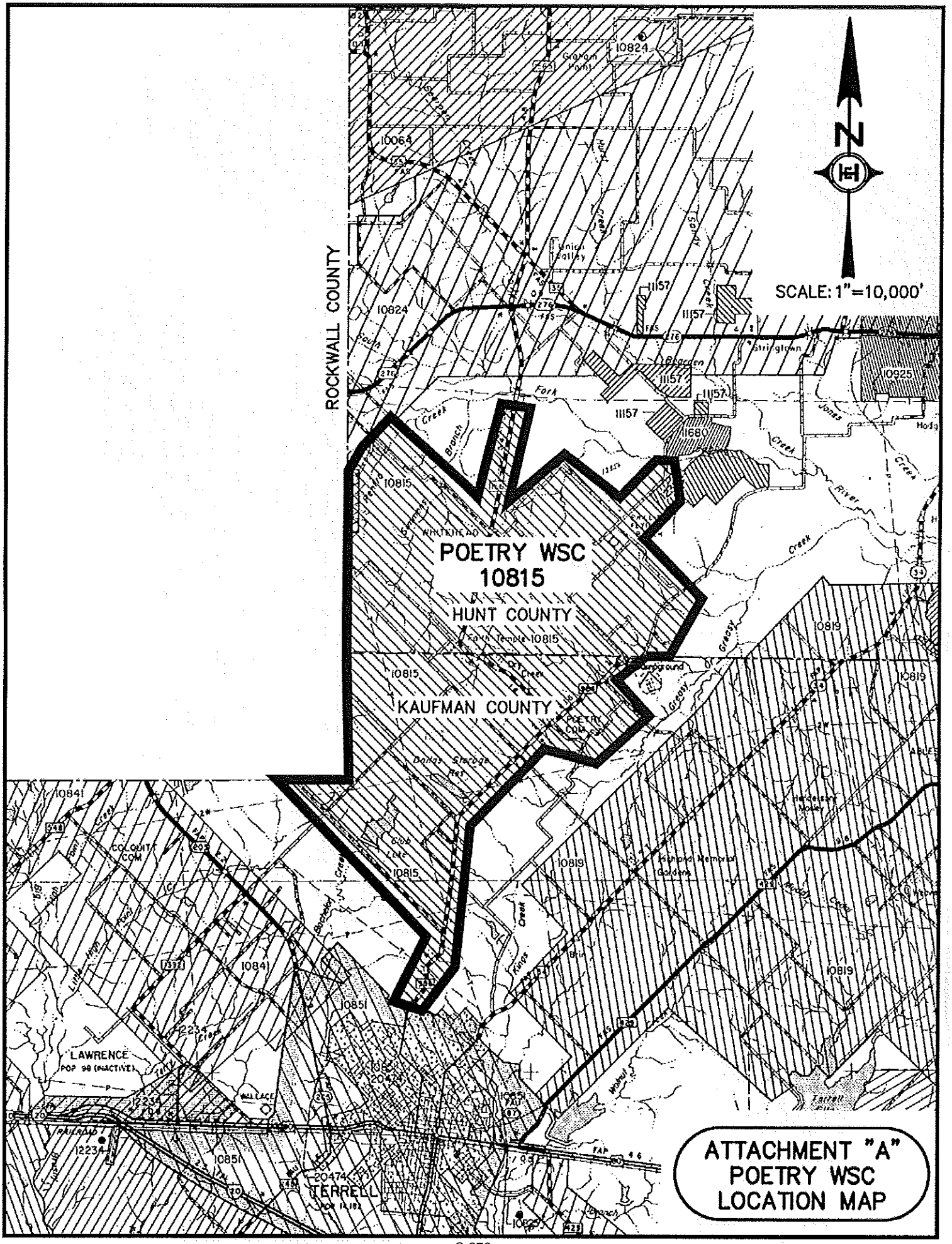

ROCKWALL COUNTY
N
SCALE: 1"=10,000'
POETRY WSC
10815
HUNT COUNTY
KAUFMAN COUNTY
LAWRENCE
POP 98 (INACTIVE)
TERRELL
ATTACHMENT "A"
POETRY WSC
LOCATION MAP

Table C4.52 - Surface Water Worksheet
Poetry WSC
Hunt County

Water Purchase Contract With City of Terrell:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
41,066	**46.0**	$ 5.12

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	1	14	46	10
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ 1,668.36	$ 23,357.00	$ 76,744.43	$ 16,961.63
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ 1,668.36**	**$ 23,357.00**	**$ 76,744.43**	**$ 16,961.63**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 1,668.36**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF SHADY GROVE WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

Shady Grove WSC provides water service in Hunt County. The WUG population is projected to be 1,211 in 2010 and 6,523 in the year 2060. The WSC has a contract for water supply with the City of Greenville for 560 ac-ft/yr. The WSC is projected to have a deficit of 280 ac-ft in 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1211	1498	1911	2596	4125	6523
Projected Water Demand	157	193	246	334	531	840
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	560	560	560	560	560	560
Projected Supply Surplus (+) / Deficit (-)	**403**	**367**	**314**	**226**	**29**	**-280**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Shady Grove WSC's water supply shortages as summarized 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. 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 Greenville.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**280**	**$0**	**$48,965**	**$1,049**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)						280

Surface water purchase from City of Greenville is the recommended strategy to meet Shady Grove WSC's needs.

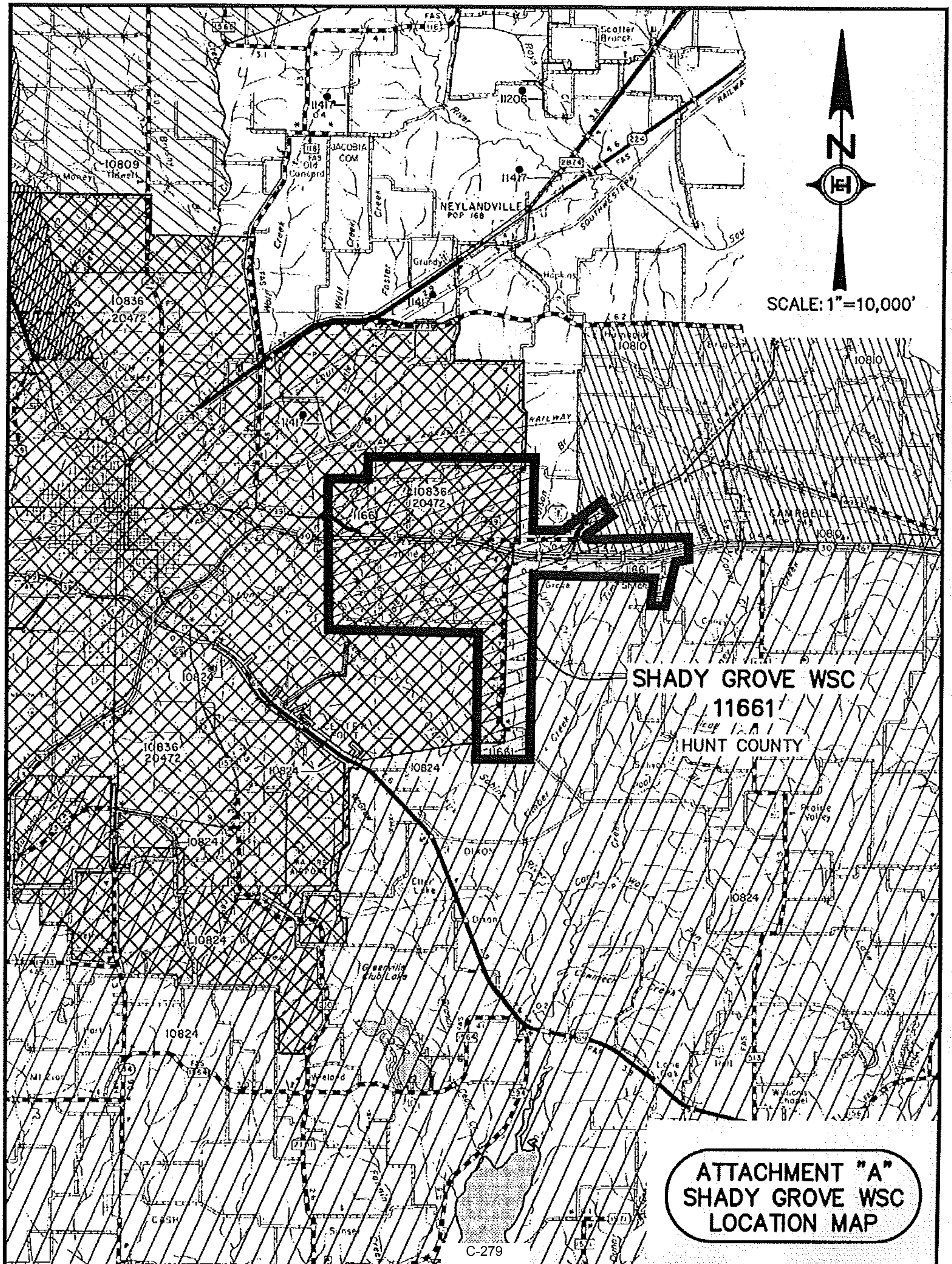

SCALE: 1"=10,000'
SHADY GROVE WSC
11661
HUNT COUNTY
ATTACHMENT "A"
SHADY GROVE WSC
LOCATION MAP
NEYLANDVILLE
CAMPBELL
10836
20472
10824
10810
10809
11417
11206

Table C4.53 - Surface Water Worksheet
Shady Grove WSC
Hunt County

Water Purchase Contract With City of Greenville:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
249,968	**280.0**	$ 3.22

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	0	0	280	47
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ -	$ -	$ 293,787.26	$ 48,964.54
							Average
TOTAL ANNUALIZED COST	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 293,787.26**	**$ 48,964.54**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 1,049.24**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF WEST LEONARD WATER SUPPLY CORPORATION IN HUNT COUNTY

Description of Water User Group:

West Leonard WSC, which is within the County Other systems in Fannin County, supplies water to users in Collin, Fannin and Hunt counties. Currently, the WSC serves a total population of approximately 1300 people. Over 90% of the population is located in Fannin County. The paragraphs below describe the needs of the 3% population served in Hunt County. The population served is projected to be 45 persons in 2010 and increasing to 245 persons in 2060. Current source of supply for the system are three wells into the Woodbine aquifer with a total rated capacity of 530 gpm, which equates to 285 ac-ft/yr on an annual average basis. 9 ac-ft/yr is the water allocated to users in Hunt County. A water supply deficit of 1 ac-ft/yr beginning 2040 and increasing to a deficit of 24 ac-ft/yr by 2060 is projected for Hunt County. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	45	56	72	97	155	245
Projected Water Demand	7	8	10	14	21	33
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	9	9	9	9	9	9
Projected Supply Surplus (+) / Deficit (-)	**2**	**1**	**-1**	**-5**	**-12**	**-24**

Evaluation of Potentially Feasible Water Management Strategies:

Advanced conservation was not selected for West Leonard since per capita water use is less than 140 gallons per capita per day. Surface water was not chosen as an alternative for this small water system, because the system is not large enough to cost-effectively treat surface water, and there are currently no surface water wholesalers within close proximity. NTMWD currently has water at Farmersville, about 15 miles away, which could become a viable source much later in the planning period. Water reuse was not selected because there is no centralized collection system. Ground water was considered as the system's primary source to meet the projected deficit. A groundwater worksheet is included as Attachment B.

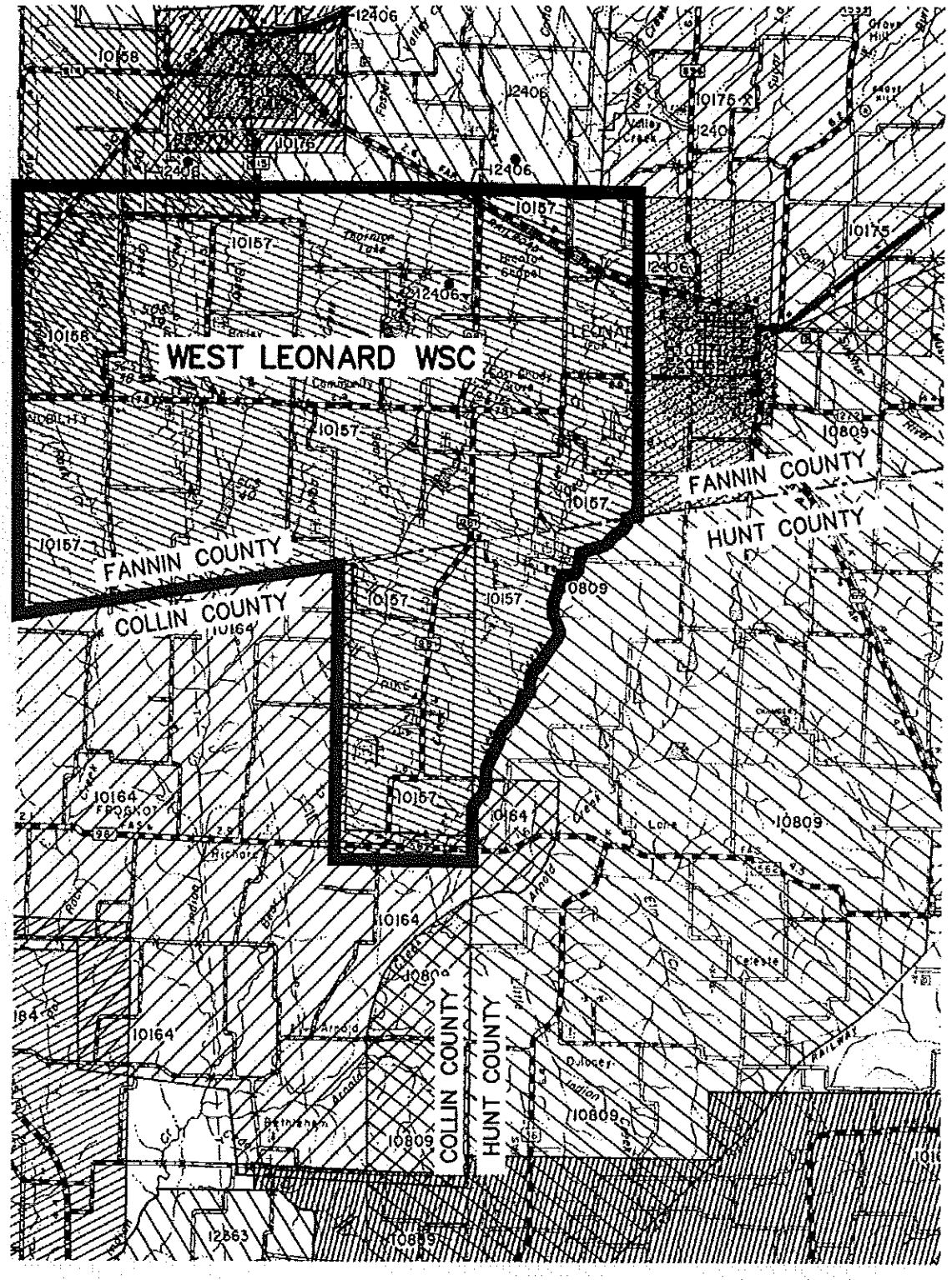
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**81**	**$1,166,252**	**$102,870**	**$747**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	81	81	81	81	81	81

Additional ground water from the Woodbine aquifer is the recommended strategy for West Leonard WSC to meet the projected deficit by 2010. One new well with a capacity of 150 gpm, or a total of 81 ac-ft/yr, should be achievable in Hunt County. Since only a small percentage of the users are located in Region D, the excess capacity from this well could be available for the system's meters in Region C.

Given the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source due to quality issues, 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 re-evaluated.



ATTACHMENT "A"
WEST LEONARD WSC
LOCATION MAP

Table C4.54 - Groundwater Worksheet
West Leonard WSC
Hunt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
1	1800	150	**81**	$ 440.00	$ 792,000.00	$ 7,920.00	$ 799,920.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,600	6	$ 2.93	$ 45,708.00	$ 1,599.78	$ 47,307.78

Storage

No of Tanks	Size-Gals	Cost per gallon	(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 847,227.78**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 254,168.33
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 1,121,396.11**
INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 67,283.77
4% Rate of Return on Investment of Unspent Funds	$ 22,427.92
Net Interest	**$ 44,855.84**
TOTAL CAPITAL COST	**$ 1,166,251.96**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 13,929.20

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	150	300	70%	1	0.09	$ 4,270.55

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 102,869.64**
WUG Total WMS Cost Per Acre-Foot	**$ 747.34**

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

LAMAR COUNTY

WUGs:

Steam Electric

County Other:

Petty WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF PETTY WATER SUPLY CORPORATION

Description of Water User Group:

Petty WSC is a very small public water supply located in western Lamar County along US Highway 82. It is surrounded on all sides by the Lamar County WSD. In 2003, Petty served 62 connections. The estimated population is 137 in the year 2010, and is projected to be 155 by the year 2060. Petty WSC is included in the County Other water user group for Lamar County. The current source of supply is a single 31 gpm well into the Woodbine formation. Water quality does not meet current TCEQ standards because of high TDS. Backup for the single well is provided through a 6" connection to Lamar County WSD. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	137	146	154	163	159	155
Projected Water Demand	18	19	20	21	20	20
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	17	17	0	0	0	0
Projected Supply Surplus (+) / Deficit (-)	**-1**	**-2**	**-20**	**-21**	**-20**	**-20**

Evaluation of Potentially Feasible Water Management Strategies:

The alternative strategies listed in the table below were considered to meet Petty's water supply shortage. Advanced conservation was not selected since per capita use is less than 140 gpcpd, the threshold set by the planning group. All uses is for residential purposes, so there are no current water needs which could be met by water reuse. Groundwater is not of suitable quality. The existing well is projected to fail by 2020, and a replacement well will not be a viable option, since water quality is below TCEQ minimum standards. Treatment of the groundwater is not considered viable because of the operational complexity for a system of this size. Conversion to surface water by contracting with LCWSD was the alternative selected for this entity. A surface water purchase worksheet is included as Attachment B.

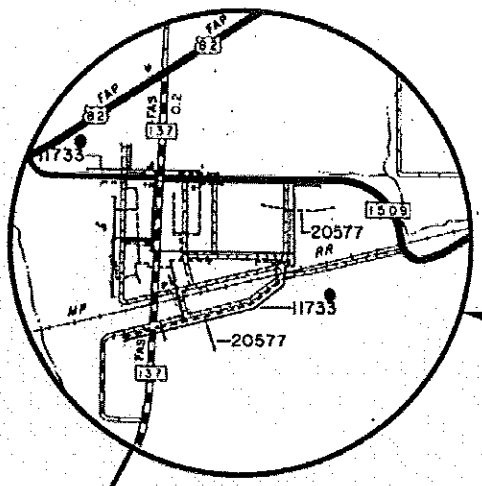
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**21**	**$43,435**	**$14,441**	**$1,032**	**Minimal**

Recommendations:

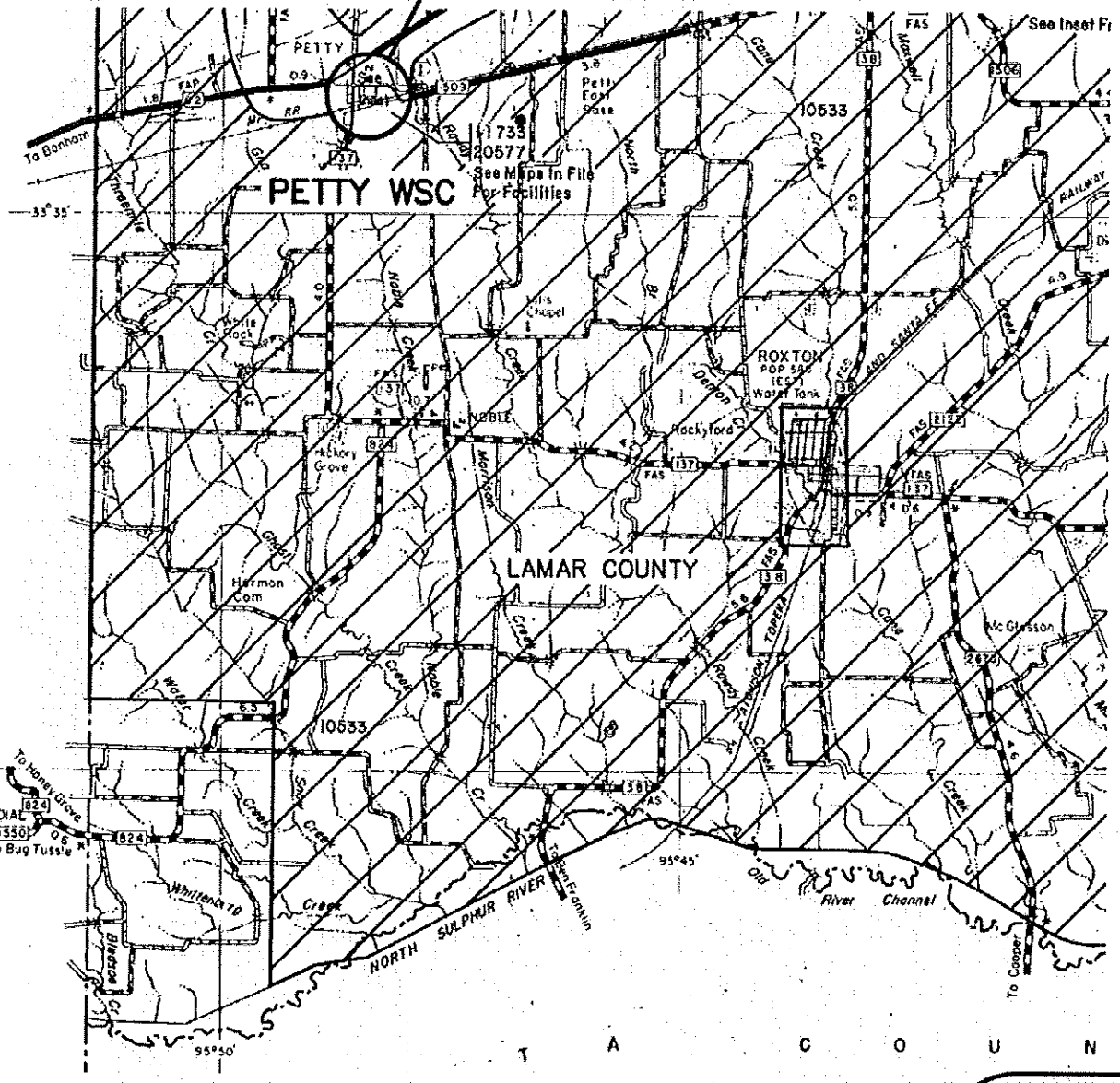
	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	1	2	20	21	20	20

The recommended strategy is for Petty WSC to enter into a contract for treated surface water with Lamar County Water Supply District when necessary. LCWSD has adequate supply available, and already has facilities in-place to provide this service. There are no other suppliers in the Petty area with adequate facilities to meet Petty's needs. Given that facilities are in-place, capital costs would be negligible. Since LCWSD already has water available, and no significant construction would be required, environmental impact would be negligible.

SCALE: 1" = 1000'



PETTY WSC
(CCN #11733)



N

SCALE:
1"=10,000'

ATTACHMENT "A"
PETTY WSC
LOCATION MAP

Table C4.55 - Surface Water Worksheet
Petty WSC
Lamar County

Water Purchase Contract With Lamar County Water Supply District:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
18,748	**21.0**	$ 2.82

Pump Station

	Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
Rework	1	$ 28,000.00	$ 28,000.00	$ 280.00	$ 28,280.00
Existing					

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	10	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 28,280.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 8,484.00
ENVIRONMENTAL (LUMP SUM)	$ 5,000.00
Total Borrowed Funds	**$ 41,764.00**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 2,505.84
	4% Rate of Return on Investment of Unspent Funds	$ 835.28
	Net Interest	**$ 1,670.56**

TOTAL CAPITAL COST	**$ 43,434.56**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	1	2	20	21	20	20	14
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 918.90	$ 1,837.80	$ 18,378.00	$ 19,296.90	$ 18,378.00	$ 18,378.00	$ 12,864.60
							Average
TOTAL ANNUALIZED COST	**$ 4,072.25**	**$ 4,991.15**	**$ 21,531.35**	**$ 19,296.90**	**$ 18,378.00**	**$ 18,378.00**	**$ 14,441.27**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 1,031.52**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF STEAM ELECTRIC IN LAMAR COUNTY

Description of Water User Group:

The Steam Electric WUG in Lamar County has a demand that is projected to grow from a demand of 5,940 ac-ft/yr in 2010 to 16,435 ac-ft/yr in 2060. Panda's steam electric contract with City of Paris is 8,961 ac-ft/yr. Steam electric is projected to have a deficit of 980 ac-ft/yr in 2030 and increasing to a deficit of 7,474 ac-ft/yr in 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Projected Water Demand	5940	8503	9941	11694	13831	16435
Current Water Supply	8961	8961	8961	8961	8961	8961
Projected Supply Surplus (+)/Deficit(-)	**3021**	**458**	**-980**	**-2733**	**-4870**	**-7474**

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Lamar County Steam Electric WUG's water supply shortages. In this round of planning, estimates were not made for electric power water conservation because data on operating strategies for each power plant was not available. Groundwater is also not feasible due to questionable reliability and the large quantity required for a steam electric facility. Surface water from surrounding lakes was considered as a viable alternative to meet projected demands. A surface water purchase worksheet is included as Attachment A.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**7,474**	**$ 0**	**$ 249,663**	**$ 93**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	**0**	**0**	**980**	**2733**	**4870**	**7474**

The recommended strategy for the Lamar County steam electric WUG to meet projected demands during the planning period is to purchase raw water from the City of Paris's Pat Mayse Lake. A capital cost is not included for this alternative since Panda's steam electric facilities is already in place.

Table C4.56 - Surface Water Worksheet
Steam Electric
Lamar County

Water Purchase from City of Paris:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
6,672,357	**7474**	$ 0.29

Total Construction Cost		**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)		**1.0**
Other Capital Costs		
ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)		$ -
ENVIRONMENTAL (LUMP SUM)		$ -
Total Borrowed Funds		**$ -**
INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**
TOTAL CAPITAL COST		**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	980	2733	4870	7474	2,676
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ 91,425.32	$ 254,964.69	$ 454,327.86	$ 697,257.99	$ 249,662.64
							Average
TOTAL ANNUALIZED COST (Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))	**$ -**	**$ -**	**$ 91,425.32**	**$ 254,964.69**	**$ 454,327.86**	**$ 697,257.99**	**$ 249,662.64**

UNIT COST **$ 93.29**
($ / ac-ft / yr)

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

MARION COUNTY

WUGs:

None

County Other:

None

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

MORRIS COUNTY

WUGs:

None

County Other:

None

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

RAINS COUNTY

WUGs:

None

County Other:

South Rains WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF SOUTH RAINS WATER SUPPLY CORPORATION IN RAINS COUNTY

Description of Water User Group:

South Rains WSC provides water service in Rains County. The WUG population is projected to be 2,706 in 2010 and 3,604 in the year 2060. The WSC has a contract for water supply with the City of Emory for 264 ac-ft/yr. The WSC is projected to have a deficit of 160 ac-ft in 2010 and increasing to a deficit of 277 ac-ft by 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	2706	3251	3599	3695	3669	3604
Projected Water Demand	424	502	548	559	551	541
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	264	264	264	264	264	264
Projected Supply Surplus (+) / Deficit (-)	**-160**	**-239**	**-284**	**-295**	**-287**	**-277**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet South Rains WSC's water supply shortages as summarized in the Table below. Advanced conservation was considered because the per capita use per day was greater 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 WSC is planning on continuing to purchase surface water from the City of Emory.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**28**	**$187,197**	-	**$726**	**Minimal**
Water Reuse					
Ground Water					
Surface Water	**295**	**$0**	**$489,063**	**$1,903**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	160	239	284	295	287	277

Surface water purchase from City of Emory is the recommended strategy to meet South Rains WSC's needs.

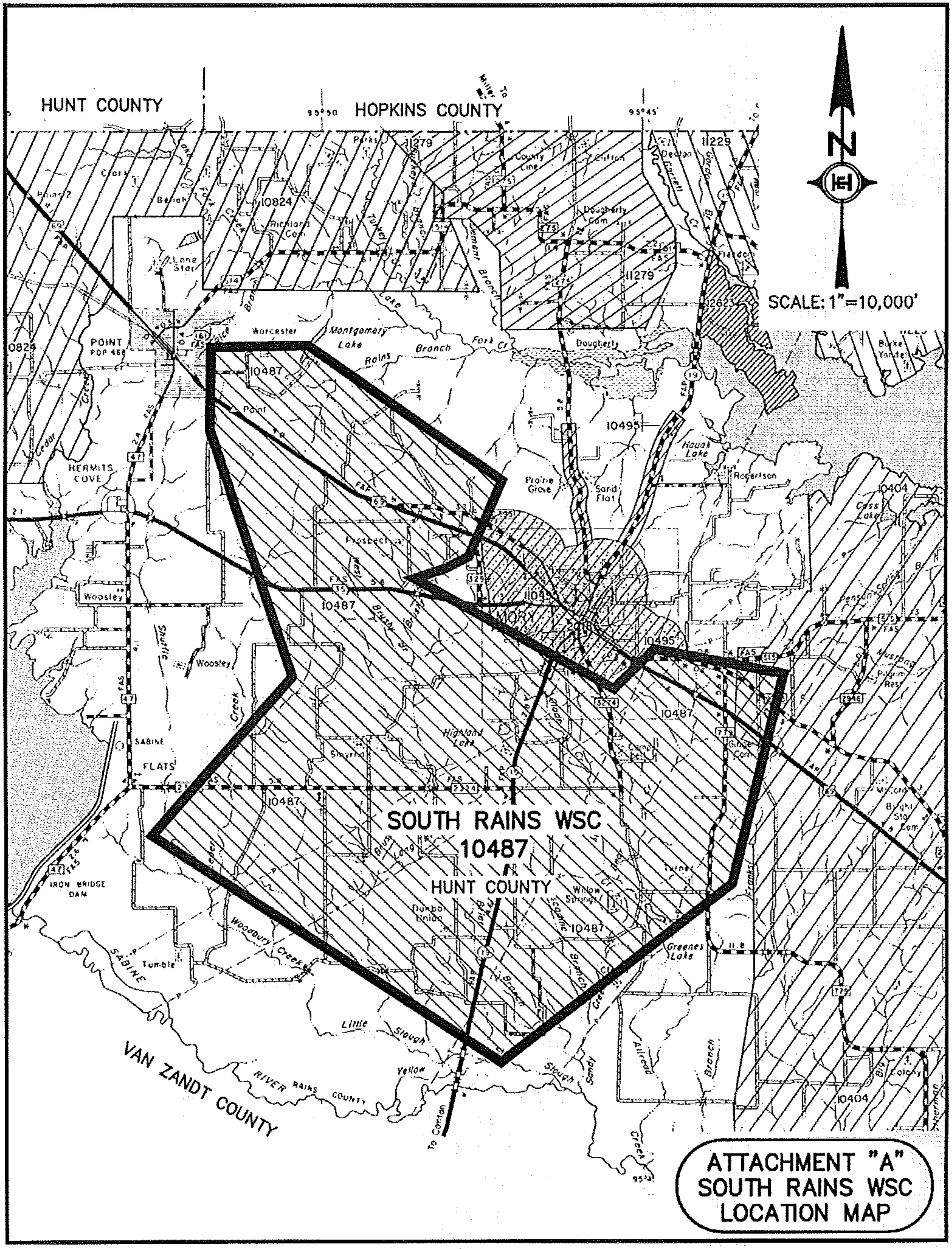

HUNT COUNTY
HOPKINS COUNTY
N
SCALE: 1"=10,000'
SOUTH RAINS WSC
10487
HUNT COUNTY
VAN ZANDT COUNTY
POINT
HERMITS COVE
EMORY
ATTACHMENT "A"
SOUTH RAINS WSC
LOCATION MAP

Table C4.57 - Surface Water Worksheet
South Rains WSC
Rains County

Water Purchase Contract With City of Emory:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
263,359	**295.0**	$ 5.84

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
-	-	$ 2.20	$ -	$ -	$ -

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ -
ENVIRONMENTAL (LUMP SUM)	$ -
Total Borrowed Funds	**$ -**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**

TOTAL CAPITAL COST	**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	160	239	284	295	287	277	257
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 304,475.17	$ 454,809.79	$ 540,443.43	$ 561,376.10	$ 546,152.34	$ 527,122.65	$ 489,063.25
							Average
TOTAL ANNUALIZED COST	**$ 304,475.17**	**$ 454,809.79**	**$ 540,443.43**	**$ 561,376.10**	**$ 546,152.34**	**$ 527,122.65**	**$ 489,063.25**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST ($ / ac-ft / yr)	**$ 1,902.97**

Conservation Worksheet

Table C4.58 - Cost-Savings Analysis for Region D - South Rains WSC

Regional Data	
Population	3,421
SF Population	3,421
MF Population	-
Institutional Population	-
SF Units	1,368
MF Units	-
Average Yearly Rainfall (inches)	42.9
SF Household Size	2.50
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	-
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit	10.5	26.3	2.0	13.1	10%	50%	-	-	-	$ -	$ -	$ -	free or rebate
SF Showerheads and Aerators	5.5	13.8	2.0	6.9	10%	50%	-	-	-	$ -	$ -	$ -	kits picked up by customer
SF Clothes Washer Rebate	5.6	14.0	1.0	14.0	0%	90%	1,232	17,242	19.31	$ 120	$ 147,787	$ 815	rebate from water utility only
SF Irrigation Audit-High User	20.0	50.0	1.0	50.0	1%	5%	55	2,737	3.07	$ 70	$ 3,832	$ 459	staff
SF Rainwater Harvesting	18.9	47.2	1.0	47.2	0%	5%	68	3,230	3.62	$ 250	$ 17,105	$ 456	rebate
SF Rain Barrels	2.0	5.1	1.0	5.1	0%	30%	411	2,098	2.35	$ 45	$ 18,473	$ 757	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate													
MF Irrigation Audit													
MF Rainwater Harvesting													
								25,306	**28**		**$ 187,197**	**$725.57**	
Commercial													
Commercial Toilet Retrofit													
Coin-Operated Clothes Washer Rebate													
Irrigation Audit													
Commercial General Rebate													
Commercial Rainwater Harvesting													

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

Red River COUNTY

WUGs:

None

County Other:

None

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

SMITH COUNTY

WUGs:

Crystal Systems Inc.
Lindale Rural WSC
City Of Lindale
City of Winona

County Other:

Star Mountain WSC

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CRYSTAL SYSTEMS INC

Description of Water User Group:

Crystal Systems Inc. provides water service in northwestern Smith County in the Hideaway Lake Community. The CSI service area is bounded on the north by Duck Creek WSC, on the east by the City of Lindale and Lindale Rural WSC, and on the south by Southern Utilities Company. Crystal Systems Inc. is 92% in Region D and 8% in Region I. In 2003, the WSC served 1,700 connections. The projected population is 3,740 in the year 2010 and is projected to be 7,204 in the year 2060. The projected population in Region D is 3,419 in the year 2010 and is projected to be 6,649 in the year 2060. This evaluation is for the Region D portion and assumes demands in Region D will be met with supplies in Region D. Crystal Systems Inc. is included as a water user group for Smith County. The system is served by three wells from the Carrizo-Wilcox Aquifer with a total pumping capacity of 1,940 gpm, or 1,043 ac-ft/yr on an average annual basis. The Region D portion would be 960 ac-ft/yr. A location map is included as Attachment A.

Water Supply and Demand Analysis:

Region D Allocation	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Population	3419	3889	4357	4824	5609	6649
Projected Water Demand	712	810	908	1005	1169	1385
Current Water Supply	960	960	960	960	960	960
Projected Supply Surplus (+) / Deficit (-)	+248	+150	+52	**-45**	**-209**	**-425**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the Crystal Systems Inc. water supply shortages as summarized in the table below. Advanced conservation was considered because the per capita use per day of 186 is greater than the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because CSI does not have a centralized sewerage collection system. Surface water alternatives were omitted since a surface water supply source is not available within reasonable proximity. A ground water worksheet is included as Attachment B and an advanced water conservation worksheet is included as Attachment C.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**41**	**$ 263,851**		**$ 703**	**Minimal**
Water Reuse					
Groundwater	**538**	**$ 1,383,789**	**$ 201,752**	**$ 610**	**Minimal**
Surface Water					

Recommendations:

	2010	**2020**	**2030**	**2040**	**2050**	**2060**
Groundwater (ac-ft/yr)				269	269	538

The recommended strategy for Crystal Systems Inc. to meet their projected deficit of 45 ac-ft in the year 2040 and 425 ac-ft in the year 2060 would be to construct two additional water wells in the Carrizo-Wilcox Aquifer. One well with a total rated capacity of 500 gpm would provide approximately 269 ac-ft/yr each or 538 ac-ft/yr total for two wells. The wells will need to be constructed prior to the year 2040 and 2060. The supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin, Smith County. The aquifer has an adequate supply to meet the projected needs of Crystal Systems Inc.

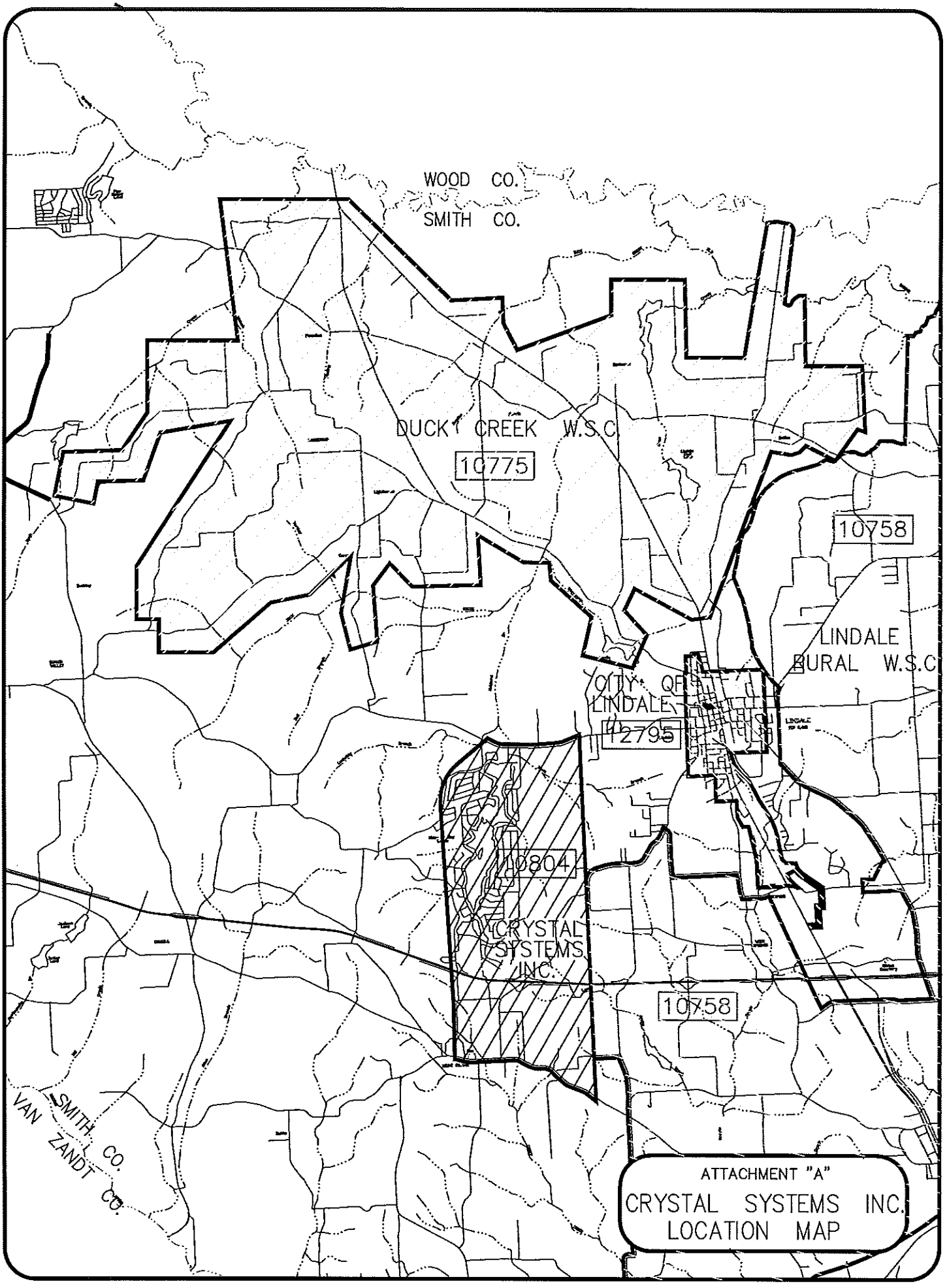

WOOD CO.
SMITH CO.
DUCK CREEK W.S.C.
10775
10758
LINDALE
RURAL W.S.C.
CITY OF
LINDALE
12795
10804
CRYSTAL
SYSTEMS
INC.
10758
SMITH CO.
VAN ZANDT CO.
ATTACHMENT "A"
CRYSTAL SYSTEMS INC.
LOCATION MAP

Table C4.59 - Groundwater Worksheet
Crystal Systems Inc.
Smith County
WUG

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
2	1000	500	**538**	$ 440.00	$ 880,000.00	$ 22,000.00	$ 902,000.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
4,000	6	$ 2.20	$ 52,800.00	$ 1,848.00	$ 54,648.00

Total Construction Cost	**$ 956,648.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 286,994.40
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 1,253,643.40**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 75,218.60
	4% Rate of Return on Investment of Unspent Funds	$ 25,072.87
	Net Interest	**$ 50,145.74**

TOTAL CAPITAL COST	**$ 1,303,789.14**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 92,861.34

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	500	150	70%	2	0.09	$ 14,235.16

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 201,751.59**
WUG Total WMS Cost Per Acre-Foot	**$ 609.52**

Table C4.60 - Crystal Systems Inc. Cost-Savings Analysis for Region D - Rural

Attachment C - Advanced Water Conservation Worksheet

WUG Data	
Population	5,034
SF Population	5,034
MF Population	-
Institutional Population	-
SF Units	1,929
MF Units	-
Average Yearly Rainfall (inches)	43.3
SF Household Size	2.61
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	1.2
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
SF Toilet Retrofit													
SF Showerheads and Aerators													
SF Clothes Washer Rebate	5.6	14.6	1.0	14.6	0%	90%	1,736	25,371	28.42	$ 120	$ 208,303	$ 780	rebate from water utility only
SF Irrigation Audit-High User	19.2	50.0	1.0	50.0	1%	5%	77	3,857	4.32	$ 70	$ 5,400	$ 459	staff
SF Rainwater Harvesting	18.3	47.6	1.0	47.6	0%	5%	96	4,595	5.15	$ 250	$ 24,109	$ 451	rebate
SF Rain Barrels	2.0	5.2	1.0	5.2	0%	30%	579	2,985	3.34	$ 45	$ 26,038	$ 750	rebate or distribution
MF Toilet Retrofit	N/A												
MF Showerheads and Aerators	N/A												
MF Clothes Washer Rebate	N/A												
MF Irrigation Audit	N/A												
MF Rainwater Harvesting	N/A												
								36,808	**41**		**$ 263,851.03**	**$ 703.11**	
Commercial													
Commercial Toilet Retrofit	N/A												
Coin-Operated Clothes Washer Rebate	N/A												
Irrigation Audit	N/A												
Commercial General Rebate	N/A												
Commercial Rainwater Harvesting	N/A												

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LINDALE RURAL WSC

Description of Water User Group:

Lindale Rural WSC provides water service in northern Smith County. The LR WSC service area is bounded on the west by Duck Creek WSC, Crystal Systems Inc., and the City of Lindale, on the north by the Sabine River, on the east by Sand Flat WSC, and on the south by Southern Utilities Company. Lindale Rural is 48% in Region D and 52% in Region I. In 2003, the WSC served 2,346 connections. The projected population is 5,135 in the year 2010 and is projected to be 9,828 in the year 2060. The projected population in Region D is 2,421 in the year 2010 and is projected to be 4,709 in the year 2060. This evaluation is for the Region D portion and assumes demands in Region D will be met with supplies in Region D. Lindale Rural WSC is included as a water user group for Smith County. The system is served by five wells from the Carrizo-Wilcox Aquifer with a total pumping capacity of 2,045 gpm, or 1,100 ac-ft/yr on an average annual basis. The Region D portion would be 528 ac-ft/yr. A location map is included as Attachment A.

Water Supply and Demand Analysis:

Region D Allocation	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**
Population	2421	2754	3086	3416	3973	4709
Projected Water Demand	391	435	480	524	605	717
Current Water Supply	528	528	528	528	528	528
Projected Supply Surplus (+) / Deficit (-)	+137	+93	+48	+4	**-77**	**-189**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the Lindale Rural WSC water supply shortages as summarized in the table below. Advanced conservation was considered because the per capita use per day of 149 is greater than the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because the WSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since surface water supply source is not available within reasonable proximity. A ground water worksheet is included as Attachment B and an advanced water conservation worksheet is included as Attachment C.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**29**	**$ 186,855**		**$ 703**	**Minimal**
Water Reuse					
Groundwater	**215**	**$ 413,194**	**$ 70,938**	**$ 330**	**Minimal**
Surface Water					

Recommendations:

	2010	**2020**	**2030**	**2040**	**2050**	**2060**
Groundwater (ac-ft/yr)					215	215

The recommended strategy for Lindale Rural WSC to meet their projected deficit of 77 ac-ft in the year 2050 and 189 ac-ft in the year 2060 would be to construct one additional water well in the Carrizo-Wilcox Aquifer. One well with a total rated capacity of 400 gpm would provide approximately 215 ac-ft/yr. The well will need to be constructed by the year 2050. The supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin, Smith County. The aquifer has an adequate supply to meet the projected needs of LR WSC.

Given the increasing costs to comply with more stringent regulations and 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 recommendation previously discussed should be disregarded and a re-evaluation completed.

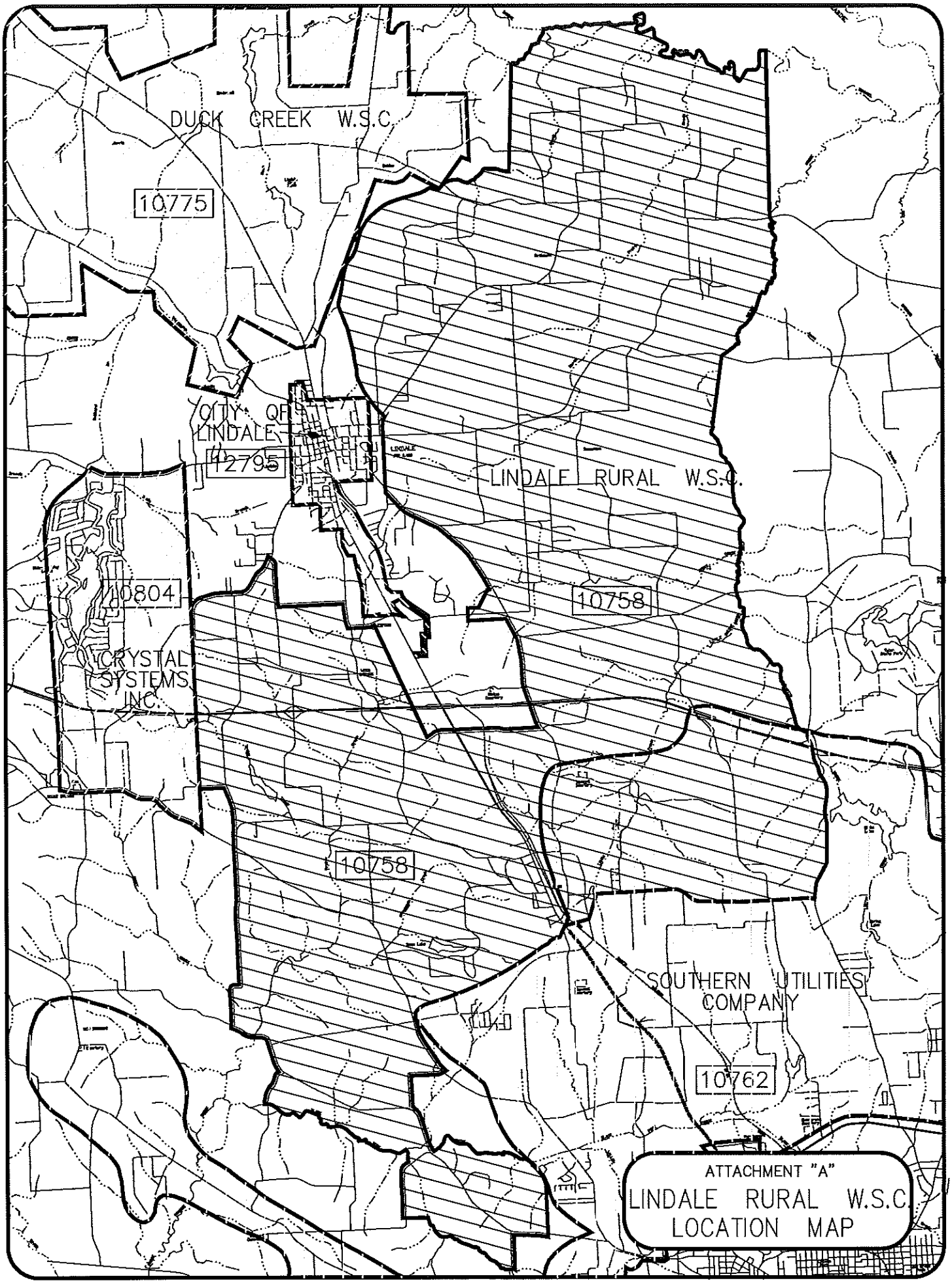

DUCK CREEK W.S.C.
10775
CITY OF LINDALE
12795
LINDALE RURAL W.S.C.
10804
CRYSTAL SYSTEMS, INC.
10758
10758
SOUTHERN UTILITIES COMPANY
10762
ATTACHMENT "A"
LINDALE RURAL W.S.C.
LOCATION MAP

Table C4.61 - Groundwater Worksheet
Lindale Rural WSC
Smith County
WUG

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	600	400	**215**	$ 440.00	$ 264,000.00	$ 6,600.00	$ 270,600.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	6	$ 2.20	$ 26,400.00	$ 924.00	$ 27,324.00

Total Construction Cost	**$ 297,924.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 89,377.20
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 397,302.20**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 23,838.13
	4% Rate of Return on Investment of Unspent Funds	$ 7,946.04
	Net Interest	**$ 15,892.09**

TOTAL CAPITAL COST	**$ 413,194.29**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 37,144.54

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	400	100	70%	1	0.09	$ 3,796.04

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 70,938.49**
WUG Total WMS Cost Per Acre-Foot	**$ 329.95**

Table 4.62 - Lindale Rural WSC Cost-Savings Analysis for Region D - Rural

Attachment C - Advanced Water Conservation Worksheet

WUG Data	
Population	3,565
SF Population	3,565
MF Population	-
Institutional Population	-
SF Units	1,366
MF Units	-
Average Yearly Rainfall (inches)	43.3
SF Household Size	2.61
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	1.2
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

	For Participating Customers												
	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit													
SF Showerheads and Aerators													
SF Clothes Washer Rebate	5.6	14.6	1.0	14.6	0%	90%	1,229	17,968	20.13	$ 120	$ 147,517	$ 780	rebate from water utility only
SF Irrigation Audit-High User	19.2	50.0	1.0	50.0	1%	5%	55	2,732	3.06	$ 70	$ 3,825	$ 459	staff
SF Rainwater Harvesting	18.3	47.6	1.0	47.6	0%	5%	68	3,254	3.64	$ 250	$ 17,074	$ 451	rebate
SF Rain Barrels	2.0	5.2	1.0	5.2	0%	30%	410	2,114	2.37	$ 45	$ 18,440	$ 750	rebate or distribution
MF Toilet Retrofit	N/A												
MF Showerheads and Aerators	N/A												
MF Clothes Washer Rebate	N/A												
MF Irrigation Audit	N/A												
MF Rainwater Harvesting	N/A												
								26,067	**29**		**$ 186,855.17**	**$ 703.11**	
Commercial													
Commercial Toilet Retrofit	N/A												
Coin-Operated Clothes Washer Rebate	N/A												
Irrigation Audit	N/A												
Commercial General Rebate	N/A												
Commercial Rainwater Harvesting	N/A												

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF LINDALE

Description of Water User Group:

The City of Lindale provides water service within its corporate boundaries in northern Smith County. The City of Lindale service area is bounded on the north and west by Duck Creek WSC and Crystal Systems Inc., and the Lindale Rural WSC on the east and the south. City of Lindale is 91% in Region D and 9% in Region I. In 2003, the City served 1,860 connections. The projected population is 3,724 in the year 2010 and is projected to be 7,683 in the year 2060. The projected population in Region D is 3,051 in the year 2010 and is projected to be 7,010 in the year 2060. This evaluation is for the Region D portion and assumes demands in Region D will be met with supplies in Region D. The City of Lindale is included as a water user group for Smith County. The system is served by four wells from the Carrizo-Wilcox Aquifer with a total pumping capacity of 2,300 gpm, or 1,237 ac-ft/yr on an average annual basis. The Region D portion would be 1,126 ac-ft/yr. A location map is included as Attachment A.

Water Supply and Demand Analysis:

Region D Allocation	2010	2020	2030	2040	2050	2060
Population	3051	3627	4201	4773	5736	7010
Projected Water Demand	680	796	913	1027	1227	1500
Current Water Supply	1126	1126	1126	1126	1126	1126
Projected Supply Surplus (+) / Deficit (-)	+446	+330	+213	+99	**-101**	**-374**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City of Lindale water supply shortages as summarized in the table below. Advanced conservation was considered because the per capita use per day of 204 is greater than the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because the City does not have an industrial end user needing that capacity. Surface water alternatives were omitted since groundwater is less expensive to treat and is available in larger quantities in this area. A ground water worksheet is included as Attachment B and an advanced water conservation worksheet is included as Attachment C.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**39**	**$ 243,935**		**$ 692**	**Minimal**
Water Reuse					
Groundwater	**376**	**$ 669,409**	**$ 120,245**	**$ 320**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)					376	376

The recommended strategy for City of Lindale to meet their projected deficit of 101 ac-ft in the year 2050 and 374 ac-ft in the year 2060 would be to construct one additional water well in the Carrizo-Wilcox Aquifer. One well with a total rated capacity of 700 gpm would provide approximately 376 ac-ft/yr. The well will need to be constructed by the year 2050. The supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin, Smith County. The aquifer has an adequate supply to meet the projected needs of the City of Lindale.

Given the increasing costs to comply with more stringent regulations and 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 recommendation previously discussed should be disregarded and a re-evaluation completed.

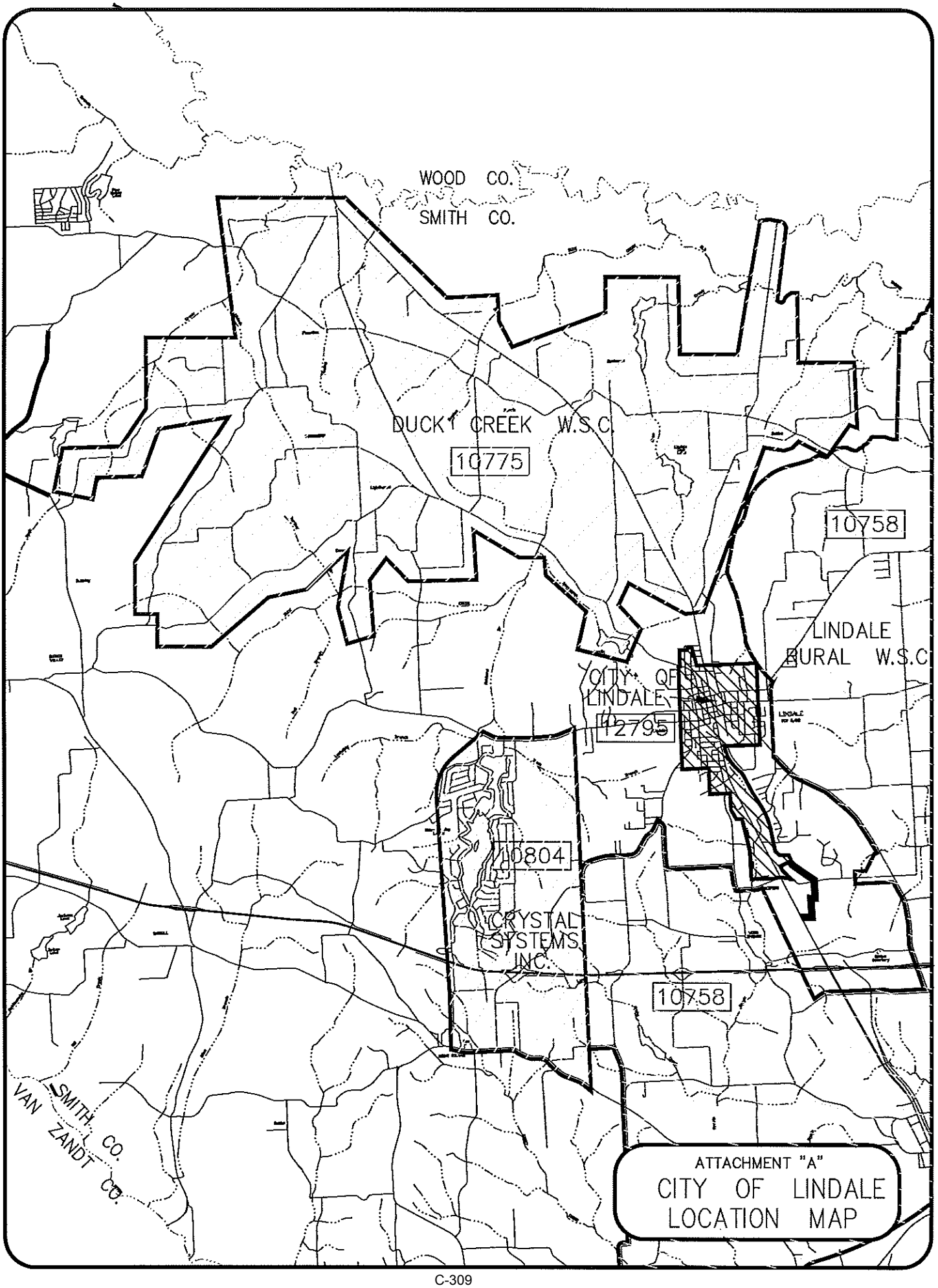

WOOD CO.
SMITH CO.
DUCKY CREEK W.S.C.
10775
10758
LINDALE
RURAL W.S.C.
CITY OF
LINDALE
12795
10804
CRYSTAL
SYSTEMS
INC.
10758
SMITH CO.
VAN ZANDT CO.
ATTACHMENT "A"
CITY OF LINDALE
LOCATION MAP

Table C4.63 - Groundwater Worksheet
City of Lindale
Smith County
City Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	1000	700	**376**	$ 440.00	$ 440,000.00	$ 11,000.00	$ 451,000.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	8	$ 2.20	$ 35,200.00	$ 1,232.00	$ 36,432.00

Total Construction Cost	**$ 487,432.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 146,229.60
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 643,662.60**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 38,619.76
	4% Rate of Return on Investment of Unspent Funds	$ 12,873.25
	Net Interest	**$ 25,746.50**

TOTAL CAPITAL COST	**$ 669,409.10**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 65,002.94

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	700	100	70%	1	0.09	$ 6,643.07

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 120,245.12**
WUG Total WMS Cost Per Acre-Foot	**$ 319.80**

Table C4.64 - City of Lindale Cost-Savings Analysis for Region D - Rural

Attachment C - Advanced Water Conservation

WUG Data	
Population	5,031
SF Population	4,700
MF Population	225
Institutional Population	106
SF Units	1,774
MF Units	150
Average Yearly Rainfall (inches)	43.3
SF Household Size	2.65
MF Houshold Size	1.50
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	1.2
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	18
No. of MF Units per Complex	50

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

	For Participating Customers												
	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit	N/A												
SF Showerheads and Aerators	N/A												
SF Clothes Washer Rebate	5.6	14.8	1.0	14.8	0%	90%	1,596	23,688	26.53	$ 120	$ 191,547	$ 768	rebate from water utility only
SF Irrigation Audit-High User	18.9	50.0	1.0	50.0	1%	5%	71	3,547	3.97	$ 70	$ 4,966	$ 459	staff
SF Rainwater Harvesting	18.0	47.6	1.0	47.6	0%	5%	89	4,225	4.73	$ 250	$ 22,170	$ 451	rebate
SF Rain Barrels	1.9	5.2	1.0	5.2	0%	30%	532	2,744	3.07	$ 45	$ 23,943	$ 750	rebate or distribution
MF Toilet Retrofit	N/A												
MF Showerheads and Aerators	N/A												
MF Clothes Washer Rebate	1.1	1.7	0.056	30.0	2%	80%	6	194	0.22	$ 120	$ 778	$ 553	rebate from water utility only
MF Irrigation Audit	1.7	2.5	NA	125.0	0%	50%	1	187	0.21	$ 150	$ 224	$ 393	staff
MF Rainwater Harvesting	7.4	11.1	NA	553.8	0%	5%	0	83	0.09	$ 2,050	$ 307	$ 318	rebate
								34,669	**39**		**$ 243,935.09**	**$ 692.43**	
Commercial													
Commercial Toilet Retrofit	N/A												
Coin-Operated Clothes Washer Rebate	N/A												
Irrigation Audit	N/A												
Commercial General Rebate	N/A												
Commercial Rainwater Harvesting	N/A												

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 provides water service to the residents within its corporate boundary in central northern Smith County. The City of Winona service area is bounded on the north, west and south by Sand Flat WSC and on the east by Star Mountain WSC. In 2003, the City served 270 connections. The projected population is 586 in the year 2010 and is projected to be 1,135 in the year 2060. The City of Winona is included as a water user group for Smith County. The system is served by one well from the Carrizo-Wilcox Aquifer with a total pumping capacity of 400 gpm, or 215 ac-ft/yr on an average annual basis and a water purchase contract with Smith County WCID No. 1. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	672	739	806	873	986	1135
Projected Water Demand	107	115	123	131	147	169
Current Water Supply	118	124	133	141	152	164
Projected Supply Surplus (+) / Deficit (-)	+11	+9	+10	+10	+5	**-5**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the City of Winona water supply shortages as summarized in the table below. Advanced conservation was considered because the per capita use per day of 147 is greater than the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because the WSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since surface water treatment is not practical for a system of this size. A ground water worksheet is included as Attachment B and an advanced water conservation worksheet is included as Attachment C.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	7	**$ 48,308**		**$ 713**	**Minimal**
Water Reuse					
Groundwater (Purchase)	**5**	**$ 0**	**$ 5,752**	**$ 1,150**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)						5

The recommended strategy for the City of Winona to meet their projected deficit of 5 ac-ft in the year 2060 would be to increase their contract with Smith County WCID No. 1. The supply source will be the Carrizo-Wilcox aquifer in the Sabine Basin, Smith County. The aquifer has an adequate supply to meet the projected needs of City of Winona. The City of Winona should implement advanced conservation measures due to their high per capita water use.

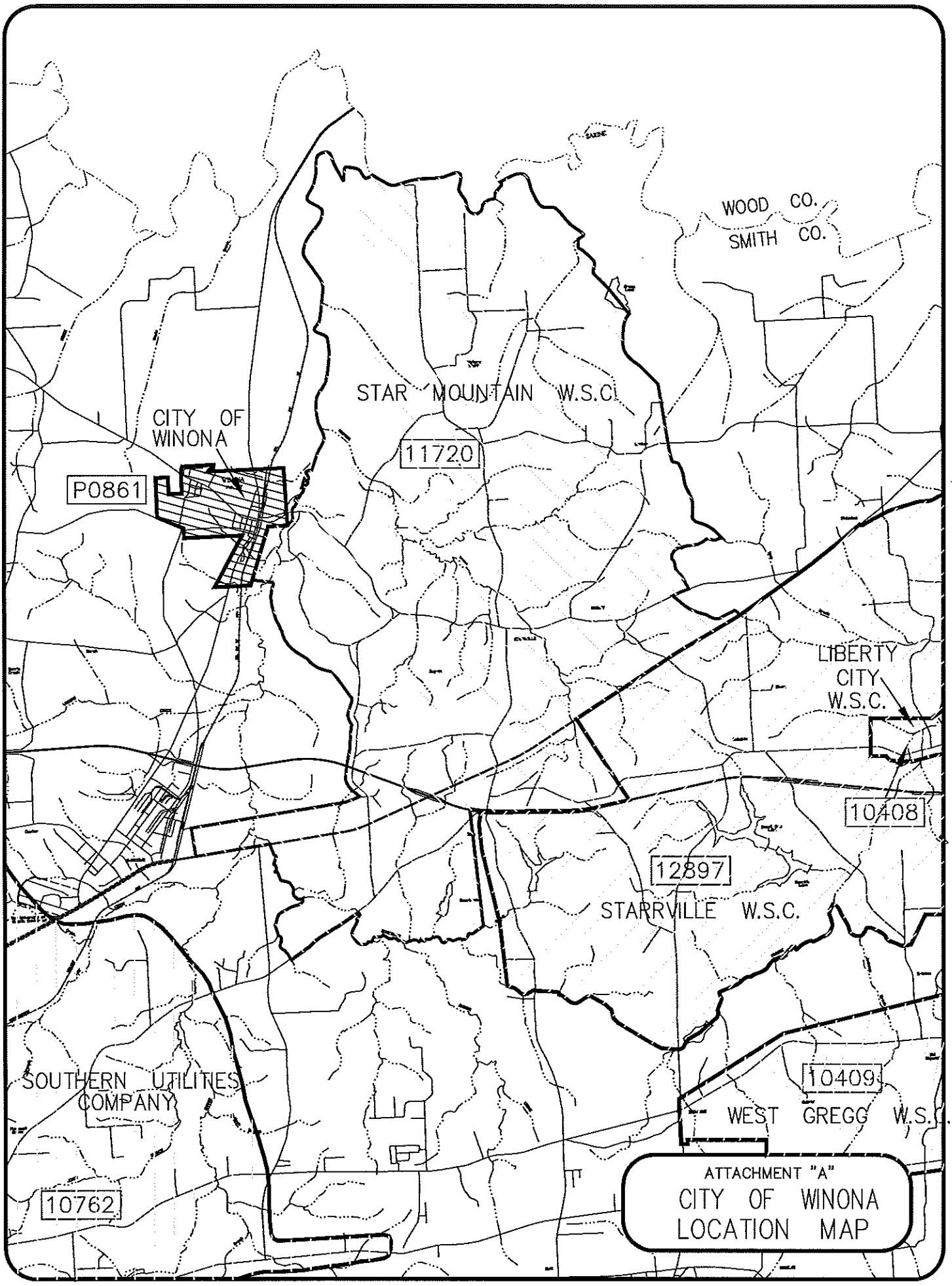

WOOD CO.
SMITH CO.
STAR MOUNTAIN W.S.C.
11720
CITY OF WINONA
P0861
LIBERTY CITY W.S.C.
10408
12897
STARRVILLE W.S.C.
SOUTHERN UTILITIES COMPANY
10762
10409
WEST GREGG W.S.C.
ATTACHMENT "A"
CITY OF WINONA
LOCATION MAP

Table C4.65 - Surface Water Worksheet
City of Winona
Smith County
City Category

Water Purchase Contract With Northeast Texas Municipal Water District:

Avg. yield (GPD)	Total yield (GPD)	Total Yield (AF/YR)	Unit Cost ($ / 1000GAL)
4,464	4,464	**5.0**	$ 3.00

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$	863.51
Water Purchase Cost (Average Yield (AF/yr) * 325,851 * $ 3.00/ 1,000)	$	4,888.08
TOTAL ANNUALIZED COST (O & M Cost + Water Purchase Cost)	**$**	**5,751.59**
UNIT COST ($ / AC-FT / yr)	**$**	**1,150.32**

Table C4.66 - City of Winona Cost-Savings Analysis for Region D - Rural

Attachment C - Advanced Water Conservation Worksheet

WUG Data	
Population	904
SF Population	904
MF Population	-
Institutional Population	-
SF Units	353
MF Units	-
Average Yearly Rainfall (inches)	43.3
SF Household Size	2.56
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	1.2
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

	For Participating Customers												
	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit													
SF Showerheads and Aerators													
SF Clothes Washer Rebate	5.6	14.3	1.0	14.3	0%	90%	318	4,556	5.10	$ 120	$ 38,138	$ 796	rebate from water utility only
SF Irrigation Audit-High User	19.5	50.0	1.0	50.0	1%	5%	14	706	0.79	$ 70	$ 989	$ 459	staff
SF Rainwater Harvesting	18.6	47.6	1.0	47.6	0%	5%	18	841	0.94	$ 250	$ 4,414	$ 451	rebate
SF Rain Barrels	2.0	5.2	1.0	5.2	0%	30%	106	546	0.61	$ 45	$ 4,767	$ 750	rebate or distribution
MF Toilet Retrofit	N/A												
MF Showerheads and Aerators	N/A												
MF Clothes Washer Rebate	N/A												
MF Irrigation Audit	N/A												
MF Rainwater Harvesting	N/A												
								6,650	**7**		**$ 48,307.50**	**$ 712.52**	
Commercial													
Commercial Toilet Retrofit	N/A												
Coin-Operated Clothes Washer Rebate	N/A												
Irrigation Audit	N/A												
Commercial General Rebate	N/A												
Commercial Rainwater Harvesting	N/A												

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF STAR MOUNTAIN WSC

Description of Water User Group:

Star Mountain WSC provides water service in northeastern Smith County. The SMWSC service area is bounded on the west by Sand Flat WSC, on the north by the Sabine River, on the east by Starrville WSC, and on the south by Smith County WCID No. 1. In 2003, the WSC served 452 connections. The projected population is 1,190 in the year 2010 and is projected to be 2,313 in the year 2060. Star Mountain WSC is included in the County Other water user group for Smith County. The system is served by three wells from the Carrizo-Wilcox Aquifer with a total pumping capacity of 400 gpm, or 215 ac-ft/yr on an average annual basis. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1190	1353	1516	1679	1952	2313
Projected Water Demand	163	182	199	216	251	298
Current Water Supply	215	215	215	215	215	215
Projected Supply Surplus (+) / Deficit (-)	+62	+32	+16	**-1**	**-36**	**-83**

Evaluation of Potentially Feasible Water Management Strategies:

Four alternative strategies were considered to meet the Star Mountain WSC water supply shortages as summarized in the table below. Advanced conservation was considered because the per capita use per day of 161 is greater than the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because the WSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since surface water supply source is not available within reasonable proximity. A ground water worksheet is included as Attachment B and an advanced water conservation worksheet is included as Attachment C.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**14**	**$ 91,829**		**$ 703**	**Minimal**
Water Reuse					
Groundwater	**108**	**$ 413,194**	**$ 50,468**	**$ 330**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)				108	108	108

The recommended strategy for Star Mountain WSC to meet their projected deficit of 1 ac-ft in the year 2040 and 83 ac-ft in the year 2060 would be to construct one additional water well in the Carrizo-Wilcox Aquifer. One well with a total rated capacity of 200 gpm would provide approximately 108 ac-ft/yr. The well will need to be constructed by the year 2040. The supply source will be the Carrizo-Wilcox Aquifer in the Sabine Basin, Smith County. The aquifer has an adequate supply to meet the projected needs of SM WSC.

Given the increasing costs to comply with more stringent regulations and 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 recommendation previously discussed should be disregarded and a re-evaluation completed.

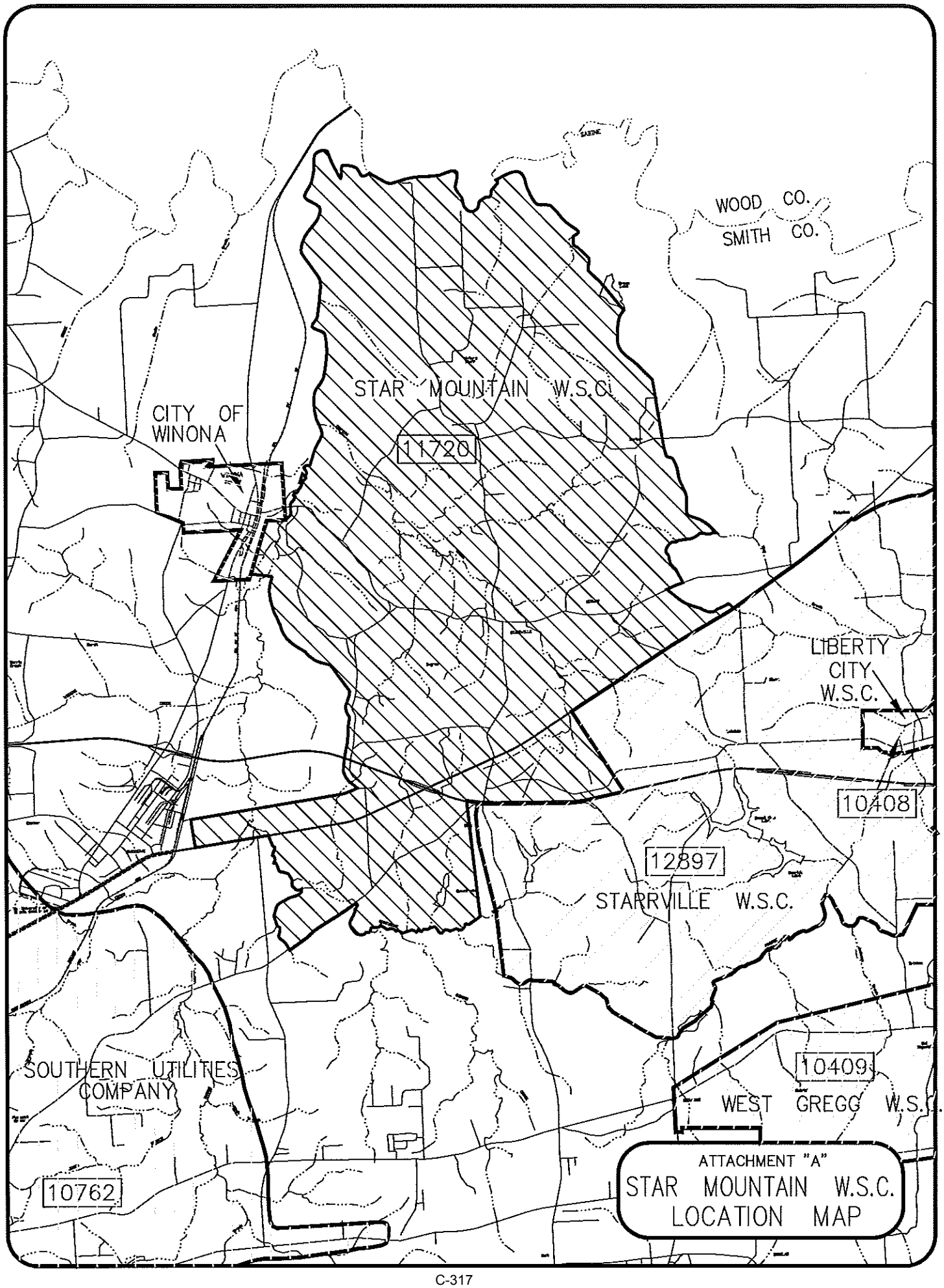

WOOD CO.
SMITH CO.
STAR MOUNTAIN W.S.C.
11720
CITY OF WINONA
LIBERTY CITY W.S.C.
10408
12897
STARRVILLE W.S.C.
SOUTHERN UTILITIES COMPANY
10762
10409
WEST GREGG W.S.C.
ATTACHMENT "A"
STAR MOUNTAIN W.S.C.
LOCATION MAP

Table C4.67 - Groundwater Worksheet
Star Mountain WSC
Smith County
County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	600	200	**108**	$ 440.00	$ 264,000.00	$ 6,600.00	$ 270,600.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	6	$ 2.20	$ 26,400.00	$ 924.00	$ 27,324.00

Total Construction Cost	**$ 297,924.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 89,377.20
ENVIRONMENTAL (LUMP SUM)	$ 10,000.00
Total Borrowed Funds	**$ 397,302.20**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 23,838.13
	4% Rate of Return on Investment of Unspent Funds	$ 7,946.04
	Net Interest	**$ 15,892.09**

TOTAL CAPITAL COST	**$ 413,194.29**

OPERATION & MAINTENANCE COSTS $ 18,572.27
(Yield (AF/yr) * 325,851 * $ 0.45/ 1,000)

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	200	100	70%	1	0.09	$ 1,898.02

TOTAL ANNUALIZED COST	**$ 50,468.20**
(O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	

WUG Total WMS Cost Per Acre-Foot	**$ 329.82**

Table C4.68 - Star Mountain WSC Cost-Savings Analysis for Region D - Rural

Attachment C - Advanced Water Conservation Worksheet

WUG Data	
Population	1,752
SF Population	1,752
MF Population	-
Institutional Population	-
SF Units	671
MF Units	-
Average Yearly Rainfall (inches)	43.3
SF Household Size	2.61
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	1.2
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
SF Toilet Retrofit													
SF Showerheads and Aerators													
SF Clothes Washer Rebate	5.6	14.6	1.0	14.6	0%	90%	604	8,830	9.89	$ 120	$ 72,497	$ 780	rebate from water utility only
SF Irrigation Audit-High User	19.2	50.0	1.0	50.0	1%	5%	27	1,343	1.50	$ 70	$ 1,880	$ 459	staff
SF Rainwater Harvesting	18.3	47.6	1.0	47.6	0%	5%	34	1,599	1.79	$ 250	$ 8,391	$ 451	rebate
SF Rain Barrels	2.0	5.2	1.0	5.2	0%	30%	201	1,039	1.16	$ 45	$ 9,062	$ 750	rebate or distribution
MF Toilet Retrofit	N/A												
MF Showerheads and Aerators	N/A												
MF Clothes Washer Rebate	N/A												
MF Irrigation Audit	N/A												
MF Rainwater Harvesting	N/A												
								12,810	**14**		**$ 91,828.97**	**$ 703.11**	
Commercial													
Commercial Toilet Retrofit	N/A												
Coin-Operated Clothes Washer Rebate	N/A												
Irrigation Audit	N/A												
Commercial General Rebate	N/A												
Commercial Rainwater Harvesting	N/A												

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

TITUS COUNTY

WUGs:

Steam Electric

County Other:

None

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF STEAM ELECTRIC IN TITUS COUNTY

Description of Water User Group:

The Steam Electric WUG in Titus County has a demand that is projected to grow from 51,804 ac-ft/yr in 2010 to 101,329 ac-ft/yr in 2060. Both TXU and SWEPCO have plants in Titus County. Steam electric is projected to have a deficit of 4,535 ac-ft/yr in 2040 and increasing to a deficit of 31,909 ac-ft/yr in 2060.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Projected Water Demand	51804	52423	61288	72096	85270	101329
Current Water Supply	67191	67613	67632	67561	67532	69420
Projected Supply Surplus (+)/Deficit(-)	**15387**	**15190**	**6344**	**-4535**	**-17738**	**-31909**

Evaluation of Potentially Feasible Water Management Strategies:

Three alternative strategies were considered to meet the Titus County Steam Electric WUG's water supply shortages. In this round of planning, estimates were not made for electric power water conservation because data on operating strategies for each power plant was not available. Groundwater is also not feasible due to questionable reliability and the large quantity required for a steam electric facility. Surface water from surrounding lakes was considered as a viable alternative to meet projected demands. A surface water purchase worksheet is included as Attachment A.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water					
Surface Water	**31,909**	**$ 0**	**4,590,367**	**$ 508**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Surface Water (ac-ft/yr)	**0**	**0**	**0**	**4535**	**177,38**	**31,909**

The recommended strategy for the Titus County steam electric WUG to meet projected demands during the planning period is to purchase raw water from the Northeast Texas MWD. The MWD receives supplies from several lakes, and Lake O the Pines has the largest yield. At this stage it is assumed that the steam electric water needs will be met from this lake. A capital cost cannot be included for this alternative since the location of the future generator facilities is unknown.

Table C4.69 - Surface Water Worksheet
Steam Electric
Titus County

Water Purchase from Northeast Texas Water Supply District:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
28,486,519	**31909**	$ 1.56

Total Construction Cost		**$ -**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)		**1.0**
Other Capital Costs		
ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)		$ -
ENVIRONMENTAL (LUMP SUM)		$ -
Total Borrowed Funds		**$ -**
INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ -
	4% Rate of Return on Investment of Unspent Funds	$ -
	Net Interest	**$ -**
TOTAL CAPITAL COST		**$ -**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	0	0	4535	17738	31909	9,030
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ -	$ -	$ 2,305,265.48	$ 9,016,714.26	$ 16,220,224.11	$ 4,590,367.31
							Average
TOTAL ANNUALIZED COST (Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))	**$ -**	**$ -**	**$ -**	**$ 2,305,265.48**	**$ 9,016,714.26**	**$ 16,220,224.11**	**$ 4,590,367.31**

UNIT COST **$ 508.33**
($ / ac-ft / yr)

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

UPSHUR COUNTY

WUGs:

None

County Other:

None

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

VAN ZANDT COUNTY

WUGs:

City of Canton
City of Grand Saline
R.P.M. WSC
City of Van

County Other:

Corinth WSC
Crooked Creek WSC
Edom WSC
Fruitvale WSC
Little Hope Moore 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 TWDB estimated population is 3,537 in the year 2010 and is projected to be 4,613 in the year 2060. The City relies on ground water from the Carrizo-Wilcox with a total pumping capacity of 530 GPM, or 285 ac-ft/yr and from Lake Canton with 706 ac-ft/yr. Canton is projected to have a water supply deficit of 29 ac-ft/yr beginning 2030 and increasing to a deficit of 161 ac-ft/yr by 2060. The system is bordered by Myrtle Springs WSC to the Northwest and Mac Bee WSC to the Southwest. A location map is included as Attachment A.

The City's per capita water consumption is quite high for Region D, at 238 gpcpd. This could very likely be the result of the First Monday Trades Days, which occur each month. The City through its consulting engineer has expressed disagreement with the TWDB population projections, suggesting that the 2060 service population may be as high as 34,000. The City filed the following comment:

"The population projections do not take into account the additional water demand resulting from the monthly First Monday Trades Days. Depending on the month or season, this recurring event brings 200,000 to 400,000 visitors to the City for four consecutive days each month. Many of these visitors stay overnight."

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	3537	3795	4012	4175	4382	4613
Projected Water Demand	923	978	1020	1048	1095	1152
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	991	991	991	991	991	991
Projected Supply Surplus (+) / Deficit (-)	**68**	**13**	**-29**	**-57**	**-104**	**-161**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet City of Canton water supply shortages as summarized in the table below. Advanced conservation was considered because the 238 gallon per capita per day use was above the 140 gpcpd threshold set by the water planning group. However, the projected savings is minimal in comparison to the predicted shortage and the cost of conservation is much higher than that of ground water. Water reuse was omitted because the City does not have a demand for non-potable water at this time. Surface water alternatives were not selected since the safe yield from the City Lake has all been allocated for City use. In addition, the City has indicated a preference to use ground water and is planning on drilling new wells. A ground water worksheet is included as Attachment B.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**34**	**$223,586**	**-**	**$725**	**Minimal**
Water Reuse					
Ground Water	**194**	**$939,729**	**$105,071**	**$244**	**Minimal**
Surface Water	**161**	**$54,613,653**	**$6,530,924**	**$58,133**	*

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	0	0	97	97	194	194

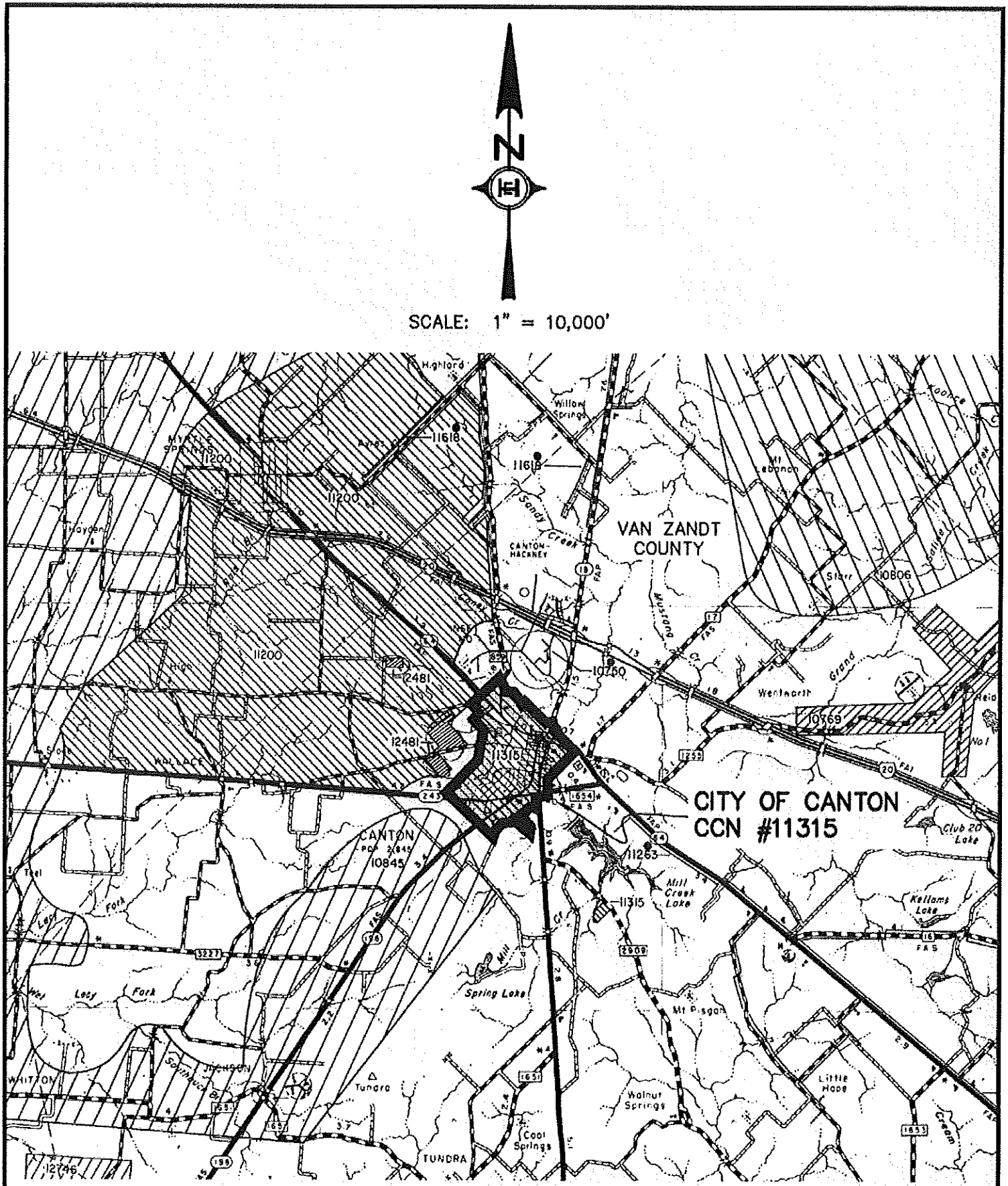
The recommended strategy for the City of Canton to meet their projected water deficit of 29 ac-ft in the year 2030 and 161 ac-ft in the year 2060 would be to construct two additional wells, similar to their existing well, with a capacity of 180 gpm each, or a total of 194 ac-ft/yr. The recommended wells will be in the Carrizo-Wilcox aquifer in Van Zandt County. This recommendation is based upon current NETRWPG

populations 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 Region D 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 ground water 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 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 population growth in the potential service area significantly exceeds current NETRWPG projections.

* For information on environmental impact of reservoir, please see the City of Canton's "Long-Term Water, Study Surface Water Supply, December 2008, Prepared by: Gary Burton Engineering, Inc."



ATTACHMENT "A"
CITY OF CANTON
LOCATION MAP

Table C4.70 - Groundwater Worksheet
City of Canton
Van Zandt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
2	560	180	**194**	$ 440.00	$ 492,800.00	$ 4,928.00	$ 497,728.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
10,000	6	$ 2.93	$ 175,800.00	$ 6,153.00	$ 181,953.00

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 679,681.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 203,904.30
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 903,585.30**
INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 54,215.12
4% Rate of Return on Investment of Unspent Funds	$ 18,071.71
Net Interest	**$ 36,143.41**
TOTAL CAPITAL COST	**$ 939,728.71**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 33,430.08

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	180	100	70%	2	0.09	$ 3,416.44

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 105,070.83**
WUG Total WMS Cost Per Acre-Foot	**$ 731.53**

Table C4.70B - Reuse Worksheet
City of Canton
Van Zandt County

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
1,300,000	**1456.2**	$ -

Pump Station

Number (ea)	Size-MGD	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
2	1.3	$ 231,000.00	$ 462,000.00	$ 4,620.00	$ 466,620.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
56,126	12	$ 3.30	$ 2,222,605.44	$ 77,791.19	$ 2,300,396.63

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 2,767,016.63**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**
Other Capital Costs	
ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 830,104.99
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 3,617,121.62**
INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 217,027.30
4% Rate of Return on Investment of Unspent Funds	$ 72,342.43
Net Interest	**$ 144,684.86**
TOTAL CAPITAL COST	**$ 3,761,806.48**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 251,484.95

POWER COST	GPM	Head (ft)	Efficiency	No. of HSPs	$/kWh	
	903	52	70%	2	0.09	$ 8,917.28

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 533,509.38**
WUG Total WMS Cost Per Acre-Foot	**$ 6,785.57**

Table C4.71 - Surface Water Worksheet
City of Canton
Van Zandt County

Proposed Canton Reservoir:

Reservoir Construction	$ 13,222,800.00
Intake Structure Construction	$ 1,409,000.00
Transmission Line Construction	$ 5,927,708.00
Treatment Plant Expansior Construction	$ 24,390,000.00
Total Construction Cost	**$ 44,949,508.00**

Other Capital Costs

ENGINEERING AND CONTINGENCIES (20%)	$ 8,989,901.60
ENGINEERING CONSTRUCTION PHASE ADDITIONAL (1.5%	$ 674,242.62
TOTAL CAPITAL COST	**$ 54,613,652.22**
Amortized Construction Cost (20 Yrs, 6% Interest)	$ 4,695,228.00

OPERATION & MAINTENANCE COSTS

Pump Stations	$ 636,536.00
Water Treatment Plant	$ 1,199,160.00
	$ 1,835,696.00

TOTAL ANNUALIZED COST **$ 6,530,924.00**
(Amortized Construction Cost + O & M Cost)

PROJECTED SUPPLY DEFICIT

2010	2020	2030	2040	2050	2060
		29	57	104	161

WUG Total WMS Cost Per Acre-Foot **$ 58,132.85**

Costs are based on the City of Canton's "Long-Term Water Study Surface Water Supply, December 2008, Prepared by: Gary Burton Engineering, Inc."

Conservation Worksheet

Table C4.72 - Cost-Savings Analysis for Region D - City of Canton

Regional Data	
Population	4,086
SF Population	4,086
MF Population	-
Institutional Population	-
SF Units	1,777
MF Units	-
Average Yearly Rainfall (inches)	43.0
SF Household Size	2.30
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	-
No of Irrigation Months	4.5
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
SF Toilet Retrofit	10.5	24.2	2.0	12.1	10%	50%	-	-	-	$ -	$ -	$ -	free or rebate
SF Showerheads and Aerators	5.5	12.7	2.0	6.3	10%	50%	-	-	-	$ -	$ -	$ -	kits picked up by customer
SF Clothes Washer Rebate	5.6	12.9	1.0	12.9	0%	90%	1,599	20,593	23.07	$ 120	$ 191,864	$ 885	rebate from water utility only
SF Irrigation Audit-High User	16.3	37.5	1.0	37.5	1%	5%	71	2,665	2.98	$ 70	$ 4,974	$ 612	staff
SF Rainwater Harvesting	20.6	47.3	1.0	47.3	0%	5%	89	4,203	4.71	$ 250	$ 22,207	$ 454	rebate
SF Rain Barrels	2.2	5.1	1.0	5.1	0%	30%	533	2,730	3.06	$ 45	$ 23,983	$ 756	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate													
MF Irrigation Audit													
MF Rainwater Harvesting													
								30,191	**34**		**$ 243,028**	**$ 789.57**	
Commercial													
Commercial Toilet Retrofit													
Coin-Operated Clothes Washer Rebate													
Irrigation Audit													
Commercial General Rebate													
Commercial Rainwater Harvesting													

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF GRAND SALINE

Description of Water User Group:

The City of Grand Saline provides water service in Van Zandt County. Grand Saline served a population of 3,028 in the year 2000. The population is projected to be 3,312 in 2010 and 4,560 in the year 2060. The City relies on four wells in the Carrizo-Wilcox aquifer with a total rated pumping capacity of 1,175 gpm, or 632 ac-ft/yr. The City is bounded by Golden WSC to the east, Pruitt-Sandflat WSC and Corinth WSC to the south, and Fruitvale WSC to the west. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	3312	3611	3863	4052	4292	4560
Projected Water Demand	627	671	705	731	769	817
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	632	632	632	632	632	632
Projected Supply Surplus (+) / Deficit (-)	**5**	**-39**	**-73**	**-107**	**-137**	**-185**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet City of Grand Saline's water supply shortages as summarized in the Table below. Advanced conservation was considered because the per capita use per day of 173 gpcd was above the 140 gpcd threshold set by the water planning group. Water reuse was omitted from consideration because there is no major user for the recycled supply. Surface water alternatives were considered. However the nearby WUG's with surface water surplus do not have adequate capacity for Grand Saline, and there is no regional entity in this vicinity. Groundwater and conservation worksheets are included as Attachment B and C respectively.

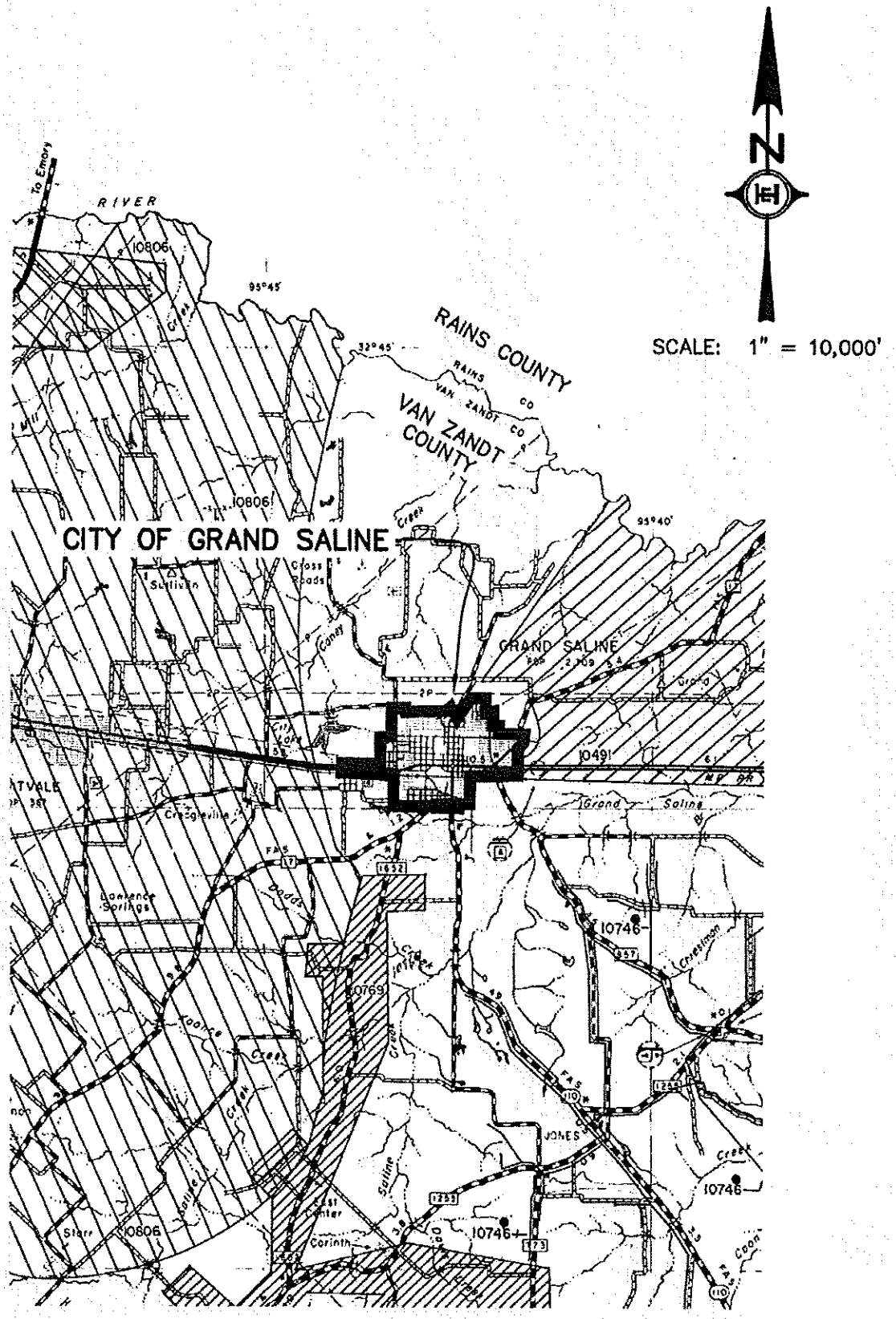
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**33**	**216,035**	**-**	**$725**	**Minimal**
Water Reuse					
Ground Water	**323**	**$749,549**	**$115,828**	**$366**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)		161	161	161	161	323

The recommended strategy for the City of Grand Saline to meet their projected water deficit of 39 ac-ft in the year 2020 and 185 ac-ft in the year 2060 would be to construct two wells. The first well, 500 feet deep and with a pumping capacity of 300 gpm is currently under development and will replace existing well #2, for a net increase of 180 gpm, or 97 acre feet per year. A second well will be needed after 2050.

Given the increasing costs to comply with more stringent regulations and 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 recommendation previously discussed should be re-evaluated.



ATTACHMENT "A"
CITY OF GRAND SALINE
LOCATION MAP

Table C4.73 - Groundwater Worksheet
City of Grand Saline
Van Zandt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
2	500	300	**323**	$ 440.00	$ 440,000.00	$ 4,400.00	$ 444,400.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
5,200	6	$ 2.93	$ 91,416.00	$ 3,199.56	$ 94,615.56

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 539,015.56**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 161,704.67
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 720,720.23**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 43,243.21
	4% Rate of Return on Investment of Unspent Funds	$ 14,414.40
	Net Interest	**$ 28,828.81**

TOTAL CAPITAL COST	**$ 749,549.04**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 55,716.81

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	300	100	70%	2	0.09	$ 5,694.06

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 115,828.13**
WUG Total WMS Cost Per Acre-Foot	**$ 366.20**

Conservation Worksheet

Table C4.74 - Cost-Savings Analysis for Region D - City of Grand Saline

Regional Data	
Population	3,948
SF Population	3,948
MF Population	-
Institutional Population	-
SF Units	1,579
MF Units	-
Average Yearly Rainfall (inches)	43.0
SF Household Size	2.50
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	-
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit	10.5	26.3	2.0	13.1	10%	50%	-	-	-	$ -	$ -	$ -	free or rebate
SF Showerheads and Aerators	5.5	13.8	2.0	6.9	10%	50%	-	-	-	$ -	$ -	$ -	kits picked up by customer
SF Clothes Washer Rebate	5.6	14.0	1.0	14.0	0%	90%	1,421	19,898	22.29	$ 120	$ 170,554	$ 815	rebate from water utility only
SF Irrigation Audit-High User	20.0	50.0	1.0	50.0	1%	5%	63	3,158	3.54	$ 70	$ 4,422	$ 459	staff
SF Rainwater Harvesting	18.9	47.3	1.0	47.3	0%	5%	79	3,736	4.18	$ 250	$ 19,740	$ 454	rebate
SF Rain Barrels	2.0	5.1	1.0	5.1	0%	30%	474	2,427	2.72	$ 45	$ 21,319	$ 756	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate													
MF Irrigation Audit													
MF Rainwater Harvesting													
								29,219	**33**		**$ 216,035**	**$725.22**	
Commercial													
Commercial Toilet Retrofit													
Coin-Operated Clothes Washer Rebate													
Irrigation Audit													
Commercial General Rebate													
Commercial Rainwater Harvesting													

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF RPM WATER SUPPLY CORPORATION

Description of Water User Group:

RPM WSC provides water services in southeast Van Zandt County. The system is projected to serve 1556 people in 2010 and 2610 people by the year 2060. The current sources of supply are five wells into the Carrizo Wilcox with a total production capacity of 606 gpm. RPM provides water to its own customers in the neches river basin and is projected to have a water supply deficit of 10 ac-ft/yr in 2060. The system does have a water conservation plan and drought management plan in place. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1556	1808	2021	2181	2384	2610
Projected Water Demand	216	245	267	283	307	336
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	326	326	326	326	326	326
Projected Supply Surplus (+) / Deficit (-)	**110**	**81**	**59**	**43**	**19**	**-10**

Evaluation of Potentially Feasible Water Management Strategies:

The four alternative strategies considered to meet RPM's water supply shortages are listed in the table below. Advanced conservation is not applicable since per capita use is less than 140 gpcpd. There are no significant water needs in RPM that could be met by water reuse. Surface water alternatives were omitted since there are no nearby entities with enough water to sale. Groundwater from the Woodbine Aquifer was the alternative selected for this entity.

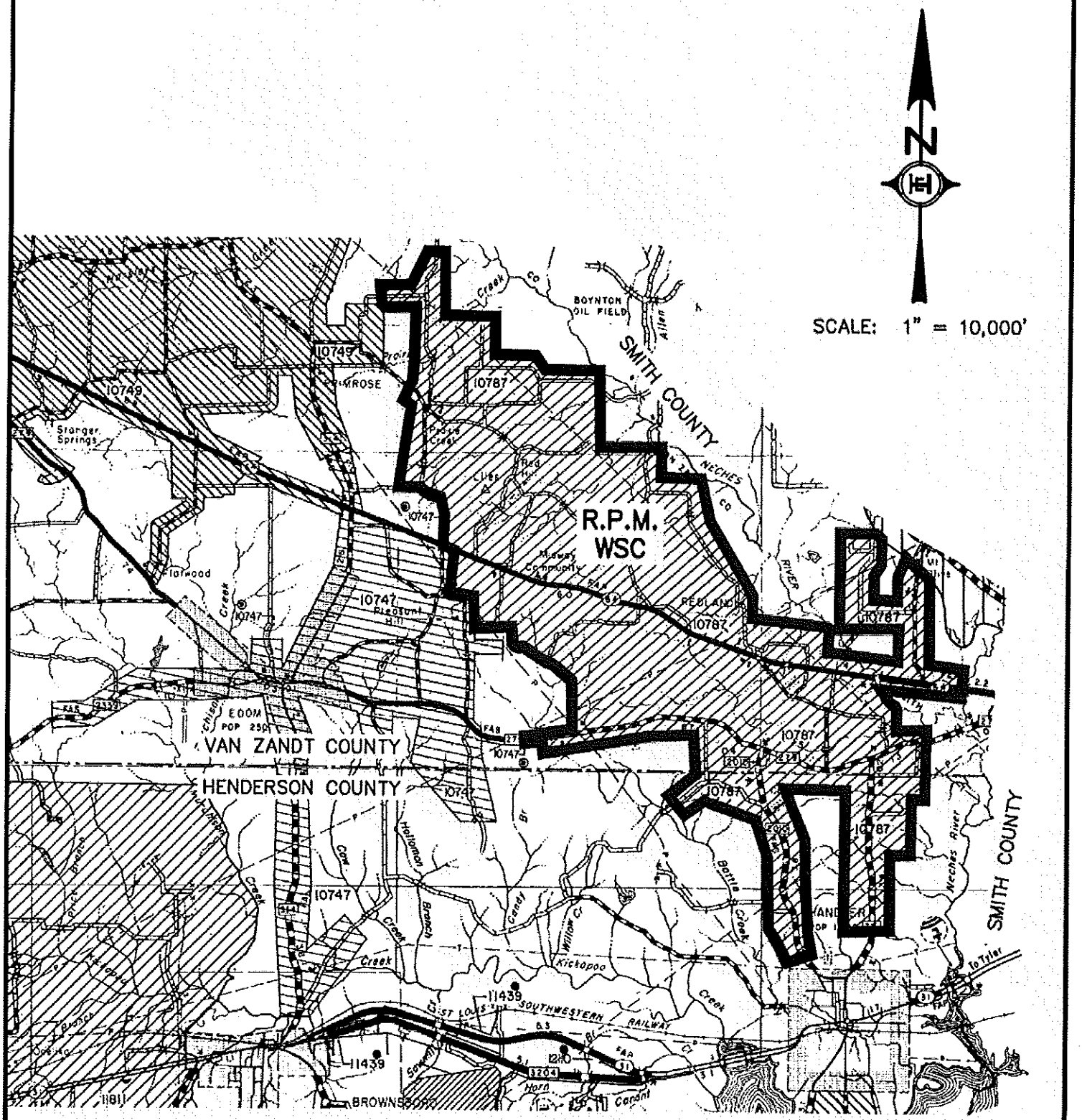
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**65**	**$449,135**	**$44,889**	**$451**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)		0	0	0	0	65

In order to meet the projected deficit in 2060, a new well with a rated capacity of 120 gpm should be drilled before 2060. This well will provide an additional 65 ac-ft/yr sufficient to meet the demand up to 2060.

Given the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source due to quality issues, 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 re-evaluated.



ATTACHMENT "A"
R.P.M. WSC
LOCATION MAP

Table C4.75 - Groundwater Worksheet
RPM WSC
Van Zandt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
1	500	120	**65**	$ 440.00	$ 220,000.00	$ 2,200.00	$ 222,200.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
5,200	6	$ 2.93	$ 91,416.00	$ 3,199.56	$ 94,615.56

Storage

No of Tanks	Size-Gals	Cost per gallon	(1%)	Subtotal
-	-	$ 0.73	$ -	$ -

Total Construction Cost	**$ 316,815.56**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 95,044.67
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 431,860.23**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 25,911.61
	4% Rate of Return on Investment of Unspent Funds	$ 8,637.20
	Net Interest	**$ 17,274.41**

TOTAL CAPITAL COST	**$ 449,134.64**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 11,143.36

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	120	100	70%	1	0.09	$ 1,138.81

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 44,889.35**
WUG Total WMS Cost Per Acre-Foot	**$ 451.35**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CITY OF VAN

Description of Water User Group:

The City of Van provides water service in Van Zandt County. The estimated population is 2,725 in the year 2010 and is projected to be 4,319 in the year 2060. The City relies on ground water from the Carrizo-Wilcox with a total pumping capacity of 1,205 GPM, or 648 ac-ft/yr. Van is projected to have a water supply deficit of 25 ac-ft/yr beginning 2050 and increasing to a deficit of 83 ac-ft/yr by 2060. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	2725	3106	3428	3670	3977	4319
Projected Water Demand	488	542	591	625	673	731
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	648	648	648	648	648	648
Projected Supply Surplus (+) / Deficit (-)	**160**	**106**	**57**	**23**	**-25**	**-83**

Evaluation of Potentially Feasible Water Management Strategies:

Advanced conservation was considered because the 164 gallons per capita per day use was above the 140 gpcd threshold set by the water planning group. However, the projected savings is minimal in comparison to the predicted shortage and the cost of conservation is much higher than that of ground water. Water reuse was omitted because the City does not have a demand for non-potable water at this time. Surface water alternative were omitted because of the small deficit which occurs later in the planning period. Groundwater from the Carrizo-Wilcox was the alternative selected for this entity.

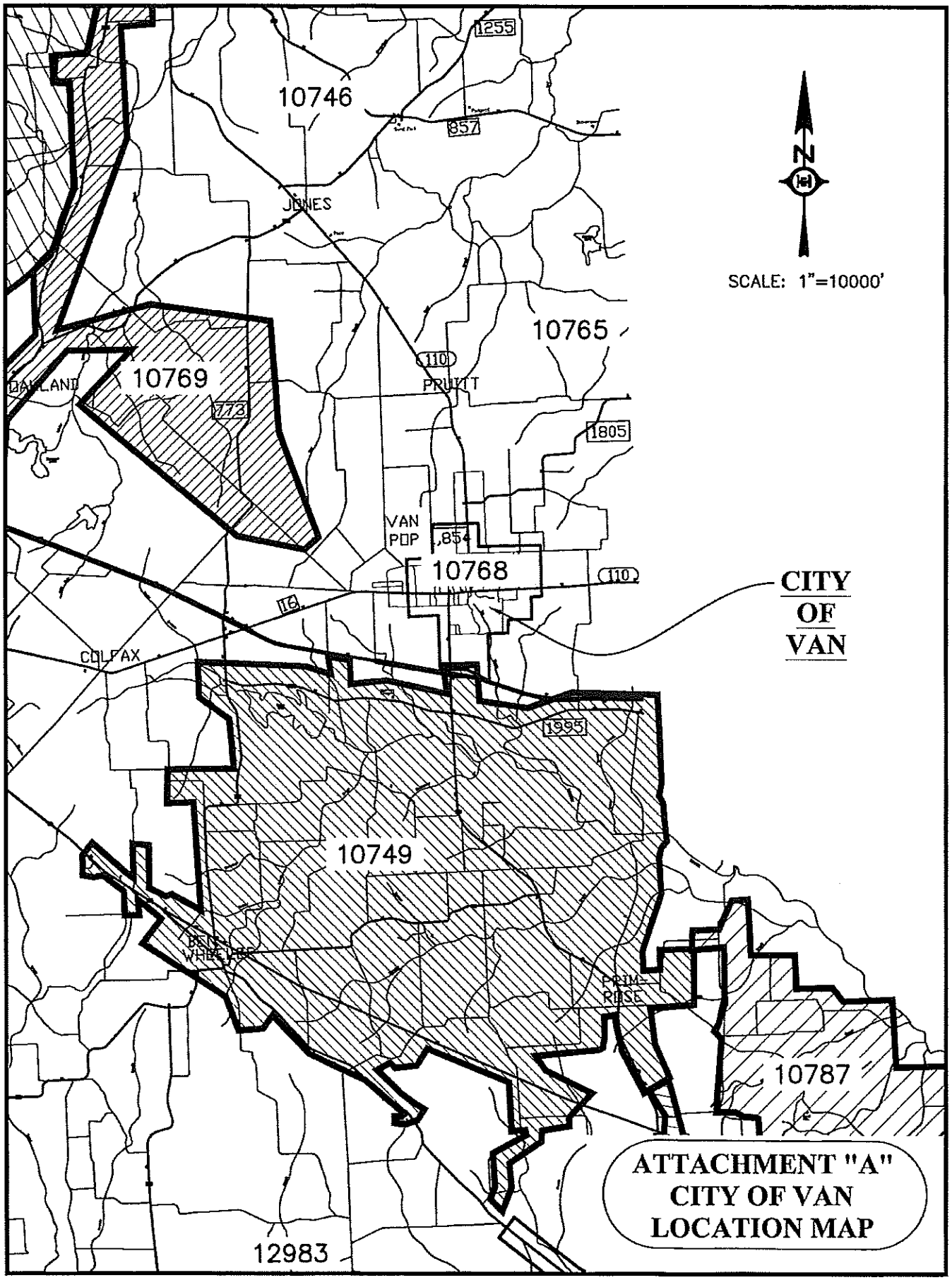
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annual Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**29**	**193,545**	**-**	**725**	**Minimal**
Water Reuse					
Ground Water	**134**	**$562,963**	**$66,460**	**$727**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	0	0	0	0	134	134

The recommended strategy for the City of Van to meet their projected water deficit of 25 ac-ft in the year 2050 and 83 ac-ft in the year 2060 would be to construct one additional well, similar to their existing well, with a capacity of 250 gpm, or a total of 134 ac-ft/yr. The recommended wells will be in the Carrizo-Wilcox aquifer in Van Zandt County.

Given the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source due to quality issues, 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 re-evaluated.


10746
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OAKLAND
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PRUITT
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CITY
OF
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COLFAX
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12983
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SCALE: 1"=10000'
ATTACHMENT "A"
CITY OF VAN
LOCATION MAP

Table C4.76 - Groundwater Worksheet
City of Van
Van Zandt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
1	800	250	**134**	$ 440.00	$ 352,000.00	$ 3,520.00	$ 355,520.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,500	6	$ 2.93	$ 43,950.00	$ 1,538.25	$ 45,488.25

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 401,008.25**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 120,302.48
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 541,310.73**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 32,478.64
	4% Rate of Return on Investment of Unspent Funds	$ 10,826.21
	Net Interest	**$ 21,652.43**

TOTAL CAPITAL COST	**$ 562,963.15**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 23,215.34

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	250	100	70%	1	0.09	$ 2,372.53

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 66,458.99**
WUG Total WMS Cost Per Acre-Foot	**$ 726.69**

Conservation Worksheet

Table C4.77 - Cost-Savings Analysis for Region D - City of Van

Regional Data	
Population	3,537
SF Population	3,537
MF Population	-
Institutional Population	-
SF Units	1,415
MF Units	-
Average Yearly Rainfall (inches)	43.0
SF Household Size	2.50
MF Houshold Size	-
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	-
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	-
No. of MF Units per Complex	-

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

For Participating Customers

	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
SF Toilet Retrofit	10.5	26.3	2.0	13.1	10%	50%	-	-	-	$ -	$ -	$ -	free or rebate
SF Showerheads and Aerators	5.5	13.8	2.0	6.9	10%	50%	-	-	-	$ -	$ -	$ -	kits picked up by customer
SF Clothes Washer Rebate	5.6	14.0	1.0	14.0	0%	90%	1,273	17,826	19.97	$ 120	$ 152,798	$ 815	rebate from water utility only
SF Irrigation Audit-High User	20.0	50.0	1.0	50.0	1%	5%	57	2,830	3.17	$ 70	$ 3,961	$ 459	staff
SF Rainwater Harvesting	18.9	47.3	1.0	47.3	0%	5%	71	3,347	3.75	$ 250	$ 17,685	$ 454	rebate
SF Rain Barrels	2.0	5.1	1.0	5.1	0%	30%	424	2,174	2.44	$ 45	$ 19,100	$ 756	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate													
MF Irrigation Audit													
MF Rainwater Harvesting													
								26,177	**29**		**$ 193,545**	**$725.22**	
Commercial													
Commercial Toilet Retrofit													
Coin-Operated Clothes Washer Rebate													
Irrigation Audit													
Commercial General Rebate													
Commercial Rainwater Harvesting													

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CORINTH WSC

Description of Water User Group:

Corinth WSC provides water service in Van Zandt County south of U.S.80 and north of I-20. In 2004, the WSC served 310 connections. The estimated population is 901 in the year 2010 and is projected to be 1,511 in year 2060. The system relies on three groundwater wells, which provide water from the Carrizo-Wilcox Aquifer with a total rated pumping capacity of 320 GPM or 172 ac-ft/yr. The system is projected to have a deficit of 6 ac-ft/yr in 2050 and increasing to a deficit of 23 ac-ft/yr in 2060. Corinth WSC is included in the County Other water user group for Van Zandt County. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	901	1047	1170	1263	1380	1511
Projected Water Demand	116	135	151	163	178	195
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	172	172	172	172	172	172
Projected Supply Surplus (+) / Deficit (-)	+56	+37	+21	+9	**-6**	**-23**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Corinth WSC water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was below 140 gpcd threshold set by the water planning group. Water reuse was omitted from consideration because the WSC does not have a centralized sewerage collection system. Surface water alternatives were omitted since there is not a supply source within close proximity to the WSC. A groundwater worksheet is included as Attachment B.

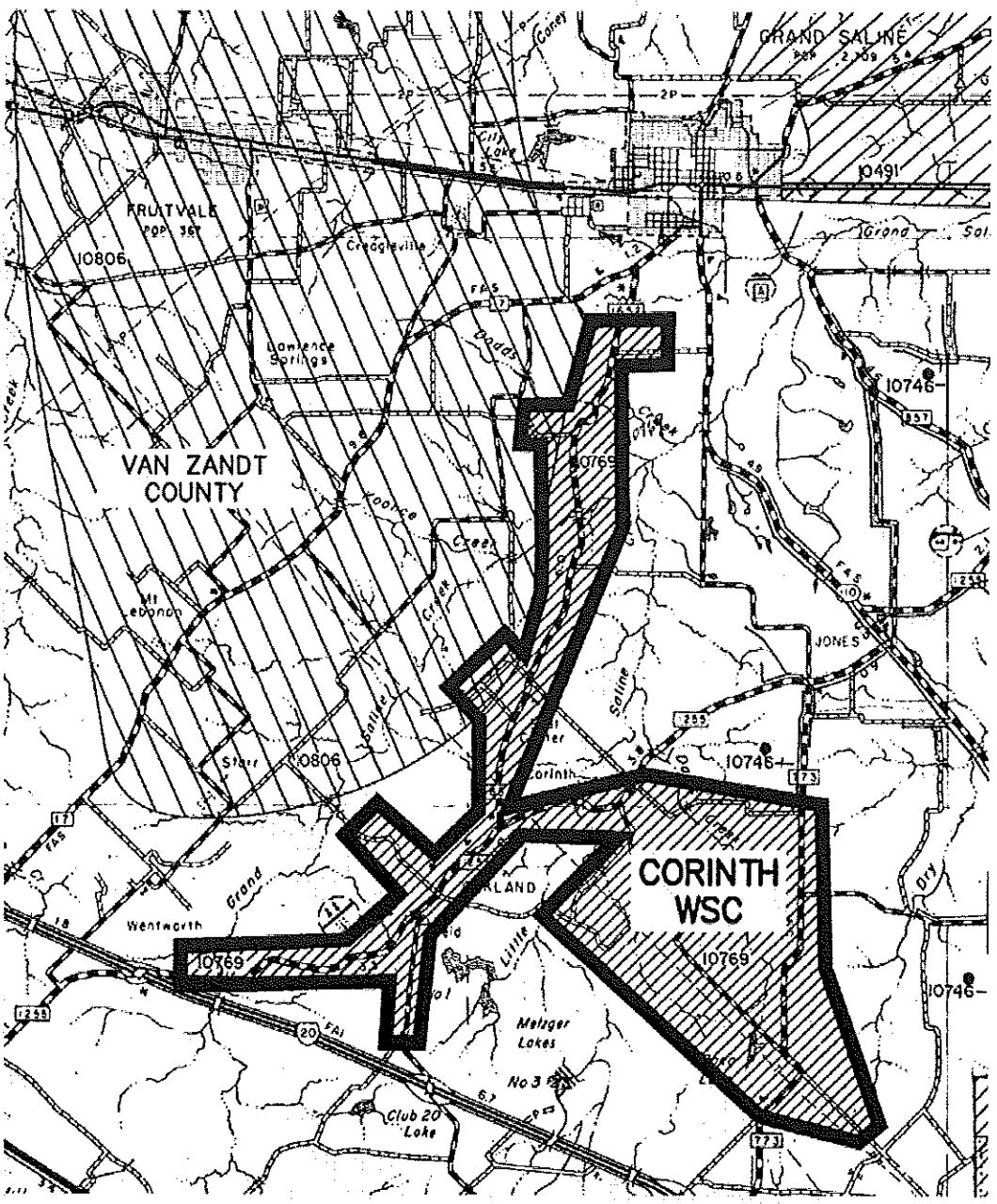
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**27**	**$363,854**	**$31,533**	**$1,752**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)					27	27

The recommended strategy for Corinth WSC to meet their projected deficit of 6 ac-ft in the year 2050 and 23 ac-ft in the year 2060 would be to construct one additional well in the Carrizo-Wilcox aquifer about 500 ft deep. A well with a total pumping capacity 50 gpm or 27 ac-ft/yr has sufficient capacity to meet their shortages through the year 2060.

Given the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source due to quality issues, 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 recommendation previously discussed should be re-evaluated.



ATTACHMENT "A"
CORINTH WSC
LOCATION MAP

Table C4.78 - Groundwater Worksheet
Corinth WSC
Van Zandt County
County Other category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
1	500	50	**27**	$ 440.00	$ 220,000.00	$ 2,200.00	$ 222,200.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,600	4	$ 2.93	$ 30,472.00	$ 1,066.52	$ 31,538.52

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 253,738.52**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 76,121.56
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 349,860.08**
INTEREST DURING CONSTRUCTION(IDC) 6% Annual Interest on Total Borrowed Funds	$ 20,991.60
4% Rate of Return on Investment of Unspent Funds	$ 6,997.20
Net Interest	**$ 13,994.40**
TOTAL CAPITAL COST	**$ 363,854.48**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 4,643.07

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	50	100	70%	1	0.09	$ 474.51

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 31,533.41**
WUG Total WMS Cost Per Acre-Foot	**$ 1,751.86**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF CROOKED CREEK WSC

Description of Water User Group:

Crooked Creek WSC provides water service in Van Zandt County. In 2004, the WSC served 265 connections. The estimated population is 717 in the year 2010 and is projected to be 1,204 in the year 2060. Crooked Creek WSC is included in the County Other water user group for Van Zandt County. The system relies on one well in the Carrizo-Wilcox aquifer with a total pumping capacity of 185 gpm, or 99 ac-ft/yr. The WSC is adjacent to rural roads between FM 859 and state highway 9. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	717	834	932	1006	1099	1204
Projected Water Demand	92	107	120	130	142	155
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	99	99	99	99	99	99
Projected Supply Surplus (+) / Deficit (-)	+7	**-8**	**-21**	**-31**	**-43**	**-56**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Crooked Creek WSC water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was below 140 gpcd threshold set by the water planning group. Water reuse was omitted because the WSC does not have a demand for non-potable water and there is no central wastewater treatment facility. The WSC is considering contracting with City of Canton for surface water. A ground water worksheet is included as Attachment B, and a surface water worksheet is included as Attachment C.

Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**59**	**$ 273,730**	**$31,131**	**$431**	**Minimal**
Surface Water	**56**	**$94,684**	**$46,612**	**$1,759**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)		59	59	59	59	59

The recommended strategy for the Crooked Creek WSC would be to construct a groundwater well. The recommended supply source will be the Carrizo-Wilcox aquifer in Van Zandt County. A well with a rating of 110 gpm would provide approximately 59 acre-feet on an annualized basis. The WSC's total storage exceeds TCEQ requirements.

Given the increasing costs to comply with more stringent regulations and 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 recommendation previously discussed should be re-evaluated.

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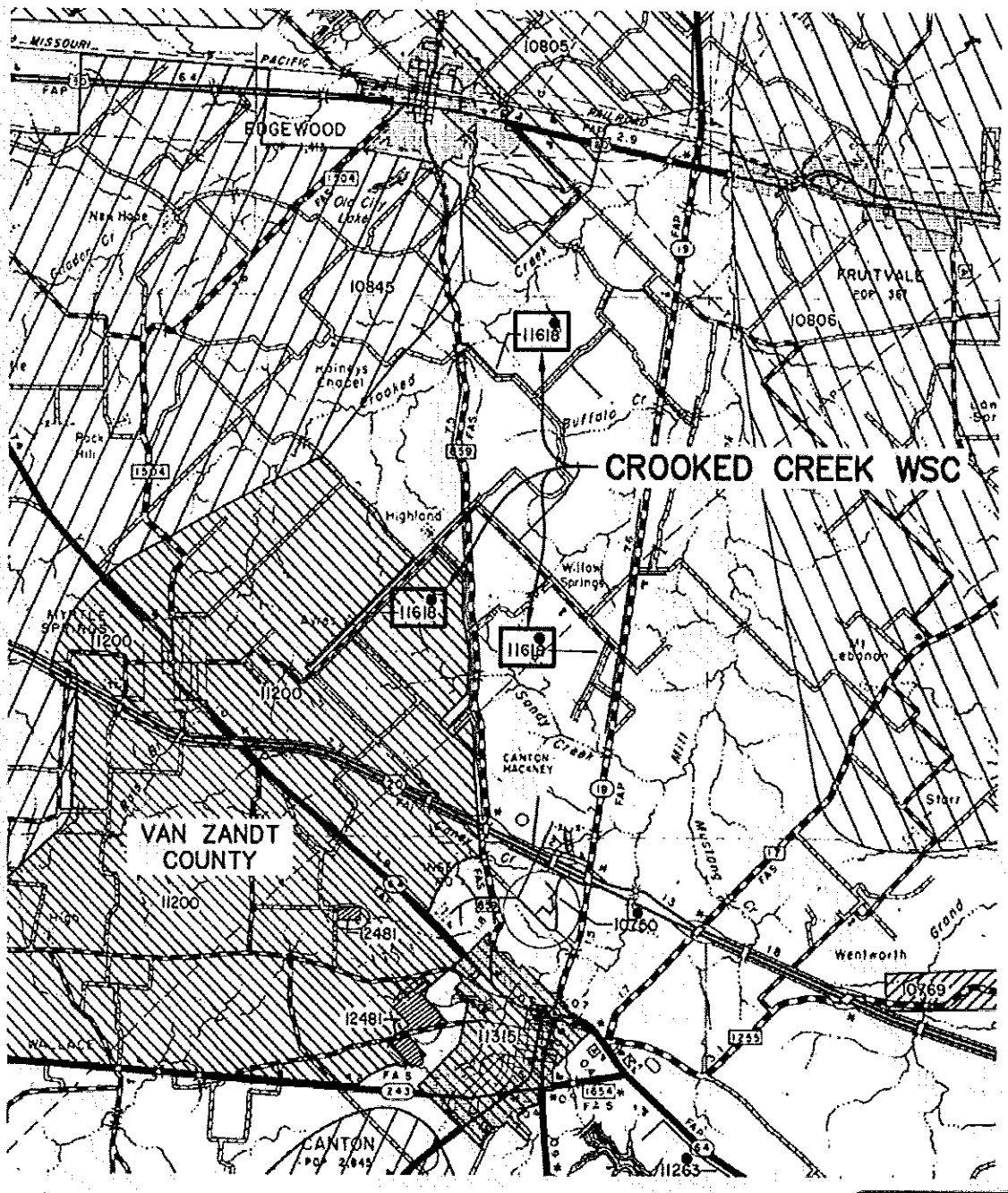
SCALE: 1" = 10,000'



ATTACHMENT "A"
CROOKED CREEK WSC
LOCATION MAP

Table C4.79 - Groundwater Worksheet
Crooked Creek WSC
Van Zandt County

Water Well Development

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
1	350	110	**59**	$ 440.00	$ 154,000.00	$ 1,540.00	$ 155,540.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,600	4	$ 2.93	$ 30,472.00	$ 1,066.52	$ 31,538.52

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 187,078.52**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 56,123.56
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 263,202.08**
INTEREST DURING CONSTRUCTION 6% Annual Interest on Total Borrowed Funds	$ 15,792.12
4% Rate of Return on Investment of Unspent Funds	$ 5,264.04
Net Interest	**$ 10,528.08**
TOTAL CAPITAL COST	**$ 273,730.16**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 10,214.75

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	110	100	70%	1	0.09	$ 1,043.91

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 31,131.47**
WUG Total WMS Cost Per Acre-Foot	**$ 431.09**

Table C4.80 - Surface Water Worksheet
Crooked Creek WSC
Van Zandt County

Water Purchase Contract With City of Canton:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
49,994	**56.0**	$ 5.00

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
4,000	6	$ 2.20	$ 52,800.00	$ 1,848.00	$ 54,648.00

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 54,648.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)		$ 16,394.40
ENVIRONMENTAL (LUMP SUM)		$ 20,000.00
Total Borrowed Funds		**$ 91,042.40**
INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 5,462.54
	4% Rate of Return on Investment of Unspent Funds	$ 1,820.85
	Net Interest	**$ 3,641.70**
TOTAL CAPITAL COST		**$ 94,684.10**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	8	21	31	43	56	27
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ 13,034.04	$ 34,214.36	$ 50,506.91	$ 70,057.97	$ 91,238.28	$ 43,175.26
							Average
TOTAL ANNUALIZED COST	**$ 6,874.07**	**$ 19,908.11**	**$ 41,088.42**	**$ 50,506.91**	**$ 70,057.97**	**$ 91,238.28**	**$ 46,612.29**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 1,758.95**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF EDOM WSC IN VAN ZANDT COUNTY

Description of Water User Group:

Edom WSC is included in the County Other water user group and provides water service in Van Zandt and Henderson Counties. In 2004, the WSC served a total of 470 connections. Approximately 78% of the population served resides in Van Zandt County. The estimated population in Van Zandt County is 1,056 in the year 2010 and is projected to be 1,771 in the year 2060. The system relies on four wells with a total pumping capacity of 340 gpm, or 183 ac-ft/yr. Edom WSC is planning a future well with a total pumping capacity of 80 to 120 gpm in the year 2006. In Van Zandt County, the system is projected to have a water supply deficit of 16 ac-ft/yr in 2020 and increasing to 86 ac-ft/yr in 2060. A location map is included in Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1056	1227	1372	1480	1618	1771
Projected Water Demand	137	159	177	191	209	229
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	143	143	143	143	143	143
Projected Supply Surplus (+) / Deficit (-)	**6**	**-16**	**-34**	**-48**	**-66**	**-86**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Edom WSC water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was below 140 gpcd threshold set by the water planning group. Water reuse is not feasible because the WSC does not have a centralized sewerage collection system. Ground water was considered and a ground water worksheet is included as Attachment B. Surface water from the City of Tyler, which is 16 miles away, was also considered. A surface water worksheet is included as Attachment C.

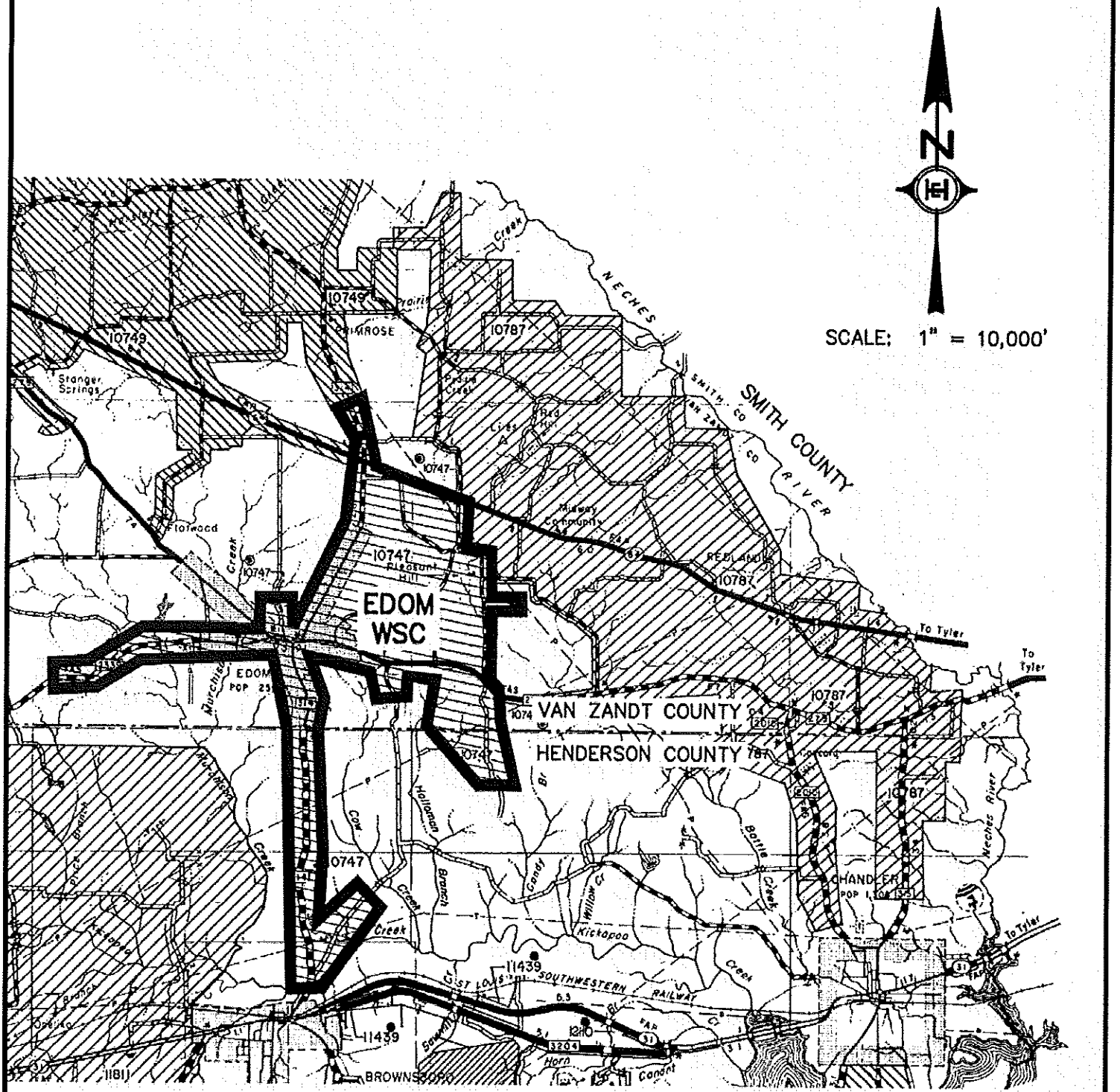
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**86**	**$ 864,795**	**$79,160**	**$833**	**Minimal**
Surface Water	**86**	**$2,606,743**	**$125,309**	**$3,007**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)		43	43	86	86	86

The recommended strategy for Edom WSC to meet their projected deficit of 86 ac-ft would be to construct one 80 gpm well, in addition to the 80 to 100 gpm well already in their plan. These two wells have a yield of 86 ac-ft/yr, sufficient to meet projected demand up to 2060. Edom WSC currently has a total storage that exceeds TCEQ requirements.

Given the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source due to quality issues, 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 recommendation previously discussed should be re-evaluated.



ATTACHMENT "A"
EDOM WSC
LOCATION MAP

Table C4.81 - Groundwater Worksheet
Edom WSC
Van Zandt County

Water well Development:

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
2	600	80	**86**	$ 440.00	$ 528,000.00	$ 5,280.00	$ 533,280.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
5,000	6	$ 2.93	$ 87,900.00	$ 3,076.50	$ 90,976.50

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 624,256.50**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 187,276.95
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 831,533.45**

INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 49,892.01
	4% Rate of Return on Investment of Unspent Funds	$ 16,630.67
	Net Interest	**$ 33,261.34**

TOTAL CAPITAL COST	**$ 864,794.79**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 14,857.82

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	80	100	70%	2	0.09	$ 1,518.42

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 79,160.33**
WUG Total WMS Cost Per Acre-Foot	**$ 833.17**

Table C4.82 - Purchased Supply Worksheet
Edom WSC
Van Zandt County

Water Purchase Contract City of Tyler:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
76,776	**86.0**	$ 2.26

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
84,000	10	$ 2.20	$ 1,848,000.00	$ 64,680.00	$ 1,912,680.00

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 1,912,680.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)		$ 573,804.00
ENVIRONMENTAL (LUMP SUM)		$ 20,000.00
Total Borrowed Funds		**$ 2,506,484.00**
INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 150,389.04
	4% Rate of Return on Investment of Unspent Funds	$ 50,129.68
	Net Interest	**$ 100,259.36**
TOTAL CAPITAL COST		**$ 2,606,743.36**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	0	16	34	48	66	86	42
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ -	$ 11,782.77	$ 25,038.39	$ 35,348.32	$ 48,603.94	$ 63,332.40	$ 30,684.30
							Average
TOTAL ANNUALIZED COST	**$ 189,249.57**	**$ 201,032.34**	**$ 214,287.96**	**$ 35,348.32**	**$ 48,603.94**	**$ 63,332.40**	**$ 125,309.09**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 3,007.42**
($ / ac-ft / yr)

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF FRUITVALE WSC

Description of Water User Group:

Fruitvale WSC provides water service in Van Zandt County. In 2004, the WSC served 1063 connections. The estimated population is 3,087 in the year 2010 and is projected to be 5,179 in the year 2060. Fruitvale WSC is included in the County Other water user group for Van Zandt County. The system relies on twelve wells into the Carrizo Wilcox with a total pumping capacity of 742 gpm, or 398 ac-ft/yr. The WSC is projected to have a deficit of 64 ac-ft/yr in 2020 and increasing to a deficit of 269 ac-ft/yr in 2060. A location map is included in Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	3087	3587	4010	4327	4730	5179
Projected Water Demand	398	462	517	557	609	667
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	398	398	398	398	398	398
Projected Supply Surplus (+) / Deficit (-)	+0	**-64**	**-119**	**-159**	**-211**	**-269**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Fruitvale WSC water supply shortages as summarized in the Table below. Advanced conservation was omitted because the per capita use per day was below 140 gpcd threshold set by the water planning group. Water reuse was not selected because the WSC does not have a centralized sewer collection system. Surface water alternatives were omitted since there is no viable supply source within close proximity to the WSC. The system plans to continue adding water wells, which are 500 feet deep and have an average capacity of 80 gpm to meet their requirements. A ground water worksheet is included as Attachment B.

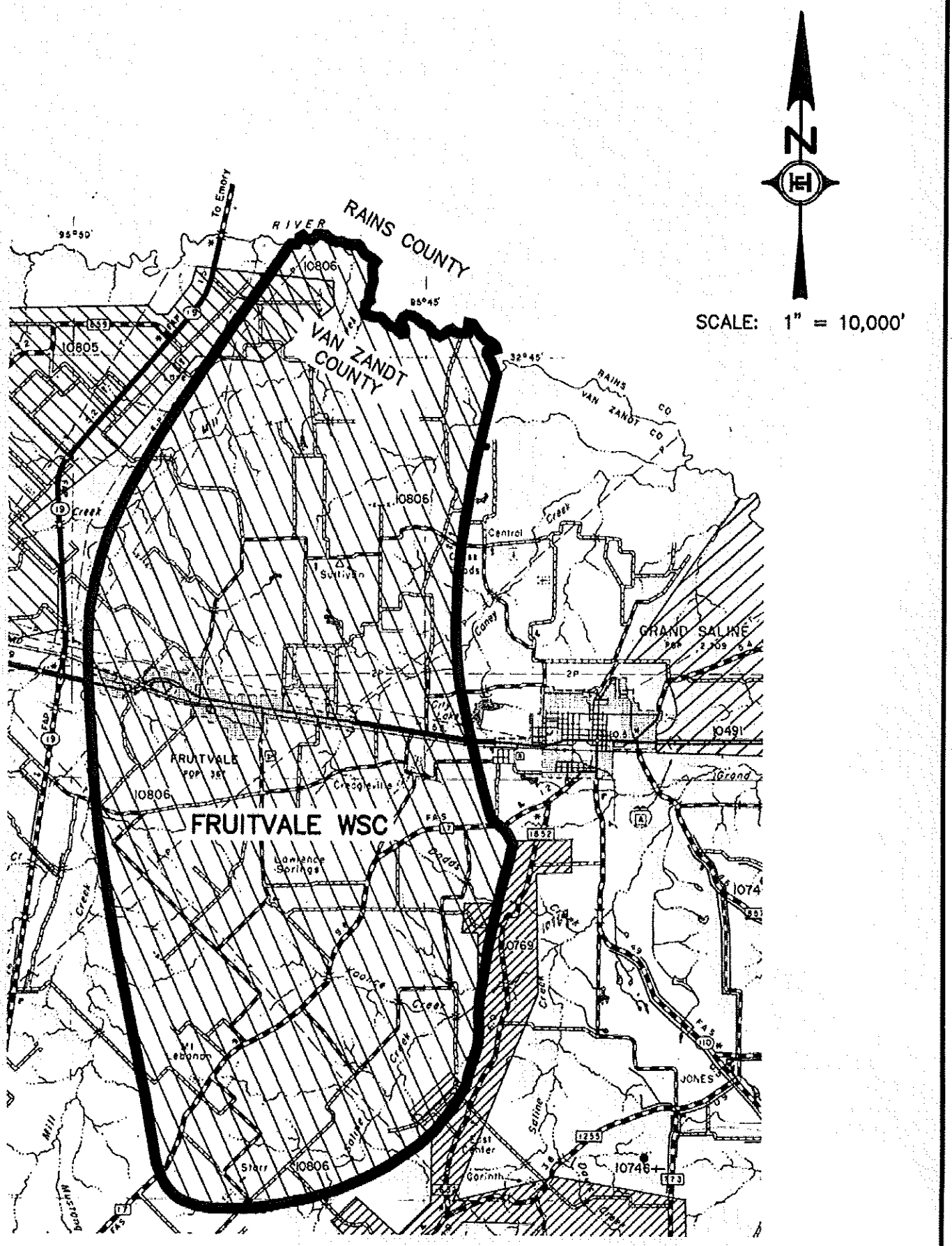
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**301**	**$2,554,202**	**$245,409**	**$1,015**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)		86	129	172	215	301

The recommended strategy for Fruitvale WSC to meet their projected water deficit of 64 ac-ft in the year 2020 and 269 ac-ft in the year 2060 would be to construct seven additional 80 gpm, 43 ac-ft/yr, wells. It is recommended that two wells be constructed before 2020, followed by one well before 2030 and then one well around 2040. Additional wells should be constructed as needed. Fruitvale's existing total storage of 0.305 MG exceeds TCEQ requirements.

Given the increasing costs to comply with more stringent regulations and decreasing reliability of groundwater as a future supply source due to quality issues, 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 recommendation previously discussed should be re-evaluated.



ATTACHMENT "A"
FRUITVALE WSC
LOCATION MAP

Table C4.83 - Groundwater Worksheet
Fruitvale WSC
Van Zandt County
County Other category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
7	500	80	**301**	$ 440.00	$ 1,540,000.00	$ 15,400.00	$ 1,555,400.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
17,500	6	$ 2.93	$ 307,650.00	$ 10,767.75	$ 318,417.75

Storage

No of Tanks	Size-Gals	Cost per gallon	(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 1,873,817.75**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 562,145.33
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 2,455,963.08**

INTEREST DURING CONSTRUCTION(IDC): 6% Annual Interest on Total Borrowed Funds	$ 147,357.78
4% Rate of Return on Investment of Unspent Funds	$ 49,119.26
Net Interest	**$ 98,238.52**

TOTAL CAPITAL COST	**$ 2,554,201.60**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 52,002.35

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	80	150	70%	7	0.09	$ 7,971.69

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 245,409.08**
WUG Total WMS Cost Per Acre-Foot	**$ 1,014.56**

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF LITTLE HOPE-MOORE WSC

Description of Water User Group:

Little Hope-Moore WSC provides water service in Van Zandt County. In 2004, the WSC served about 550 connections. The population of the WSC is estimated as 1,702 in 2010 and is projected to be 2,855 in the year 2060. Little Hope-Moore WSC is included in the County Other water user group for Van Zandt County. The system relies on five ground water wells, which provide water from the Carrizo-Wilcox Aquifer. The five wells have a total rated pumping capacity of 384 gpm, or 207 ac-ft/yr. The WSC is projected to have a water supply deficit of 13 ac-ft/yr in 2010 and increasing to 161 ac-ft/yr in 2060. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	1702	1978	2211	2386	2608	2855
Projected Water Demand	220	255	285	308	336	368
Water Demand from other entities	0	0	0	0	0	0
Current Water Supply	207	207	207	207	207	207
Projected Supply Surplus (+) / Deficit (-)	**-13**	**-48**	**-78**	**-101**	**-129**	**-161**

Evaluation of Potentially Feasible Water Management Strategies:

There were four alternative strategies considered to meet Little Hope-Moore WSC's water supply shortages as summarized in the Table below. Advanced conservation was not selected because the per capita use per day was below the 140 gpcd threshold set by the water planning group. Water reuse was not selected because the WSC does not have a centralized sewer collection system. Groundwater from the Carrizo Wilcox was also considered as an alternative for the WSC. Groundwater worksheet is included as Attachment B. Surface water alternative is included as Attachment C.

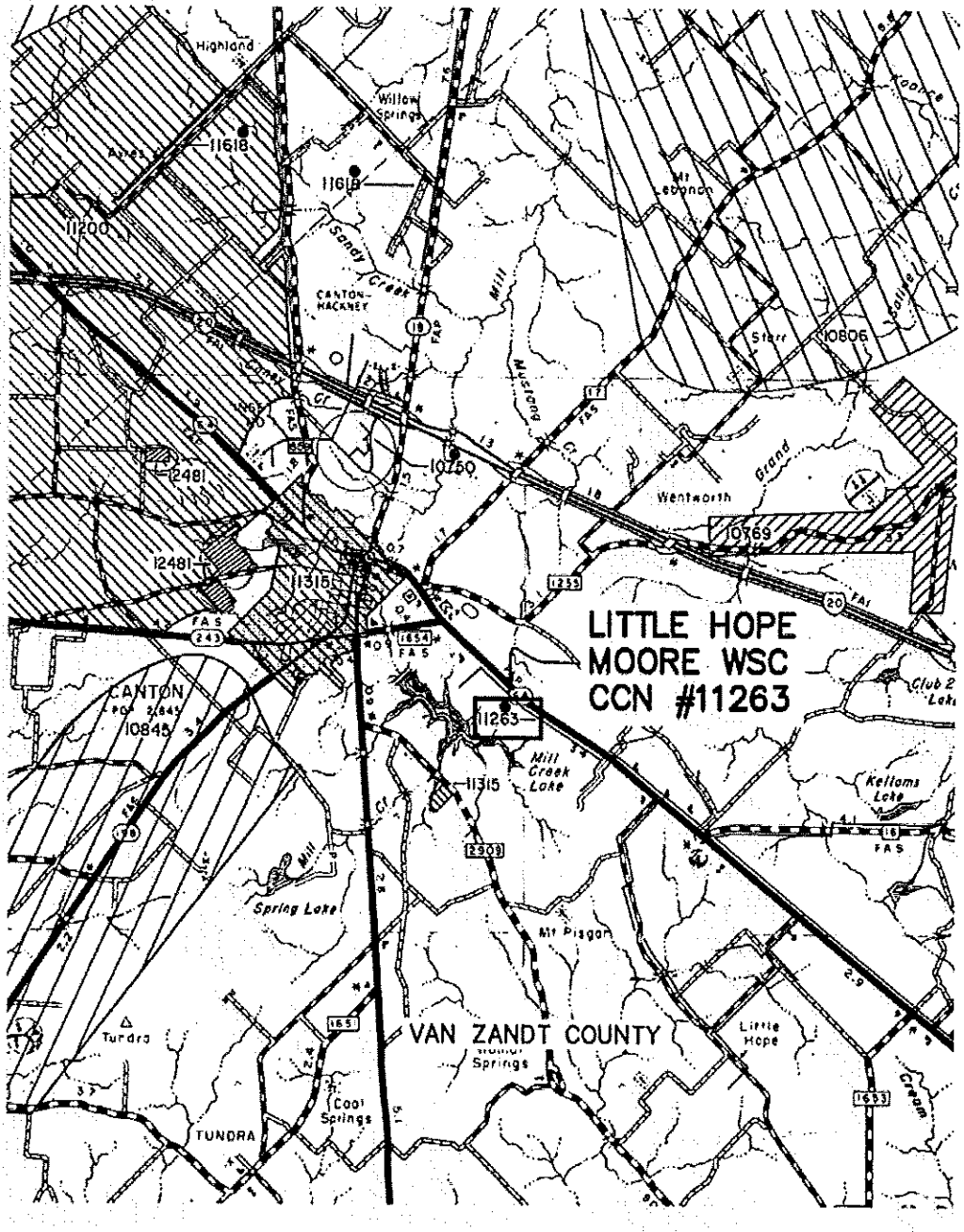
Strategy	Firm Yield (ac-ft)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation					
Water Reuse					
Ground Water	**188**	**$1,830,373**	**$170,369**	**$920**	**Minimal**
Surface Water	**161**	**$1,184,475**	**$155,828**	**$1,764**	**Minimal**

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	38	75	113	113	151	188

The recommended strategy for Little Hope-Moore WSC to meet their projected water deficit of 13 ac-ft in the year 2010 and 161 ac-ft in the year 2060 would be to drill additional wells. A 70 gpm well would yield approximately 38 ac-ft/yr, which is enough to meet needs in 2010. Four other wells of similar capacity should be drilled in successive decades to meet projected demands. The alternative would be to purchase water from the City of Edgewood.

Given the increasing costs to comply with more stringent regulations and 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 recommendation previously discussed should be re-evaluated.



ATTACHMENT "A"
LITTLE HOPE MOORE WSC
LOCATION MAP

Table C4.84 - Groundwater Worksheet
Little Hope-Moore WSC
Van Zandt County

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (1%)	Subtotal
5	500	70	**188**	$ 440.00	$1,100,000.00	$ 11,000.00	$ 1,111,000.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
12,500	6	$ 2.93	$ 219,750.00	$ 7,691.25	$ 227,441.25

Storage

No of Tanks	Size-Gals	Cost per gallon		(1%)	Subtotal
-	-	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 1,338,441.25**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 401,532.38
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 1,759,973.63**
INTEREST DURING CONSTRUCTION(IDC) 6% Annual Interest on Total Borrowed Funds	$ 105,598.42
4% Rate of Return on Investment of Unspent Funds	$ 35,199.47
Net Interest	**$ 70,398.95**
TOTAL CAPITAL COST	**$ 1,830,372.57**
OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 32,501.47

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	70	150	70%	5	0.09	$ 4,982.31

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 170,368.82**
WUG Total WMS Cost Per Acre-Foot	**$ 919.70**

NOTE: O&M costs include $0.06/1000 to sequester iron

Table C4.85 - Surface Water Worksheet
Little Hope-Moore WSC
Van Zandt County

Water Purchase Contract With City of Edgewood:

Avg. yield (GPD)	Total Yield (ac-ft/yr)	Unit Cost ($ / 1000GAL)
143,732	**161.0**	$ 3.92

Pump Station

Number (ea)	Unit Cost ($ / ea)	Total Cost	Land & Easements (1%)	Subtotal
0	$ 231,000.00	$ -	$ -	$ -

Treated Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
63,000	6	$ 2.20	$ 831,600.00	$ 29,106.00	$ 860,706.00

Storage Tank

Number (ea)	Gallons (gal)	Unit Cost ($ / gal)	Total Cost	Land & Easements (1%)	Subtotal
-	0	$ 0.73	$ -	$ -	$ -

Total Construction Cost	**$ 860,706.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1.0**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)		$ 258,211.80
ENVIRONMENTAL (LUMP SUM)		$ 20,000.00
Total Borrowed Funds		**$ 1,138,917.80**
INTEREST DURING CONSTRUCTION(IDC):	6% Annual Interest on Total Borrowed Funds	$ 68,335.07
	4% Rate of Return on Investment of Unspent Funds	$ 22,778.36
	Net Interest	**$ 45,556.71**
TOTAL CAPITAL COST		**$ 1,184,474.51**

	2010	2020	2030	2040	2050	2060	Average
WATER PURCHASED (ac-ft/yr)	13	48	78	101	129	161	88
ANNUAL WATER PURCHASE COST (Yield (ac-ft/yr) * 325,851 * $ / 1,000)	$ 16,605.37	$ 61,312.12	$ 99,632.20	$ 129,010.93	$ 164,776.33	$ 205,651.08	$ 112,831.34
							Average
TOTAL ANNUALIZED COST	**$ 102,598.22**	**$ 147,304.97**	**$ 185,625.05**	**$ 129,010.93**	**$ 164,776.33**	**$ 205,651.08**	**$ 155,827.76**

(Water Purchase Cost + Total Capital Cost * debt service factor (30 yrs @ 6%))

UNIT COST **$ 1,764.09**
($ / ac-ft / yr)

REGION D
EVALUATIONS OF WATER MANAGEMENT STRATEGIES
FOR MEETING PROJECTED WATER SUPPLY NEEDS
TO YEAR 2060

WOOD COUNTY

WUGs:

City of Mineola

County Other:

None

EVALUATION OF WATER MANAGEMENT STRATEGIES FOR MEETING THE PROJECTED WATER SUPPLY NEEDS OF THE CITY OF MINEOLA

Description of Water User Group:

The City of Mineola is located in southwestern Wood County and serves the incorporated city limits and approximately 175 connections adjacent to the city. In 2003 the system had 2,123 residential connections. The population is projected to increase from 5,681 persons in 2010 to 6,858 persons in 2060. The City of Mineola is included in the City and County Other water user groups for Wood County. The system's current water supply consists of three water wells in the Carrizo-Wilcox Aquifer. The total rated capacity of these three wells is 1750 gpm, which equates to 941 ac-ft/yr on an annual average basis. The city provides 22 ac-ft/yr to the Manufacturing WUG in Wood County. The system is bounded on the north and west by Ramey WSC, on the east by New Hope WSC and on the south by the Sabine River. The City of Mineola does have a water conservation plan and a drought management plan. A location map is included as Attachment A.

Water Supply and Demand Analysis:

	2010	2020	2030	2040	2050	2060
Population	5681	6410	6814	6858	6858	6858
Projected Water Demand	1122	1237	1293	1286	1279	1279
Current Water Supply	919	919	919	919	919	919
Projected Supply Surplus (+)/Deficit(-)	**-203**	**-318**	**-374**	**-367**	**-360**	**-360**

Evaluation of Potentially Feasible Water Management Strategies:

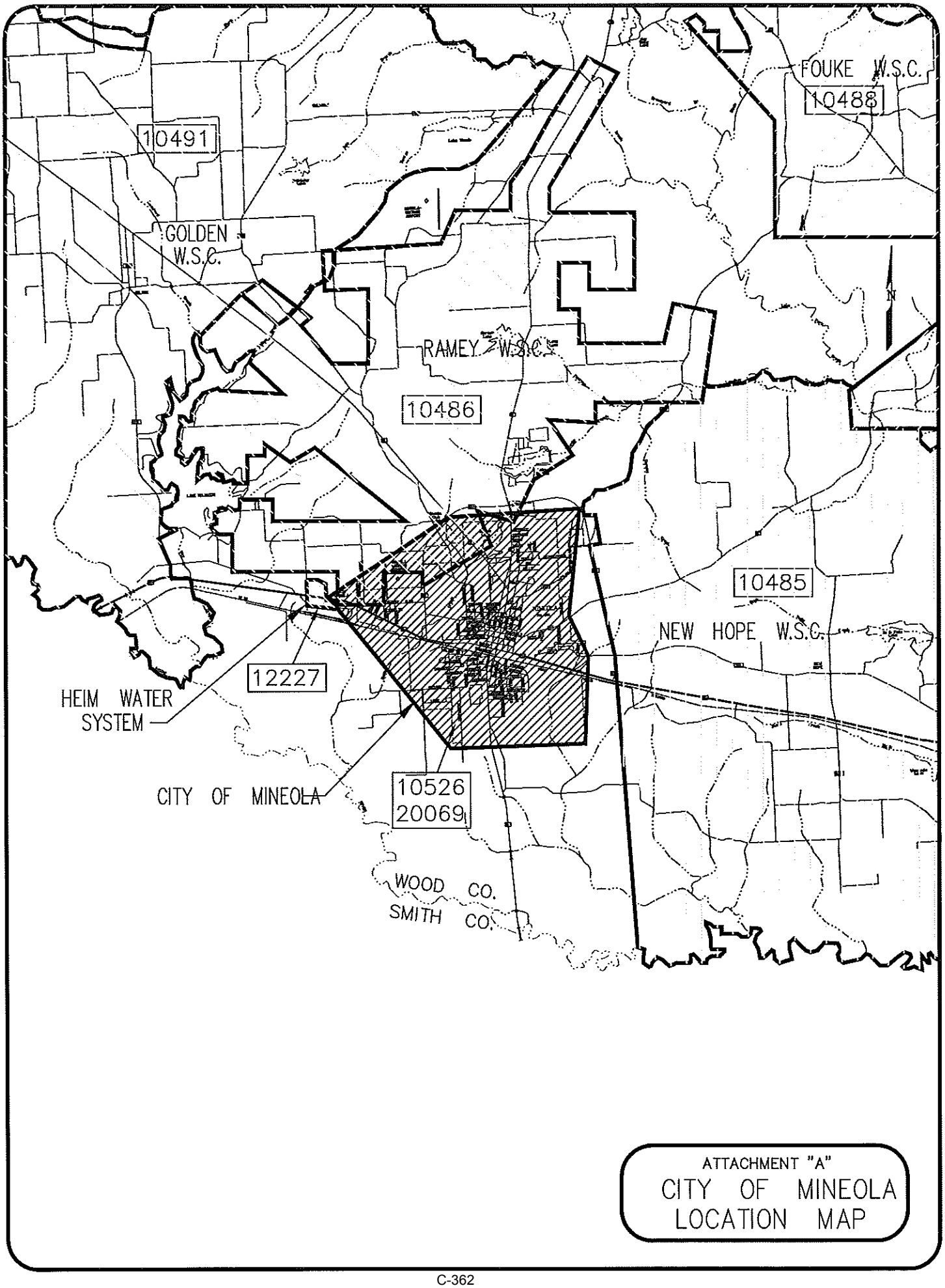
Four alternative strategies were considered to meet the City of Mineola's water supply shortages as summarized in the following table. Advanced conservation was considered because the per capita use per day of 184 is greater than the 140 gpcpd threshold set by the water planning group. Water reuse was omitted from consideration because the City does not have a demand for non-potable water at this time. Surface water alternatives were omitted since surface water treatment is not economically feasible for a system when groundwater is readily available. A groundwater worksheet is included as Attachment B and an advanced water conservation worksheet is included as Attachment C.

Strategy	Firm Yield (AF)	Total Capital Cost	Total Annualized Cost	Unit Cost	Environmental Impact
Advanced Water Conservation	**49**	**$ 325,998**		**$ 726**	**Minimal**
Water Reuse					
Groundwater	**403**	**$ 313,957**	**$99,557**	**$ 247**	**Minimal**
Surface Water					

Recommendations:

	2010	2020	2030	2040	2050	2060
Groundwater (ac-ft/yr)	403	403	403	403	403	403

Since the water conservation alternative does not provide sufficient savings to overcome the deficits, the recommended strategy for the City of Mineola to meet their projected deficit of 203 acre-feet in the year 2010 and 360 acre-feet in the year 2060 would be to construct one additional water well similar to their largest existing well. The recommended supply source will be the Carrizo-Wilcox Aquifer in Wood County. A well with rated capacity of 750 gpm would provide approximately 403 acre-feet on an annualized basis. The Carrizo-Wilcox Aquifer in Wood County is projected to have a more than ample supply availability to meet the needs of the City of Mineola for the planning period.



ATTACHMENT "A"
CITY OF MINEOLA
LOCATION MAP

Table C4.86 - Groundwater Worksheet
City of Mineola
Wood County
City and County Other Category

CAPITAL COST

Construction

Well

No of wells	Depth (ft)	Yield per well (gpm)	Total Yield (AF)	Unit Cost / VF	Well subtotal const cost	Land & easements (2.5%)	Subtotal
1	400	750	**403**	$ 440.00	$ 176,000.00	$ 4,400.00	$ 180,400.00

Raw Water Main

Length (ft)	Diam (in)	Unit Cost ($ / in / ft)	Total Cost	Land & Easements (3.5%)	Subtotal
2,000	8	$ 2.20	$ 35,200.00	$ 1,232.00	$ 36,432.00

Total Construction Cost	**$ 216,832.00**
Construction Duration ($0 to $3M =1YR, $3M to $5M = 1.5YRS, >5M=2YRS)	**1**

Other Capital Costs

ADMINISTRATION, ENGINEERING, LEGAL, CONTINGENCIES (30%)	$ 65,049.60
ENVIRONMENTAL (LUMP SUM)	$ 20,000.00
Total Borrowed Funds	**$ 301,882.60**

INTEREST DURING CONSTRUCTION(IDC)	6% Annual Interest on Total Borrowed Funds	$ 18,112.96
	4% Rate of Return on Investment of Unspent Funds	$ 6,037.65
	Net Interest	**$ 12,075.30**

TOTAL CAPITAL COST	**$ 313,957.90**

OPERATION & MAINTENANCE COSTS (Yield (AF/yr) * 325,851 * $ 0.53/ 1,000)	$ 69,646.01

POWER COST	GPM	Head (ft)	Efficiency	No. of Wells	$/kWh	
	750	100	70%	1	0.09	$ 7,117.58

TOTAL ANNUALIZED COST (O & M Cost + Power Cost+ (Total Capital Cost* debt service factor (30 yrs @ 6%))	**$ 99,556.93**
WUG Total WMS Cost Per Acre-Foot	**$ 247.04**

Table C4.87 - City of Mineola Cost-Savings Analysis for Region D - Rural

Attachment C - Advanced Water Conservation Worksheet

WUG Data	
Population	6,270
SF Population	5,856
MF Population	282
Institutional Population	132
SF Units	2,371
MF Units	188
Average Yearly Rainfall (inches)	43.3
SF Household Size	2.47
MF Houshold Size	1.50
No. of Bathrooms per SF House	2.0
No. of Bathrooms per MF Unit	1.2
No of Irrigation Months	6
% of High Use SF customers	10%
No. of MF Units per Washer	18
No. of MF Units per Complex	50

Notes:
SF=single-family, MF=multi-family
Column 1 - savings per person in gallons per day
(For SF and MF Toilet Retrofits, Showers and Aerators and SF Clothes Washers see Section 2. For other measures, Column 1 is calculated by dividing Column 4 by the SF household size or the MF population using the measure.)
Column 2 - savings per housing unit in gallons per day
(Column 3 x Column 4, with the exception of MF Irrigation Audits and MF Rainwater Harvesting, which are calculated by multiplying Column 1 x MF household size.)
Column 3 - the number of measures needed for each living unit
Column 4 - gallons saved per day for each measure (see Section 2)
Column 5- the percent of customers that have already implemented this measure
Column 6- the potential number of customers who could be expected to implement the program with substantial marketing and outreach
Column 7- estimated number of measures [(column 6- column 5)*number of MF or SF units]
Column 8- potential savings for the region in gallons er day (column 4 x column 7)
Column 9- potential savings for the region in acre-feet [(column 8*365)/325851]
Column 10 - program costs including rebates, staff time and marketing (see Section 2)
Column 11- total program cost (column 7 x column 10)
Column 12 - cost per acre foot of water saved each year [(column 5 x 325,851 gallons/AF) / (column 4 x 365 days)]) amotized at 5% interest over the life of the measure
Column 13 - delivery option(s) for which costs are estimated

* See Sections 2 and 3 for additional information on calculations and assumptions

	For Participating Customers												
	Savings per Residential Capita (gpd)	Savings per Living Unit (gpd)	No. of Measures / Living Unit	Savings per Measure (gpd)	Current Penetration Rate	Potential Penetration Rate	Number of Proposed Measures	Potential Savings for the Region (gpd)	Potential Savings for the Region (acre-ft/yr)	Program Costs per Measure	Total Program Costs	Cost per AF of Water Saved (Amortized)	Standard Delivery Description
Residential	1	2	3	4	5	6	7	8	9	10	11	12	13
SF Toilet Retrofit													
SF Showerheads and Aerators													
SF Clothes Washer Rebate	5.6	13.8	1.0	13.8	0%	90%	2,134	29,516	33.06	$ 120	$ 256,068	$ 825	rebate from water utility only
SF Irrigation Audit-High User	20.2	50.0	1.0	50.0	1%	5%	95	4,742	5.31	$ 70	$ 6,639	$ 459	staff
SF Rainwater Harvesting	19.3	47.6	1.0	47.6	0%	5%	119	5,648	6.33	$ 250	$ 29,638	$ 451	rebate
SF Rain Barrels	2.1	5.2	1.0	5.2	0%	30%	711	3,669	4.11	$ 45	$ 32,009	$ 750	rebate or distribution
MF Toilet Retrofit													
MF Showerheads and Aerators													
MF Clothes Washer Rebate	1.1	1.7	0.056	30.0	2%	80%	8	244	0.27	$ 120	$ 978	$ 553	rebate from water utility only
MF Irrigation Audit	1.7	2.5	NA	125.0	0%	50%	2	235	0.26	$ 150	$ 282	$ 393	staff
MF Rainwater Harvesting	7.4	11.1	NA	553.8	0%	5%	0	104	0.12	$ 2,050	$ 385	$ 318	rebate
								44,159	**49**		**$ 325,997.80**	**$ 726.36**	
Commercial													
Commercial Toilet Retrofit				26.0						$ 150		$ 365	free or rebate
Coin-Operated Clothes Washer Rebate				45.0	0%	50%				$ 170		$ 522	rebate from water utility only
Irrigation Audit				125.0						$ 150		$ 393	staff
Commercial General Rebate				1.0						$ 1.2		$ 103	rebate
Commercial Rainwater Harvesting				553.8						$ 2,050		$ 318	rebate

January 14, 2010

Mr. Reeves Hayter, P.E.
Hayter Engineering, Inc.

Re: Northeast Texas Regional Water Plan
City of Canton Proposed Strategy

Dear Mr. Hayter:

As requested, below is suggested language for inclusion in Chapter 4, Section 4.8(t), page 4-88.

Description / Discussion of Needs:
Please add:

> "The population projections do not take into account the additional water demand resulting from the monthly First Monday Trades Days. Depending on the month or season, this recurring event brings 200,000 to 400,000 visitors to the City for four consecutive days each month. Many of these visitors stay overnight."

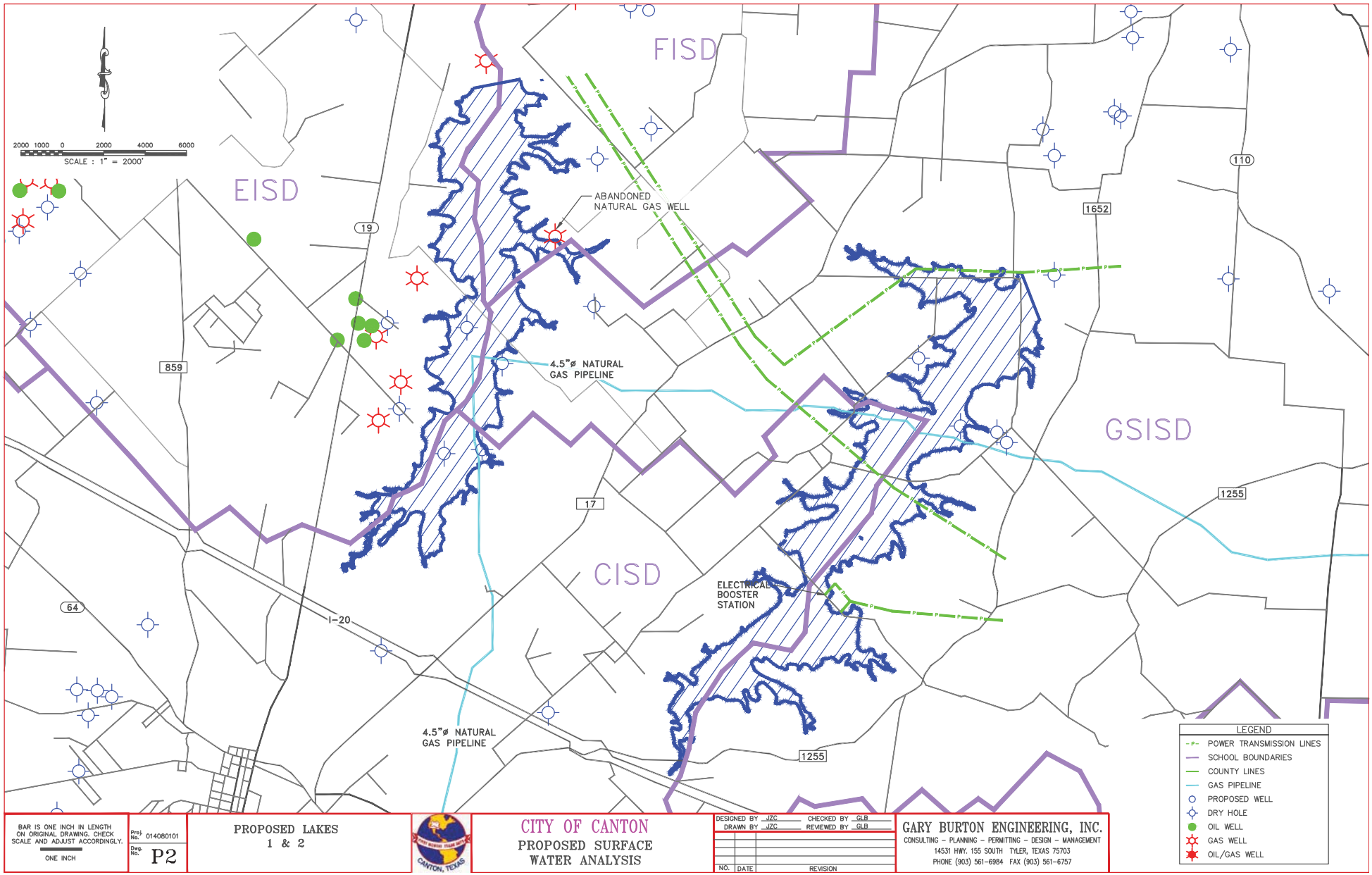
Recommendations:
Please amend as follows:

> The recommended strategy for…2060 "is with surface water from a proposed reservoir on Grand Saline Creek. The City of Canton has provided to Region D 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 ground water 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 in the interim to meet increasing demands due to population growth and the First Monday influence."

Sincerely,

Gary L. Burton, III, P.E.

SITE COMPARISON		
Parameter	**Mill Creek**	**Grand Saline Creek**
Miles of Road Affected	**0.6**	**1.4**
Oil / Gas Wells in Footprint	**4 (Abandoned)**	**3 (Abandoned)**
Pipelines (Feet)	**8,742**	**3,264**
Water Systems	**1**	**2**
Transmission Lines (Feet)	**0**	**11,747**
Drainage Area (Square Miles)	**41.7 – 8.9 = 32.8**	**29.7**
Surface Area (Acres)	**1,460**	**1,644**
Depth (Feet)	**32**	**30**
Yield in Drought (MGD)	**5.7**	**5.2**
Number of Parcels Affected	**75**	**104**
Number of Property Owners	**50**	**75**
Total Acreage Affected	**5,414**	**4,081**
Total Appraised Value	**$14.6 Million**	**$14.0 Million**
Appraised Value (Per Acre)	**$2,704**	**$3,426**



BAR IS ONE INCH IN LENGTH ON ORIGINAL DRAWING. CHECK SCALE AND ADJUST ACCORDINGLY.

ONE INCH

Proj No. 014080101
Dwg No. P2

PROPOSED LAKES
1 & 2

CITY OF CANTON
PROPOSED SURFACE
WATER ANALYSIS

DESIGNED BY JZC CHECKED BY GLB
DRAWN BY JZC REVIEWED BY GLB

NO.	DATE	REVISION

GARY BURTON ENGINEERING, INC.
CONSULTING – PLANNING – PERMITTING – DESIGN – MANAGEMENT
14531 HWY. 155 SOUTH TYLER, TEXAS 75703
PHONE (903) 561-6984 FAX (903) 561-6757

CITY OF GRAND SALINE

RESOLUTION NO. 2009-15

SUPPORTING THE CITY OF CANTON'S EFFORT TO PURSUE CONSTRUCTION OF A NEW RESERVOIR FOR WATER SUPPLY NEEDS.

WHEREAS, the City of Canton is responsible for providing an ample supply of water to its current and future water customers; and

WHEREAS, the City of Canton currently supplies water to its customers by a combination of ground and surface water sources; and

WHEREAS, the City of Canton desires to meet future water shortage needs primarily by surface water sources; and

WHEREAS, the City of Canton has a projected shortage according to the 2006 Adopted Regional Water Plan for North East Texas (Region D); and

WHEREAS, the City of Canton has had performed by a qualified professional an evaluation of alternative surface water sources; and

WHEREAS, said evaluation concluded that construction of a new reservoir in Van Zandt County was preferable for the City of Canton to purchasing raw or treated water from another entity; and

WHEREAS, the City Council of the City of Canton is interested in providing for future water supply needs for the benefit of its current and future customers, as well as for surrounding cities; and

WHEREAS, the City of Grand Saline believes in the merit of this project for the City of Canton and the area.

NOW, THEREFORE, BE IT RESOLVED, that by a majority vote of the Council Members at a meeting on the 12th day of January, 2010 at which a quorum was present, the City of Grand Saline hereby supports Canton's petition to the Region D Planning Group to include a new reservoir in Van Zandt County as an alternative strategy for meeting the long term water supply needs of the City of Canton and other cities in Van Zandt County in the next update to the Regional Water Plan.

PASSED, ADOPTED AND APPROVED this the 12th day of January, 2010.

Sandra Bozeman, Mayor

ATTEST:

Alesia Mayne, City Secretary

CITY OF WILLS POINT

RESOLUTION NO. 09-24

SUPPORTING THE CITY OF CANTON'S EFFORT TO PURSUE CONSTRUCTION OF A NEW RESERVOIR FOR WATER SUPPLY NEEDS

WHEREAS, the City of Canton is responsible for providing an ample supply of water to its current and future water customers; and

WHEREAS, the City of Canton currently supplies water to its customers by a combination of ground and surface water sources; and

WHEREAS, the City of Canton desires to meet future water shortage needs primarily by surface water sources; and

WHEREAS, the City of Canton has a projected shortage according to the 2006 Adopted Regional Water Plan for North East Texas (Region D); and

WHEREAS, the City of Canton has had performed by a qualified professional an evaluation of alternative surface water sources; and

WHEREAS, said evaluation concluded that construction of a new reservoir in Van Zandt County was preferable for the City of Canton to purchasing raw or treated water from another entity; and

WHEREAS, the City Council of the City of Canton is interested in providing for future water supply needs for the benefit of its current and future customers, as well as for surrounding cities; and

WHEREAS, the City of Wills Point believes in the merit of this project for the City of Canton and the area;

NOW, THEREFORE, BE IT RESOLVED, that by a majority vote of the Council Members at a meeting on the 10th day of November, 2009 at which a quorum was present, the City of Wills Point hereby supports Canton's petition to the Region D Planning Group to include a new reservoir in Van Zandt County as an alternative strategy for meeting the long-term water supply needs of the City of Canton and other cities in Van Zandt County in the next update to the Regional Water Plan.

PASSED, ADOPTED AND APPROVED this the 10th day of November 2009.

Scott McGriff, Mayor

ATTEST:

Carla Oldacre

City Secretary

CITY OF WILLS POINT

COPY

CITY OF EDGEWOOD

RESOLUTION NO. 102709

SUPPORTING THE CITY OF CANTON'S EFFORT TO PURSUE CONSTRUCTION OF A NEW RESERVOIR FOR WATER SUPPLY NEEDS

WHEREAS, the City of Canton is responsible for providing an ample supply of water to its current and future water customers; and

WHEREAS, the City of Canton currently supplies water to its customers by a combination of ground and surface water sources; and

WHEREAS, the City of Canton desires to meet future water shortage needs primarily by surface water sources; and

WHEREAS, the City of Canton has a projected shortage according to the 2006 Adopted Regional Water Plan for North East Texas (Region D); and

WHEREAS, the City of Canton has had performed by a qualified professional an evaluation of alternative surface water sources; and

WHEREAS, said evaluation concluded that construction of a new reservoir in Van Zandt County was preferable for the City of Canton to purchasing raw or treated water from another entity; and

WHEREAS, the City Council of the City of Canton is interested in providing for future water supply needs for the benefit of its current and future customers, as well as for surrounding cities; and

WHEREAS, the City of Edgewood believes in the merit of this project for the City of Canton and the area;

NOW, THEREFORE, BE IT RESOLVED, that by a majority vote of the Council Members at a meeting on the 26th day of October, 2009 at which a quorum was present, the City of Edgewood hereby supports Canton's petition to the Region D Planning Group to include a new reservoir in Van Zandt County as an alternative strategy for meeting the long-term water supply needs of the City of Canton and other cities in Van Zandt County in the next update to the Regional Water Plan.

PASSED, ADOPTED AND APPROVED this the 26th day of October, 2009.

Charles Prater, Mayor

ATTEST:

City Secretary

RESOLUTION NO. 2009-11

CITY OF CANTON

TO PURSUE CONSTRUCTION OF A NEW RESERVOIR FOR WATER SUPPLY NEEDS

WHEREAS, the City of Canton is responsible for providing an ample supply of water to its current and future water customers; and

WHEREAS, the City of Canton currently supplies water to its customers by a combination of ground and surface water sources; and

WHEREAS, the City of Canton desires to meet future water shortage needs primarily by surface water sources; and

WHEREAS, the City of Canton has a projected shortage according to the 2006 Adopted Regional Water Plan for North East Texas (Region D); and

WHEREAS, the City of Canton has had performed by a qualified professional an evaluation of alternative surface water sources; and

WHEREAS, said evaluation concluded that construction of a new reservoir in Van Zandt County was preferable to purchasing raw or treated water from another entity; and

WHEREAS, the City Council of the City of Canton is interested in providing for future water supply needs for the benefit of its current and future customers;

NOW, THEREFORE, BE IT RESOLVED, that by a majority vote of the Council Members at a meeting on the 21 day of July, 2009 at which a quorum was present, the City of Canton hereby agrees to petition the Region D Planning Group to include a new reservoir in Van Zandt County as an alternative strategy for meeting the long-term water supply needs of the City of Canton in the next update to the Regional Water Plan.

PASSED, ADOPTED AND APPROVED this the 21st day of July, 2009.

William R. Wilson, Mayor

ATTEST:

Julie H. Seymore, City Secretary

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