

<2 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPD)
2938	FOUNTAINHEAD M.U.D.	999	
6009	FOUR D INVESTMENTS	1	300,000
5837	FRANK SUPPLY CO OF HOUSTON	1	500,000
7674	FRANKLIN'S	1	
2114	FRANZ ENTERPRISES, RALPH D.	999	
2045	FRANZ, C. C.	999	
6216	FRASER, DIANA L.	1	500,000
7317	FRAYSUR, DARREN LEE	1	1,800
4906	FREDERICK, WAYNE H. & DONNA	1	136,400
6375	FREEDOM FELLOWSHIP CHURCH	1	3,840
4907	FRESH AMERICA CORP.	999	
5900	FRESH AMERICA CORP.		
6983	FREY PROPERTIES, INC., JACK	1	50,000
2151	FRIENDSWOOD DEVELOPMENT CO.	1	
4295	FRIENDSWOOD DEVELOPMENT CO.	1	209,534
2144	FRIENDSWOOD DEVELOPMENT CO.	1	500,000
2143	FRIENDSWOOD DEVELOPMENT CO.	999	
2146	FRIENDSWOOD DEVELOPMENT CO.	999	
2147	FRIENDSWOOD DEVELOPMENT CO.	999	
2148	FRIENDSWOOD DEVELOPMENT CO.	999	
2150	FRIENDSWOOD DEVELOPMENT CO.	999	
4056	FRIENDSWOOD DEVELOPMENT CO.	999	
4057	FRIENDSWOOD DEVELOPMENT CO.	999	
4206	FRIENDSWOOD DEVELOPMENT CO.	999	
7471	FUN IN SWIMMING, INC.	1	38,830
5306	FURLONG LTD.	1	64,824
6915	GAGE, EDDIE W.	1	1,000,000
7156	GAMEZ, NEMECIO P.	1	845,000
7652	GARDEN ACCENTS INC.	1	2,400
4039	GARY CUTSINGER COMPANY	999	
5084	GARZA, CABRITOS	1	682,760
6043	GAS-N-STUFF	1	500,000
4984	GATEWAY FOODS	999	
4738	GBZ, INC. DBA THE WINNERS CIRCLE	999	
6885	GEAREN, JR., DEMPSEY	999	
2259	GENESIS PIPELINE TEXAS, L.P.	1	8,528
7002	GENSHELMEYER, MARK	1	60,500
7204	GERLAND, JR., A.J.	1	180,000
6604	GIBBS ENTERPRISES	1	
6605	GIBBS ENTERPRISES	1	250,000
7976	GIBBS, GREGG		
2020	GIFFORD-HILL & COMPANY, INC.	999	
7078	GILBREATH, JAMES R.	1	69,700
7910	GILCHRIST, RONALD G.	1	17,755
3573	GIRL'S COUNTRY OF HOUSTON, INC.	1	1,045,000
5609	GLASSCOCK, ROCKY M.	1	24,000
6422	GLENWOOD FALLS ANIMAL HOSPITAL	1	18,000
5417	GODWIN MECHANICAL	1	2,400

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*WELL	OWNER	AGG2000	PUMP2000 (GPY)
6363	GOLF ACADEMY LLC, THE	999	
6364	GOLF ACADEMY LLC, THE	999	
7725	GOMEZ, ELVIRA	1	6,000
5879	GONZALES, THOMAS	1	33,600
2453	GOODRICH, HUGH R.	999	
1422	GOODYEAR TIRE & RUBBER CO.	999	
7829	GOWER CONSTRUCTION	1	1,200
4817	GRANT ROAD DAY CARE CENTER, INC.	1	300,000
6723	GRAVES, LLOYD	1	36,000
6809	GRAY, THOMAS R.	1	10,000
4941	GRAYSON, EDWARD H.	999	
6984	GREATER LIFE CHURCH	1	51,400
5264	GREEN, JONATHAN T., DVM	1	227,000
5574	GREENBRIAR REAL ESTATE INVEST.	1	600
6650	GREENWOOD BAPTIST CHURCH	1	8,750
7886	GREIG, ROBERT	1	12,000
5969	GRIEPP, BRAD		
5990	GRIFFS AUTO SERVICE	999	
5331	GROGANS PARK TEXAS	1	196,000
7879	GUETERSLOH, JAMES CRAIG	1	380,000
6669	GULF COAST ALLOY WELDING, INC.	1	492,000
5372	GULF COAST STABILIZED MATERIALS	1	38,828
3420	GULF OIL COMPANY - U.S.	999	
3422	GULF OIL COMPANY - U.S.	999	
5399	GUTHRIE, DON	1	3,000
7571	H & H SALES	1	96,000
3336	H & J WATER COMPANY, INC.	999	
3671	H & J WATER COMPANY, INC.	999	
5627	H&S INTERPRISE	1	12,000
4501	HAMBRICK, MARY ELLEN	1	230,000
7506	HAMILTON PRECISION ASSEMBLY	1	43,000
7415	HAMILTON, BILL	1	60,000
3818	HAMMONDS, GENE	999	
7102	HAMMONDS, GENE E.	1	91,937
6986	HANCE, JOHN F.	1	293,000
5248	HANDLEY, DENNIS	1	25,200
5289	HANNOVER ESTATES LTD.	999	
6987	HANTMAN, JEROME, B.	1	17,640
7285	HARGRAVE ELECTRIC	1	58,800
7911	HARMEIER, SUE	1	7,800
4160	HARRIS CO. FLOOD CONTROL DIST.	1	145,600
3826	HARRIS CO. M.U.D. 115	999	
1612	HARRIS CO. M.U.D. 132	999	
2156	HARRIS CO. M.U.D. 18	999	
3998	HARRIS CO. M.U.D. 199	999	
3714	HARRIS CO. M.U.D. 220	999	
3982	HARRIS CO. M.U.D. 222	999	
3953	HARRIS CO. M.U.D. 231	999	

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WELL	OWNER	AGG2000	PUMP2000 (GPY)
4092	HARRIS CO. M.U.D. 249	1	
4093	HARRIS CO. M.U.D. 249	999	
4107	HARRIS CO. M.U.D. 289	999	
2200	HARRIS CO. M.U.D. 29	999	
4122	HARRIS CO. M.U.D. 317	999	
4110	HARRIS CO. M.U.D. 325	999	
4222	HARRIS CO. M.U.D. 351	999	
2438	HARRIS CO. M.U.D. 44	999	
7622	HARRIS CO. M.U.D. 44		
4030	HARRIS CO. M.U.D. 77	999	
4035	HARRIS CO. M.U.D., INC.	999	
4319	HARRIS CO. TOLL ROAD AUTHORITY	1	24,000
4320	HARRIS CO. TOLL ROAD AUTHORITY	1	24,000
2093	HARRIS CO. W.C.&I.D. 116	999	
3021	HARRIS COUNTY	1	400
2833	HARRIS COUNTY	1	46,500
3933	HARRIS COUNTY	1	93,310
5993	HARRIS COUNTY	1	128,900
3147	HARRIS COUNTY	1	133,255
4326	HARRIS COUNTY	1	280,000
2842	HARRIS COUNTY	2	317,429
4267	HARRIS COUNTY	2	317,429
3603	HARRIS COUNTY	1	402,300
4120	HARRIS COUNTY	1	486,400
4410	HARRIS COUNTY	1	1,317,200
2839	HARRIS COUNTY	999	
2841	HARRIS COUNTY	999	
3018	HARRIS COUNTY	999	
3326	HARRIS COUNTY	999	
4083	HARRIS COUNTY	999	
4084	HARRIS COUNTY	999	
4546	HARRIS COUNTY	999	
4874	HARRIS COUNTY	999	
3325	HARRIS COUNTY MENTAL HEALTH /	999	
7067	HARRISON, DAVID	1	1,620,000
3022	HARRISON, IMOGENE	999	
7946	HART, RICHARD		
7324	HARVILL, ROBERT D.	1	10,000
7808	HASSELL CONSTRUCTION CO., INC.	1	100,000
7832	HAUDE, DIANA	1	74,000
6725	HAWKINS FORD INVESTMENTS	1	7,800
4939	HAYS UTILITY SERVICE CORP.	1	1,075,000
7623	HAYSLIP, GARY & SHERYL	999	
1979	HEGAR BROTHERS	999	
1982	HEGAR BROTHERS	999	
2215	HEIGHTS SAVINGS ASSOCIATION	999	
6390	HEMMAT, JOHN AL. A.	1	3,600
7084	HERRON & TURELL		

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WELL	OWNER	AGG2000	PUMP2000 (GPM)
6858	HEYMAN, L.W., ELKIN KENNELS, INC.	1	1,000,000
7101	HIEDEN FEED & SUPPLY	1	2,900
6727	HIEDEN, F.J.	1	25,500
6262	HIGAREDO, FRANCISCO & JUAN	1	900,000
7164	HIGH RIDGE KENNEL, LLC	1	270,000
7208	HINOJOSA, OZIEL	1	3,600
3970	HMW WATER SUPPLY CORP	1	813,000
7200	HOBOK, JAY	1	9,000
7577	HOFFPAUIR, TOMMY	1	8,400
6989	HOLLINGSWORTH, SUSAN M.	1	500,000
7326	HOLY COMFORTER EPISCOPAL CHURCH	1	100,000
2422	HEMECRAFT LAND DEVELOPMENT, INC.	999	
3091	HOOKS III, CHARLES G.	2	
3654	HOOKS III, CHARLES G.	2	
2669	HOOKS, CHARLES G. & SON	999	
2671	HOOKS, CHARLES G. & SON	999	
3653	HOOKS, CHARLES G. & SON	999	
6990	HOPPER KLEIN PAINT & BODY, GEORGE	1	23,400
6991	HOUIS SURVEYING	1	349,999
7676	HOUSTON BOTANICAL SERVICES	1	24,000
1183	HOUSTON LIGHTING & POWER COMPANY	999	
4947	HOUSTON NORTHWEST BAPTIST CHURCH	1	1,644,000
4303	HOUSTON PIONEER DEVELOPMENT, INC	1	89,000
4129	HOUSTON POLY BAG, INC.	1	750,000
4130	HOUSTON POLY BAG, INC.	1	800,000
4223	HOUSTON SHELL & CONCRETE	999	
4186	HUBER CORPORATION, J. M.	1	891,950
7327	HUDSPETH, MARIE	1	73,000
7416	HUFFMEISTER BLD. LANDSCAPING DEV		
6007	HUGHES COMPANY, DAN A.	999	
7131	HUMBLE CARPET & TILE, INC.		
2696	HURRICANE FENCE COMPANY	999	
7948	HUTCHERSON, TERRY E.	1	6,000
7731	HYATT, MARVIN	1	6,000
4446	I.Q. PRODUCTS COMPANY	1	
4279	I.Q. PRODUCTS COMPANY	999	
6115	I-45 SOIL CENTER	1	2,800
7755	IGLESIA BAUTISTA LIBERTAD	1	41,600
5470	INDUSTRIAL CONTRACTORS	1	30,000
7165	INTER FABRICS	1	54,000
7141	INTERMOTOR AUTO SERVICE INC.	1	100,000
5793	IOTOP INVESTMENTS	1	60,000
5792	IOTOP INVESTMENTS	999	
6001	ITEM PRODUCTS, INC.	1	600,000
7677	ITEQ STORAGE SYSTEMS INC.	1	300,000
4921	IVEST, INC.	1	200,000
7735	IVEY, JAMES	1	77,000
4784	J.V. GROUP II		

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WELL	OWNER	AGG2000	PUMP2000 (GPY)
7417	JACOBS, CHAD	1	590
6550	JADE, INC.	1	30,870
2778	JAPHET, E. C.	999	
5573	JAROSZEWSKI, TRAVIS	1	10,200
7779	JDC GREENLEAF LTD.	1	10,333
5422	JEDNOTA HOUSTON LODGE	1	5,950
4638	JEN, YUNG-CHING	999	
3354	JERSEY VILLAGE, CITY OF	1	54,000
1846	JERSEY VILLAGE, CITY OF	999	
1847	JERSEY VILLAGE, CITY OF	999	
4949	JOES QUICK STOP	1	120,000
3965	JOHNSON, GEORGE	999	
4771	JOHNSON, JAYSON T.	1	500,000
7913	JOHNSON, RANDALL & BARBARA	1	5,000
4747	JOHNSON, WAYNE	1	30,593
2502	JOHNSON-LOGGINS, INC.	999	
2504	JOHNSON-LOGGINS, INC.	999	
6905	JOHNSTON UTILITIES, INC.	1	1,720,000
7100	JONES COURT LTD.		
4826	JONES RD. LTD. & ENTERPRISE CAP.		
7115	JONES RESTAURANT, GREGORY L.	1	300,000
7309	JONES ROAD PROPERTIES LTD.	1	10,000
7626	JONES ROAD WEST BUSINESS PARK	1	480,000
7979	JONES, CHARLES E.		
7889	JONES, DEBBIE		
7329	JONES, GLENDA KAREN	1	50,000
4362	JONES, WILLIAM HENRY SR.	1	356,040
4363	JONES, WILLIAM HENRY SR.	999	
7983	KACHELL, JERRY	1	36,000
5139	KAGAN-EDELMAN CAP. FUND SER. VI/	1	288,000
6064	KAISER, CLARENCE	1	
6812	KAISERHOF LUTHERAN RETREAT CNTR.	1	500,000
7950	KALBACH, KENNETH	1	25,550
4919	KAROLYIS GYMNASTICS		
7436	KASPERLAIN, NORMA	1	
7732	KEELS, JOHNNY AND KAREN	1	35,000
2712	KEETON, GENE	1	600
5806	KELLY ICE TEE LLC, JIM		
6950	KENNEDY COATING INSPECTION, INC.	1	500,000
7116	KENSINGER, PHIL	1	10,000
7117	KENSINGER, PHIL	1	10,000
7118	KENSINGER, PHIL	1	10,000
7835	KENSINGER, PHIL	1	10,000
5140	KEPPLER JR., KENNETH L.	1	80,000
7168	KEYS, L.R.	1	24,000
4831	KHALIL, HANNA TANNOUS	1	575,000
5771	KICKAPOO FEED	1	14,600
6795	KILLION, CAROL	1	9,000

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WELL	OWNER	AGG2000	PUMP2000 (GPY)
5002	KIMICH, LUKE		
5107	KINARD, KEN	1	5,400
6359	KING, BEAU	1	1,000,000
7534	KING, MANUEL	1	42,910
3825	KING'S COLONY, INC.	999	
7217	KIRTLEY, PHILIP & CONNIE	1	5,200
5601	KIRTLEY, THERMAN		
6992	KITCHENS, CHARLES R.	1	3,000
7579	KLEB, DAVID	1	125,000
7580	KLEIN BANK	1	76,266
2697	KLEIN I.S.D.	1	
5652	KLEIN I.S.D.	1	1,267,000
2698	KLEIN I.S.D.	1	1,764,000
2699	KLEIN I.S.D.	999	
2700	KLEIN I.S.D.	999	
7641	KLEIN VOLUNTEER FIRE DEPT.	1	24,000
7119	KLEIN-SPRING MONTESSORI SCHOOL	1	480,000
7210	KLEIN FIRST BAPTIST CHURCH		
6530	KNIGHT, DENNIS A.	1	56,850
6843	KOCH GATEWAY PIPELINE COMPANY	999	
6993	KOL, INC.	1	2,600
5773	KWIK INDUSTRIES	999	
3157	LAKE OWNERS ASSOCIATION	999	
7842	LAKEWOOD FOREST KENNELS	1	192,000
5515	LAMBRECHT CONSTRUCTION, T.J.	999	
7099	LAND, P.C., DONN A.	1	24,000
7098	LANDMARK INDUSTRIES, INC.	1	596,000
7784	LANDMARK INDUSTRIES, LTD.		
6893	LANGDON, TOMMY R.	1	100,000
2452	LAPHAM, IRA G.	999	
2490	LAPHAM, IRA G.	999	
6416	LAWRENCE, WILMA J.	1	
5173	LEE INVESTMENTS, INC., SUN		
7010	LEE, AN SIK	1	10,000
4955	LEE, EUGENE	1	
6899	LEE, KENNETH	1	3,600
6814	LEMM, ROBERT B.	1	350,000
3116	LETSON, MRS. JOE	999	
2489	LEWIS & SONS, J. D.	999	
2488	LEWIS & SONS, J.D.	999	
7185	LIBERTY REVIVAL CHURCH	1	318,348
2599	LINDSAY, EDWARD E.	999	
7424	LINDSEY CONSTRUCTION	1	60,000
2464	LINDSEY, C. M.	999	
2465	LINDSEY, C. M.	999	
2466	LINDSEY, C. M.	999	
5225	LINDSEY, HELENE	1	342,500
7955	LITTLE, JOSEPH L.	1	111,400

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WELL	OWNER	AGG2000	PUMP2000 (GPY)
4402	LITTLES, RAYMOND WALTER	1	968,100
4403	LITTLES, RAYMOND WALTER	2	968,100
5929	LOCKER JR., A.L.	1	800,000
4834	LONE STAR SKATE		
7680	LOOMCRAFT CARPET	1	44,400
5474	LOUETTA RD. BAPTIST CHURCH, INC.	999	
5718	LOWE, MICHAEL	1	
6082	LOWER, DON	1	8,750
4871	LSS - LONE STAR - HOUSTON, INC.	1	1,030,602
7092	LUCKY, INC., HENRY T.T.	1	216,000
5906	LUE, ROSWELL	1	44,000
6362	LUU, BRUCE	1	898,100
4787	LUU, TRINH NGOC	999	
5921	MADINMA, INC., AL	1	60,000
7358	MALEK BROTHERS CONSTRUCTION	1	22,500
7788	MALEK WAREHOUSE	1	24,000
5772	MALONE, BOB	1	50,000
6817	MANCO ELECTRIC	1	100,000
5726	MANIS, THOMAS G.	1	77,608
5964	MANNING, WALTER	1	650,000
7524	MANTLE, ELLEN L.	1	60,000
5505	MANUFACTURES CAPITAL, INC.	1	1,500,000
4807	MANU-TECH PRODUCTS, INC., SAMUAL	1	203,000
7091	MANZIONE, JOHN E.		
2416	MARSHALL TRUST, DOUGLAS B. JR.	999	
2356	MARSHALL TRUST, HUGH ROY	999	
2359	MARSHALL, DOUGLAS B. JR.	999	
2418	MARSHALL, HUGH ROY	999	
3471	MARSHALL, HUGH ROY	999	
5676	MARTIN, RICKY	1	8,150
5138	MARY IMMACULATE SCHOOL	1	576,000
7011	MAYNARD, WANDA	1	200,000
6678	MCCARTNEY, GERVIS	1	14,400
6900	MCCAULEY LUMBER TOMBALL, INC.	1	300,000
7012	MCCLANAHAN, JACK		
6480	MCCLELLAN, RICHARD J.	1	300,000
5190	MCCOLLUM UPHOLSTERIES	1	96,000
6738	MCCURDY, LLOYD	1	9,600
7957	MCCURLEY, RICHARD	1	
1917	MCDERMOTT, INC., JOE A.	999	
1919	MCDERMOTT, INC., JOE A.	999	
1921	MCDERMOTT, INC., JOE A.	999	
3094	MCDERMOTT, INC., JOE A.	999	
7013	MCGUFFY INDUSTRIES, INC.	1	97,500
7516	MCNIEL, JOHN R.	1	25,000
7203	MELCHOR, MIKE	1	1,688,900
7014	MELTON, FRED C.	1	100,000
7848	MELVIN, JOE & KAY	1	600

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WELL	OWNER	AGG2000	PUMP2000 (GPY)
1546	MEMORIAL HILLS U.D.	999	
7089	MERRILL, ROBERT	1	8,030
5166	MEYER INDUSTRIES, THOMAS & BETTS	2	1,701,100
6613	MEYER INDUSTRIES, THOMAS & BETTS	2	1,701,100
5378	MICHEL, MELVIN	1	8,657
6744	MILLENNIUM INTERESTS, INC.	1	144,000
7929	MILLER, PAT	1	
4840	MINOR, BOB	1	100,000
7644	MIRABAL, BLAS	1	57,700
5808	MIROCAR COLLISION	1	47,000
7268	MIRROR LAKE LANDSCAPING	1	14,000
5958	MISCELLANEOUS SPECIALTIES, INC.	1	45,600
1869	MISSOURI PACIFIC RAILROAD CO.	999	
3524	MISSOURI PACIFIC RAILROAD CO.	999	
4672	MITTELSTAEDT, OSWALD	1	120,000
2864	MOBIL OIL CORPORATION	999	
3048	MOBIL OIL CORPORATION	999	
3050	MOBIL OIL CORPORATION	999	
5860	MOBILE CAR CARE		
5635	MOBILE MART LLC	1	1,560
5918	MOCEANU GYMNASTICS, INC.	1	
7083	MOLINA, SR., JAVIER H.	1	420,000
7806	MONKEMEIER, JIM	1	115,200
6735	MOORE, LEROY	1	3,600
7843	MORGAN PERFORMANCE	1	9,100
5764	MORRIS, JIMMY R.	999	
3841	MOTIVA ENTERPRISES L.L.C.	1	
3175	MOTIVA ENTERPRISES L.L.C.	1	55,000
4613	MOTIVA ENTERPRISES L.L.C.	2	99,996
7895	MOTOR CITY ENGINE		
4835	MOUSA, CHAYN	1	1,200,000
4836	MOUSA, CHAYN	1	1,200,000
6183	MTEC MECHANICAL TESTING SERVICE	1	16,175
5332	MURRAY, BOB	1	2,400
6565	MUSE, LARRY R.	1	10,400
3100	MUSTERMAN, INC., GEORGE H.	999	
3101	MUSTERMAN, INC., GEORGE H.	999	
7016	MYNERS, GERALD M.	1	7,050
4917	NABORS DRILLING USA, INC.		
5591	NAL, JUVE	999	
7166	NAOMI WAREHOUSE JOINT VENTURE	1	36,500
5744	NAPA AUTO PARTS	1	
4307	NATIONAL CONVENIENCE STORES INC.	1	104,320
4306	NATIONAL CONVENIENCE STORES INC.		
4311	NATIONAL CONVENIENCE STORES INC.	999	
7988	NATIONAL REFURBISHING CENTER INC	1	
5007	NATIONS BANK STEEPLECHASE	1	300,000
6619	NATIONWIDE HOUSING SYSTEMS, INC.	2	9,950

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WELL	OWNER	AGG2000	PUMP2000 (GPY)
6856	NATIONWIDE HOUSING SYSTEMS, INC.	2	9,950
5885	NATURAL LANDSCAPE DESIGN	1	2,700
6798	NEW LIFE CHRISTIAN RFMD CHURCH	1	40,000
7004	NEW LIGHT CHRISTIAN CNTR. CHURCH		
7005	NEW LIGHT CHRISTIAN CNTR. CHURCH		
7143	NEWLIN, MICHELLE	1	100,000
4592	NEWMAN, THOMAS C.	999	
4960	NGO, SHUN LUEN	999	
6212	NGO, TUONG	1	1,000,000
7984	NGUYEN, DAN	1	60,000
6920	NGUYEN, DAN	1	113,000
5108	NGUYEN, HUY DINH	1	3,218
7039	NGUYEN, SONNY THANH	1	600,000
6907	NICHOLS, DEBRA	1	39,100
2141	NINE BAR RANCH	999	
2149	NINE BAR RANCH	999	
2152	NINE BAR RANCH	999	
7902	NOACK MAINT. & LANDSCAPE CO, INC.	1	379,756
7017	NORTH HOUSTON MACHINE	1	30,000
6567	NORTH PARK BAPTIST CHURCH		
7850	NORTH WEST HARRIS CO. M.U.D. 36	1	
6464	NORTHFIELD CHRISTIAN OUTREACH	1	3,000
5940	NORTHGATE FOREST COUNTRY CLUB	999	
3651	NORTHWEST AIRPORT DEV., INC.	999	
2271	NORTHWEST WATER SYSTEMS, INC.	999	
2656	NORTHWEST WATER SYSTEMS, INC.	999	
2636	NORTHWOOD FARMS JOINT VENTURE	999	
4966	NORTHWOODS PRESBYTERIAN CHURCH	1	922,600
2731	NW HARRIS CO. M.U.D. 6	999	
2550	NW HARRIS CO. M.U.D. 10	999	
7390	NW HARRIS CO. M.U.D. 21		
7736	NW HARRIS CO. M.U.D. 15		
4070	NW HARRIS CO. M.U.D. 28	999	
4111	NW HARRIS CO. M.U.D. 32	999	
4124	NW HARRIS CO. M.U.D. 32	999	
7018	NW HOU SEVENTH-DAY ADVENTIST	1	204,400
7851	OAKS DP INVESTMENTS LTD.	1	15,000
4863	OAKS PRECISION FABRICATING, INC.	1	200,000
5798	OAKWOOD HOMES CORP.		
7019	O'BRIEN, WILLIAM H.	1	100,900
7020	O'CONNOR, PATRICK T.	1	100,000
5765	OIKOSS CORPORATION	999	
7021	OMNI DATA SYSTEMS, INC.	1	119,000
7737	O'NEAL, ROBERT	1	18,250
7738	O'NEAL, ROBERT		
7959	OWNERS OF SASHER LANE	1	700,000
6645	P & B CUSTOM STEEL BUILDERS	1	100,000
7088	P K MANUFACTURING	1	180,000

2 MG Y - Water Well Permittees within NHCRA per HGCD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
7960	P&M PROPERTIES	1	24,200
7961	PAGE, SR., FORREST W.	1	420
6680	PAGITT INSURANCE AGENCY, JIM	1	1,865
7496	PALM HARBOR	1	6,000
7456	PALMER, WANDA	1	3,100
7792	PALUMBO, JOSEPH	1	3,000
5414	PALWASHA, INC.	1	18,200
7269	PANELMATIC TEXAS, INC.	1	91,000
5285	PARK, KWANG HO	1	198,952
3220	PARKER BROTHERS, INC.	1	100,000
4967	PARKER, ROY	1	30,000
4915	PATEL, SHOBHA	1	109,300
5596	PATTERNED CONCRETE BY RICK DAVIS		
3036	PAUL'S GREEN THUMB NURSERY	999	
5328	PAYNE, MIKE	1	280,000
7897	PEARSON, JOHN T.		
5288	PEMARCO, INC.	1	2,376
6646	PERRY, ALLINE	1	1,200,000
7538	PERRY, WILLIAM DOUG	1	864,570
5637	PETERIET, RAY	999	
5981	PETERS, JACK	1	312,000
6647	PETERSON, RALPH	1	43,000
5998	PETROLEUM WHOLESALE, INC.	1	306,684
7271	PHAM, L.	1	930,000
7087	PHILIPPINE AMERICAN BAPTIST CHUR	1	6,950
7962	PIERCE, DARRELL C.	1	3,590
5340	PIPELINE PIGGING PRODUCTS	1	78,000
7022	PLANTS FOR ALL SEASONS	1	800,000
5022	PLUMMER, ROY & LINDA	1	72,000
6822	POLYTRUST	1	160,000
7739	PONDER, JAMES	999	
4847	PORTER, RAYMOND J.	1	901,515
5271	PRECISION FLUOROCARBON, INC.	1	1,723,800
7740	PRECISION HOMES		
5983	PRECISION WELL TESTING COMPANY	1	327,600
6476	PRIME EQUIPMENT - 214	1	91,250
7378	PRIME MECHANICAL & CONST., INC.	1	20,800
2420	PROPERTIES INTERNATIONAL	999	
2421	PROPERTIES INTERNATIONAL	999	
7216	PYE MOTOR CO. INC., JOE	1	25,750
4522	QUADVEST, INC.	1	1,900,000
4521	QUADVEST, INC.	1	1,970,000
5915	QUALITY PRODUCT FINISHERS	1	435,838
5916	QUALITY PRODUCT FINISHERS	1	1,144,150
3385	RAIF, F. A.	999	
5371	RAMSHUR, J.W.	999	
7844	RANASINGHE, ANANDA	1	154,000
6570	RANCH COUNTRY MFGD. HOMES, INC.		

<2 MGY - Water Well Permittees within NHCRWA per HGCSO 2000 Pumpage Report

WELL I	OWNER	AGG2000	PUMP2000 (GPY)
5527	RANESINGHE, ANANDA	1	198,500
4996	RANGER UTILITY CO.	1	1,790,400
3861	RAVENEUX COUNTRY CLUB	999	
4337	RAVENEUX COUNTRY CLUB	999	
5239	REALTY INCOME CORPORATION	999	
6839	REECE, DAVID	1	60,000
4253	REFINERY FABRICATING, INC.	999	
1195	RELIANT ENERGY, INCORPORATED	1	42,000
1197	RELIANT ENERGY, INCORPORATED	1	42,000
1200	RELIANT ENERGY, INCORPORATED	1	42,000
3595	RELIANT ENERGY, INCORPORATED	1	42,000
3613	RELIANT ENERGY, INCORPORATED	1	42,000
7854	REORGANIZED CHURCH OF JESUS	1	5,300
7215	RESERVE AT WOODWIND LAKES, THE	0	
7221	RETSO INTERNATIONAL	1	160,500
7172	REYES, JOE	1	222,512
7742	RGG MASONARY	1	7,500
5211	RHODES, CHRIS	1	144,000
6765	RHODES, HEATHER		
6086	RICHARDSON, ROGER	1	18,300
7048	RICHEY, CHARLES W.	2	189,000
7049	RICHEY, CHARLES W.	2	189,000
7273	RICHEY, E.R. "BUDDY"	1	96,000
3046	RIDGWAY INVESTMENT CORP., INC.	999	
3045	RIDGWAY, WILLIAM O.		
5303	RIEDEL, ANTHONY	1	609,970
4752	RILEY EQUIPMENT COMPANY, INC.	1	36,000
7155	RITECO SUPPLY COMPANY	1	132,000
5056	ROBERTS, REBECCA	1	
7385	ROBINSON WATER WELL SERVICE INC.	1	500,000
6022	ROCKING BAR S RANCH	1	108,000
7640	RODGERS, DUANE	1	10,950
5994	RODRIGUEZ ROOFING	1	18,000
6121	RODRIGUEZ ROOFING	1	30,000
7175	RODRIGUEZ, FIDEL & JAN	1	10,400
6537	RODS SURVEYING	1	18,000
7086	ROEDER, HELMUTH V.	1	72,000
7540	ROGERS, DONNA J.	1	14,640
6898	ROLAND, VERNON A.	1	48,000
7274	ROSE HILL UNITED METHODISTCHURCH	1	100,000
7033	ROSEHILL VETERINARY CLINIC	1	32,000
5972	ROSEHILL VOLUNTEER FIRE DEPT.	1	93,000
5110	ROSSI, EDWARD	1	31,488
6474	ROSSMORE ENTERPRISES	1	49,400
7602	ROTHSCHILD, BRYAN	1	840
6747	ROWE, BARBARA A., DVM	1	100,000
7376	ROWE, DWAYNE	1	36,000
4859	ROYAL PROVIDENCE, INC.	1	90,000

<2 MGY - Water Well Permittees within NHCRA per HGCSO 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
7995	RUMFOLO, ANNA M.	1	3,650
7964	RUMFOLO, JOHN W.	1	50,400
5100	RUMFOLO, LUCILLE	1	100,000
2914	RUSCHE, A. N. DIST. CO.	999	
2915	RUSCHE, A. N. DIST. CO.	999	
3202	RUSCHE, A. N. DIST. CO.	999	
7444	RUSH RETAIL CENTERS, INC.	1	
5025	RUSSELL, BOB	1	1,000,000
6016	RUSSELL, KHAI T.		
7035	S&V SURVEYING, INC.	1	65,000
6924	SADDLEBROOK RANCH	1	200,000
2791	SAFEWAY STORES, INC.	999	
2792	SAFEWAY STORES, INC.	999	
7899	SALAZAR, PEDRO	1	800
6799	SALEM LUTHERAN CHURCH CEMETERY	1	
5461	SANBERG, DON	999	
7025	SARGENT PLUMBING CO.	1	420,000
5098	SARTIN, JACK	1	18,000
7106	SAUNDERS, BILL	999	
7085	SBR HOMEOWNERS ASSOCIATION, INC.		
6823	SCHAUB, DAN	1	8,000
5030	SCHINAS & SCHINAS, INC.	1	
6344	SCHULTEA JR, JOE	1	100,000
7043	SCHULTEA JR., JOE	1	400,000
7576	SCHULTZ, DAMON R. AND TRACY K.	1	100,000
6911	SCHULTZ, EARL V.	1	1,600,000
7026	SCULLY, T.F., M SCULLY/R SCULLY	1	248,832
5924	SEA SPORTS SCUBA	1	59,415
7583	SEALY, GARY	1	120,000
7855	SELENSKY, ROBERT D.	1	54,800
6912	SELZERS INVESTMENTS	1	13,107
5855	SHADY OAKS BANQUET HALL	1	480,000
7604	SHAH, RAJANJI K.		
4101	SHARONWOOD DEVELOPMENT, INC.	999	
7027	SHARP, JERRY RAY	1	1,021,850
7686	SHAW, C.E.	1	24,000
6913	SHAW, STEVE C.	1	6,000
5016	SHEIKH, AMTUL M.		
2948	SHELL OIL COMPANY	1	5,000
2874	SHELL OIL COMPANY	999	
2974	SHELL OIL COMPANY	999	
4042	SHELL OIL COMPANY	999	
4218	SHELL OIL COMPANY.	999	
4375	SHELL OIL COMPANY	999	
5888	SHELL OIL PRODUCTS COMPANY	999	
7728	SHEPHERD TURK, INC.	1	288,000
6896	SHURGARD OF CHAMPIONS	999	
5256	SIDDIQUIENILOFERENUZHAT, SAYEED	1	165,000

<2 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
3059	SIGMOR CORPORATION	999	
3247	SIGMOR CORPORATION	999	
3773	SILVER DOLLAR CITY, INC.	999	
5162	SILVER SEAL MEAT CO.	1	30,000
7549	SILVER, JAY	1	300,000
6923	SIZENBACH DVM, GARY L.	1	224,000
7966	SLATER, STEPHEN, E.	1	276,000
7340	SLOAN, FAYE	1	710,000
6652	SMITH ESTATE	1	10,400
6929	SMITH JR., ADRIAN LEO	1	1,068,070
3075	SMITH, B.G.		
3076	SMITH, B.G.		
7150	SMITH, DARRYL	1	283,030
4849	SMITH, WILLIAM D.	999	
6466	SNA, INC.	1	6,000
7104	SNOW PLUMBING SUPPLY, INC.	1	79,582
7629	SOUTHERN REFRESHMENT SERVICES	1	18,000
6736	SOUTHLAND CORP., THE	999	
6914	SOUTHWEST ENERGY METALS, INC.	1	4,400
3185	SOUTHWEST METAL FABRICATORS, INC.	999	
5854	SOUTHWEST UTILITIES, INC.	1	1,364,000
2375	SOUTHWEST UTILITIES, INC.	999	
2892	SOUTHWESTERN BELL TELEPHONE CO.	1	18,900
2889	SOUTHWESTERN BELL TELEPHONE CO.	1	22,680
2890	SOUTHWESTERN BELL TELEPHONE CO.	1	294,840
3387	SOUTHWESTERN BELL TELEPHONE CO.	1	937,440
2887	SOUTHWESTERN BELL TELEPHONE CO.	999	
2888	SOUTHWESTERN BELL TELEPHONE CO.	999	
2895	SOUTHWESTERN BELL TELEPHONE CO.	999	
2896	SOUTHWESTERN BELL TELEPHONE CO.	999	
2897	SOUTHWESTERN BELL TELEPHONE CO.	999	
3158	SOUTHWESTERN BELL TELEPHONE CO.	999	
6942	SOUTHWINDS BAPTIST CHURCH	1	231,500
6941	SOUTHWINDS BAPTIST CHURCH	1	500,000
7028	SOVEREIGN GRACE BAPTIST CHURCH	1	1,395,000
5339	SPECIALTY OIL TOOLS	1	196,000
7127	SPINKS, CHARLOTTE		
6949	SPRING BIBLE CHURCH	1	77,604
4389	SPRING CENTER, INC.	1	264,000
7178	SPRING CHURCH OF CHRIST	1	36,000
7229	SPRING CREEK CONGREGATION OF/	1	15,750
7858	SPRING CYPRESS AUTO	1	91,250
5111	SPRING CYPRESS PRESBYTERIAN CH.	1	540,000
5401	SPRING CYPRESS RETAIL, INC.		
4137	SPRING CYPRESS ROAD M.U.D./	999	
6002	SPRING CYPRESS RV	1	14,400
5246	SPRING CYPRESS WATER CORPORATION	999	
7128	SPRING GARDENS NURSERY	999	

<2 MGY - Water Well Permittees within NHCRWA per HGCSO 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
3477	SPRING I.S.D.	1	707,500
2658	SPRING I.S.D.	999	
2659	SPRING I.S.D.	999	
2660	SPRING I.S.D.	999	
2662	SPRING I.S.D.	999	
2663	SPRING I.S.D.	999	
3763	SPRING I.S.D.	999	
3807	SPRING I.S.D.	999	
5118	SPRING LODGING, INC.	1	1,825,000
6439	SPRING MEMORIAL BAPTIST CHURCH	1	1,000
6470	SPRING NATURE - RAUL ARGUETA	1	136,000
3096	SPRING NURSERY	999	
3097	SPRING NURSERY	999	
5036	SPRING TABERNACLE	1	500,000
5832	SPRING TIME HOUSE, THE, INC.	999	
7922	SPRING VOLUNTEER FIRE ASSOC.	1	20,000
5445	ST. DUNSTONS EPISCOPAL CHURCH	1	1,276,568
6836	ST. EDWARDS CATHOLIC CHURCH	1	3,400
6837	ST. EDWARDS CATHOLIC CHURCH	1	500,000
5027	ST. JOHN LUTHERAN	1	1,931,000
5504	ST. SAVA SERBIAN ORTHODOX CHURCH	1	202,000
5028	ST. TIMOTHY LUTHERAN CHURCH	1	255,000
5037	STALLONES	999	
5275	STARK, DALE	1	300,000
7846	STATURE CONSTRUCTION		
7631	STEEL CORPORATION OF TEXAS	1	300,000
7046	STEINBACHER, OWEN J.	1	6,000
6916	STEVENS, CHARLES R.	1	120,000
7107	STICK, LARRY	1	15,600
6943	STOCKTON, JR., EDWIN J.	1	1,000,000
6553	STORAGE U.S.A.	1	180,000
6287	STRACK ROAD STORAGE	1	1,021,589
7034	STRACK, CARLTON	1	
2673	STRAKE FND. & '75 REAL EST. TR.	1	60,000
2674	STRAKE FND. & '75 REAL EST. TR.	999	
2002	SUBURBAN UTILITY COMPANY		
2003	SUBURBAN UTILITY COMPANY		
5600	SUPERIOR DERRICK SERVICES, INC.	1	80,600
5163	SUPERIOR DERRICK SERVICES, INC.	999	
7868	SUSTAIRE, W.J. & RUBY	1	2,500
3756	SWACO DIVISION/DRESSER IND.	999	
3757	SWACO DIVISION/DRESSER IND.	999	
7687	T.A.S CONSTRUCTION, INC.	1	46,266
7130	TACHO, INC.	1	146,100
7930	TAGGART, JOHN	999	
2176	TALL PINES UTILITY/K & L UTILITY	999	
2402	TANDEM ENERGY CORPORATION	2	650,200
3297	TANDEM ENERGY CORPORATION	2	650,200

<2 MGY - Water Well Permittees within NHCRWA per HGCD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
7154	TAVERAS, MELIDA	1	240,000
7108	TAYLOR, GLENN A.	1	8,500
7228	TCP/GSL INDUSTRIAL PARTNERS	1	180,000
2527	TEAS NURSERY COMPANY, INC.	1	23,874
2528	TEAS NURSERY COMPANY, INC.	999	
7179	TEBCO SERVICES, INC.	1	
6946	TEE WOOD DRIVING RANGE		
2404	TEJAS GAS PIPELINE COMPANY	1	81,930
5819	TELGE ROAD MATERIALS	1	23,400
6962	TERPSTRA, PETER S.	1	3,000
6994	TERPSTRA, PETER S.	1	3,000
2287	TEXACO, INC.	999	
2292	TEXACO, INC.	999	
2297	TEXACO, INC.	999	
3176	TEXACO, INC.	999	
3655	TEXACO, INC.	999	
4686	TEXAS ARAI, INC.	1	434,100
7859	TEXAS FIRST NATIONAL BANK	1	36,400
3237	TEXAS LIBERTY CONCRETE, INC.	999	
5797	TEXAS MANUFACTURED HOMES	1	7,100
7129	TEXAS MANUFACTURED HOMES	999	
5164	TEX-FAB, INC.	1	11,260
7066	THEIS, A.W.	1	150,000
6752	THEISS PLUMBING CO., INC.	1	100,000
5042	THEISS SUBDIVISION, ALTON H.	1	1,381,800
6928	THEISS, KARL R.	1	850,000
5165	THERMAL CORP.	1	173,000
7810	THOMAS REALTY, PATRICK	1	29,760
6764	THOMPSON, BARBARA	1	6,000
6753	THORNTON, GARY	1	5,000
3276	THREE LAKES M.U.D.	999	
5060	TILLES, TINA	1	100,000
2071	TIMBERLAKE I.D.	999	
5858	TIME SAVER GROCERY	1	336,067
7195	TITAN INDUSTRIES	1	73,800
7918	TLC AMERICA		
7632	TOBIAS, JOHN	1	14,400
5061	TOMBALL BOWLING CENTER		
3388	TOMBALL COUNTRY CLUB	1	817,000
2657	TOMBALL I.S.D.	999	
5394	TOMBALL MOBILE HOME SALES, INC.		
7919	TOMBALL VFW POST 2427	1	48,000
7989	TOMBALL, CITY OF	1	50,000
1935	TOMBALL, CITY OF	999	
3559	TOMBALL, CITY OF	999	
7860	TOMCZSZYN, GRADY P.	1	50,000
7450	TOMPKINS, STATON	1	41,600
5831	TOM'S TREE SERVICE	1	10,000

WELL	OWNER	AGG2000	PUMP2000 (GPY)
7931	TOP LINE STABLES	1	25,000
6207	TOPPER SALES, INC.	1	
	TOTALS	221270	119,530,204
4161	TOWER OAK BEND WATER SUPPLY	999	
5044	TOWER OAK CENTER	999	
4216	TOWER OAKS PLAZA M.U.D.	999	
7146	TOWN & COUNTRY BRICK & SUPPLY	1	
7689	TOWNLEY, RANDALL	1	100,000
5436	TRACY ANIMAL HOSPITAL		
5922	TRAW, JIM	1	33,500
4288	TREELINE GOLF CLUB, INC.	1	288,500
3838	TREELINE GOLF CLUB, INC.	999	
5329	TRINITY LUTHERAN CHURCH	1	470,924
7124	TRINITY LUTHERAN CHURCH CEMETERY	1	8,833
7861	TRINITY STEEL FABRICATORS, INC.	1	91,000
6441	TRUMP MACHINE WORKS	1	8,400
1729	TRUNKLINE GAS COMPANY	2	382,388
5177	TRUNKLINE GAS COMPANY	2	382,388
1728	TRUNKLINE GAS COMPANY	999	
7051	TURK BROTHERS BUILDING	1	150,000
7050	TURK BROTHERS BUILDING	1	200,000
7036	TURNER, R. SCOTT	1	300,000
4870	TURNER, STAN & MARILEE	1	
5316	TURNER, STAN & MARILEE	2	1,647,400
5317	TURNER, STAN & MARILEE	2	1,647,400
7037	TUTTLE, CLEMONS	1	16,530
3307	U. S. LAND DEVELOPMENT COMPANY	999	
3562	U. S. LAND DEVELOPMENT COMPANY	999	
6452	U.S.A. DREAMLAND, INC.	999	
7923	UC5, LTD.	1	315,000
7986	UNITED CHURCH OF GOD HOUSTON NO.	1	48,427
5473	UNITED MINI WAREHOUSE, INC.	1	200,000
7643	UNITED PENTECOSTAL CHURCH	1	20,000
6655	UNITED STATES POSTAL SERVICE	1	1,956,400
5341	UNIVERSAL DISTRIBUTING	1	480,000
2059	UTOTEM DIV. OF FAIRMONT FOODS	999	
6844	VEROT, ROGER	1	14,050
5119	VFW POST 8905	1	16,728
7152	VON HEDEMANN, CAROLE	1	500,000
3994	W. HARRIS CO. M.U.D. 1	999	
5775	W.S. SYSTEMS	1	1,050
6758	WACHSMAN, MARVIN	1	100,000
6827	WALKER JR., J.F.	1	9,000
5067	WALKER, A.W.	1	200,000
5894	WALLER INDEPENDENT SCHOOL DIST.	999	
7125	WALLS, JANE	1	
4730	WAL-MART STORES, INC.		
7044	WARREN III, A.J.	1	7,800

<2 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
7145	WARREN, J.N.	1	288,000
7144	WARREN, J.N.	1	360,000
5536	WAT BUDDHAVAS OF HOUSTON	1	25,125
7608	WATTS, WILLIAM H.	1	39,500
5082	WBC COLLECTIONS	1	1,000,000
5931	WDBCM CORPORATION	1	3,650
7232	WEATHERFORD EXCAVATION	1	12,000
2435	WEINGARTEN REALTY, INC.	999	
2479	WEINGARTEN, INC., J.	999	
2480	WEINGARTEN, INC., J.	999	
7767	WEISER AIR PARK INC.	1	36,000
5543	WELCH, MAX	1	750,000
5880	WELD-TECH ENGINEERING	1	124,500
5807	WELL HEAD WELDERS		
4502	WHATABURGER, INC.	999	
5292	WHEATON DETAILING SERVICE, INC.	1	990
7987	WHITAKER, ROBERT	1	46,000
7344	WHITE MERCHANDISING, RALPH	1	500,000
5566	WHITE OAK ESTATES LTD.	1	
4011	WHITE OAK/1960 M.U.D.	999	
5243	WHITE, BRUNHILDE	1	12,000
5725	WICKANDER, NELS	1	300,000
5076	WICKERSHAM, W.D.	1	365,000
6754	WILD WELL CONTROL, INC.	1	15,000
6517	WILKERSON, JAMES, TRUSTEE	1	24,000
3987	WILKINSON, IV, THOMAS B.	999	
7187	WILKINSON, JAMES	1	3,000
4851	WILLIAMS BROTHERS CONST CO., INC	1	
4852	WILLIAMS BROTHERS CONST CO., INC	1	433,200
4471	WILLIAMS BROTHERS CONST CO., INC	999	
6755	WILLIAMS, LARRY G.	1	6,240
7353	WILLIAMS, R. BRYAN	1	456,059
5073	WILLOW LAKE HOMEOWNERS ASSOC.		
7188	WILLOWBROOK ASSEMBLY OF GOD	1	61,000
5357	WILSON, JIM D.	1	60,000
7869	WINDFERN REALTY CO. L.P.	1	117,500
5120	WINDWOOD WATER SYSTEM, INC.		
5121	WINDWOOD WATER SYSTEM, INC.	999	
7182	WIRT, FREDDY	1	7,200
2675	WOODLANDS LAND DEV. CO. L.P., THE	1	
4441	WOOTEN, ANDY	1	6,260
1695	WORTHAM ESTATE, GUS	999	
3416	Y.M.C.A. OF GREATER HOUSTON AREA	1	315,000
4547	Y.M.C.A. OF GREATER HOUSTON AREA	1	600,620
4720	Y.M.C.A. OF GREATER HOUSTON AREA	1	757,946
4676	Y.M.C.A. OF GREATER HOUSTON AREA	1	1,577,460
5187	ZAPATA, MERIH ORER	1	317,424

2-5 MGY - Water Well Permittees within NHCRA per HGCSO 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
	OWNERS WITH 1 GW WELL		
6331	WHIKEHART, BILL & JOE ANN	1	2,000,000
7169	LDS CHURCH-HOUSTON TEXAS TEMPLE	1	2,022,300
5995	BEAZER HOMES	1	2,142,400
4261	HARRIS COUNTY	1	2,207,300
4931	CYPRESS BIBLE CHURCH	1	2,242,800
4325	HARRIS COUNTY	1	2,283,700
4525	HARRIS COUNTY	1	2,288,500
4299	AQUASOURCE, INC.	1	2,337,000
3759	CHAMP'S WATER COMPANY	1	2,347,000
7270	BERGERON, HALE	1	2,400,000
4342	HMW WATER SUPPLY CORP	1	2,402,000
7065	NEEDHAM, BERTON LONNIE	1	2,500,000
6842	HAAS TOYOTA, FRED	1	2,500,563
7029	TOMBALL I.S.D.	1	2,626,900
7874	D&S SERVICES	1	2,754,000
6910	ROSEWOOD HILL HOMEOWNERS ASSOC	1	2,808,790
5369	WILLOW BRIDGE HOMEOWNERS ASSOC	1	2,886,800
4126	CAMPBELL READY MIX, L.P.	1	2,964,236
5226	SALEM LUTHERAN SCHOOL	1	3,000,000
7094	LONGBOTHAM, ANN H	1	3,087,246
5144	SPRING GARDENS NURSERY	1	3,306,700
3681	WILLOW CREEK GOLF CLUB, INC.	1	3,318,000
3719	TIFCO, INC.	1	3,349,000
4728	KWIK-KOPY CORPORATION	1	3,433,800
7076	CALE'S CAR WASH & LUBE	1	3,609,000
5879	NEWMAN, THOMAS C.	1	3,621,300
3932	HMW WATER SUPPLY CORP	1	3,646,000
4669	HOLTKAMP, INC., WAYNE	1	3,752,113
4573	TXI OPERATIONS, L.P.	1	3,810,000
3266	AQUASOURCE, INC.	1	3,848,000
3503	HMW WATER SUPPLY CORP	1	3,988,000
3652	NORTHWEST AIRPORT MGMT., INC.	1	3,992,100
3523	HARRIS COUNTY	1	4,127,307
5244	CBI CONSTRUCTORS, INC.	1	4,411,400
3486	AQUASOURCE, INC.	1	4,530,000
3670	AQUASOURCE, INC.	1	4,585,000
4937	MOORPARK VILLAGE, INC.	1	4,611,600
5116	CHAMPIONS LAKESIDE CLUB	1	4,629,400
6607	SPRING CYPRESS WATER SUPPLY CORP	1	4,704,000
5018	KLEIN UNITED METHODIST CHURCH	1	4,742,000
4045	DUBROOK, INC.	1	4,743,074
5948	LAKES OF ROSEHILL HOA	1	4,776,700
3668	AQUASOURCE, INC.	1	4,902,000
3775	AQUASOURCE, INC.	1	4,914,000
2935	ALDINE I.S.D.	1	4,965,800
5358	LAKEWOOD GROVE ASSOC., LTD.	1	4,973,500
4930	TELGE MANOR MOBILE HOME PARK	1	4,996,000

2-5 MGY - Water Well Permittees within NHCRA per HGCSO 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 2 OR MORE GW WELLS			
3820	RELIANT ENERGY, INCORPORATED	2	2,543,800
3821	RELIANT ENERGY, INCORPORATED	2	2,543,800
5640	SPRING BAPTIST CHURCH	2	2,560,244
5641	SPRING BAPTIST CHURCH	2	2,560,244
4452	CW-MHP, LTD.	2	2,680,260
4453	CW-MHP, LTD.	2	2,680,260
4390	SPRING CENTER, INC.	2	2,866,000
4391	SPRING CENTER, INC.	2	2,866,000
5319	SPRING KLEIN SPORTS ASSOCIATION	2	3,242,000
5320	SPRING KLEIN SPORTS ASSOCIATION	2	3,242,000
3505	HMW SPECIAL UTILITY DISTRICT	2	3,898,000
3968	HMW SPECIAL UTILITY DISTRICT	2	3,898,000
4465	RCW NURSERIES, INC.	2	3,962,600
4466	RCW NURSERIES, INC.	2	3,962,600
3322	WINTERHAVEN HOMEOWNERS ASSOC.	2	4,113,801
3323	WINTERHAVEN HOMEOWNERS ASSOC.	2	4,113,801
1923	AQUASOURCE, INC.	2	4,453,000
1924	AQUASOURCE, INC.	2	4,453,000
2734	BOY'S COUNTRY OF HOUSTON, INC.	2	4,606,769
2735	BOY'S COUNTRY OF HOUSTON, INC.	2	4,606,769
2661	SPRING I.S.D.	3	2,612,700
3261	SPRING I.S.D.	3	2,612,700
7186	SPRING I.S.D.	3	2,612,700
4112	CAMPBELL READY MIX, L.P.	3	4,929,606
4113	CAMPBELL READY MIX, L.P.	3	4,929,606
5232	CAMPBELL READY MIX, L.P.	3	4,929,606

5-7.5 MGY - Water Well Permittees within NHCRA per HGCD 2000 Pumpage Report

WELL#	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
5049	TOM, JOHN W. SR.	1	5,000,004
5632	KLEIN MEMORIAL PARK & MAUSOLEUM	1	5,028,400
4769	TREES & PLANTS, INC.	1	5,191,100
7230	STERLING GATE ESTATES	1	5,333,601
4687	TEXAS ARAI, INC.	1	5,569,500
4597	C & P UTILITIES, INC.	1	5,683,000
2440	SOUTHWEST UTILITIES, INC.	1	5,688,000
4925	GILBERT, ROBERT C.	1	5,719,000
6223	ENVIRO-GROW NURSERY	1	5,850,000
4596	C & P UTILITIES, INC.	1	5,885,000
2415	CHAMPIONS GLEN, L.P.	1	6,000,820
4832	AMBERWOOD UTILITY CO.	1	6,074,000
7023	RAUB, VAL	1	6,142,360
2617	COMPAQ COMPUTER CORPORATION	1	6,325,000
3517	KLEIN I.S.D.	1	6,417,000
4220	HMW SPECIAL UTILITY DISTRICT	1	6,422,000
3796	AQUASOURCE, INC.	1	6,525,000
6838	WOODWIND LAKES HOMEOWNERS, ASSC	1	6,745,800
5588	JUST TREES INC.	1	7,007,900
7665	BEAZER HOMES	1	7,187,000
4414	KWIK-KOPY CORPORATION	1	7,369,800
6671	JUST TREES INC.	1	7,465,600
OWNERS WITH 2 OR MORE GW WELLS			
4046	DUBROOK, INC.	2	5,242,874
7675	FRONTIER MATERIALS	2	5,242,874
2034	CEMEX USA	2	5,255,650
7223	CEMEX USA	2	5,255,650
5535	I.Q. PRODUCTS COMPANY	2	5,318,150
6547	I.Q. PRODUCTS COMPANY	2	5,318,150
4437	C & P UTILITIES, INC.	2	5,853,000
4438	C & P UTILITIES, INC.	2	5,853,000
5351	ALLIED CONCRETE MATERIAL, INC.	2	6,356,468
6952	ALLIED CONCRETE MATERIAL, INC.	2	6,356,468
4591	NEWMAN, THOMAS C.	2	6,446,010
7105	NEWMAN, THOMAS C.	2	6,446,010
2670	NORTHWEST AIRPORT MGMT., LP	2	6,654,453
2672	NORTHWEST AIRPORT MGMT., LP	2	6,654,453
3334	AQUASOURCE, INC.	2	6,764,000
3335	AQUASOURCE, INC.	2	6,764,000
3509	HMW SPECIAL UTILITY DISTRICT	2	6,965,000
4077	HMW SPECIAL UTILITY DISTRICT	2	6,965,000

7.5-10 MGY - Water Well Permittees within NHCRWA per HGCSO 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
5622	BUSSELL, CRAIG	1	7,700,000
7837	LODGE AT CYPRESSWOOD L.P.	1	7,900,100
7615	AQUASOURCE DEVELOPMENT CO.	1	8,029,000
6062	CASTLE COUNTRY HOMES, INC.	1	8,242,000
5655	LAKE OWNERS ASSOCIATION	1	8,297,000
3947	HARRIS COUNTY	1	8,656,200
4313	HMW SPECIAL UTILITY DISTRICT	1	8,724,000
6867	PITCAIRN WATER SUPPLY	1	8,924,000
4298	COMPAQ COMPUTER CORP.	1	8,962,700
4192	HARRIS COUNTY	1	9,000,400
4677	JAEGER, KENNETH V.	1	9,292,000
4324	HARRIS COUNTY	1	9,629,600
1730	TRUNKLINE GAS COMPANY	1	9,760,200
6052	EJDS, INC.	1	9,976,400
OWNERS WITH 2 OR MORE GW WELLS			
3667	HMW SPECIAL UTILITY DISTRICT	2	8,365,000
4312	HMW SPECIAL UTILITY DISTRICT	2	8,365,000
4554	HMW SPECIAL UTILITY DISTRICT	2	8,724,000
4555	HMW SPECIAL UTILITY DISTRICT	2	8,724,000
4002	HMW SPECIAL UTILITY DISTRICT	2	9,561,000
4315	HMW SPECIAL UTILITY DISTRICT	2	9,561,000
3510	HMW SPECIAL UTILITY DISTRICT	2	9,602,000
4183	HMW SPECIAL UTILITY DISTRICT	2	9,602,000
1359	JERSEY VILLAGE, CITY OF	3	8,264,000
1361	JERSEY VILLAGE, CITY OF	3	8,264,000
8221	JERSEY VILLAGE, CITY OF	3	8,264,000

10-15 MGY - Water Well Permittees within NHCRWA per HGCD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
7038	WALLER I.S.D.	1	10,027,700
6709	ASHTON HOUSTON RESIDENTIAL, LLC	1	10,599,000
3350	ALBURY MANOR UTILITY CO., INC.	1	11,449,000
2202	PILCHERS OXFORD GROUP	1	11,827,000
3355	TOMBALL COUNTRY CLUB	1	12,126,400
3089	HOE WATER SUPPLY CORPORATION	1	13,075,500
3641	AQUASOURCE, INC.	1	14,071,000
4778	WOODWIND LAKES HOMEOWNERS, ASSO	2	10,164,500
5335	WOODWIND LAKES HOMEOWNERS, ASSO	2	10,164,500
2177	TALL PINES UTILITY/K & L UTILITY	2	10,864,000
5448	TALL PINES UTILITY/K & L UTILITY	2	10,864,000
4282	SCOTT, L. W., JR.	2	10,945,200
4283	SCOTT, L. W., JR.	2	10,945,200
2856	CEMEX USA	2	11,433,200
2857	CEMEX USA	2	11,433,200
6407	FUZZEL FARM, RILEY	2	11,788,500
6419	FUZZEL, RILEY FARM	2	11,788,500
3669	AQUASOURCE, INC.	2	12,207,000
5736	AQUASOURCE, INC.	2	12,207,000
5833	S C UTILITIES, INC.	2	12,536,000
6498	S C UTILITIES, INC.	2	12,536,000
1844	CONSUMERS WATER CORPORATION	2	13,906,000
4009	CONSUMERS WATER CORPORATION	2	13,906,000
3895	CHASEWOOD LAND VENTURE	2	14,695,000
3896	CHASEWOOD LAND VENTURE	2	14,695,000
3544	AQUASOURCE, INC.	2	14,793,000
3593	AQUASOURCE, INC.	2	14,793,000

15-30 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
4489	LAKES OF CYPRESS HILL HOMEOWNERS	1	21,531,400
5477	FURLONG LTD.	1	21,961,769
3238	TOWER OAK BEND WATER SUPPLY	1	22,272,000
7903	R CREEK LP	1	23,831,600
2952	ENCHANTED VALLEY WATER SUPPLY	1	25,223,000
8092	CHAMPIONS GLEN LP	1	25,831,000
5878	LAKES OF FAIRFIELD H.O.A., THE	1	26,754,000
1851	ADAMS RANCHES, INC., BUD	1	26,870,000
5883	LAKES OF FAIRFIELD H.O.A., THE	1	28,774,100
4103	PINEWOOD PLACE, INC.	1	28,976,880
3608	C & P UTILITIES, INC.	1	29,614,000
OWNERS WITH 2 OR MORE GW WELLS			
4373	WAYNEWOOD PLACE CIVIC CLUB, INC.	2	15,236,000
4374	WAYNEWOOD PLACE CIVIC CLUB, INC.	2	15,236,000
3875	HMW SPECIAL UTILITY DISTRICT	2	16,522,000
3969	HMW SPECIAL UTILITY DISTRICT	2	16,522,000
2949	GRANTWOOD CIVIC CLUB	3	18,072,000
2950	GRANTWOOD CIVIC CLUB	3	18,072,000
3368	GRANTWOOD CIVIC CLUB	3	18,072,000
3960	HMW SPECIAL UTILITY DISTRICT	2	18,203,000
4102	HMW SPECIAL UTILITY DISTRICT	2	18,203,000
3874	HMW SPECIAL UTILITY DISTRICT	2	18,657,000
5449	HMW SPECIAL UTILITY DISTRICT	2	18,657,000
2272	NORTHWEST WATER SYSTEMS, INC.	3	18,709,100
3554	NORTHWEST WATER SYSTEMS, INC.	3	18,709,100
4568	NORTHWEST WATER SYSTEMS, INC.	3	18,709,100
2907	CY-FOREST SERVICE ASSOCIATION	4	21,760,200
2908	CY-FOREST SERVICE ASSOCIATION	4	21,760,200
3195	CY-FOREST SERVICE ASSOCIATION	4	21,760,200
3769	CY-FOREST SERVICE ASSOCIATION	4	21,760,200
5816	AQUASOURCE UTILITY, INC.	2	23,436,000
6909	AQUASOURCE UTILITY, INC.	2	23,436,000
1836	CONSUMERS WATER CORPORATION	2	26,002,000
4008	CONSUMERS WATER CORPORATION	2	26,002,000
6741	INLINE DEVELOPMENT CORP.	2	27,062,000
7531	INLINE DEVELOPMENT CORP.	2	27,062,000
3263	BAYER WATER SYSTEM	2	27,790,900
3264	BAYER WATER SYSTEM	2	27,790,900

30-60 MGY - Water Well Permittees within NHCRWA per HGCD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
2333	GLEANNLOCH FARMS COMMUNITY ASSOC	1	31,933,000
4560	W. HARRIS CO. M.U.D. 21	1	35,119,000
3839	TREELINE GOLF CLUB, INC.	1	36,934,100
4567	HOUSTON RACE PARK, SAM	1	37,861,800
8156	WILLOW CREEK GOLF CLUB	1	38,444,100
6606	ATASCOCITA MANAGEMENT CORP.	1	39,607,800
3418	COMPAQ COMPUTER CORP.	1	46,610,000
2065	ENCANTO REAL U.D.	1	47,794,000
3386	AQUASOURCE UTILITY, INC.	1	49,022,000
6164	HARRIS CO. M.U.D. 280	1	49,056,000
3791	SIX FLAGS SPLASHTOWN L.P.	1	53,536,000
3380	RAVENEUX COUNTRY CLUB	1	55,945,600
6922	WINDERMERE INTERESTS LTD.	1	56,374,000
3726	HARRIS CO. M.U.D. 233	1	56,594,000
4069	HARRIS CO. M.U.D. 275	1	58,845,000
4172	CYPRESSWOOD LTD.	1	68,980,000
OWNERS WITH 2 OR MORE GW WELLS			
3691	C & P UTILITIES, INC.	2	31,414,000
3692	C & P UTILITIES, INC.	2	31,414,000
3424	NW HARRIS CO. M.U.D. 19	2	31,719,000
8267	NW HARRIS CO. M.U.D. 19	2	31,719,000
7374	JERSEY LAKE HOMEOWNERS ASSOC.	2	34,120,652
7375	JERSEY LAKE HOMEOWNERS ASSOC.	2	34,120,652
3556	SPRING WEST M.U.D.	2	34,554,000
7222	SPRING WEST M.U.D.	2	34,554,000
5406	JOHNSTON UTILITIES, INC.	2	37,766,000
6848	JOHNSTON UTILITIES, INC.	2	37,766,000
4556	HMW SPECIAL UTILITY DISTRICT	3	44,022,000
4557	HMW SPECIAL UTILITY DISTRICT	3	44,022,000
5231	HMW SPECIAL UTILITY DISTRICT	3	44,022,000
4003	NORTHGATE CROSSING M.U.D. 2	2	49,731,000
7460	NORTHGATE CROSSING M.U.D. 2	2	49,731,000
3508	HMW SPECIAL UTILITY DISTRICT	2	51,726,000
3512	HMW SPECIAL UTILITY DISTRICT	2	51,726,000
3771	NW HARRIS CO. M.U.D. 24	2	54,257,000
3797	NW HARRIS CO. M.U.D. 24	2	54,257,000
5946	AQUASOURCE UTILITY, INC.	3	55,312,000
5947	AQUASOURCE UTILITY, INC.	3	55,312,000

60-90 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
4172	CYPRESSWOOD LTD.	1	68,980,000
5907	CYPRESSWOOD LTD.	1	70,209,000
3941	HARRIS CO. M.U.D. 230	1	71,109,000
1860	LOUETTA ROAD U.D.	1	76,800,000
3751	HARRIS CO. M.U.D. 191	1	81,228,000
3296	WHITE OAK BEND M.U.D.	1	85,562,000
3461	HARRIS CO. M.U.D. 170	1	86,856,000
4746	NATIONAL GOLF PROPERTIES, INC.	1	88,652,000
2536	GRANT ROAD P.U.D.	1	89,539,000
OWNERS WITH 2 OR MORE GW WELLS			
3356	HOMETOWN TIMBERCREST, L.P.	2	61,011,000
7655	HOMETOWN TIMBERCREST, L.P.	2	61,011,000
1593	CHAMPIONS GOLF CLUB, INC.	2	65,140,000
1594	CHAMPIONS GOLF CLUB, INC.	2	65,140,000
4540	HARRIS CO. M.U.D. 368	2	72,500,000
7381	HARRIS CO. M.U.D. 368	2	72,500,000
1868	DOWDELL P.U.D.	2	75,541,000
3777	DOWDELL P.U.D.	2	75,541,000
7734	LOUETTA ROAD U.D.	2	76,800,000
1662	HARRIS CO. W.C.&I.D. 113	2	77,105,000
3937	HARRIS CO. W.C.&I.D. 113	2	77,105,000
3999	NW HARRIS CO. M.U.D. 32	2	82,071,000
6807	NW HARRIS CO. M.U.D. 32	2	82,071,000
1916	BAMMEL FOREST UTILITY COMPANY	2	83,009,000
4098	BAMMEL FOREST UTILITY COMPANY	2	83,009,000
3164	NORTHWEST FREEWAY M.U.D.	2	88,433,000
3165	NORTHWEST FREEWAY M.U.D.	2	88,433,000

90-120 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
2170	SHASLA P.U.D.	1	95,646,000
3867	HARRIS CO. M.U.D. 202	1	98,864,000
7171	PINELAKES LIMITED PARTNERSHIP	1	99,980,000
3605	NW HARRIS CO. M.U.D. 6	1	101,058,000
1615	HARRIS CO. W.C.&I.D. 136	1	107,077,000
3910	NORTHGATE FOREST COUNTRY CLUB	1	107,656,500
2970	HARRIS CO. M.U.D. 104	1	108,503,000
1930	POST WOOD M.U.D.	1	110,363,000
3269	NW HARRIS CO. M.U.D. 15	1	110,379,000
1857	HUNTERS GLEN M.U.D.	1	111,558,000
5828	HARRIS CO. M.U.D. 367	1	112,425,000
OWNERS WITH 2 OR MORE GW WELLS			
1829	HARRIS CO. W.C.&I.D. 99	2	107,095,000
3111	HARRIS CO. W.C.&I.D. 99	2	107,095,000
2741	CORNELIUS, INC.	7	107,326,846
4104	CORNELIUS, INC.	7	107,326,846
4105	CORNELIUS, INC.	7	107,326,846
4138	CORNELIUS, INC.	7	107,326,846
4165	CORNELIUS, INC.	7	107,326,846
4660	CORNELIUS, INC.	7	107,326,846
5434	CORNELIUS, INC.	7	107,326,846
3234	NW HARRIS CO. M.U.D. 10	2	117,063,000
3634	NW HARRIS CO. M.U.D. 10	2	117,063,000
1724	CANDLELIGHT SERVICE CO., INC.	3	119,734,000
1726	CANDLELIGHT SERVICE CO., INC.	3	119,734,000
3921	CANDLELIGHT SERVICE CO., INC.	3	119,734,000
1545	MEMORIAL HILLS U.D.	2	119,885,000
4286	MEMORIAL HILLS U.D.	2	119,885,000

>120 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
OWNERS WITH 1 GW WELL			
1759	HARRIS CO. M.U.D. 25	1	131,998,000
3805	REID ROAD M.U.D. 2	1	140,347,000
3635	NW HARRIS CO. M.U.D. 20	1	144,752,000
4916	DOVE MEADOWS M.U.D.	1	145,000,000
7290	CYPRESS LAKES GOLF COURSE	1	145,696,000
2546	HARRIS CO. M.U.D. 44	1	150,487,000
4099	BAMMEL U.D.	1	151,825,000
4058	TERRANOVA WEST M.U.D.	1	151,957,000
3944	NW HARRIS CO. M.U.D. 29	1	152,401,000
7598	GLEANNLOCH GOLF CLUB, L.P.	1	152,737,920
1852	HARRIS CO. M.U.D. 43	1	161,718,000
3478	HARRIS CO. M.U.D. 16	1	178,205,000
4412	HARRIS CO. M.U.D. 222	1	181,189,000
3956	LOUETTA NORTH P.U.D.	1	182,428,000
3735	HARRIS CO. M.U.D. 69	1	183,930,000
1631	TATTOR ROAD M.U.D.	1	191,470,000
3390	W. HARRIS CO. M.U.D. 9	1	246,294,000
4657	HARRIS CO. M.U.D. 360/PILGRIM	1	276,514,000
OWNERS WITH 2 OR MORE GW WELLS			
1600	INVERNESS FOREST I.D.	3	120,714,000
1601	INVERNESS FOREST I.D.	3	120,714,000
3962	INVERNESS FOREST I.D.	3	120,714,000
5963	HARRIS CO. M.U.D. 365	2	122,090,000
8303	HARRIS CO. M.U.D. 365	2	122,090,000
3566	CYPRESS HILL M.U.D. 1	3	126,041,000
5330	CYPRESS HILL M.U.D. 1	3	126,041,000
7774	CYPRESS HILL M.U.D. 1	3	126,041,000
2175	HARRIS CO. M.U.D. 1	2	134,334,000
5897	HARRIS CO. M.U.D. 1	2	134,334,000
1664	SPRING CREEK FOREST P.U.D.	2	164,001,000
4241	SPRING CREEK FOREST P.U.D.	2	164,001,000
1537	HARRIS CO. W.C.&I.D. 91	2	181,319,000
1538	HARRIS CO. W.C.&I.D. 91	2	181,319,000
2424	CHARTERWOOD M.U.D.	2	182,462,000
3529	CHARTERWOOD M.U.D.	2	182,462,000
3383	TIMBERLAKE I.D.	2	183,552,000
5616	TIMBERLAKE I.D.	2	183,552,000
2973	MILLS ROAD M.U.D.	2	198,934,000
4010	MILLS ROAD M.U.D.	2	198,934,000
2682	NORTH PARK P.U.D.	2	201,356,000
3527	NORTH PARK P.U.D.	2	201,356,000
1867	HEATHERLOCH M.U.D.	2	217,864,000
4508	HEATHERLOCH M.U.D.	2	217,864,000
1727	KLEINWOOD M.U.D.	2	218,534,000

>120 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
4413	KLEINWOOD M.U.D.	2	218,534,000
4059	HARRIS CO. M.U.D. 286	2	219,924,000
4297	HARRIS CO. M.U.D. 286	2	219,924,000
1515	HARRIS CO. M.U.D. 26	2	221,756,000
3864	HARRIS CO. M.U.D. 26	2	221,756,000
1544	PRESTONWOOD FOREST U.D.	2	230,170,000
3293	PRESTONWOOD FOREST U.D.	2	230,170,000
1793	HARRIS CO. M.U.D. 82	2	231,702,000
1794	HARRIS CO. M.U.D. 82	2	231,702,000
1606	CYPRESS CREEK U.D.	3	232,952,700
1607	CYPRESS CREEK U.D.	3	232,952,700
3824	CYPRESS CREEK U.D.	3	232,952,700
2609	NW HARRIS CO. M.U.D. 5	2	235,040,000
7441	NW HARRIS CO. M.U.D. 5	2	235,040,000
3448	NW HARRIS CO. M.U.D. 21	2	241,399,000
4178	NW HARRIS CO. M.U.D. 21	2	241,399,000
3229	BILMA P.U.D.	2	248,546,000
7080	BILMA P.U.D.	2	248,546,000
2183	HARRIS CO. W.C.&I.D. 119	2	250,248,000
4091	HARRIS CO. W.C.&I.D. 119	2	250,248,000
1854	FOUNTAINHEAD M.U.D.	2	251,882,000
3428	EMERALD FOREST U.D.	2	257,899,000
4644	EMERALD FOREST U.D.	2	257,899,000
2445	REID ROAD M.U.D. 1	2	263,161,000
3804	REID ROAD M.U.D. 1	2	263,161,000
2943	KLEIN P.U.D.	2	263,342,000
6802	KLEIN P.U.D.	2	263,342,000
4579	W. HARRIS CO. M.U.D. 11	2	272,629,000
7609	W. HARRIS CO. M.U.D. 11	2	272,629,000
3399	NW HARRIS CO. M.U.D. 9	2	274,286,000
4151	NW HARRIS CO. M.U.D. 9	2	274,286,000
2476	HARRIS CO. W.C.&I.D. 92	3	282,525,000
2477	HARRIS CO. W.C.&I.D. 92	3	282,525,000
3966	HARRIS CO. W.C.&I.D. 92	3	282,525,000
3430	HARRIS CO. M.U.D. 18	2	282,639,000
4526	HARRIS CO. M.U.D. 18	2	282,639,000
1620	CYPRESS-KLEIN U.D.	3	289,336,000
4353	CYPRESS-KLEIN U.D.	3	289,336,000
7252	CYPRESS-KLEIN U.D.	3	289,336,000
2094	HARRIS CO. W.C.&I.D. 116	2	290,440,000
3316	HARRIS CO. W.C.&I.D. 116	2	290,440,000
1617	HARRIS CO. W.C.&I.D./M.U.D. 110	2	310,421,000
2903	HARRIS CO. W.C.&I.D./M.U.D. 110	2	310,421,000
2680	BRIDGESTONE M.U.D.	4	320,860,000
3352	BRIDGESTONE M.U.D.	4	320,860,000
4713	BRIDGESTONE M.U.D.	4	320,860,000
8001	BRIDGESTONE M.U.D.	4	320,860,000
1528	HARRIS CO. F.W.S.D. 52	3	336,807,000
1529	HARRIS CO. F.W.S.D. 52	3	336,807,000

>120 MGY - Water Well Permittees within NHCRWA per HGCSD 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
1630	CY-CHAMP P.U.D.	2	343,934,000
5135	CY-CHAMP P.U.D.	2	343,934,000
1616	MALCOMSON ROAD U.D.	2	346,575,000
5675	MALCOMSON ROAD U.D.	2	346,575,000
3391	W. HARRIS CO. M.U.D. 10	2	355,284,000
5850	W. HARRIS CO. M.U.D. 10	2	355,284,000
3320	JERSEY VILLAGE, CITY OF	4	375,360,000
3872	JERSEY VILLAGE, CITY OF	4	375,360,000
4147	JERSEY VILLAGE, CITY OF	4	375,360,000
7781	JERSEY VILLAGE, CITY OF	4	375,360,000
1904	WESTADOR M.U.D.	3	375,623,000
1905	WESTADOR M.U.D.	3	375,623,000
4115	WESTADOR M.U.D.	3	375,623,000
4162	HARRIS CO. M.U.D. 358	2	404,834,000
4340	HARRIS CO. M.U.D. 358	2	404,834,000
1658	CNP UTILITY DISTRICT	4	410,185,000
2634	CNP UTILITY DISTRICT	4	410,185,000
3564	CNP UTILITY DISTRICT	4	410,185,000
5654	CNP UTILITY DISTRICT	4	410,185,000
1534	HARRIS CO. W.C.&I.D. 114	3	419,591,000
3409	HARRIS CO. W.C.&I.D. 114	3	419,591,000
4316	HARRIS CO. W.C.&I.D. 114	3	419,591,000
2689	LAKE FOREST U.D.	2	421,545,000
4287	LAKE FOREST U.D.	2	421,545,000
1663	PONDEROSA FOREST U.D.	3	428,408,000
2947	PONDEROSA FOREST U.D.	3	428,408,000
3631	PONDEROSA FOREST U.D.	3	428,408,000
1779	HARRIS CO. M.U.D. 24	2	429,600,000
3750	HARRIS CO. M.U.D. 24	2	429,600,000
1611	HARRIS CO. M.U.D. 132	2	435,478,000
4788	HARRIS CO. M.U.D. 132	2	435,478,000
1553	NORTHAMPTON M.U.D.	3	440,217,000
1554	NORTHAMPTON M.U.D.	3	440,217,000
4243	NORTHAMPTON M.U.D.	3	440,217,000
3332	HARRIS CO. M.U.D. 168	2	441,638,000
3412	HARRIS CO. M.U.D. 168	2	441,638,000
1536	TIMBERLANE U.D.	3	441,973,000
3156	TIMBERLANE U.D.	3	441,973,000
4155	TIMBERLANE U.D.	3	441,973,000
1673	HARRIS CO. W.C.&I.D. 132	3	457,187,000
1870	HARRIS CO. W.C.&I.D. 132	3	457,187,000
3648	HARRIS CO. W.C.&I.D. 132	3	457,187,000
2901	FAULKEY GULLY M.U.D.	3	479,712,000
4338	FAULKEY GULLY M.U.D.	3	479,712,000
5496	FAULKEY GULLY M.U.D.	3	479,712,000
1513	HARRIS CO. F.W.S.D. 61	5	553,158,000
1514	HARRIS CO. F.W.S.D. 61	5	553,158,000
3676	HARRIS CO. F.W.S.D. 61	5	553,158,000
5524	HARRIS CO. F.W.S.D. 61	5	553,158,000

>120 MGY - Water Well Permittees within NHCRWA per HGCSO 2000 Pumpage Report

WELL	OWNER	AGG2000	PUMP2000 (GPY)
3161	CYPRESS FOREST P.U.D.	2	560,823,000
4086	CYPRESS FOREST P.U.D.	2	560,823,000
1378	HARRIS CO. W.C.&I.D. 109	3	588,698,000
1379	HARRIS CO. W.C.&I.D. 109	3	588,698,000
3333	HARRIS CO. W.C.&I.D. 109	3	588,698,000
1934	TOMBALL, CITY OF	4	691,251,000
4023	TOMBALL, CITY OF	4	691,251,000
4131	TOMBALL, CITY OF	4	691,251,000
6927	TOMBALL, CITY OF	4	691,251,000
1980	HEGAR FARMS	4	779,496,650
1983	HEGAR FARMS	4	779,496,650
1984	HEGAR FARMS	4	779,496,650
4193	HEGAR FARMS	4	779,496,650

**APPENDIX C NHCROWA AND CITY OF HOUSTON WATER SUPPLY
CONTRACT AND FINANCIAL MILESTONES**

This section will be provided when it becomes available.

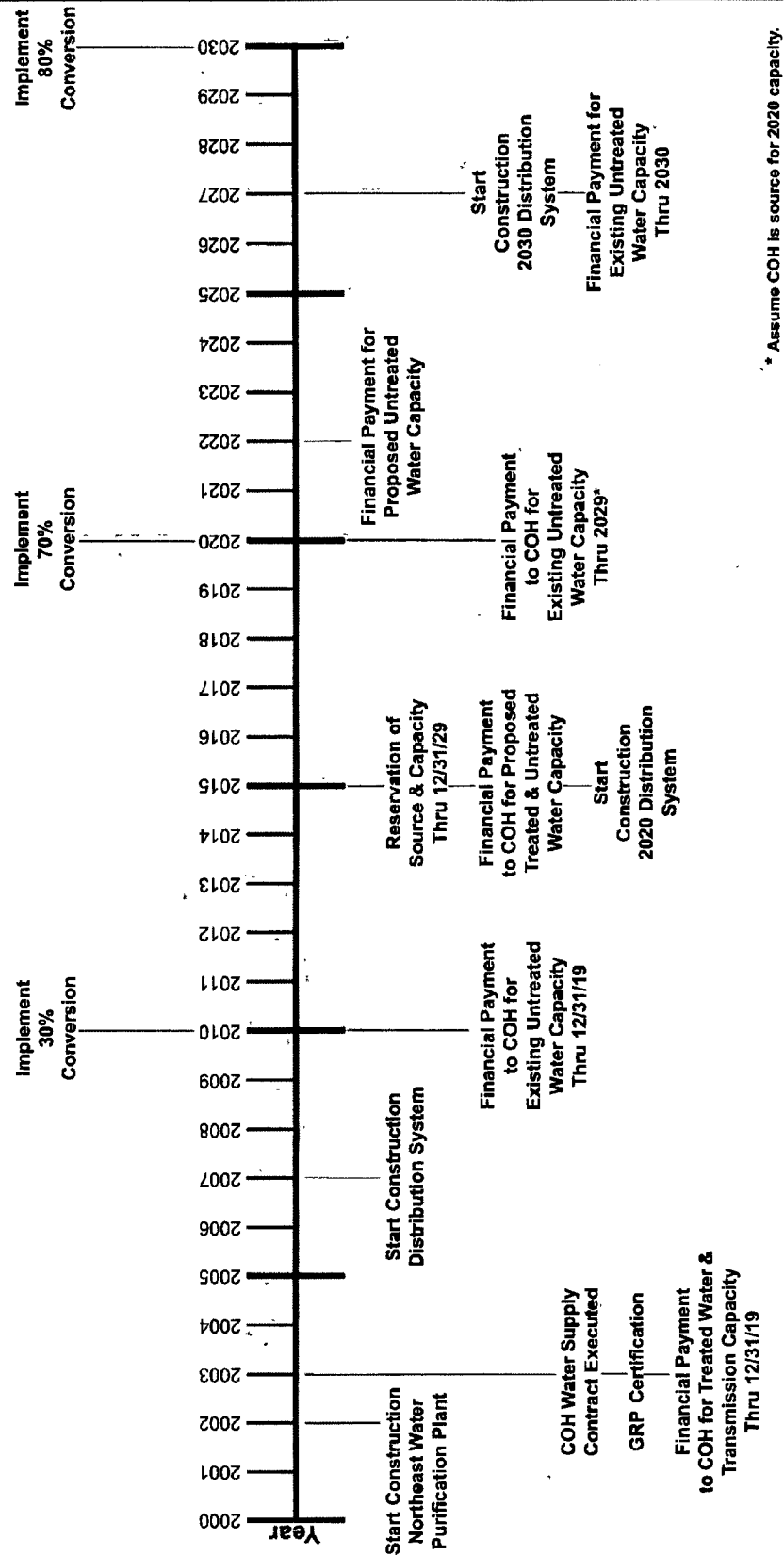
Turner Collie & Braden Inc.

ARCADIS

Direct Testimony of David Esquivel, P.E.

Ex. DME-6

North Harris County Regional Water Authority Project Timeline for Compliance With Harris-Galveston Coastal Subsidence District Regulatory Plan



Direct Testimony of David Esquivel, P.E.

Ex. DME-6

APPENDIX D NHCRWA WATER CONSERVATION PLAN

Turner Collie & Braden Inc.

ARCADIS

Direct Testimony of David Esquivel, P.E.

Ex. DME-6



WATER CONSERVATION PLAN

MAY 2002

**BROWN
& GAY**
ENGINEERS INC.

CIVIL ENGINEERS & SURVEYORS

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Direct Testimony of David Esquivel, P.E.

Ex. DME-6

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APPENDIX A – Projected Population

APPENDIX B – Projected Water Demand

North Harris County Regional Water Authority
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Preface

PREFACE

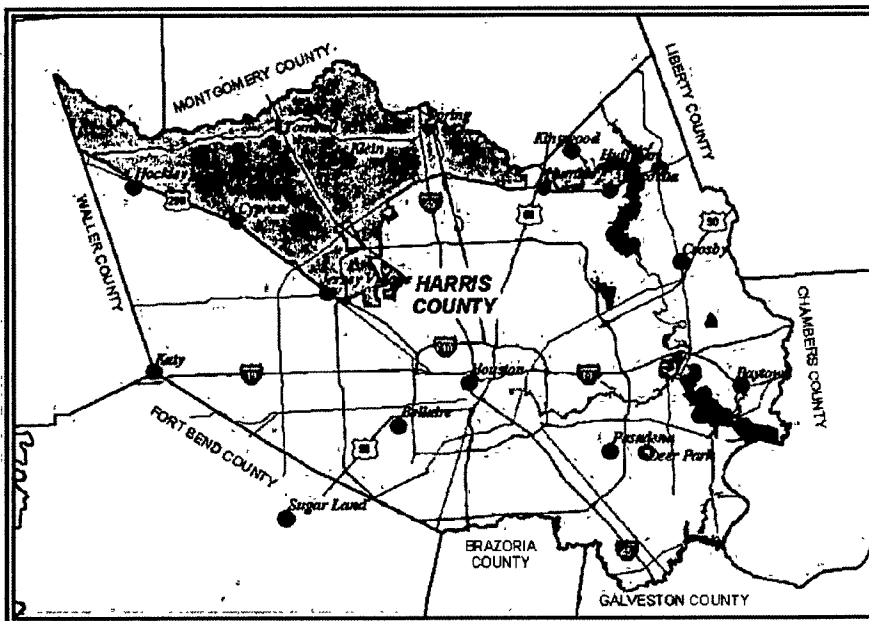
The enclosed Water Conservation Plan (WCP) describes tentative conservation methods, not a fully implemented plan. The North Harris County Regional Water Authority does not currently own and operate a potable water system but anticipates having the first phase operational by first or second quarter of 2009. The WCP offers conservation concepts for the future potable water system. The North Harris County Regional Water Authority Board of Directors will consider for approval and implementation a final WCP closer to the time the potable water system is operational.

1.0 INTRODUCTION

A. Service Area Description

The service area of the North Harris County Regional Water Authority (Authority) is located entirely in northern Harris County. The Authority is generally bounded on the west by SH 290, Spring Creek to the north, Houston to the east and portions of FM 1960 on the south. The southernmost part of the area extends inside Beltway 8 and the easternmost area is located between US 59 and Lake Houston just past US 59. **Figure 1** shows the boundary of the Authority's service area that is approximately 335 square miles with approximately 368,000 residents.

FIGURE 1: SERVICE AREA BOUNDARY



The Authority was created in order to develop a mechanism for coming into regulatory compliance with the requirements of the Harris-Galveston Coastal Subsidence District's (HGCSD) 1999 Regulatory Plan (Plan). The Plan requires a reduction in groundwater

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withdrawals to no more than 20% of total water demand by the year 2030. This includes interim reductions in groundwater withdrawals to no more than 30% of total water demand by the year 2010 and no more than 70% of total water demand by the year 2020. The main objective for creation of the Plan is to reduce or stop subsidence due to excessive withdrawals of groundwater by the well owners. A component of reducing water use, whether it is groundwater or surface water, is water conservation.

The first planning milestone for the Authority requires the preparation and submittal of a Groundwater Reduction Plan (GRP) report that describes the mechanisms identified for meeting HGCSO's groundwater reduction mandates. The Authority will attain the phased groundwater reduction as a wholesale public water supplier (wholesale supplier) providing wholesale water to retail public water suppliers (retail suppliers). One component of a GRP is the preparation of a Water Conservation Plan (WCP). The Texas Water Development Board (TWDB) requires a WCP be prepared for those projects receiving TWDB grants from the Regional Facilities Planning Grant Program. This WCP will satisfy both of these requirements.

B. TWDB Regional Water Supply Facilities Program

The Authority received grant authorization from TWDB *Regional Water Supply Facilities Planning Program* (Regional Facility Planning Grant) in August 2000 under TWDB Contract No. 2001-483-366. The Regional Facility Planning Grant program is for studies and analyses to evaluate alternatives that meet regional water supply facility needs, estimate the costs associated with implementing feasible regional water supply facility alternatives, and identify institutional arrangements to provide regional water supply services for proposed planning areas in Texas. The Authority's commitment to its constituents is to provide adequate and reliable potable water to its customers at the lowest possible cost. Funding assistance from the Texas Water Development Board will offset a portion of the planning costs required to develop the GRP.

The Authority's Regional Facility Planning Grant has three major tasks that include the WCP. In accordance with 31 Texas Administrative Code Chapter 357, development of a Water Conservation Plan (WCP) must be included as a specific task in the scope of work for proposed

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planning areas in Texas without a previously approved WCP by TWDB or TNRCC. The Authority submits this report to TWDB in compliance with this regulation and the Authority's contract.

C. *Population Projections*

The Authority will provide wholesale water for municipal use to 160 independent water districts, municipal utility districts, permitted well owners located in Northwest Harris County and the cities of Tomball and Jersey Village. The report entitled *Update of Population and Water Demand Forecasts for the Harris-Galveston Coastal Subsidence District* (Update Report) was prepared by Turner Collie & Braden in March 1996 for the HGCSO and projected population and water demand at the census-tract level. The Update Report gave projections by census tract for Harris and Galveston Counties for every five years from 1990 to 2030. These population and water demand projections were used to develop the WCP. Table No. 1 shows the projected census population and HGCSO annual average water demand for 2000.

**TABLE NO. 1
YEAR 2000 POPULATION AND AVERAGE WATER DEMAND**

Consumer	Year 2000 Projected Service Area Population	Year 2000 Average Day Water Demand (mgd)
North Harris County Regional Water Authority	367,722	71.27

Population projection development included the actual census population and HGCSO annual average water demand for 1990. The population projection was based on actual 1990 census block group data based on delineated geographical boundaries. The census block group and population data was obtained from the USGS Census Bureau 1990 Census Tracts for Harris County, Texas. Each census block group with the corresponding projected population for years 2000, 2010, 2020 and 2030, and the total population within the boundary of the Authority is shown in Appendix A.

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D. Water Demand Projections

The calculation of water demand was performed at the geographic level of a census block group. Each category of water demand was calculated separately. Agricultural demand was computed by multiplying the unit factor of irrigation times the acreage of irrigated cropland. Industrial usage was determined by prorating the total usage at each physical location of the industrial facility times the projected increase overall by county.

Municipal demand was calculated by the sum of single family demand plus multi-family demand plus commercial demand. Multi-family unit usage factors were determined to be 254 gallons per unit. Unit factors of 450.8 gallons per single family connection and 115 gallons per multi-family occupant were applied. Total demand was then a function of multiplying the projected population times the respective unit factor. The division between single and multi-family population growth was assumed to exhibit the same ratio as exhibited in 1990. Commercial demand was calculated as the projected employment times the unit factor for water consumption per employee, adopted as 27 gallons per day.

The issue most important to the Subsidence District is the geographic distribution of water production based on water demand. A part of the issue concerns the geographic distribution of water demand and where water will be produced to meet this demand. The use of GIS became an integral part of the geographic distribution of water demand. Aggregation of water demand was accomplished by using GIS software to intersect a 2½ x 2½-mile grid with census block groups. The GIS was used to overlay the geographic delineation of the regulatory areas over the census block groups. Each census block group in Harris and Galveston counties was assigned to an area in this manner. A mathematical relationship between area and density of demand was then used to calculate the final water demand in each grid cell. Appendix B shows the projected annual average water demand for 2010, 2020, and 2030.

E. Wastewater Demand Projections

Wastewater demand data is not provided because the Authority will solely be a wholesale regional water supplier and will only be responsible for maintaining and supplying potable water

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to its customers. It is not anticipated at this time that the Authority will ever be a wastewater treatment provider, therefore, the determination of projected wastewater demand is not included as part of this WCP.

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Goals

2.0 CONSERVATION GOALS

The goal of the Authority is the assurance of an adequate and safe potable water supply for its customers in years to come. The goals of a WCP are to reduce water consumption, limit unaccounted for water, and protect both existing and future water supplies. The result of a successful WCP will be reduced peak-day demands, thereby potentially reducing, or downsizing distribution and treatment facilities, resulting in economic benefits to the Authority and its customers. Reduced peak day demand could also delay the construction of facilities.

The Authority is expected to complete construction of a wholesale regional water supply system in 2009. One year later in 2010, approximately 30 percent of the water demand in the Authority will be converted to surface water and will be distributed to designated participants. Participants will be required to execute a contract with the Authority.

The most direct effects a wholesale water provider can make to water conservation are to reduce unaccounted for water and protect water supplies. Unaccounted for water is the difference between the quantity of water that is withdrawn from a supply source and the amount that is actually delivered to the customer. If the supply is raw water, the "supply source" is defined as the forebay or raw water storage reservoir ahead of a water treatment plant. If the supply is potable water, the "supply source" is defined as the take point for the potable water. The goal of the Authority will be to limit unaccounted for water to less than 10 percent of reported water usage.

Both surface water supplies and groundwater supplies must be protected. This includes preventing pollution of water supplies and assuring the availability of water supplies for future needs. Supply source contamination and issues related to public health and safety will be monitored through all applicable testing procedures as defined by American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), American Water Works Association (AWWA), and any additional Local, State or Federal Agencies that are applicable.

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Goals

The goals of the WCP are:

- Reduce water consumption by its retail suppliers. Reduction of water consumption by retail suppliers will begin as soon as a contractual agreement with the retail suppliers is entered into. These will be in place by 2010.
- Limit unaccounted for water to no more than 10 percent of the reported water usage. Limiting unaccounted for water will begin at such time as the Authority constructs its water supply infrastructure. Based on the timetable for conversion to surface water, it is anticipated that the infrastructure will be in place by 2010.
- Prevent pollution of surface water and groundwater supplies. This has already begun and will be an ongoing effort.
- Sustain water supplies for future users. This has already begun and will be an ongoing effort.

3.0 CONSERVATION STRATEGIES

The WCP is a strategy, or combination of strategies, for reducing the volume of water withdrawn from a water supply source, for reducing the loss or waste of water, for maintaining or improving the efficiency in the use of water, for increasing the recycling and reuse of water, and for preventing the pollution of water.

The conservation strategies used to attain the goals mentioned in Section Two can be divided into three (3) categories: operational, administrative and educational.

A. Operational Strategies

The following operational strategies are considered for implementation:

- Effective use of groundwater and surface water.
- Efficient utilization of existing water supplies through universal metering.
- Water Audits and Leak Detection.
- Reservoir Systems Operation Plan.
- Methods to Monitor the Effectiveness and Efficiency.
- Wastewater Reclamation

1. Effective Use of Groundwater and Surface Water

The major water source for surface water has not been determined at this time, however municipal users will continue to provide groundwater from existing wells to supplement the use of surface water.

Surface water is a renewable resource; groundwater is not as easily renewable. The use of surface water will extend the availability of groundwater for future use. In addition, the future availability of groundwater may supplement surface water in times of drought or other emergencies. The supply lines constructed by the Authority will have sufficient pressure to distribute wholesale water to the participants; fill retail suppliers ground storage tanks; and

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deliver peak hour and/or peak day volumes, whereby the retail suppliers will be required to meet the distribution pressure and system requirements outlined by the TNRCC.

The total cost to the Authority will be affected by the supplemental use of ground water in areas where it may be cost prohibitive to build surface water lines. Providing surface water to those areas located remotely from the surface water lines will be costly. Some of the NHCRWA customers on the outer reaches will not be provided treated surface water, while other customers will be delayed until a time that it is feasible to construct surface water transmission lines to these customers. The Authority's ability to delay construction of these lines will not affect the overall goals of the WCP.

2. Efficient Utilization of Existing Water Supplies through Universal Metering

Water meters at point of delivery of wholesale supply to the Authority and at the Authority's delivery point to its customers will serve as a means for leak detection, thus providing a cost benefit savings to the Authority by lowering unaccounted water use. The Authority will be responsible for its meters that lead up to the point of connection at the retail supplier's main point of distribution.

Because the Authority's customers will use their existing water distribution facilities, a program for the testing and calibration of retail water meters will be required. Retail suppliers will be required to provide documentation demonstrating that existing water meters on its water mains and at its water treatment plants have been tested and calibrated prior to connection to the wholesale supplier's distribution system. This will serve as a means of documenting unaccounted water use in the retail distribution systems.

3. Water Audits and Leak Detection

Water audits and leak detection in water systems are effective ways to achieve water conservation and offer a cost savings to both the retail supplier and the Authority. Successful leak detection programs benefit everyone because they prevent unnecessary costs and lost revenue. Periodic testing and calibration of the Authority's meters will reduce the chance of lost revenues and prevent leaks, which also benefits the Authority. The Authority will implement a method for record management and testing of its water meters. **Table No. 2** shows an estimated

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daily loss of revenue due to water leaks based on total projected water demand for years 2010, 2020 and 2030.

TABLE NO. 2
PROJECTED AVERAGE DAILY WATER LOSSES

Description	2010	2020	2030
⁽¹⁾ Total Daily Demand (mgd):	76.9	87.3	99.9
⁽²⁾ Estimated Water Loss (mgd):	7.7	8.7	10.0
⁽³⁾ Estimated Revenue Loss (dollars):	\$1,922	\$2,183	\$2,498
⁽⁴⁾Total Estimated Daily Revenue Losses After Leak Detection and Repair (dollars):	\$961	\$1,091	\$1,249

Source: AWWA Leak Detection Committee, 1999, pp 5-33. *Water Audits and Leak Detection: Manual of Water Supply Practices*. (M36). American Water Works Association: Denver, CO. Notes: ⁽¹⁾ Total projected daily demands based on Table No. 1 shown in Section I – Introduction. ⁽²⁾ Assumes 10% unaccountable due to leaks, system losses, system flushing, etc., ⁽³⁾ Based on estimated \$0.25 / 1000 gallons fee imposed by wholesale water provider, ⁽⁴⁾ Estimated 50% recoverable leakage due to leak detection system and repairs.

Table No. 3 shows an estimated annual loss of revenue due to water leaks based on total projected water demand for years 2010, 2020 and 2030. Similar assumptions and methodology were used to determine annual revenue losses as those used to create Table No. 2.

TABLE NO. 3
PROJECTED AVERAGE ANNUAL WATER LOSSES

Description	2010	2020	2030
Total Yearly Demand (mgd):	28,056.5	31,864.8	36,476.1
Estimated Water Loss (mgd):	2,805.7	3,186.5	3,647.6
Estimated Revenue Loss (dollars):	\$701,413	\$796,619	\$911,902
Total Estimated Annual Revenue Losses After Leak Detection and Repair (dollars):	\$350,706	\$398,309	\$455,951

Source: AWWA Leak Detection Committee, 1999, pp 5-33. *Water Audits and Leak Detection: Manual of Water Supply Practices*. (M36). American Water Works Association: Denver, CO.

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The Authority will require each retail supplier who enters into contract for purchasing water to submit a water conservation plan that includes a water audit and leak detection program approved by the Authority. Each retail supplier will provide forms for conducting a comprehensive, system wide audit of its internal distribution system. These forms, sometimes referred to as "water audit worksheets," should consist of the following:

- ✓ Frequency of Audit.
- ✓ Means to measure the required water supply.
- ✓ Means to measure authorized metered use.
- ✓ Means to measure authorized unmetered use.
- ✓ Calculation of water losses.
- ✓ Analysis of water audit results.

The submittal of a leak detection program, or a "leak detection worksheet," by the retail supplier should include the following:

- ✓ Description of the area surveyed for leaks.
- ✓ List of procedures and equipment used during the leak detection process.
- ✓ Leak detection costs, budget and repair schedule.
- ✓ Means to track daily surveys or log books.
- ✓ Means to monitor repair history of service lines.
- ✓ Leak detection summary.

The water audit will quantify the water losses and the leak detection program will determine if the losses are due to leaks or unauthorized uses. Leaks will be located and repaired and unauthorized uses will be located and shut down.

4. Reservoir Systems Operation Plan

The Authority will address the requirements and consider the need for a reservoir systems operation plan, if necessary, once the primary source for water has been determined.

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5. Methods to Monitor the Effectiveness and Efficiency of the WCP.

The Authority will develop a plan for monitoring the effectiveness and efficiency of the WCP. This plan will include contractual requirements of the retail supplier to establish a method to monitor their individual conservation plans.

B. Administrative Strategies

The Authority could implement several administrative strategies to encourage water conservation by its customers to lower overall demand for water. These strategies include:

- Water Rate Structure.
- Water Rates and Related Charges.
- Prepare and implement a Drought Contingency Plan.
- Water Conservation Plan.
- Implementation and Enforcement.

1. Water Rate Structure

Wholesale rates will be designed to recover the costs of providing service based on usage, pattern of usage, and level of service to retail suppliers. The wholesale rate structures that are typically used to promote conservation are uniform volume, seasonal, increasing block, and demand rates.

The Authority will evaluate the different types of rate structures and select the one which best suits its need for revenue and the promotion of water conservation. Currently, the four rate structures mentioned above are being considered by the Authority.

For uniform volume rates, the basis for recovering costs is the same for all retail suppliers and is incurred by the wholesale supplier through an average price for water. Uniform rates tend to facilitate the basic principles of water conservation because customer bills vary directly with the level of water usage. The actual efficiency of the uniform rate depends on the circumstances of the wholesale supplier.

North Harris County Regional Water Authority
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Seasonal demand rates allow the Authority the ability to recover costs associated with high demands imposed by the retail customer during a few months of the year. In cases where seasonal increases are weather related, applying seasonal rates to large wholesale customers may affect the Authority's financial stability or require it to establish a rate stabilization fund. Setting seasonal rates is more complex than setting a uniform volume rate for the wholesale customer class.

The increasing block rate structure usually conserves more water than the uniform rate structure because it tends to be conservation-oriented. Increasing block rates would allow the Authority the ability to send consistent price signals to retail suppliers without over earning or under earning revenues. At its optimum, no customer within a given class, using similar amounts of water, should be rewarded more or less than another customer for saving a gallon of water. The increasing block rate structure will provide the Authority the flexibility to deal with difficult situations such as increased growth in water demand, decreased existing water supplies, and regional requirements to improve water efficiency and decrease subsidence due to groundwater withdrawals.

The demand rate structure is less common to the water industry than in the electric industry. This rate structure allocates, or reserves, a portion of water production facilities for a given customer or customer class. The capacity allocated or reserved is the peak-daily or peak-hourly demand allowed for the customer class. For this reserved capacity, the retail customer pays a fixed charge per month to cover demand or extra capacity-related costs. Commodity or base-related charges are then recovered through a uniform charge per unit of volume. While demand rates can effectively reduce the peak usage, they may not be as effective as seasonal rates at reducing total annual usage. The economic impacts should be carefully considered as well. If peak demand is a major determinant of system capacity and the need for system expansion, a demand charge is appropriate. If system expansion is driven more by the total annual use, a demand charge is less appropriate.

2. Water Rates and Related Charges

Properly designed rates will recover the cost, as nearly as is practicable, of providing service to the retail supplier. Water rates will consider operation and maintenance costs related to

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only the Authority's wholesale distribution system. The retail suppliers will be required to provide and maintain their own distribution facilities. Depending on specific circumstances, the cost analysis may determine that some of the costs for smaller distribution mains will not be allocated to the retail suppliers.

As with any rate structure, the effect of a change to uniform rates varies depending on the magnitude of the change and the means of implementation. A transition from block rates can be accomplished by gradually reducing the number of rate blocks and the differentials among them. A phased approach can reduce the rate shock, particularly for large-volume customers.

Source: AWWA Leak Detection Committee, 1999, pp. 1-6, 43-77. *Water Rate Structures and Pricing*. Manual of Water Supply Practices. (M34). American Water Works Association: Denver, CO.

3. Drought Contingency Plan

A Drought Contingency Plan (DCP) is a strategy or combination of strategies for temporary supply and demand management responses to temporary and potentially recurring water supply shortages and other supply emergencies. A DCP is useful to sustain water supplies for the highest priority uses during times of shortage and to preserve the water for human sustenance. Drought conditions are usually the result of extended periods of below average rainfall but could result from equipment failure. The Authority will develop a DCP to provide an orderly procedure for the limitation of water to its retail suppliers in accordance with §288.22 at a later date.

4. Water Conservation Plan

The Authority will require its retail suppliers to have approved WCP's prior to connection to the wholesale supply distribution system. Before executing a water supply contract, each retail supplier will be required to develop and implement a WCP or applicable water conservation measures in accordance with §288.2. The retail supplier's WCP will provide a means to control the rate structure and pricing of the retail water supply.

5. Means of Implementation and Enforcement

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The Authority will require all retail suppliers to comply with the Authority's WCP by contractual agreement. The means of enforcement will be considered by the Authority when a final WCP is adopted.

C. Educational Strategies

Educational strategies provide an overall savings benefit to the retail supplier and its customers, thereby lowering the overall demand for water. Although consumer education programs exist, the Authority will not require its customers to enforce or maintain a customer education program; however, several strategies are described below.

- Water Conservation Devices.
- Consumer Education Programs.
- Prepare and implement a Drought Contingency Plan.

1. Water Conservation Devices

Retail suppliers could provide information of water conservation strategies, including the adoption of low flow devices in the home. These low flow devices could include showerheads, lavatory faucets, kitchen faucets, toilet dams, outdoor watering timers, etc. Large water users, such as apartments, schools, office buildings, and City facilities could be fitted, or retrofitted, with these devices as well. A reduction could be realized at apartment complexes where most tenants are not aware of water use because they are not directly metered like homeowners. Table No. 4 lists several types of water conservation devices and estimated unit water savings based on selected water conservation programs or devices.

TABLE NO. 4
ESTIMATED UNIT WATER SAVINGS BASED ON
SELECTED WATER CONSERVATION DEVICES

Appliance/Fixture	Typical Flow Rates	Water Savings
Standard toilet	5.5 gal/flush	--
Low-flush toilet	3.5 gal/flush	2 gal/flush
Ultra-low-flush toilet	1.6 gal/flush	3.9 gal/flush
Toilet dam	--	1 gal/flush

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Appliance/Fixture	Typical Flow Rates	Water Savings
Toilet tank bag	---	0.7 gal/flush
Toilet tank replacement bottles (2)	---	0.5 gal/flush
Standard showerhead	3.4 gal/minute	---
Low-flow showerhead	1.9 gal/minute	1.5 gal/minute
Standard washing machine	55 gal/load	---
Water-efficient washing machine	42 gal/load	13 gal/load
Standard dishwasher	14 gal/load	---
Water-efficient dishwasher	8.5 gal/load	5.5 gal/load

Source: Dznegielewski, Benedykt, Eva M. Opitz, Jack C. Keifer, and Duane D. Baumann. 1993, p. 74. *Evaluating Urban Water Conservation Programs: A Procedures Manual* Planning and Management Consultants, Ltd.: Carbondale, IL.

The retail supplier should educate its customers of the benefits of water conservation practices. More emphasis should be placed on lawn watering schedules that incorporate the effective use of water timers and ideal watering times during the daytime in summer months. Commercial water sprinklers in esplanades are highly visible sources of improper watering techniques that commonly yield complaints from citizens. The use of water-wise, landscaping, effective irrigation systems, proper mowing and proper fertilizer techniques can also lower the water consumption and waste. **Table No. 5** shows potential water savings for selected water conservation practices on an annual basis.

TABLE NO. 5
POTENTIAL WATER SAVINGS FOR SELECTED
CONSERVATION PRACTICES

Measure Description	gpcd ⁽²⁾	gphd ⁽³⁾	Estimated Water Savings ⁽¹⁾ Percent
Single-family retrofit (pre-1980 homes)			
Toilet retrofit	1.3	4	1% of annual use
Low-flow showerhead	7.2	22	4% of annual use
Multi-family retrofit (pre-1980 homes)			
Toilet retrofit	1.3	3	1% of annual use
Low-flow showerhead	7.2	17	6% of annual use
Home water audits (pre-1980 single-family homes)			
Toilet retrofit	1.3	4	1% of annual use
Low-flow showerhead	7.2	22	5% of annual use
Leak repair	0.5	2	<1% of annual use
Outdoor use	---	---	5-10% of outdoor use
Home water audits (post-1980 single-family homes)			
Low-flow showerhead	2.9	9	2% of annual use
Leak repair	0.5	2	<1% of annual use
Outdoor use	---	---	5-10% of outdoor use
Large landscape water audits	---	---	10-20% of irrigation use in affected sectors
Landscape requirements for new commercial, industrial, multifamily complexes	---	---	10-20% of irrigation use in affected sectors
Distribution system water audits and leak detection	---	---	<10% of total production

Source: Dziegielewski, Benedykt, Eva M. Opitz, Jack C. Keifer, and Duane D. Baumann. 1993, p. 77. *Evaluating Urban Water Conservation Programs: A Procedures Manual*. Planning and Management Consultants, Ltd.: Carbondale, IL. Notes: ⁽¹⁾ Estimated savings based on practices in California, but not substantiated with empirical data. ⁽²⁾ gpcd=gallons per capita per day, ⁽³⁾ gphd=gallons per household per day.

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2. Consumer Education Programs

Programs designed to educate water consumers could include any one or combinations of the following: doorhanger notifications, rebates, subsidies, telephone solicitation, internet sites, direct written contact, mass-media contacts including radio and/or television spots, mailed flyers, water bill inserts, billboards and invitational workshops. Most water conservation programs rely on the customer to install a device or modify a behavior based on education information, products, or assistance provided by the utility. Costs to residential customers must be considered if a water retailer is to make recommendations to its customers. Any customers who feel that the program will cost them too much will not participate. Table No. 6 shows energy savings associated with residential water conservation.

TABLE NO. 6
POTENTIAL ENERGY SAVINGS ASSOCIATED WITH
RESIDENTIAL WATER CONSERVATION PRACTICES

Device	Water saved Gal/day/person	Annual Energy Saved per Person		Value of Energy Saved per Person \$/year	
		Gas Water Heaters Therm/year	Electric Water Heaters KWh/year	Gas	Electric
Low-flow shower-heads, 2.75 gpm	7.2	11.6	275	\$8.30	\$33.0
Water-saving dishwashers	1.0	3.0	71	\$2.20	\$8.50
Water-saving clothes washer	1.7	5.1	121	\$3.70	\$14.50
Total	9.9	19.7	467	\$14.20	\$56.00

Source: Dziegielewski, Benedykt, Eva M. Opitz, Jack C. Keifer, and Duane D. Baumann. 1993, p. 104. *Evaluating Urban Water Conservation Programs: A Procedures Manual*. Planning and Management Consultants, Ltd., Carbondale, IL.

3. Prepare and Implement a Drought Contingency Plan

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The Authority will develop a program to assist customers in the development of drought contingency plans and conservation pollution prevention abatement plans. The extent of this assistance will be determined when the Authority enters a contractual agreement with its customers. These contracts should be in place by 2010.

D. Wastewater Reclamation

Treated wastewater effluent for reuse is an effective means by which conservation can be achieved at a minimum cost to the Authority. An expressed interest from various users of groundwater could justify the cost to supply reclaimed water. A separate water reclamation study identified these various users by conducting a survey of potential reclaimed water users located within the boundaries of the Authority. School grounds and athletic fields were considered as potential reuse candidates, but rejected due to the small amount of irrigation water needed by these facilities. It was determined that the cost to provide reclaimed water to these facilities greatly outweighed the benefit of groundwater pumpage reduction.

The water reclamation study reported that thirteen potential reuse projects were evaluated as part of this study, including twelve golf courses and one park facility. Evaluations include preliminary distribution system layouts; determination of reclaimed water demand and availability and detailed cost estimates for each project. Several of the projects were evaluated as joint facilities serving two or more users based on the proximity of single reclaimed water production facilities to multiple potential users. In addition, the Reliant Energy power plant on SH 249 is considering operating up to 70 percent of its present demand using reclaimed water as an alternative supply for its industrial use. This is an effective means of substituting recycled water for treated potable water. The Authority is pursuing the use of reclaimed water by the power plant.

A regional reclaimed water plan could provide economic and regulatory benefits to all participants and to the Authority as a whole by reducing the demand for potable water for irrigation applications. The golf courses and park / recreation facilities considered as potential reclaimed water users represent a potential reduction of groundwater pumpage of 1.13 billion

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gallons per year, which is 4.5% of the Authority's current groundwater demand of 25 billion gallons per year.

Implementation of a regional reclaimed water system, to be planned, constructed and maintained by the Authority, is a viable solution to providing a low cost, readily available irrigation resource that is beneficial to the environment as well as to the constituents of the Authority by reducing overall groundwater pumpage requirements.

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Appendix A

PROJECTED POPULATION

Census Tract	Population Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0244.01:1	2,754	2,754	3,051	3,051	3,300	3,300	3,574	3,574
0244.01:2	1,516	1,516	1,753	1,753	1,952	1,952	2,171	2,171
0244.01:3	1,397	1,397	1,444	1,444	1,482	1,482	1,525	1,525
0244.01:4	1,969	1,969	3,111	3,111	4,068	4,068	5,123	5,123
0244.12:1	681	681	789	789	880	880	976	976
0244.12:2	80	80	131	131	174	174	220	220
0244.22:1	1,643	1,643	1,919	1,919	2,149	2,149	2,393	2,393
0244.22:2	1,785	1,785	2,217	2,217	2,578	2,578	2,962	2,962
0244.22:3	2,917	2,917	2,979	2,979	3,030	3,030	3,084	3,084
0244.22:4	3,980	1,274	5,384	1,723	6,555	2,098	7,802	2,497
0248.00:1	1,324	583	2,101	924	2,765	1,216	3,538	1,557
0248.00:2	1,514	560	3,039	1,124	4,344	1,607	5,863	2,169
0248.00:3	2,926	2,926	3,034	3,034	3,126	3,126	3,234	3,234
0248.00:4	3,800	3,420	4,313	3,882	4,752	4,277	5,263	4,737
0248.00:5	2,673	1,363	3,357	1,712	3,942	2,011	4,624	2,358
0248.00:6	1,968	1,968	2,010	2,010	2,046	2,046	2,088	2,088
0530.01:1	2,467	2,467	2,935	2,935	3,459	3,459	5,992	5,992
0530.03:3	3,079	800	3,406	886	3,620	941	3,745	974
0530.03:4	2,453	883	3,635	1,309	4,405	1,586	4,857	1,748
0530.03:5	4,979	3,187	5,936	3,799	6,560	4,198	6,926	4,433
0530.03:6	2,313	1,735	2,596	1,947	2,781	2,085	2,889	2,167
0536.11:1	1,561	1,561	1,676	1,676	1,790	1,790	1,905	1,905
0536.11:2	1,493	1,493	1,494	1,494	1,496	1,496	1,497	1,497
0536.11:3	1,305	1,305	1,314	1,314	1,324	1,324	1,333	1,333
0536.11:4	1,596	1,596	1,644	1,644	1,692	1,692	1,740	1,740
0536.11:5	1,128	1,128	1,128	1,128	1,128	1,128	1,128	1,128
0536.21:1	2,988	2,988	3,113	3,113	3,139	3,139	3,164	3,164
0536.21:2	1,286	746	1,685	977	1,765	1,024	1,845	1,070
0536.21:3	2,398	1,631	2,440	1,659	2,448	1,665	2,456	1,670
0536.21:4	3,025	3,025	3,744	3,744	3,889	3,889	4,034	4,034
0536.21:5	2,341	2,341	2,672	2,672	2,739	2,739	2,806	2,806
0537.01:1	1,467	1,467	1,839	1,839	2,157	2,157	2,569	2,569
0537.01:2	1,857	1,857	2,166	2,166	2,429	2,429	2,771	2,771
0537.01:3	2,166	2,166	2,319	2,319	2,449	2,449	2,619	2,619
0537.01:4	3,915	3,915	5,360	5,360	6,589	6,589	8,186	8,186
0537.12:1	492	462	721	678	916	861	1,145	1,076

PROJECTED POPULATION (cont.)

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Direct Testimony of David Esquivel, P.E.

Ex. DME-6

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Census Tract	Population Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0537.12:2	1,901	1,969	1,521	2,040	2,099	1,632	2,159	2,221
0537.12:3	1,312	1,377	1,312	1,446	1,503	1,446	1,560	1,621
0538.11:1	2,086	2,227	2,086	2,383	2,508	2,383	2,640	2,790
0538.11:2	2,582	3,006	1,730	3,475	3,851	2,328	4,249	4,700
0538.12:1	2,125	2,125	1,849	2,125	2,125	1,849	2,125	2,125
0538.12:2	1,338	1,367	1,338	1,398	1,423	1,398	1,448	1,474
0538.12:3	1,458	1,458	1,458	1,458	1,458	1,458	1,458	1,458
0538.12:4	1,368	1,368	1,368	1,368	1,368	1,368	1,368	1,368
0538.12:5	1,757	1,757	1,757	1,757	1,758	1,757	1,758	1,758
0538.12:6	2,968	4,196	2,434	5,480	6,527	4,494	7,580	8,653
0538.12:7	2,366	2,521	2,366	2,683	2,815	2,683	2,948	3,083
0538.21:1	954	1,045	954	1,142	1,220	1,142	1,299	1,385
0538.21:2	1,303	1,381	1,303	1,466	1,533	1,466	1,602	1,676
0538.21:3	1,846	2,116	1,846	2,406	2,637	2,406	2,874	3,127
0538.21:4	2,096	2,346	2,096	2,613	2,826	2,613	3,045	3,279
0538.31:1	1,434	1,435	1,434	1,437	1,438	1,437	1,438	1,438
0538.31:2	2,265	2,748	2,265	3,249	3,638	3,249	3,889	3,960
0538.31:3	1,425	1,425	1,425	1,425	1,425	1,425	1,425	1,425
0538.31:4	1,441	1,441	1,441	1,441	1,441	1,441	1,441	1,441
0538.31:5	1,442	1,817	1,442	2,206	2,507	2,206	2,701	2,757
0539.00:4	2,316	2,790	2,153	3,284	3,691	3,054	4,174	5,130
0540.01:3	6,016	6,885	6,016	7,786	8,530	7,786	9,306	10,146
0540.12:2	2,436	2,442	682	2,448	2,452	685	2,457	2,465
0540.12:3	1,213	1,399	1,213	1,591	1,738	1,591	1,903	2,174
0540.12:4	5,391	6,039	5,121	6,707	7,220	6,372	7,793	8,739
0540.12:5	1,895	2,101	891	2,314	2,477	1,088	2,660	2,961
0540.22:3	2,625	2,920	2,337	3,221	3,429	2,866	3,673	4,168
0540.22:5	1,716	1,814	429	1,915	1,984	479	2,066	2,231
0541.10:1	1,101	1,167	507	1,253	1,331	576	1,424	1,560
0541.10:2	1,697	1,911	1,069	2,186	2,440	1,377	2,738	3,176
0541.10:3	1,050	1,418	1,050	1,892	2,329	1,892	2,842	3,596
0541.20:1	3,204	3,391	2,564	3,593	3,763	2,874	3,939	4,133
0541.20:3	1,505	1,746	1,505	2,007	2,227	2,007	2,454	2,705
0541.20:4	3,501	3,763	3,501	4,046	4,284	4,046	4,530	4,802
0541.20:5	2,763	2,875	2,763	2,995	3,097	2,995	3,202	3,318
0541.20:6	5,124	5,608	5,124	6,131	6,571	6,131	7,027	7,530

PROJECTED POPULATION (cont.)

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Census Tract	Population Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0541.20:7	5,154	5,254	5,154	5,362	5,452	5,362	5,546	5,650
0541.20:8	7,439	9,031	7,439	10,749	12,196	10,749	13,695	15,349
0541.30:1	1,022	1,037	1,022	1,052	1,068	1,052	1,083	1,098
0541.30:2	2,019	2,035	1,878	2,052	2,068	1,908	2,085	2,101
0541.30:3	1,977	2,007	1,839	2,037	2,066	1,894	2,096	2,126
0545.01:1	1,614	1,645	1,614	1,683	1,719	1,683	1,759	1,810
0545.01:2	634	829	634	1,072	1,299	1,072	1,552	1,874
0545.01:3	3,370	4,102	3,370	5,013	5,863	5,013	6,811	8,015
0545.12:1	1,999	2,020	1,999	2,044	2,064	2,044	2,085	2,108
0545.12:2	1,683	1,935	1,683	2,222	2,453	2,222	2,706	2,986
0545.12:3	1,656	2,143	1,656	2,696	3,141	2,696	3,630	4,170
0545.22:1	1,713	2,038	1,713	2,393	2,666	2,393	2,952	3,147
0545.22:2	3,178	3,560	3,178	3,978	4,299	3,978	4,634	4,864
0545.22:3	1,060	1,060	1,060	1,060	1,060	1,060	1,060	1,060
0545.22:4	3,109	3,575	3,109	4,084	4,476	4,084	4,884	5,165
0545.32:1	2,528	3,105	1,997	3,716	4,187	2,936	4,665	4,838
0545.32:2	3,555	4,447	3,555	5,394	6,122	5,394	6,863	7,131
0545.32:3	2,599	2,629	2,599	2,660	2,684	2,660	2,708	2,717
0545.32:4	1,737	1,737	1,737	1,737	1,737	1,737	1,737	1,737
0545.32:5	1,696	1,696	1,696	1,696	1,696	1,696	1,696	1,696
0545.32:6	1,331	1,374	1,331	1,419	1,454	1,419	1,489	1,502
0548.98:9	582	587	518	589	567	524	545	525
0549.00:1	1,878	1,891	1,878	1,904	1,903	1,904	1,902	1,901
0549.00:2	708	817	680	927	912	890	904	902
0550.00:9	2,417	2,565	2,417	2,715	2,749	2,715	2,788	2,832
0551.01:1	2,104	2,296	2,104	2,520	2,707	2,520	2,915	3,150
0551.01:2	2,558	2,636	2,558	2,727	2,802	2,727	2,887	2,982
0551.01:3	892	1,002	892	1,130	1,237	1,130	1,356	1,490
0551.01:4	3,534	4,582	3,534	5,797	6,813	5,797	7,944	9,222
0551.12:1	1,864	1,889	1,864	1,915	1,941	1,915	1,966	1,992
0551.12:2	2,379	2,380	2,379	2,380	2,381	2,380	2,381	2,382
0551.12:3	1,582	1,605	1,582	1,628	1,652	1,628	1,675	1,698
0551.12:4	2,232	2,232	2,232	2,232	2,232	2,232	2,233	2,233
0551.12:5	2,087	2,087	2,087	2,087	2,087	2,087	2,087	2,087
0551.12:6	1,600	1,694	1,600	1,788	1,881	1,788	1,975	2,069
0551.22:1	3,133	3,646	3,133	4,195	4,622	4,195	5,059	5,506

PROJECTED POPULATION (cont.)

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Census Tract	Population Projections						
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030
0551.22:2	761	887	761	1,022	1,127	1,022	1,234
0551.22:3	2,955	3,098	2,955	3,251	3,371	3,251	3,493
0551.22:4	2,765	2,895	2,765	3,035	3,143	3,035	3,254
0551.22:5	1,025	1,324	451	1,642	1,890	723	2,144
0552.00:1	2,350	2,712	2,350	3,156	3,556	3,156	3,999
0552.00:2	1,916	2,257	1,916	2,677	3,054	2,677	3,473
0552.00:3	1,604	1,784	1,604	2,006	2,205	2,006	2,425
0553.00:1	1,291	1,299	1,291	1,308	1,313	1,308	1,319
0553.00:2	2,118	2,244	2,118	2,379	2,465	2,379	2,557
0553.00:3	937	1,152	937	1,382	1,529	1,382	1,685
0553.00:4	1,911	2,194	1,911	2,496	2,689	2,496	2,895
0553.00:5	1,368	1,492	1,368	1,625	1,710	1,625	1,800
0554.00:1	1,276	1,512	1,276	1,814	2,109	1,814	2,439
0555.01:1	1,426	1,580	1,426	1,768	1,937	1,768	2,128
0555.01:2	815	1,054	815	1,345	1,608	1,345	1,902
0555.12:1	1,564	1,861	1,564	2,200	2,475	2,200	2,777
0555.12:2	2,411	2,672	2,411	2,970	3,213	2,970	3,478
0555.22:1	1,557	1,805	1,557	2,003	2,029	2,003	2,055
0555.22:2	2,244	2,653	2,244	2,980	3,024	2,980	3,068
0555.22:3	2,388	2,468	2,388	2,531	2,540	2,531	2,548
0555.22:4	3,423	3,987	3,423	4,438	4,498	4,438	4,559
0555.22:5	3,383	3,974	3,383	4,446	4,509	4,446	4,572
0555.22:6	3,071	3,430	3,071	3,717	3,755	3,717	3,793
0555.32:1	1,450	1,572	1,450	1,710	1,819	1,710	1,936
0555.32:2	1,159	1,487	1,159	1,856	2,148	1,856	2,461
0555.32:3	2,188	2,348	2,188	2,527	2,669	2,527	2,820
0555.32:4	1,880	2,160	1,880	2,474	2,722	2,474	2,988
0556.01:1	2,002	2,060	2,002	2,128	2,188	2,128	2,255
0556.01:2	1,793	1,978	1,793	2,199	2,393	2,199	2,609
0556.01:3	2,021	2,338	2,021	2,716	3,047	2,716	3,417
0556.01:4	1,675	2,357	1,675	3,170	3,882	3,170	4,677
0556.12:1	1,684	1,696	1,684	1,710	1,720	1,710	1,732
0556.12:2	1,237	1,242	1,237	1,246	1,250	1,246	1,255
0556.12:3	2,233	2,233	2,233	2,233	2,233	2,233	2,233
0556.12:4	2,710	3,570	2,710	4,543	5,319	4,543	6,171
0556.12:5	1,995	2,511	1,995	3,095	3,561	3,095	4,072

PROJECTED POPULATION (cont.)

North Harris County Regional Water Authority
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Appendix A

Census Tract	Population Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0556.22:1	2,504	2,773	2,504	3,066	3,291	3,066	3,526	3,689
0556.22:2	3,227	3,481	3,227	3,758	3,971	3,758	4,193	4,347
0556.22:3	1,261	1,550	1,261	1,866	2,108	1,866	2,360	2,536
0556.22:4	2,923	3,380	2,923	3,878	4,260	3,878	4,658	4,936
0557.00:1	896	939	896	986	1,014	986	1,044	1,076
0557.00:2	1,777	1,987	1,777	2,210	2,347	2,210	2,491	2,646
0558.01:1	2,431	2,953	2,431	3,565	4,082	3,565	4,660	5,322
0558.01:2	5,622	6,036	5,622	6,521	6,931	6,521	7,390	7,915
0558.01:3	2,787	3,224	2,787	3,736	4,170	3,736	4,654	5,209
0558.01:4	3,118	3,981	3,118	4,991	5,847	4,991	6,802	7,896
0558.12:1	1,325	1,938	1,325	2,632	3,189	2,632	3,799	4,473
0558.12:2	2,188	2,403	2,188	2,647	2,843	2,647	3,057	3,293
0558.12:3	1,995	2,102	1,995	2,223	2,320	2,223	2,427	2,544
0558.12:4	2,203	2,353	2,203	2,523	2,659	2,523	2,808	2,974
0558.12:5	1,590	1,793	1,590	2,024	2,209	2,024	2,411	2,635
0558.22:1	2,713	2,751	2,713	2,766	2,780	2,766	2,794	2,809
0558.22:2	3,350	3,433	3,350	3,464	3,495	3,464	3,526	3,557
0558.22:3	2,678	2,847	2,678	2,911	2,975	2,911	3,038	3,102
0559.01:1	1,223	1,763	1,223	2,377	2,871	2,377	3,415	4,015
0559.01:2	523	700	523	900	1,062	900	1,239	1,436
0559.01:3	1,021	1,294	1,021	1,604	1,853	1,604	2,127	2,430
0559.01:4	1,154	1,329	1,154	1,528	1,688	1,528	1,864	2,058
0559.01:5	2,940	3,177	2,940	3,446	3,663	3,446	3,901	4,164
0559.01:6	3,177	3,221	3,177	3,271	3,311	3,271	3,355	3,403
0559.02:1	4,967	5,417	4,967	5,935	6,349	5,935	6,800	7,321
0559.02:2	5,375	6,055	5,375	6,837	7,463	6,837	8,145	8,933
0559.02:3	2,714	3,063	2,714	3,465	3,786	3,465	4,136	4,540
0559.02:4	3,225	3,230	3,225	3,236	3,240	3,236	3,245	3,250
0559.02:5	3,877	4,454	3,877	5,119	5,650	5,119	6,229	6,897
0559.02:6	6,356	8,614	6,356	11,212	13,289	11,212	15,555	18,171
0559.02:7	3,732	3,942	3,732	4,185	4,379	4,185	4,591	4,835
0559.02:8	1,177	1,269	1,177	1,374	1,458	1,374	1,549	1,655
Totals	391,519	367,722	485,532	455,085	563,479	527,769	657,038	615,197

Source: *Update of Population and Water Demand Forecasts for the Harris-Galveston Coastal Subsidence District (Update Report)*, Turner Collie & Braden, Inc., March 1996.

**North Harris County Regional Water Authority
Water Conservation Plan**

Appendix B

PROJECTED WATER DEMAND

Census Tract	Water Demand Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0244.01:1	0.47	0.48	0.47	0.50	0.51	0.50	0.53	0.54
0244.01:2	0.25	0.26	0.25	0.28	0.29	0.28	0.30	0.32
0244.01:3	0.24	0.25	0.24	0.25	0.25	0.25	0.25	0.26
0244.01:4	0.27	0.35	0.27	0.43	0.49	0.43	0.56	0.63
0244.12:1	0.14	0.15	0.14	0.17	0.17	0.17	0.18	0.19
0244.12:2	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05
0244.22:1	0.28	0.29	0.28	0.31	0.33	0.31	0.35	0.36
0244.22:2	0.29	0.31	0.29	0.35	0.37	0.35	0.40	0.42
0244.22:3	0.51	0.51	0.51	0.52	0.52	0.52	0.52	0.53
0244.22:4	0.76	0.97	0.24	1.10	1.22	0.35	1.34	1.46
0248.00:1	0.23	0.28	0.10	0.34	0.39	0.15	0.44	0.49
0248.00:2	0.16	0.25	0.06	0.35	0.43	0.13	0.51	0.60
0248.00:3	0.52	0.53	0.52	0.54	0.54	0.54	0.55	0.56
0248.00:4	0.67	0.70	0.60	0.74	0.77	0.67	0.80	0.84
0248.00:5	0.48	0.53	0.24	0.58	0.62	0.29	0.66	0.71
0248.00:6	0.35	0.35	0.35	0.36	0.36	0.36	0.36	0.36
0530.01:1	0.43	0.47	0.43	0.50	0.52	0.50	0.57	0.72
0530.03:3	0.20	0.22	0.05	0.24	0.25	0.06	0.26	0.27
0530.03:4	0.25	0.32	0.09	0.38	0.43	0.14	0.47	0.51
0530.03:5	0.82	0.89	0.53	0.96	1.00	0.61	1.04	1.08
0530.03:6	0.41	0.43	0.31	0.44	0.46	0.33	0.47	0.48
0536.11:1	0.23	0.24	0.23	0.24	0.25	0.24	0.26	0.27
0536.11:2	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
0536.11:3	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
0536.11:4	0.26	0.27	0.26	0.27	0.27	0.27	0.27	0.28
0536.11:5	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
0536.21:1	0.53	0.55	0.53	0.55	0.55	0.55	0.55	0.55
0536.21:2	0.24	0.28	0.14	0.29	0.30	0.17	0.31	0.31
0536.21:3	0.44	0.45	0.30	0.45	0.45	0.30	0.45	0.45
0536.21:4	0.56	0.65	0.56	0.67	0.69	0.67	0.70	0.71
0536.21:5	0.43	0.47	0.43	0.48	0.49	0.48	0.49	0.50
0537.01:1	0.27	0.30	0.27	0.33	0.35	0.33	0.37	0.40
0537.01:2	0.34	0.36	0.34	0.39	0.41	0.39	0.43	0.45
0537.01:3	0.39	0.41	0.39	0.42	0.43	0.42	0.44	0.45
0537.01:4	0.65	0.75	0.65	0.86	0.94	0.86	1.03	1.13
0537.12:1	0.10	0.11	0.09	0.12	0.14	0.12	0.15	0.16

PROJECTED WATER DEMAND (cont.)

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Appendix B

Census Tract	Water Demand Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0537.12:2	0.35	0.36	0.28	0.37	0.38	0.30	0.39	0.40
0537.12:3	0.29	0.30	0.29	0.31	0.32	0.31	0.32	0.33
0538.11:1	0.36	0.38	0.36	0.40	0.42	0.40	0.44	0.46
0538.11:2	0.41	0.46	0.27	0.53	0.57	0.35	0.63	0.69
0538.12:1	0.40	0.40	0.35	0.40	0.40	0.35	0.40	0.40
0538.12:2	0.26	0.27	0.26	0.27	0.27	0.27	0.28	0.28
0538.12:3	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
0538.12:4	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
0538.12:5	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
0538.12:6	0.44	0.61	0.36	0.78	0.92	0.64	1.07	1.21
0538.12:7	0.44	0.46	0.44	0.49	0.51	0.49	0.53	0.55
0538.21:1	0.20	0.21	0.20	0.22	0.23	0.22	0.24	0.26
0538.21:2	0.26	0.27	0.26	0.28	0.29	0.28	0.30	0.31
0538.21:3	0.34	0.38	0.34	0.42	0.45	0.42	0.49	0.52
0538.21:4	0.39	0.42	0.39	0.46	0.49	0.46	0.52	0.55
0538.31:1	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
0538.31:2	0.36	0.43	0.36	0.49	0.55	0.49	0.58	0.59
0538.31:3	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
0538.31:4	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
0538.31:5	0.24	0.30	0.24	0.36	0.41	0.36	0.43	0.44
0539.00:4	0.34	0.41	0.32	0.47	0.53	0.44	0.59	0.72
0540.01:3	0.97	1.10	0.97	1.23	1.34	1.23	1.46	1.63
0540.12:2	0.11	0.11	0.03	0.11	0.11	0.03	0.11	0.11
0540.12:3	0.20	0.22	0.20	0.25	0.27	0.25	0.30	0.34
0540.12:4	0.89	0.98	0.84	1.07	1.15	1.02	1.23	1.37
0540.12:5	0.32	0.35	0.15	0.38	0.41	0.18	0.43	0.48
0540.22:3	0.44	0.49	0.39	0.53	0.58	0.47	0.63	0.69
0540.22:5	0.18	0.19	0.05	0.20	0.22	0.05	0.23	0.25
0541.10:1	0.20	0.21	0.09	0.22	0.24	0.10	0.25	0.27
0541.10:2	0.31	0.34	0.19	0.38	0.42	0.24	0.47	0.53
0541.10:3	0.17	0.22	0.17	0.29	0.35	0.29	0.43	0.54
0541.20:1	0.57	0.60	0.45	0.63	0.65	0.50	0.68	0.71
0541.20:3	0.33	0.36	0.33	0.40	0.43	0.40	0.47	0.51
0541.20:4	0.64	0.68	0.64	0.72	0.75	0.72	0.79	0.83
0541.20:5	0.61	0.65	0.61	0.57	0.59	0.57	0.61	0.63
0541.20:6	0.87	0.94	0.87	1.02	1.08	1.02	1.15	1.23

PROJECTED WATER DEMAND (cont.)

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Appendix B

Census Tract	Water Demand Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0541.20:7	0.92	0.93	0.92	0.95	0.96	0.95	0.98	0.99
0541.20:8	1.19	1.43	1.19	1.67	1.89	1.67	2.11	2.36
0541.30:1	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.24
0541.30:2	0.46	0.46	0.43	0.47	0.47	0.43	0.47	0.47
0541.30:3	0.59	0.59	0.55	0.60	0.60	0.56	0.61	0.61
0545.01:1	0.29	0.29	0.29	0.30	0.31	0.30	0.31	0.32
0545.01:2	0.15	0.18	0.15	0.22	0.25	0.22	0.29	0.33
0545.01:3	0.62	0.73	0.62	0.87	1.00	0.87	1.13	1.31
0545.12:1	0.36	0.36	0.36	0.36	0.37	0.36	0.37	0.37
0545.12:2	0.28	0.32	0.28	0.36	0.40	0.36	0.43	0.47
0545.12:3	0.26	0.33	0.26	0.41	0.47	0.41	0.54	0.62
0545.22:1	0.27	0.31	0.27	0.35	0.38	0.35	0.42	0.44
0545.22:2	0.53	0.59	0.53	0.64	0.69	0.64	0.73	0.76
0545.22:3	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
0545.22:4	0.50	0.57	0.50	0.64	0.70	0.64	0.75	0.79
0545.32:1	0.46	0.54	0.36	0.62	0.69	0.49	0.76	0.78
0545.32:2	0.61	0.73	0.61	0.85	0.95	0.85	1.05	1.08
0545.32:3	0.49	0.50	0.49	0.50	0.51	0.50	0.51	0.51
0545.32:4	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
0545.32:5	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
0545.32:6	0.30	0.30	0.30	0.31	0.31	0.31	0.32	0.32
0548.98:9	0.11	0.11	0.10	0.11	0.11	0.10	0.11	0.11
0549.00:1	0.37	0.38	0.37	0.38	0.38	0.38	0.38	0.38
0549.00:2	0.13	0.15	0.13	0.16	0.16	0.16	0.16	0.16
0550.00:9	0.42	0.45	0.42	0.47	0.47	0.47	0.48	0.48
0551.01:1	0.39	0.41	0.39	0.44	0.47	0.44	0.50	0.53
0551.01:2	0.49	0.50	0.49	0.51	0.52	0.51	0.53	0.55
0551.01:3	0.17	0.19	0.17	0.21	0.22	0.21	0.24	0.26
0551.01:4	0.70	0.85	0.70	1.02	1.17	1.02	1.33	1.51
0551.12:1	0.43	0.43	0.43	0.44	0.44	0.44	0.45	0.45
0551.12:2	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
0551.12:3	0.34	0.34	0.34	0.34	0.35	0.34	0.35	0.36
0551.12:4	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
0551.12:5	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
0551.12:6	0.25	0.27	0.25	0.28	0.30	0.28	0.31	0.33
0551.22:1	0.51	0.58	0.51	0.66	0.72	0.66	0.78	0.85

PROJECTED WATER DEMAND (cont.)

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Appendix B

Census Tract	Water Demand Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0551.22:2	0.13	0.15	0.13	0.17	0.18	0.17	0.20	0.21
0551.22:3	0.51	0.53	0.51	0.55	0.57	0.55	0.58	0.60
0551.22:4	0.48	0.49	0.48	0.51	0.53	0.51	0.54	0.56
0551.22:5	0.14	0.18	0.06	0.21	0.24	0.09	0.27	0.30
0552.00:1	0.39	0.44	0.39	0.50	0.55	0.50	0.61	0.69
0552.00:2	0.31	0.35	0.31	0.41	0.46	0.41	0.51	0.58
0552.00:3	0.27	0.29	0.27	0.32	0.35	0.32	0.38	0.42
0553.00:1	0.18	0.18	0.18	0.19	0.19	0.19	0.19	0.19
0553.00:2	0.25	0.26	0.25	0.35	0.36	0.35	0.37	0.39
0553.00:3	0.10	0.11	0.10	0.20	0.22	0.20	0.25	0.27
0553.00:4	0.22	0.23	0.22	0.36	0.39	0.36	0.42	0.45
0553.00:5	0.17	0.18	0.17	0.24	0.25	0.24	0.26	0.28
0554.00:1	0.21	0.25	0.21	0.29	0.33	0.29	0.38	0.44
0555.01:1	0.25	0.28	0.25	0.31	0.35	0.31	0.39	0.44
0555.01:2	0.13	0.17	0.13	0.22	0.27	0.22	0.33	0.40
0555.12:1	0.26	0.30	0.26	0.35	0.38	0.35	0.43	0.47
0555.12:2	0.42	0.45	0.42	0.50	0.53	0.50	0.57	0.61
0555.22:1	0.27	0.31	0.27	0.34	0.34	0.34	0.34	0.35
0555.22:2	0.38	0.44	0.38	0.49	0.49	0.49	0.50	0.51
0555.22:3	0.44	0.46	0.44	0.46	0.47	0.46	0.47	0.47
0555.22:4	0.58	0.66	0.58	0.72	0.73	0.72	0.74	0.75
0555.22:5	0.56	0.65	0.56	0.72	0.72	0.72	0.73	0.74
0555.22:6	0.54	0.59	0.54	0.63	0.64	0.63	0.65	0.65
0555.32:1	0.28	0.30	0.28	0.32	0.33	0.32	0.35	0.37
0555.32:2	0.23	0.28	0.23	0.34	0.38	0.34	0.43	0.48
0555.32:3	0.42	0.44	0.42	0.47	0.49	0.47	0.52	0.54
0555.32:4	0.36	0.40	0.36	0.45	0.49	0.45	0.53	0.57
0556.01:1	0.38	0.39	0.38	0.40	0.41	0.40	0.42	0.43
0556.01:2	0.36	0.38	0.36	0.42	0.45	0.42	0.48	0.52
0556.01:3	0.40	0.45	0.40	0.50	0.55	0.50	0.60	0.67
0556.01:4	0.36	0.46	0.36	0.58	0.68	0.58	0.80	0.94
0556.12:1	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31
0556.12:2	0.22	0.22	0.22	0.23	0.23	0.23	0.23	0.23
0556.12:3	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
0556.12:4	0.41	0.54	0.41	0.67	0.78	0.67	0.90	0.93
0556.12:5	0.32	0.40	0.32	0.48	0.55	0.48	0.62	0.63

PROJECTED WATER DEMAND (cont.)

**North Harris County Regional Water Authority
Water Conservation Plan**

Appendix B

Census Tract	Water Demand Projections							
	2000	2000 Adjusted	2010	2010 Adjusted	2020	2020 Adjusted	2030	2030 Adjusted
0556.22:1	0.42	0.46	0.42	0.49	0.52	0.49	0.56	0.58
0556.22:2	0.57	0.61	0.57	0.65	0.68	0.65	0.71	0.74
0556.22:3	0.20	0.25	0.20	0.29	0.33	0.29	0.36	0.39
0556.22:4	0.48	0.54	0.48	0.61	0.66	0.61	0.72	0.75
0557.00:1	0.17	0.17	0.17	0.18	0.18	0.18	0.19	0.19
0557.00:2	0.33	0.36	0.33	0.39	0.41	0.39	0.43	0.45
0558.01:1	0.39	0.46	0.39	0.54	0.61	0.54	0.69	0.78
0558.01:2	0.98	1.04	0.98	1.11	1.16	1.11	1.23	1.30
0558.01:3	0.48	0.54	0.48	0.61	0.67	0.61	0.74	0.82
0558.01:4	0.50	0.63	0.50	0.77	0.89	0.77	1.02	1.18
0558.12:1	0.19	0.27	0.19	0.36	0.44	0.36	0.52	0.61
0558.12:2	0.39	0.42	0.39	0.46	0.48	0.46	0.51	0.55
0558.12:3	0.36	0.38	0.36	0.40	0.41	0.40	0.43	0.44
0558.12:4	0.39	0.41	0.39	0.44	0.46	0.44	0.48	0.50
0558.12:5	0.28	0.31	0.28	0.34	0.37	0.34	0.40	0.43
0558.22:1	0.48	0.48	0.48	0.49	0.49	0.49	0.49	0.49
0558.22:2	0.57	0.59	0.57	0.59	0.60	0.59	0.60	0.60
0558.22:3	0.42	0.44	0.42	0.45	0.46	0.45	0.47	0.48
0559.01:1	0.23	0.32	0.23	0.41	0.49	0.41	0.57	0.66
0559.01:2	0.09	0.11	0.09	0.14	0.17	0.14	0.20	0.23
0559.01:3	0.16	0.20	0.16	0.25	0.29	0.25	0.33	0.38
0559.01:4	0.19	0.22	0.19	0.25	0.27	0.25	0.30	0.33
0559.01:5	0.54	0.57	0.54	0.61	0.65	0.61	0.69	0.73
0559.01:6	0.58	0.59	0.58	0.60	0.60	0.60	0.61	0.62
0559.02:1	0.84	0.90	0.84	0.98	1.04	0.98	1.10	1.18
0559.02:2	0.88	0.98	0.88	1.09	1.18	1.09	1.28	1.39
0559.02:3	0.44	0.49	0.44	0.55	0.59	0.55	0.64	0.70
0559.02:4	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
0559.02:5	0.64	0.73	0.64	0.82	0.90	0.82	0.98	1.08
0559.02:6	0.94	1.26	0.94	1.63	1.93	1.63	2.25	2.62
0559.02:7	0.65	0.68	0.65	0.72	0.75	0.72	0.78	0.81
0559.02:8	0.21	0.22	0.21	0.23	0.25	0.23	0.26	0.27
Totals	67.74	64.29	81.29	76.87	92.48	87.30	105.99	99.93

Source: *Update of Population and Water Demand Forecasts for the Harris-Galveston Coastal Subsidence District (Update Report)*, Turner Collie & Braden, Inc., March 1996.

**APPENDIX E DRAFT PROJECT SCHEDULE FOR NHCRWA 2010
CONVERSION PROGRAM**

TurnerCollie & Braden Inc.

ARCADIS

Direct Testimony of David Esquivel, P.E.

Ex. DME-6



Ed Shackelford, P.E.
General Manager

BOARD OF DIRECTORS
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Alan C. Rendt, *Director*

September 4, 2002

Delivered Via Messenger

Ron Neighbors, General Manager
Harris-Galveston Coastal Subsidence District
1660 West Bay Area Boulevard
Friendswood, TX 77546-2640

Dear Mr. Neighbors:

Please find enclosed a draft Project Schedule for the North Harris County Regional Water Authority's (the "Authority") proposed 2010-2012 Surface Water Conversion Project. The Project Schedule depicts the Authority delineating the required infrastructure projects for delivering at least 50 percent surface water through 2012 by category (i.e., Northeast Water Purification Plant, Regional Water Wells (2 projects), Regional Water Plants, Transmission Systems (2 projects), Distribution System (4 projects)).

Each project within each category has an engineering and construction component. The engineering component generally includes detailed engineering design services, surveying, geotechnical investigation, environmental investigation, existing utility investigation, route study, right of way investigation, easement right of way document preparation and acquisition. The construction component typically includes soliciting prospective bidders of a project, legal advertisement, pre-bid meetings, receipt of bids, tabulation of bids, awarding of project to the low bidder, preconstruction meetings, notice to proceed, construction administration, project inspection, final inspections, and notice of substantial completion.

The remaining item necessary to complete the Authority's CRP submittal to the HGCSD is the water supply contract with the City of Houston. The Authority is in the final stages of negotiating the contract language. The contract financially commits the Authority for water supply capacity through 2012 (50 percent surface water delivery). Additionally, the contract allows for financial commitment and water supply capacities reservation in 2013 for 2020 and beyond (70 percent to 80 percent surface water delivery). A timeline will be provided with a copy of the contract depicting milestones and financial commitment dates.

We have two public meetings scheduled, September 5, 2002 at 7:00 p.m. and September 7, 2002 at 9:00 a.m., to discuss in detail the water supply contract final draft. The special meeting on September 7, 2002 also allows the Board of Directors to vote on the contract. Additional dates can be scheduled should it be necessary. It is anticipated that the water supply contract could be executed by both parties by mid to late October 2002.

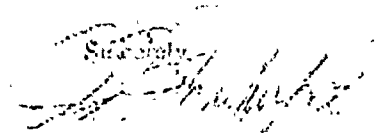
3618 Fwy 1960 West, Suite 112 • Houston, TX 77066 • Tel: 281-440-3924 • Fax: 281-440-4104
• Web: www.harriscountytx.org

Direct Testimony of David Esquivel, P.E.

Ex. DME-6

Ron Neighbors, General Manager
September 4, 2002
Page Two

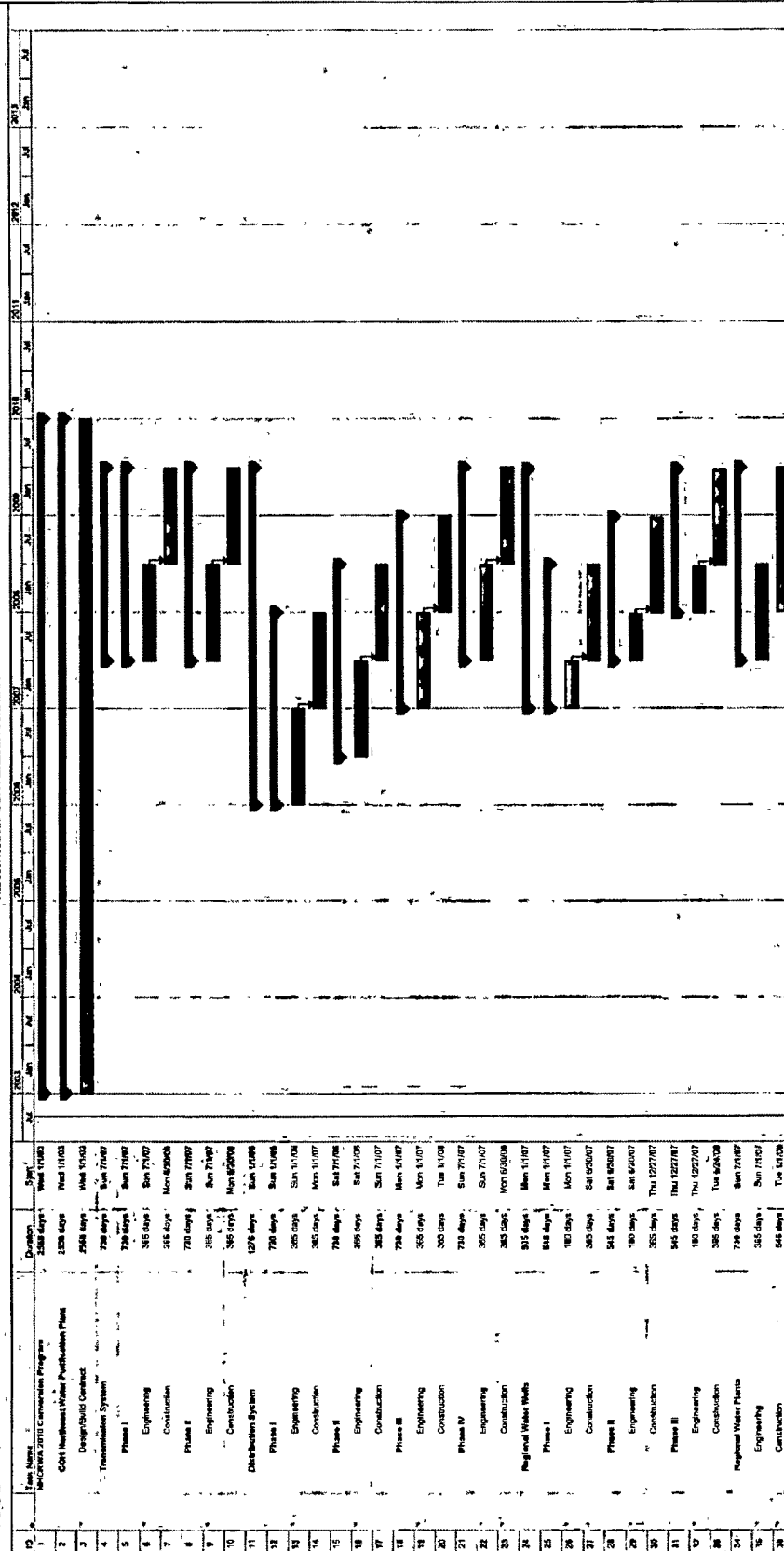
Thank you for your cooperation. Please contact me at (281) 440-3924, should you have questions.

Sincerely,

Pat Shackelford, P.E.
General Manager

Encs
Attachment: Draft Project Schedule

cc: NHD/RWA Board of Directors
R. Bobbitt, Johnson Radcliffe Petro & Bobbitt PLLC

**PROJECT SCHEDULE
FOR
NHCRWA 2010 CONVERSION PROGRAM**





Jimmie Schindewolf, P.E.
General Manager

BOARD OF DIRECTORS
James D. Pulliam, *President*
Ron Graham, *Vice President*
Kelly P. Fessler, *Secretary*
Lenox Sigler, *Asst. Secretary*
Alan J. Rendl, *Treasurer*

August 2, 2004

Mr. Ron Neighbors
General Manager
Harris-Galveston Coastal Subsidence District
1660 W. Bay Area Blvd.
Friendswood, TX 77546

Re: Proposed Amendment 1 to the North Harris County Regional Water Authority Groundwater Reduction Plan

Dear Mr. Neighbors,

The North Harris County Regional Water Authority (the "Authority") Board of Directors adopted an Order Adding Land and Redefining Boundaries of the Authority (the "Order") at the March 1, 2004 Board meeting. The Order adds the additional land of CMH Parks, Inc. – Northwest Pines Mobile Home Park, AquaSource Utility, Inc. – Atascocita Acres subdivision, Lochinvar Golf Club, and AquaSource Utility, Inc. – Mobile Home Estates subdivision into the boundaries of the Authority for all purposes.

In order to include the previously listed entities in the Authority's Groundwater Reduction Plan (the "GRP"), which was certified at your June 11, 2003 Board of Directors meeting, the Authority has prepared Amendment 1 to the GRP. On behalf of the North Harris County Regional Water Authority, I am herewith respectfully requesting that the Harris-Galveston Coastal Subsidence District approve the attached amendment to the Authority's Groundwater Reduction Plan.

Please call me if you have any questions or need any additional information relative to this matter.

Sincerely,

Jimmie Schindewolf, P.E.
General Manager

JAS/cp

Attachment

cc: Authority Board of Directors
Tom Michel, Harris-Galveston Coastal Subsidence District
Tom Rolen, P.E., Turner Collie & Braden Inc.
Robin Bobbitt, Johnson Radcliffe Petrov & Bobbitt PLLC
Showri Nandagiri, Authority Engineer Coordinator
Cyndi Plunkett, Authority Financial Assistant

3648 FM 1960 West, Suite 110 ♦ Houston, TX 77068 ♦ 281-440-3924 ♦ Fax: 281-440-4104
www.nhcrwa.com

Direct Testimony of David Esquivel, P.E.

Ex. DME-6



AMENDMENT 1

to the

North Harris County Regional Water Authority
Groundwater Reduction Plan

presented to

Harris-Galveston Coastal Subsidence District

August 2004

Direct Testimony of David Esquivel, P.E.

Ex. DME-6

TABLE OF CONTENTS

- Amendment Overview
- Order Adding Land and Redefining Boundaries of the Authority, adopted March 1, 2004
- Table 3 The NHCRWA Surface Water Conversion Goals
Revised August, 2004
- Table 4 Wholesale Customer and Non-customers within the
 NHCRWA – Existing and Proposed ADF Water
 Demands Per Construction Phase
Revised August, 2004
- Exhibit 2 NHCRWA Boundary and Member Entities
Revised August, 2004

AMENDMENT OVERVIEW

March 1, 2004 the North Harris County Regional Water Board adopted an Order Adding Land and Redefining Boundaries of the Authority (the "Order"). The Order added land in the following entities:

- AquaSource Utility, Inc. – Atascocita Acres subdivision
- AquaSource Utility, Inc. – Mobile Home Estates subdivision
- CMH Parks, Inc. – Northwest Pines Mobile Home Park
- Lochinvar Golf Course

All of the entities have been added as non-customers to the 2030 Service Area. The addition of these entities slightly increased the overall water demands for the Authority. However, the increase will not result in any changes to the proposed water system as described in the Authority's certified Groundwater Reduction Plan (GRP).

Tables 3 and 4 and Exhibit 2 of the GRP have been revised to reflect addition of the four entities.

TABLE 3 THE NHCRWA SURFACE WATER CONVERSION GOALS

Population	2000	2010	2019	2020	2029	2030
Residential (1)	397,074	487,499	595,568	607,576	680,057	688,111
Employment (2)	95,432	117,730	135,946	137,970	160,510	163,015
Water Demands (mgd)						
Residential (3)	58.81	72.37	88.59	90.39	101.26	102.47
Employment (4)	2.58	3.18	3.67	3.73	4.33	4.40
Agricultural - Wells are Exempt (5)	0.00	0.00	0.00	0.00	0.00	0.00
Other - Includes Golf Courses (6)	3.54	3.54	3.54	3.54	3.54	3.54
Industrial (6)	0.32	0.32	0.32	0.32	0.32	0.32
Aqua Texas - Atascocita Acres (7)	0.04	0.04	0.04	0.04	0.04	0.04
Aqua Texas - Mobile Home Estates (7)	0.05	0.06	0.06	0.06	0.06	0.06
Lochinvar Golf Club (7)	0.14	0.14	0.14	0.14	0.14	0.14
Northwest Pines Mobile Home Park (7)	0.11	0.13	0.15	0.15	0.15	0.15
Total (mgd)	65.58	79.79	96.50	98.36	109.84	111.12
Required HGCSO Surface Water Conversion Percentages		30%	30%	70%	70%	80%
Surface Water Conversion Goals (mgd)		23.94	28.95	68.85	76.89	88.89

Notes:

1. Year 2000 population is from the U.S. Bureau of Census. The population projections were provided by the University of Houston - Center for Public Policy.
2. Year 2000 employment data and projections are from *TC&B 1996 Report*.
3. Residential water demand based on 150 gpcd from *TC&B 1996 Report*. This demand excludes 750,000 gpd that the City of Jersey Village receives from the City of Houston through a system interconnect.
4. Employment water demand based on 27 gpcd per report from *TC&B 1996 Report*.
5. Wells designated as Agricultural by the HGCSO are exempt from inclusion in the GRP.
6. Year 2000 "Other" and "Industrial" water demands based on HGCSO Year 2000 pumpage reports. Assumed pumpages are constant throughout the planning period.
7. Added since Groundwater Reduction Plan certification.

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCRWA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
47 WHOLESALE CUSTOMERS FOR 2010 SERVICE AREA							
2	Bammel Forest Utility Company	158	201	240	244	270	273
2	BAMMEL U.D.	289	368	410	415	415	415
2	BILMA P.U.D.	473	603	689	698	698	698
2	BRIDGESTONE M.U.D.	610	779	928	945	1,043	1,054
2	Candlelight Service Co. Inc. aka Candlelight Hills and AquaSource Utility, Inc.	228	291	345	350	350	350
2	CNP UTILITY DISTRICT	780	912	912	912	912	912
3	CY-CHAMP P.U.D.	654	826	1,039	1,063	1,175	1,188
3	CYPRESS FOREST P.U.D.	1,067	1,347	1,695	1,734	1,802	1,809
2	CYPRESS KLEIN U.D. (WP to SI HCMUD 316)	550	702	837	852	941	951
2	CYPRESSWOOD UD (SI HCWCID No. 132)	NA	NA	NA	NA	NA	NA
3	FOUNTAINHEAD M.U.D. (WP and SI NWHCMUD 21)	479	587	587	587	587	587
3	HARRIS CO. F.W.S.D. 52	641	809	1,018	1,041	1,096	1,103
2	HARRIS CO. M.U.D. 016	339	432	515	525	579	586
3	HARRIS CO. M.U.D. 024	817	983	983	983	983	983
2	HARRIS CO. M.U.D. 044	286	365	381	383	383	383
3	HARRIS CO. M.U.D. 048	0	135	257	271	392	406
2	HARRIS CO. M.U.D. 104	206	263	314	319	353	357
3	HARRIS CO. M.U.D. 191	155	195	245	251	278	280
3	HARRIS CO. M.U.D. 202	188	237	299	306	338	341
2	HARRIS CO. M.U.D. 211 (SI MUD 233)	NA	NA	NA	NA	NA	NA
2	HARRIS CO. M.U.D. 233 (WP to SI MUD 211)	108	137	164	167	184	186
2	HARRIS CO. M.U.D. 275	112	143	170	173	191	193
5	HARRIS CO. M.U.D. 286	418	469	533	540	540	540
2	HARRIS CO. M.U.D. 316 (SI Cypress Klein UD)	NA	NA	NA	NA	NA	NA
2	HARRIS CO. W.C.I.D. 091	345	440	524	534	542	543
3	HARRIS CO. W.C.I.D. 109	1,120	1,414	1,482	1,490	1,490	1,490
2	HARRIS CO. W.C.I.D. 110	591	753	898	914	1,009	1,020
3	HARRIS CO. W.C.I.D. 114	798	901	901	901	901	901
3	HARRIS CO. W.C.I.D. 116	553	639	639	639	639	639
3	HARRIS CO. W.C.I.D. 119	476	601	748	764	764	764
2	HARRIS CO. W.C.I.D. 132 (WP to SI Cypresswood UD)	870	1,084	1,084	1,084	1,084	1,084
3	HEATHERLOCH M.U.D.	415	462	462	462	462	462
2	KLEIN P.U.D. (WP to SI NWHCMUD 36)	501	639	762	775	785	786
3	KLEINWOOD M.U.D.	416	525	660	676	747	755

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCROWA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
3	LOUETTA NORTH P.U.D.	347	438	551	564	623	630
2	LOUETTA ROAD U.D. (WP to SI Terranova West MUD)	146	186	222	226	250	252
5	MALCOMSON ROAD U.D.	659	739	856	869	924	930
3	NW HARRIS CO. M.U.D. 06	192	243	305	312	345	349
2	NW HARRIS CO. M.U.D. 20	275	351	357	358	358	358
3	NW HARRIS CO. M.U.D. 21 (SI w/ MUD 22 and Fountainhead MUD)	459	580	626	631	631	631
3	NW HARRIS CO. M.U.D. 22 (SI w/ MUD 21)	NA	NA	NA	NA	NA	NA
2	NW HARRIS CO. M.U.D. 36 (SI from Klein PUD)	NA	NA	NA	NA	NA	NA
2	PONDEROSA FOREST U.D.	815	940	940	940	940	940
3	PRESTONWOOD FOREST U.D.	438	532	532	532	532	532
2	SPRING CREEK FOREST P.U.D.	312	398	462	469	469	469
2	TERRANOVA WEST M.U.D. (WP and SI Louetta Road PUD)	289	369	407	412	412	412
2	WESTADOR M.U.D.	715	717	717	717	717	717
	Water Demand at ADF (gpm)	19,292	23,734	26,697	27,026	28,134	28,257
	Water Demand at ADF (mgd)	27.78	34.18	38.44	38.92	40.51	40.69
73 WHOLESALE CUSTOMERS ADDED FOR 2020 SERVICE AREA							
1	Bayer Water System	53	72	98	100	125	128
3	CHARTERWOOD M.U.D.	347	438	551	564	623	630
4	CITY OF JERSEY VILLAGE (3)	193	403	652	679	807	822
2	Consumers Water Corporation	76	97	115	117	130	131
5	CYPRESS CREEK U.D.	443	496	575	584	621	625
5	EMERALD FOREST U.D. (Very small flow from SI FWSD 61)	491	550	637	647	688	692
5	Enchanted Valley Estates Water Supply	48	48	48	48	48	48
5	FAULKLEY GULLY M.U.D.	913	1,022	1,185	1,203	1,279	1,287
1	FOREST POINT MUD	NA	152	289	304	440	456
5	GRANT ROAD P.U.D.	170	191	221	225	239	240
5	HARRIS CO. F.W.S.D. 61 (WP to HCMUD 248 and a little to SI Emerald Forest UD)	1,052	1,179	1,367	1,387	1,475	1,484
5	HARRIS CO. M.U.D. 018	538	602	643	648	648	648
1	HARRIS CO. M.U.D. 043	308	418	568	585	591	592
5	HARRIS CO. M.U.D. 052	NA	45	85	90	130	134
5	HARRIS CO. M.U.D. 069	350	392	454	461	462	462
1	HARRIS CO. M.U.D. 077	0	117	223	234	340	352

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCROWA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
1	HARRIS CO. M.U.D. 082	441	599	814	838	1,043	1,066
2	HARRIS CO. M.U.D. 086	105	134	159	162	179	181
1	HARRIS CO. M.U.D. 115	0	38	73	76	111	115
4	HARRIS CO. M.U.D. 168	840	929	929	929	929	929
4	HARRIS CO. M.U.D. 170	165	214	214	214	214	214
5	HARRIS CO. M.U.D. 222	345	386	448	454	483	486
5	HARRIS CO. M.U.D. 230	135	152	176	178	190	191
1	HARRIS CO. M.U.D. 231	0	76	145	153	221	229
5	HARRIS CO. M.U.D. 248 (SI HCFWSD 61)	NA	NA	NA	NA	NA	NA
1	HARRIS CO. M.U.D. 249	0	85	116	119	148	151
5	HARRIS CO. M.U.D. 280, now named NORTH POINTE WCID (SI NWHCMUD 15)	93	105	121	123	131	132
5	HARRIS CO. M.U.D. 360/PILGRIM	526	589	683	694	737	742
3	HARRIS CO. M.U.D. 367	214	270	340	348	384	388
3	HARRIS CO. M.U.D. 368	138	174	219	224	248	250
3	HARRIS CO. M.U.D. 383, Comrcial. Dev.	0	264	502	529	766	793
1	HARRIS CO. W.C.I.D. 092	538	730	835	847	847	847
1	HARRIS CO. W.C.I.D. 099	204	277	376	387	467	476
1	HARRIS CO. W.C.I.D. 136	204	277	376	387	408	410
1	HUNTERS GLEN M.U.D.	212	288	392	403	502	513
1	INVERNESS FOREST U.D. (partially w/in NHCROWA)	230	312	424	436	543	555
4	Jersey Lake Homeowners Assoc aka Lakeside Club	65	65	65	65	65	65
5	LAKE FOREST U.D.	802	898	1,041	1,057	1,124	1,131
2	MEADOWHILL REGIONAL MUD aka DOVE MEADOWS M.U.D. (WP to SI NWM28)	276	352	419	427	471	476
1	MEMORIAL HILLS U.D.	228	310	421	433	540	551
5	MILLS ROAD M.U.D.	378	424	491	499	520	522
1	NORTH PARK P.U.D.	383	383	383	383	383	383
1	NORTHGATE CROSSING M.U.D. 1 (SI Northgate Crossing 2)	NA	NA	NA	NA	NA	NA
1	NORTHGATE CROSSING M.U.D. 2 (WP to SI Northgate Crossing 1)	95	129	175	180	224	229
5	NW HARRIS CO. M.U.D. 09	522	584	678	688	731	736
5	NW HARRIS CO. M.U.D. 15 (SI MUD 280)	210	235	273	277	294	296
3	NW HARRIS CO. M.U.D. 24	103	130	164	168	185	187
5	NW HARRIS CO. M.U.D. 27	0	34	64	67	97	101

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCROWA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
2	NW HARRIS CO. M.U.D. 28 (SI to Meadowhill MUD)	0	117	221	233	338	350
4	NW HARRIS CO. M.U.D. 29	290	375	476	487	539	545
2	NW HARRIS CO. M.U.D. 30	0	312	592	623	904	935
2	NW HARRIS CO. M.U.D. 32	156	199	237	242	267	270
1	Pilchers Oxford Group aka Splashtown	23	23	23	23	23	23
1	POST WOOD M.U.D.	210	285	388	399	407	408
4	REID ROAD M.U.D. 1	501	648	822	841	931	941
4	REID ROAD M.U.D. 2	267	345	438	449	497	502
1	RICHEY ROAD MUD	109	148	201	207	257	263
2	SHASLA P.U.D.	182	232	263	267	267	267
1	Six Flags Splashtown L.P.	102	102	102	102	102	102
2	SPRING WEST M.U.D.	66	84	100	102	112	114
1	TATTOR ROAD M.U.D.	364	495	616	630	630	630
1	TIMBER LANE U.D.	841	1,143	1,444	1,478	1,478	1,478
5	TIMBERLAKE I.D.	349	391	410	412	412	412
3	Undeveloped Area A	0	601	1,143	1,203	1,744	1,804
7	Undeveloped Area B	0	527	1,001	1,053	1,528	1,580
6	Undeveloped Area C	0	323	613	645	936	968
6	Undeveloped Area D	0	413	784	825	1,196	1,238
6	Undeveloped Area E	0	495	940	989	1,435	1,484
4	White Oak Manor Mobile Home Comm.	32	32	32	32	32	32
4	W. HARRIS CO. M.U.D. 09	469	540	540	540	540	540
4	W. HARRIS CO. M.U.D. 10	676	874	885	886	886	886
4	W. HARRIS CO. M.U.D. 11	519	671	852	872	965	975
4	W. HARRIS CO. M.U.D. 21	67	86	110	112	124	126
4	WHITE OAK BEND M.U.D.	163	211	267	274	303	306
	Water Demand at ADF (gpm)	17,818	25,334	32,727	33,548	38,682	39,253
	Water Demand at ADF (mgd)	25.66	36.48	47.13	48.31	55.70	56.52
121 WHOLESALE CUSTOMERS CUMULATIVE TOTALS FOR 2010 THROUGH 2029							
	Water Demand at ADF (gpm)	37,110	49,068	59,423	60,574	66,816	67,509
	Water Demand at ADF (mgd)	53.44	70.66	85.57	87.23	96.21	97.21
16 WHOLESALE CUSTOMERS ADDED FOR 2030 SERVICE AREA							
1	Amberwood Utility Co.	12	16	21	22	27	28
7	CYPRESS HILL M.U.D. 1	240	249	259	260	270	271
7	CYPRESS HILL M.U.D. 2	0	212	402	424	614	635

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCRWA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
1	HARRIS CO. M.U.D. 026	422	573	779	802	998	1,020
1	HARRIS CO. M.U.D. 085	0	56	107	113	163	169
7	HARRIS CO. M.U.D. 289	0	130	247	260	378	391
7	HARRIS CO. M.U.D. 322 (SI MUD 354 and 358)	NA	NA	NA	NA	NA	NA
7	HARRIS CO. M.U.D. 354 (SI MUDs 322 and 358)	NA	NA	NA	NA	NA	NA
7	HARRIS CO. M.U.D. 358 (WP to SI MUDs 322 and 354)	770	800	831	835	868	872
7	HARRIS CO. M.U.D. 364 (SI MUD 365)	NA	NA	NA	NA	NA	NA
7	HARRIS CO. M.U.D. 365 (WP to SI MUD 364)	232	241	251	252	262	263
5	HARRIS CO. W.C.I.D. 113	147	164	190	193	206	207
5	NW HARRIS CO. M.U.D. 05	447	501	581	590	627	631
7	NW HARRIS CO. M.U.D. 10	223	231	240	241	251	252
1	Oak Hill Estates Water Co.	0	42	79	84	121	125
7	Suburban Utility Co.	0	140	266	280	406	420
	Water Demand at ADF (gpm)	2,492	3,355	4,254	4,354	5,191	5,284
	Water Demand at ADF (mgd)	3.59	4.83	6.13	6.27	7.47	7.61
137 WHOLESALE CUSTOMERS CUMULATIVE TOTALS FOR 2010 THROUGH 2030							
	Water Demand at ADF (gpm)	39,602	52,423	63,678	64,928	72,007	72,793
	Water Demand at ADF (mgd)	57.03	75.49	91.70	93.50	103.69	104.82
118 OWNERS NOT INCLUDED IN THE NHCRWA 2030 OVERALL SERVICE AREA							
6	Albury Manor Utility Co.	22	23	26	26	28	28
7	Allied Concrete Materials	12	13	13	13	14	14
3	Aqua Texas aka Atascocita Acres	26	31	31	31	31	31
3	Aqua Texas aka Bammel Oaks 2	13	16	20	21	23	23
4	Aqua Texas aka Creekside Estates	93	121	153	157	173	175
7	Aqua Texas aka Cypress Fields	28	29	30	30	32	32
7	Aqua Texas aka Lakes of Rosehill	105	109	114	114	119	119
5	Aqua Texas aka Marks Glen	23	26	30	31	33	33
4	Aqua Texas aka Mobile Home Estates	35	42	42	42	42	42
6	Aqua Texas aka Oakwood Village	12	13	15	15	16	16
5	Aqua Texas aka Park Forest	45	50	58	59	62	63
6	Aqua Texas aka Rolling Oaks	27	29	32	32	35	35
5	Aqua Texas aka Stable Gate Homeowners Assoc.	15	15	15	15	15	15

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCRA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
7	Ashton Houston Residence	20	52	54	54	56	57
6	Atascocita Management Corp.	75	81	89	90	98	99
6	Augusta Pines Golf Course aka Tour 18	15					
5	Beazer Homes	18	20	23	23	25	25
6	Bussell, Craig	15	16	17	17	19	19
4	C&P Utilities, Inc.	56	73	93	95	105	106
2	C&P Utilities, Inc.	60	76	91	92	102	103
7	C&P Utilities, Inc.	11	11	12	12	12	12
4	C&P Utilities, Inc.	11	14	18	19	21	21
7	C&P Utilities, Inc.	11	12	12	12	13	13
1	Castle Country Homes, Inc.	16	21	29	30	37	38
1	Cemex USA	10	10	10	10	10	10
3	Cemex USA	22	22	22	22	22	22
7	Champions Glen, L.P.	12	12	13	13	13	13
3	Champions Golf Club	124	124	124	124	124	124
5	Chasewood Land Venture	28	31	36	37	39	39
4	City of Jersey Village for Jersey Meadows Golf Course	16	53	53	53	53	53
6	CITY OF TOMBALL	1,315	1,414	1,549	1,564	1,705	1,720
7	Compaq Computer Corp.	89	89	89	89	89	89
3	Compaq Computer Corp.	17	17	17	17	17	17
3	Compaq Computer Corporation	12	12	12	12	12	12
5	Cypress Forest Service Assoc.	41	46	54	55	58	58
7	Cypress Lakes Golf Course aka Middleton Properties	277	277	277	277	277	277
1	Cypresswood Golf Club aka Cypresswood LTD - US golf Corp	268	268	268	268	268	268
6	DOWDELL P.U.D.	144	155	169	171	186	188
6	Dubrook, Inc./Frontier Materials	10	11	12	12	13	13
7	EJDS Inc.	19	20	20	21	21	21
6	ENCANTO REAL U.D.	91	98	107	108	118	119
2	Enviro-Grow Nursery	11	14	17	17	19	19
4	Furlong LTD	42	54	69	70	78	79
1	Fussel Farm, Riley	22	30	41	43	53	54
2	Gilbert, Robert C.	11	14	17	17	19	19
3	Gleannloch Farms Comm. Assoc. Inc. (aka Champions Glen LP)	110	110	110	110	110	110
3	Gleannloch Golf Club L.P.	291	291	291	291	291	291
7	Grand Northwest MUD	0	224	425	447	648	671
5	Grantwood Civic Club aka Grantwood Water Supply Corp.	34	34	34	34	34	34
6	HARRIS CO. M.U.D. 001	256	275	301	304	331	334

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCRWA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
6	HARRIS CO. M.U.D. 009	0	129	245	258	374	387
6	HARRIS CO. M.U.D. 022	0	184	349	368	533	552
4	HARRIS CO. M.U.D. 025 (WP to SI WHCMUD 1)	251	325	412	422	467	472
6	HARRIS CO. M.U.D. 109	727	782	856	865	942	951
6	HARRIS CO. M.U.D. 383 Golf Club (Proposed)	0	169	169	169	169	169
7	HARRIS CO. W.C.I.D. 155	0	192	365	384	556	576
3	Harris County	16	16	16	16	16	16
4	Harris County	17	17	17	17	17	17
2	Harris County	18	18	18	18	18	18
6	HMW Special Utility District	13	14	16	16	17	17
7	HMW Special Utility District aka 2920 West	35	36	37	38	39	39
7	HMW Special Utility District aka Alice Acres	18	19	20	20	21	21
2	HMW Special Utility District aka Brandywine Pines	18	23	28	28	31	31
5	HMW Special Utility District aka Cypress Pass	17	19	22	22	23	23
7	HMW Special Utility District aka Holly Lakes	17	17	18	18	19	19
7	HMW Special Utility District aka New Kentucky	84	87	90	91	94	95
4	HMW Special Utility District aka Red Oak Terrace	16	21	26	27	30	30
7	HMW Special Utility District aka Rosewood Hill	98	102	106	107	111	111
6	HMW Special Utility District aka Timberwilde	35	38	42	42	46	46
7	HMW Special Utility District aka Treichel Woods	12	13	13	13	14	14
6	HMW Special Utility District aka Willow Oaks	31	34	37	37	41	41
6	HOE Water Supply Corp.	25	27	29	30	32	33
6	Hometown Timbercrest, L.P.	116	125	137	138	150	152
4	Houston Race Park, Sam	72	72	72	72	72	72
3	I.Q. Products Company	10	13	16	16	18	18
6	Inline Development Corp. aka Sugarberry Place	51	55	61	61	67	67
1	Jaeger, Kenneth V.	18	24	33	34	42	43
7	Johnston Utilities Inc. aka Powder Mill Estates	72	75	78	78	81	81

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCRA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
2	Klein I.S.D.	12	16	19	19	21	21
6	Klein Memorial Park and Mausoleum	10	10	11	11	12	13
	KWIK KOPY CORP NORTHWEST FOREST	14					
7	Lake Owners Association	16	16	16	16	16	16
7	Lakes of Cypress Hill Homeowners	41	41	41	41	41	41
7	Lakes of Fairfield H.O.A.	106	106	106	106	106	106
5	Lakewood Grove Assoc. Ltd.	9	9	9	9	9	9
1	Lochinvar Golf Club	94	94	94	94	94	94
3	Lodge at Cypresswood L.P.	15	15	15	15	15	15
5	National Golf Properties, Inc. aka Longwood Golf Club	169	169	169	169	169	169
3	Newman, Thomas C.	19	24	30	31	34	35
6	NORTHAMPTON M.U.D. (WP to SI Oakmont PUD)	838	901	986	996	1,086	1,096
2	Northgate Country Club	205	207	207	207	207	207
2	Northwest Airport MGMT., L.P.	20	20	20	20	20	20
7	NORTHWEST FREEWAY M.U.D.	168	175	182	182	190	190
3	NORTHWEST PINES MHP	74	93	103	103	103	103
7	Northwest Water Systems Inc.	36	37	38	39	40	40
6	NW HARRIS CO. M.U.D. 19	60	65	71	72	78	79
6	OAKMONT PUD (SI to NORTHAMPTON M.U.D.)	0	174	332	349	506	523
2	Pinelakes LP now named Windrose Golf Club	190	190	190	190	190	190
6	Pinewood Place, Inc.	55	59	65	66	71	72
7	Pitcairn W.S.C.	17	18	18	18	19	19
7	Raub, Val	12	12	13	13	13	13
3	Raveneaux Country Club	106	106	106	106	106	106
5	Rock Creek LP	45	51	59	60	64	64
3	S C Utilities	24	24	24	24	24	24
1	Sasson, Eli aka Greens Rd Mobile Home Community	48	66	71	72	72	72
1	Southwest Utilities, Inc.	11	15	20	21	26	26
3	Sterling Gates Estates	10	13	16	16	18	18
5	Tall Pines Utility Inc.	21	23	27	27	29	29
4	Texas Arai, Inc.	11	14	17	18	20	20
6	Tom, John W. Sr.	10	10	11	11	12	12
6	Tomball Country Club	23	23	23	23	23	23
5	Tower Oak Bend Water Supply	42	47	55	56	59	60
5	Treeline Golf Club, INC.	70	70	70	70	70	70
3	Trees & Plants Inc	10	12	16	16	18	18
6	Trunkline Gas Company	19	20	22	22	24	24

**TABLE 4 WHOLESALE CUSTOMERS AND NON-CUSTOMERS
WITHIN THE NHCRWA – EXISTING AND PROJECTED ADF
WATER DEMAND PER CONSTRUCTION PHASE (CONTINUED)**

PLN REG	OWNER (1)	Year 2000 ADF (2) (gpm)	2010 ADF (gpm)	2019 ADF (gpm)	2020 ADF (gpm)	2029 ADF (gpm)	2030 ADF (gpm)
6	Undeveloped Area F (new Woodlds Area)	0	2,057	2,057	2,057	2,057	2,057
4	W. HARRIS CO. M.U.D. 01 (SI MUD 25)	0					
7	Waller I.S.D.	19	20	21	21	22	22
7	Waynewood Place Civic Club, INC	29	30	31	31	33	33
6	Willow Creek Golf Club	73	73	73	73	73	73
4	Windermere Interests LTD	107	139	176	180	199	202
3	Woodwind Lakes Homeowners Assoc. aka Creekside U.C.	32	32	32	32	32	32
	Water Demand (gpy)	8,714	12,540	14,144	14,321	15,783	15,945
	Water Demand at ADF (mgd)	12.55	18.06	20.37	20.62	22.73	22.96
TOTAL FLOWS WITHIN NHCRWA'S BOUNDARY >= 5.0 MGY							
	ADF (gpm)	48,316	64,963	77,822	79,249	87,790	88,739
	ADF (mgd)	69.58	93.55	112.06	114.12	126.42	127.78

Notes:

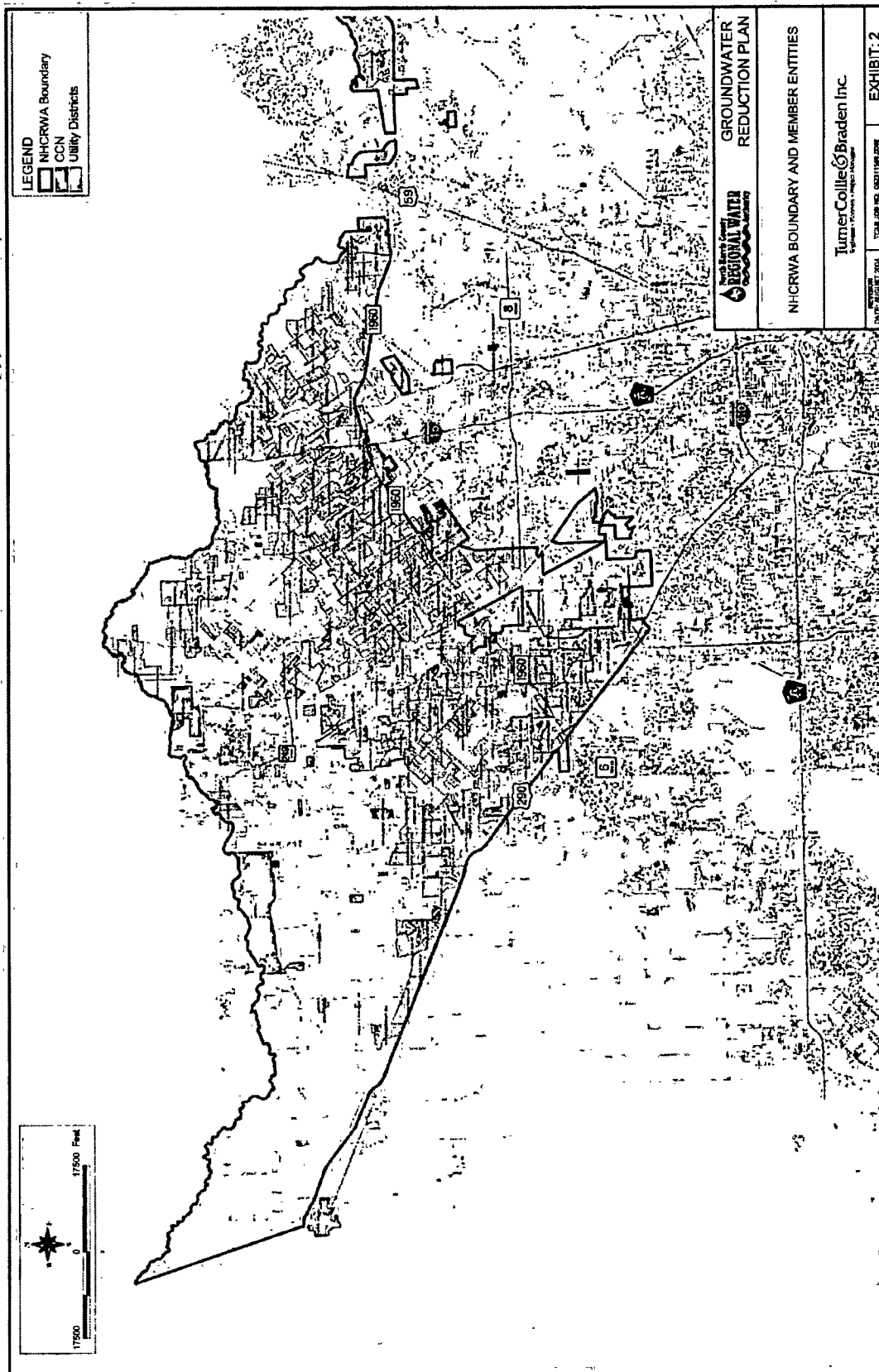
PLN REG: Planning Region Nos. 1 through 7 as shown in *Exhibit 4*; NA: Not applicable

(1) Some owners supply or receive their water from other owners through system interconnects (SI). Projected water demands for owners receiving water were combined into the projected water demands for the owner supplying their water.

(2) ADF: Annual average daily flow was calculated from HGCSO's Year 2000 pumpage.

(3) These water demands exclude the 750,000 gpd the City of Jersey Village receives from the City of Houston through its system interconnect.

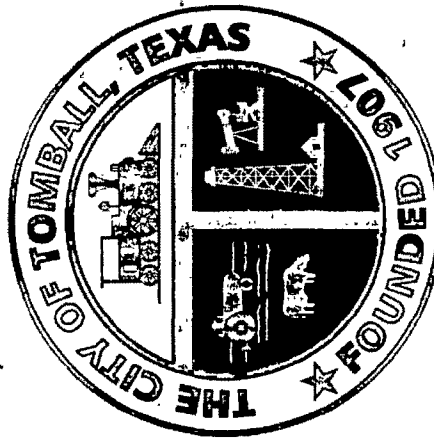
(4) Water demand projections were calculated using the UH CPP census tract population and employment forecasts, unit demand factors, and HGCSO Year 2000 pumpages.



Direct Testimony of David Esquivel, P.E.

Ex. DME-6

CITY OF TOMBALL
INFRASTRUCTURE MASTER PLAN
&
CAPITAL RECOVERY FEE DETERMINATION
2012 TO 2022



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Wastewater System

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Land Use Projections

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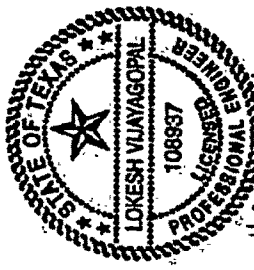
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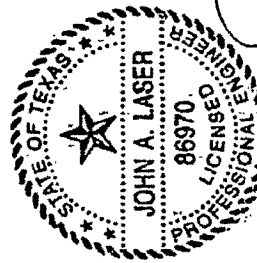
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**INFRASTRUCTURE MASTER PLAN
&
CAPITAL RECOVERY FEE DETERMINATION
2012 TO 2022**

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1.0 Executive Summary

The City of Tomball Infrastructure Master Plan & Capital Recovery Fee Determination for 2012 to 2022 is an update to the Infrastructure Master Plan & Impact Fee Determination for 2007 to 2012 as required by Texas Local Government Code. The City of Tomball retained CLR, Inc. to update this capital improvements plan using generally accepted engineering and planning practices to meet State requirements, review and evaluate its current land use assumptions, and update its capital improvements plan.

Infrastructure improvements necessary to accommodate projected growth/development within the City of Tomball jurisdiction were identified based on population and land use projections. Improvements were identified for the City's Potable Water System, Wastewater System, Drainage System, Traffic & Transportation Network, Parks, Trails & Sidewalks, and its Natural Gas Distribution System.

The 2012 estimated population of the City of Tomball is 11,121, plus an additional 3,241 in the extra-territorial jurisdiction (ETJ), for a total estimated population of 14,362. The 2022 population forecast for the City of Tomball is 13,156, plus an additional 3,834 in the extra-territorial jurisdiction (ETJ), for a total estimated population of 16,990. Population from 2012 to 2022 is projected to increase 18.3%, at an annualized growth rate of 1.695%.

The City of Tomball is approximately 12 square miles (7,670 acres) in area with an additional 8.6 square miles (5,515 acres) included in Tomball's ETJ. Projected 2022 increases in developed acreage were calculated to be 440 acres (27.9% increase) in residential land, and 227 acres (18.9% increase) in commercial land.

City of Tomball 2012 Potable Water System currently is estimated at 6,654 connections, with Average Daily Demand (ADD) usage of 2.26 MGD. Water Production ADD is projected at 2.67 MGD with 7,950 connections for end of FY 2022, based on current 5-Year average water production of 335.9 gpd per Living Unit Equivalent (LUE). This report projects a 1,000 gpm production Water Plant, at a probable cost of \$3.83M, and an increase in the water distribution network, amounting to probable cost of \$12.31M, will be necessary to meet future demands.

City of Tomball 2012 Wastewater System currently is estimated at 6,654 connections, with Average Daily Flow (ADF) usage of 1.507 MGD. Wastewater Collection ADF is projected at 1.684 MGD for 7,950 connections for end of FY 2022, based on current 5-Year average wastewater collection of 211.9 gpd per LUE. This report projects four lift stations and an increase in the wastewater collection network, amounting to a probable cost of \$14.45M, will be necessary to meet future demands. TCEQ criteria may require the design of a 0.35 MGD expansion to the south wastewater treatment plant, for probable cost of \$0.53M in design costs, but projected flow capacity will not require construction to commence.

Projected increases in development acreage is within all watershed sub-basins, however for 10-year constructability, sub-basins selected for improvements are limited to M118, M121, M124, & M125. Estimated channel drainage system project costs for projected growth to 2022 amounts to \$46.76 M. Estimated detention improvements costs for projected growth to 2022 amounts to \$44.36 M.

An analysis of existing and projected roadway capacity was done for major roadways near the City of Tomball utilizing the Houston-Galveston Area Council (H-GAC) population growth factor to develop volume projections for 2017 & 2035. Based on volume projections, by 2017 FM 2920 (Main Street) from Telge Road to SH 249 (a two-lane roadway) will be operating at Level of Service (LOS) E, and by 2035 the roadway will be operating at LOS F. To bring the roadway to an acceptable LOS D, this segment should be widened to six lanes. Volume projections also predict that the volumes on Hufsmith-Kuykendahl Road (a two-lane roadway) from Stuebner-Airline Road to Kuykendahl Road, will be operating at LOS F by 2035. To bring the roadway to LOS C, this segment of the road should be widened to four lanes. LOS A being ideal traffic conditions with free flow of vehicles, and LOS F being grid-lock of traffic and unacceptable conditions.

For the 2022 population projection of 13,156, existing park space will proportion to approximately 8.81 acres per 1,000 residents. Approximately 15.7 acres of City of Tomball park development will be necessary to meet 10 acres per 1,000 residents by the end of 2022.

Historically, the City's natural gas distribution has not been included in this report. However, basic information has been included in this update to better centralize all infrastructure owned and operated by the City and provide reference for future planning.

This Capital Improvement Plan was developed in accordance with Texas Local Government Code §395, describing existing capital improvements and their total capacities, identifying necessary capital improvements or facility expansions and their costs, establishing a service unit for each category of capital improvements, projecting service units and demand necessitated by new development based on approved land use assumptions projected over a period of 10 years. From this Capital Improvement Plan a Maximum Capital Recovery Fee Determination was made for each service unit category.

The Maximum Impact Fees calculated are as follows:

Facility	Service Unit	Effective Date	Current Fee	Maximum Fee Calculated By This Report
Water Production	LUE	06/01/2012	\$ 1,329.12	\$ 3,319.37
Wastewater Collection	LUE	06/01/2012	\$ 1,653.23	\$ 2,322.57
Drainage System (by sub-basin)				
M118	Per Acre	06/01/2009	\$ 6,023.90	\$ 5,757.81
M121E	Per Acre	06/01/2009	\$ 6,828.71	\$ 7,886.69
M121W	Per Acre	06/01/2009	\$ 4,985.14	\$ 6,692.00
M124	Per Acre	N/A	\$ -	\$13,041.36
M125	Per Acre	06/01/2009	\$ 574.40	\$ 436.88

2.0 Plan Objective

The objective of this report is to identify infrastructure improvements necessary to accommodate projected growth/development within the City of Tomball jurisdiction. The focus of the studies conducted and recommendation provided are for a period of 10 years beginning 2012 and ending 2022. The studies and resulting recommendations utilize population and development projections, updated herein, City of Tomball Zoning Ordinance and Comprehensive Plan, and existing infrastructure records provided by the City of Tomball.

Probable costs associated with the improvements identified will be calculated and include costs of construction, land acquisition (when appropriate), engineering design, surveying, and other necessary consultant services. Of the improvements identified, the costs of those necessitated by new development and/or significant redevelopment will be utilized to calculate maximum capital recovery fees in accordance with Local Government Code, Title 12, Planning and Development, Chapter 395, Financing Capital Improvements Required by New Development in Municipalities, Counties and Certain Other Local Governments. The Capital Recovery Fees determined will establish maximum fees that can be adopted by the City if desired.

Population projects, land use, and drainage infrastructure data contained in this report are summaries from a Master Drainage Plan (MDP) prepared for the City of Tomball under separate contract. Only data required for the final recommendations and conclusions of this report have been included.

Basic steps used to identify necessary infrastructure improvements included:

- Estimation of current (2012) land use and distribution of population.
- Estimation of future (2022) land use and distribution of population.
- Review of Existing (2012) Infrastructure with respect to projected growth/development
- Determination of infrastructure improvements necessary to serve 2022 conditions.
- Calculation of Probable Costs associated with identified infrastructure improvements.
- Determination of maximum capital recovery fees.

3.0 Population Projections

History and Previous Projections

Several reports produced for the City of Tomball have included population projections for the City and the ETJ:

1. The 2002 Infrastructure Master Plan (IMP) by PBS&J;
2. The 2007 Infrastructure Master Plan by LAN; and,
3. The 2009 Tomball Comprehensive Plan.

All three of these documents utilized population projections developed by the Houston-Galveston Area Council (H-GAC) and the Texas Water Development Board (TWDB). The 2002 IMP refers to the 2000 Census population of 9,089 for the City of Tomball, but uses H-GAC and TWDB population projections that are based on the 1990 Census when the population was reported to be 6,370. Since this information is dated, population projections from the 2002 IMP will not be discussed further.

Both the 2007 IMP and the Comprehensive Plan include population projections developed by H-GAC using the 2000 Census population of 9,089 as a basis. Projections developed by the TWDB, also using the 2000 data, were included for reference in the 2007 IMP. The methodologies employed by these agencies to develop these projections will not be reviewed, but it should be noted that neither agency utilizes methods that incorporate variables particular to the City in estimating future growth. Populations for the county or region are estimated at a gross level and allocated to smaller jurisdictions on a percentage basis. The projections for the City appear in the following table. The figures for 1990 and 2000 are reported by the U.S. Census Bureau.

Year	H-GAC 2035	TWDB 2006
1990	6,370	6,370
2000	9,089	9,089
2010	12,238	12,059
2020	15,281	15,429
2030	19,541	18,150

The authors of the 2007 IMP developed estimates of the City and ETJ population employing land use density assumptions from the 2002 IMP and population density statistics from the 2000 Census to derive estimates for 2007 and 2017. The combined population estimates for these two data points was used in this report to produce comparable statistics for the years of interest noted in the following section.

2010 Census & Current Projection

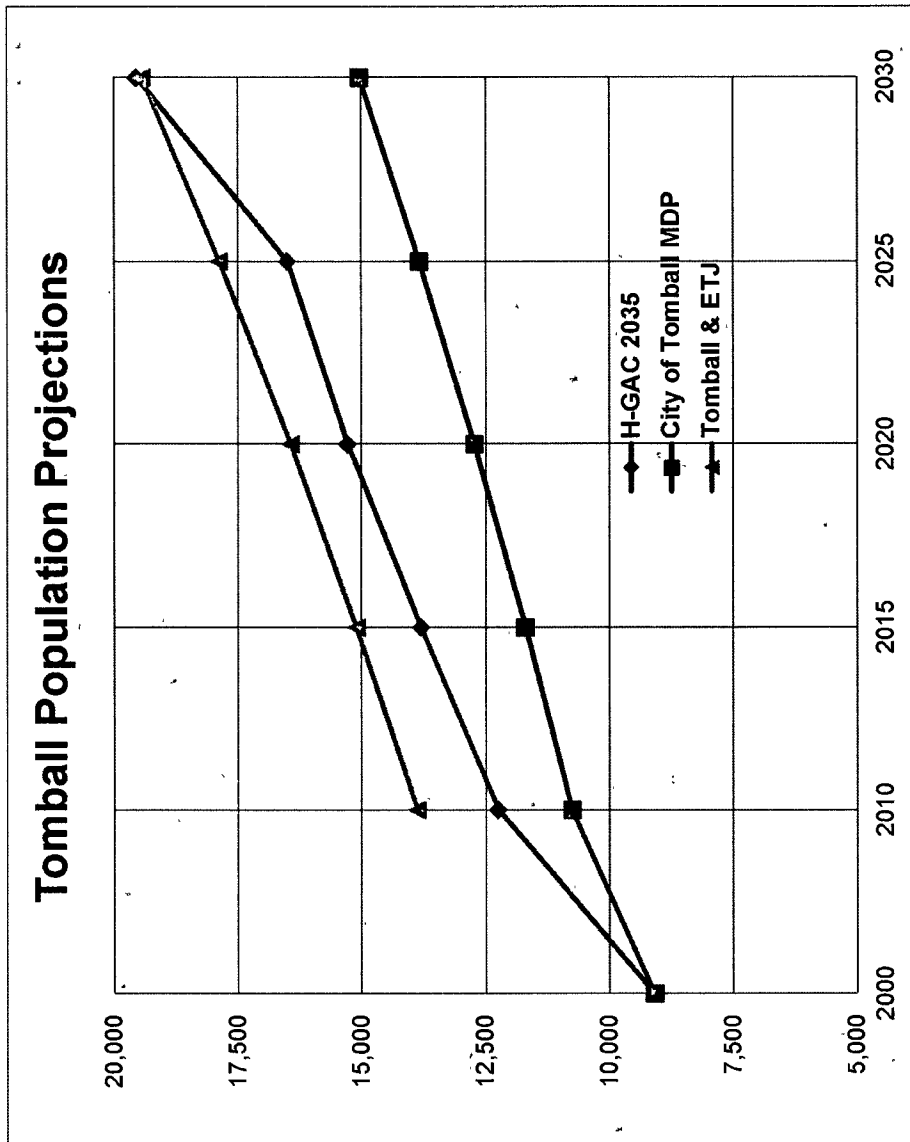
The U.S. Census Bureau has reported a 2010 population of 10,753 for the City of Tomball. This figure represents an absolute growth of 1,664 persons at a compounded annual growth rate of approximately 1.7% from the 2000 Census population of 9,089. The Census count represents a point-in-time estimate of the actual population which is unknown and may vary on a daily, weekly or monthly basis within the reporting year.

The following table presents the reported 2000 and 2010 US Census population for the City and projections developed for this IMP using the annualized growth rate of approximately 1.7% from 2000 to 2010. An estimate of the population for the Tomball extra-territorial jurisdiction (ETJ) based on 2010 Census Block data was provided by the Greater Houston Partnership in association with the Tomball Economic Development Corporation. The estimate of 3,241 for 2012 was discounted by the annualized growth rate of 1.7% to derive a 2010 population estimate of 3,134.

Year	Within City Limits	Tomball ETJ	Combined
2000	9,089	n/a	n/a
2010	10,753	3,134	13,887
2012	11,121	3,241	14,362
2015	11,696	3,409	15,105
2020	12,721	3,708	16,429
2022	13,156	3,834	16,990
2025	13,836	4,033	17,869
2030	15,049	4,386	19,435

To appreciate the differences in the projections for the 20-year time horizon (2010-2030), it should be noted that the annualized growth rate for the City of Tomball from 1990 to 2000 was 3.6% or approximately twice the growth rate for the latest 10-year period. The comparison of past and present population projections is not intended to imply that any particular forecasting methodology is superior to another since all forecasting of population is basically a best-guess formulated primarily on past history. A chart comparing population projections for the City of Tomball from the

H-GAC 2035 forecast with the projections developed for this IMP appears at the top of the next page. The combined projection for the City and ETJ developed for this report is also included in the graph.



Two major highway projects scheduled to begin construction in 2013 could likely impact population growth trends in the Tomball area. First, construction on both Segments F1 and F2 of the Grand Parkway is planned for the summer of 2013 with completion of both segments anticipated by the end of 2015. Segment F1 will connect State Highway 249 with U.S. Highway 290 while Segment F2 will extend from SH 249 to IH 45. The

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planned intersection of the Grand Parkway with SH 249 is positioned near the current intersection of SH 249 with Boudreaux Road. The second project involves upgrading SH 249 to a six-lane toll road from north of Spring-Cypress to FM 2920. Eventually, this project will include a second phase to extend the toll road, to be named the "Tomball Tollway", to FM 1774 in Montgomery County. Long-term, the Texas Department of Transportation plans to extend the project to SH 6 at Navasota.

On May 23, 2012, while text of this report was being drafted, the U.S. Census Bureau released estimates of 2012 population for states, cities and various other political subdivisions. The Bureau estimated a 2012 population of 10,964 for the City of Tomball. The Bureau's estimated growth in population from 2010 to 2012 is less than 60% of that projected for use in this report, resulting in an annualized growth rate of approximately 1%.

4.0 Land Use Projections

General

The City of Tomball is approximately 12 square miles (7,670 acres) in area with an additional 8.6 square miles (5,515 acres) included in Tomball's ETJ. Of the area within the ETJ, approximately 6.1 square miles (3,936 acres) is located in Harris County while 2.5 square miles (1,579 acres) lies within Montgomery County.

Land use within the City of Tomball and ETJ has been defined and described in several recent documents including the 2007 Infrastructure Master Plan, the 2009 Comprehensive Plan, and the Tomball Zoning Ordinance (2008-01). See *Tomball Zoning & Tomball Comprehensive Land Use Plan Exhibits*. The Zoning Ordinance and Comprehensive Plan provide the basis for guiding future land use, and the difference between these two documents should be clarified.

According to the City of Tomball Website:

"The purpose of a Comprehensive Plan is to anticipate growth and to guide that growth in a manner that provides Tomball with a balance of land uses that promote economic growth and improve quality of life."

"The Comprehensive Plan is not a zoning ordinance and it does not affect existing zoning regulations. Instead, it provides the foundation for making changes or developing new regulations that implement identified goals, objectives, and actions."

The Zoning Ordinance provides the legal framework for regulating development within the City. Again, with reference to the City's Website:

"Zoning is a system of land use regulation that controls the development of land in the corporate City limits. It is a legal mechanism by which the City of Tomball is able to regulate land uses so as to protect the public health, safety, and/or general welfare. Land is mapped into different zones with the primary purpose of promoting compatible land uses and to separate incompatible uses."

In addition, while the Comprehensive Plan provides guidance for development within the City limits and ETJ, the Zoning Ordinance only applies within the City. While the City has regulatory authority over certain development activities in the ETJ, those activities that do not fall within the purview of the City are subject to regulation by Harris and Montgomery counties, and by the requirements of utility districts, utility providers, and homeowner associations:

Existing Land Use

At any point in time, the existing land use in Tomball and the ETJ may be established by visual inspection and/or by inspection of the tax records maintained by Harris and Montgomery counties. Visual inspection of each parcel within Tomball and the ETJ was not feasible, even using aerial photographs, due to the large number of parcels within this area. Tax records of both the Harris County Appraisal District (HCAD) and the Montgomery County Appraisal District (MCAD) were used for production of this report. Not all areas are included in the tax records. In particular, public roads and right-of-way (ROW) are excluded, and other areas owned by public entities, such as drainage basins and channels, may be

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excluded as well. However, with the exception of one large tract along the eastern portion of the ETJ in Montgomery County, almost all of the area within Tomball and the ETJ is included in the tax records exclusive of the ROW areas.

Both the HCAD and MCAD records identify land use on a parcel basis using the "Texas Property Tax Assistance Property Classification Guide". The Guide classifies properties by 21 broad categories. The HCAD and MCAD records used the following broad categories for classifying real property:

- Single Family Residential (A)
- Multi-Family Residential (B)
- Vacant Lots and Tracts (C)
- Agricultural and Timber (D)
- Farm and Ranch Improvements (E)
- Commercial and Industrial (F)
- Utilities (J)
- Residential Inventory (O)
- Exempt Property (X)

Most of these categories have sub-divisions which allow further insight into type of property use on a parcel basis. In addition to the Guide classification system, HCAD also identifies parcels by use of its own classifications. This information is accessible in the GIS database developed for this report in the event that further analysis is desired. Also see **Tomball Land Use by State Code Exhibit**.

To develop statistics for the existing 2012 land use, 4,493 properties from the City Tomball's Zoning records and from HCAD analyzed by state classification. An additional 2,028 parcels in the ETJ were examined. Agricultural land, undeveloped areas, and areas not included in the tax and zoning records are reflected in the "Other" category in this table. Land use is a dynamic process and the information represents a snapshot in time. In addition, the state tax classification may not accurately represent actual land use in all cases.

The following table displays 2012 existing land use for the City of Tomball and its ETJ.

2012 Land Use, Estimated

Within City Limits	Area (Acres)	Parcels Developed	Land Use Density (Acres/Parcel)	Population	Population Density (Persons/Acre)	Population Density (Persons/Parcel)
Residential, Developed	1,578.5	2,442	0.65	11,121	7.05	4.55
Commercial, Developed	1,200.8	547	2.20	n/a	n/a	n/a
Industrial, Developed	3.5	1	3.47	n/a	n/a	n/a
Other	4,887.6	21	n/a	n/a	n/a	n/a
Total City	7,670.4	3,011	n/a	11,121	1.45	n/a

Within ETJ	Area (Acres)	Parcels Developed	Land Use Density (Acres/Parcel)	Population	Population Density (Persons/Acre)	Population Density (Persons/Parcel)
Residential, Developed	1,643.2	1,070	1.54	3,241	1.97	3.03
Commercial, Developed	427.1	84	5.08	n/a	n/a	n/a
Industrial, Developed	8.8	1	8.75	n/a	n/a	n/a
Other	3,436.3	10	n/a	n/a	n/a	n/a
Total ETJ	5,515.4	1,165	n/a	3,241	0.59	n/a

Categories defined by State Classification

Total City & ETJ	13,186	14,362
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