Geothermal Resources of Texas

1982

Table 1. Selected thermal wells and springs of Texas.

Data presented in this table are organized by county and then by aquifer. Each data point on the map is identified by a two-letter county code and a simple, unique number (the BEG County Well Number). These codes refer both to this table and to a larger BEG file (approximately 1,100 data points) of thermal resources in Texas. These data are also stored in the GEOTHERM data bank of the U.S. Geological Survey, Menlo Park, California.

In the second column of the table is another, more elaborate number: the Texas State Well Number (TWN), assigned by the Texas Department of Water Resources. This number furnishes locational information based on the subdivision of 1-degree latitude/longitude quadrangles into sixty-four 7.5-minute sections, which in turn are subdivided into nine 2.5-minute parts (fig. 1).

This table also includes the name of the well or spring and various measured attributes of the discharged water. These measurements are given in metric units, but a conversion table has been provided. "Flow" refers to natural discharge at the ground surface (without the use of a pump). The year of flow measurement is included in parentheses because at many sites this natural discharge no longer occurs.

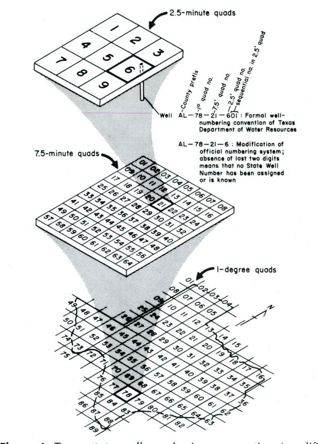
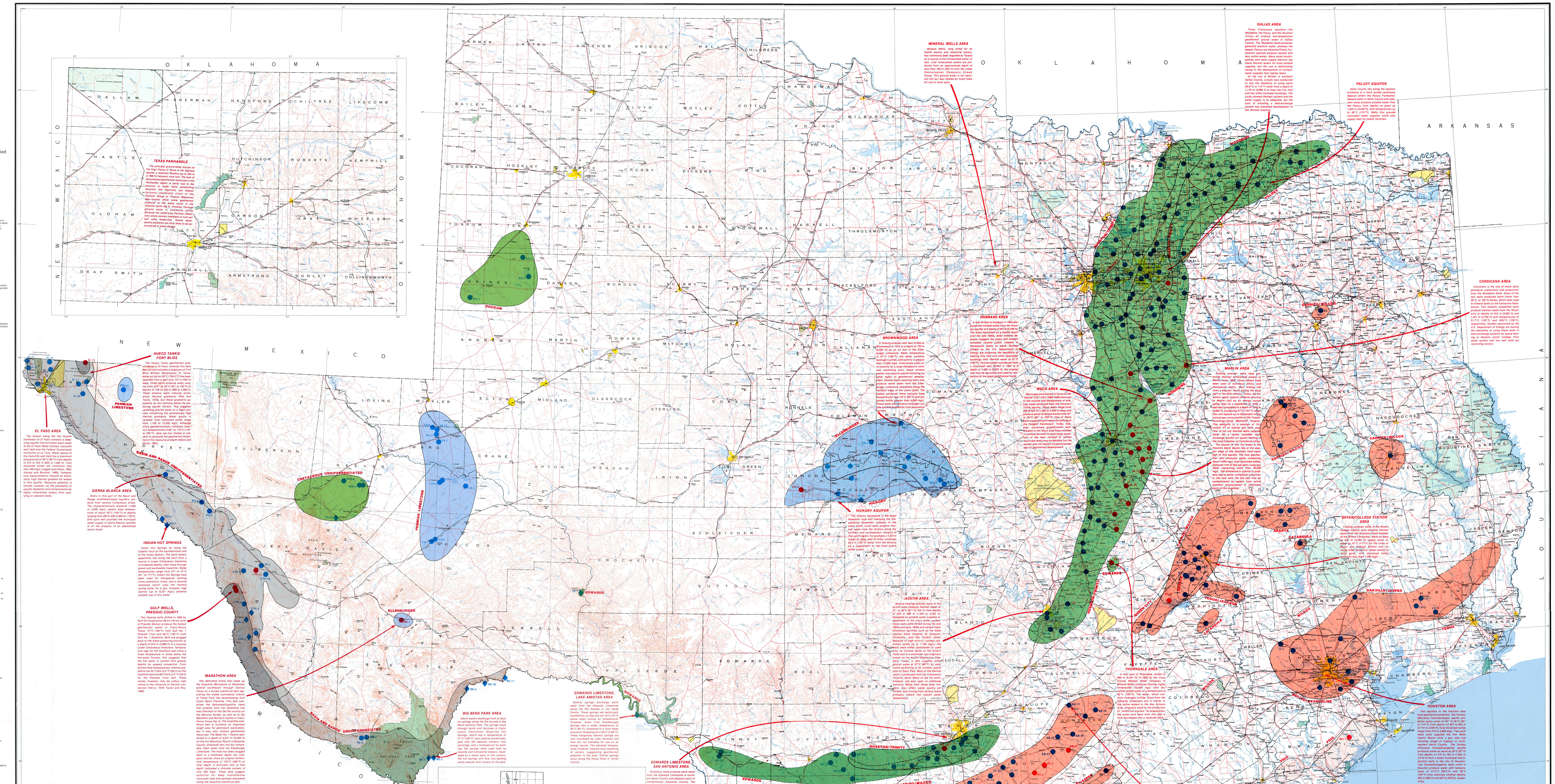


Figure 1. Texas state well numbering convention (modified from Texas Department of Water Resources).

BEG County Well Number	Texas State Well Number	Name of Well or Spring[a]	Depth (m)	Temperature (°C)	Total Dissolved Solids (mg/L)[b]	Flow (L/min)[c]	Comments[d]
ANDERSON COUNTY (AA)							
CARRIZO/WILCOX AQUIFER							
AA- 8	38-11-603	LONE PINE WSC NO. 1	472.4	30.6	212		
AA-10	38-11-903	MISSOURI PACIFIC RAILROAD WELL	594.4	33.3	341		
AA-12	38-20-604	KIMBLE PROD. CO. WATERFLOOD WELL	555.3	35.0	880		
AA-16	38-29-105	TEXACO WATERFLOOD WELL	586.7	36.7	1021		
ANGELINA COUNTY (AD)							
CARRIZO/WILCOX AQUIFER							
AD- 1	37-42-304	WOODLAWN WSC NO. 1	429.8	33.9	785		
ATASCOSA COUNTY (AL)							
SPARTA AQUIFER							
AL-24	78-13-705	CITY OF CHRISTINE WELL	291.4	31.7	3774	123 (1965)	NOT USED (1944)
QUEEN CITY AQUIFER							
AL-15	78-19-301	S. W. BERREY WELL	475.5	35.6	637		
AL-16	78-20-703	SAM COUNTISS WELL	666.0	39.4	963	378 (1964)	
AL-28	78-14-401	J. D. HARRISON WELL	487.7	38.9		151 (1944)	
AL-89	78-05-703	M. L. THOMPSON WELL	457.2	32.2		114 (1944)	
CARRIZO/WILCOX AQUIFER							
AL-14	78-18-602	EDGAR LINKENHOGER NO. 3	760.5	40.6	568		SEALED
AL-30	78-14-801	LOWER NUECES RIVER WSD NO. 5	1216.8	58.9	638	10978 (1951)	
AL-45	68-61-807	DEWITT PERRY NO. 2	402.3	34.4	240		
AL-51	78-03-405	JOHN WILSON, JR. NO. 2	426.7	37.8	334		
AL-68	78-04-803	CITY OF JOURDANTON NO. 3 (HIGH SCHOOL)	597.4	36.7	301		
AL-77	78-05-104	CITY OF PLEASANTON NO. 4	518.2	36.1	336		
AL-91	78-06-503	G. M. KEENEY WATER WELL	792.5	39.4	374		*
AL-104	78-13-205	HUMBLE OIL WATERFLOOD WELL	1089.7	45.6	1584		
AL-113	78-15-301	ATLANTIC RICHFIELD WATER WELL	1463.0	65.6	609		
EDWARDS AQUIFER							
AL-39	68-50-201	CITY OF LYTLE NO. 1	725.1	35.6	249		
AL-42	68-51-101	GIDLEY-BUSH NO. 1	809.5	41.0	1510		FLOWED UNTIL 1964
BEE COUNTY (AW)							
OAKVILLE/JASPER AQUIFER							
AW- 1	79-18-8-	STANOLIND OIL & GAS WATER WELL	283.5	31.1			
BELL COUNTY (AX)							
HOSSTON/TRINITY AQUIFER							
AX- 2	58-05-902	CITY OF HOLLAND NO. 2	737.6	38.9	1119	314 (1943)	
AX-11	40-54-401	PENDLETON WSC NO. 1	505.1	34.5			
AX-14	40-54-601	CITY OF TROY NO. 2	558.7	37.2	983		
AX-17	58-07-701	CITY OF ROGERS NO. 1	968.7	46.8	1280	681 (1965)	
AX-21	58-06-601	BELL-FALLS-MILAM WSC NO. 1	964.5	46.7	1122		
AX-22	58-07-301	ATER RANCH NO. 1	1092.4	52.8	1089	+ (1967)	
AX-27	40-62-401	MCCLOSKEY ARMY HOSPITAL NO. 1	708.1	36.7	1190	1893 (1943)	
AX-51	58-06-102	BELL COUNTY WCID NO. 2 (LITTLE RIVER)	673.6	35.0	1222		
BEXAR COUNTY (AY)							
EDWARDS AQUIFER							
AY-48	68-45-302	R. O. HUNDLEY WELL	122.7	38.9	4269	2271 (1972)	PLUGGED
AY-50	68-45-901	SAN ANTONIO PUBL. SERV. BD./BRAUNIG L. PLANT	892.1	47.8	4152	3028 (1973)	SEALED
AY-57	68-45-101	HOT WELLS HOTEL	572.4	39.4	4289	378 (1933)	ABANDONED
AY-62	68-44-3-	TERRELL WELLS NO. 2	667.5	40.5	4766	+ (1980)	
AY-67	68-44-8-	KENNETH MCOSKER WELL	717.8	43.5	2834	681 (1936)	*
AY-76	68-43-702	K. L. HAGGARD NO. 1	626.4	38.0	1276	38 (1980)	
AY-95	68-43-7-	ALDRIDGE NURSERY WELL	658.4	33.0		3785 (1980)	
HOSSTON/TRINITY AQUIFER							
AY-12	68-44-6-	TIMBERLAKE ESTATE WELL	1432.6	>48.9		1609 (1950)	* CAPPED OR PLUGGED
AY-70	68-43-9-	EARL BAKER ESTATE WELL	1377.1	55.6	2620	946 (1951)	CAPPED
BRAZORIA COUNTY (BH)							
FRIO GEOPRESSURED AQUIFER							
BH- 1	65-47-7-	PLEASANT BAYOU NO. 2	5029.2	149.5	87000		IN TESTING STAGE; TEMPORARILY SHUT IN
BRAZOS COUNTY (BJ)							
CARRIZO/WILCOX AQUIFER							
BJ- 2	59-20-564	STEEL'S STORE WELL	457.2	32.2	1040	757 (1937)	*
BJ- 3	59-21-205	CITY OF BRYAN NO. 12	877.8	46.1	664	+ (1964)	
BJ- 5	59-21-714	TEXAS A & M UNIV. (BRYAN AFB NO. 7)	932.7	47.2	585	5375 (1955)	
BJ- 6	59-22-401	CITY OF BRYAN NO. 6	625.8	38.9	2480		NOT USED
BREWSTER COUNTY (BK)							
BASIN AND RANGE UNDIFFERENTIATED AQUIFERS							
BK- 2	73-44-501	TX HIGHWAY DEPT. WELL	243.8	40.0	1268		CAPPED
BK- 3	72-49-4-	BOQUILLAS HOT SPRINGS		40.6	884	+	
BK- 5	72-49-5-	RIO SPRINGS (AT RIO GRANDE VILLAGE)		35.6	842	+	
BK- 6	72-19-2-	ASA JONES SPRINGS		32.2	502	450	PRODUCES FROM EDWARDS LIMESTONE (BRUNE, 1981)
BK- 8	73-44-4-	WELL NEAR TERLINGUA	243.8	42.2	1298		
BK-10	72-20-2-	SPRINGS IN LOWER CANYONS OF RIO GRANDE		32.2		+	
BK-11	72-13-9-	LOWER MADISON SPRINGS		32.2		45	PRODUCES FROM EDWARDS LIMESTONE (BRUNE, 1981)
ELLENBURGER AQUIFER							
BK- 7	52-54-6-	MOBIL NO. 1 ADAMS	3230.9				PLUGGED BACK TO 823 M; SEE NOTE FOR MARATHON AREA
BROOKS COUNTY (BP)							
OAKVILLE/JASPER AQUIFER							
BP- 2	87-08-101	KING RANCH HUESOS "B" WELL	487.7	36.1	1592	57	
BROWN COUNTY (BR)							
ELLENBURGER AQUIFER							
BR- 2	41-17-502	JANE L. JOHNSON (CLINIC) WELL	732.1	41.2	13178	61	*
BR- 6	42-49-303	J. D. CLARK WELL	448.0	33.2	1271	45 (1962)	*
BURLESON COUNTY (BS)							
YEGUA/JACKSON AQUIFER							
BS-14	59-37-608	BAILEY WELL	314.6	31.7	4037	114 (1970)	NO LONGER USED
SPARTA AQUIFER							
BS- 7	59-28-906	F. MAREK OIL TEST	585.2	38.9	1393	897 (1971)	*
BS-13	59-36-802	LYONS WSC WELL	490.4	38.3	382		
QUEEN CITY AQUIFER							
BS- 6	59-28-905	F. MAREK OIL TEST	475.5	32.8	988	+ (1970)	*
BS- 9	59-29-535	LUKE BUSH WELL	582.8	34.4	1800	+ (1970)	
BS-10	59-37-108	OLIPHANT-CALDWELL NO. 1 GIESENSCHLAG	472.4	38.9	1158	+ (1970)	*
CARRIZO/WILCOX AQUIFER							
BS- 4	59-28-202	MORELLO ESTATE WELL	487.7	31.1	544	4 (1970)	
BS-15	59-43-501	JOHN E. NEWMAN WELL	1170.1	55.6	1381	378 (1965)	
COLEMAN COUNTY (DS)							
ELLENBURGER AQUIFER							
DS- 1	42-31-401	VAUGHN WATER WELL	586.7	34.0	4802	151 (1960)	*
COLLIN COUNTY (DT)							
WOODBINE AQUIFER							
DT-22	18-44-801	CITY OF MELISSA NO. 2	476.4	32.2	681		
DT-23	18-45-603	CITY OF BLUE RIDGE NO. 1	464.8	33.9	584		
DT-30	18-52-301	ALTOGA WSC WELL	480.7	30.6	804		
PALUXY AQUIFER							
DT-27	18-50-802	CITY OF FRISCO NO. 1	497.4	28.9	652		
HOSSTON/TRINITY AQUIFER							
DT-26	18-50-502	TX POWER & LIGHT NO. 2 (AT PROSPER)	811.4	37.2	1482		
DT-31	18-52-401	CITY OF MCKINNEY NO. 1	988.2	45.6	1053		NOT USED
DT-33	33-03-203	CITY OF RICHARDSON GOLF COURSE WELL	1002.2	38.9	1236		
CONCHO COUNTY (DZ)							
HICKORY AQUIFER							
DZ- 1	42-36-701	MILLERSVIEW-DOOLE WSC NO. 1 TEST WELL	1191.5	44.4	21900		PLUGGED
DZ- 3	42-50-101	CITY OF EDEN NO. 2	1231.4	54.4	1073		
DALLAS COUNTY (HR)							
WOODBINE AQUIFER							
HR-26	33-02-902	ELECTRONIC DATA SYSTEMS NO. 1	319.1	33.3	1678		
HR-44	33-11-806	C. G. SLACK WELL	396.8	32.8	1574		URBANDALE PUBLIC SUPPLY
HR-56	33-25-201	CITY OF CEDAR HILL NO. 2	271.9	30.0	859		
HR-61	33-27-605	TRINITY RIVER AUTHORITY WELL	501.4	31.7	1594		
PALUXY AQUIFER							
HR-28	33-09-103	DALLAS COMM. COLLEGE DIST. WELL	360.9	30.6	752		
HR-32	33-09-707	GIFFORD-HILL AMERICAN, INC. NO. 1	317.0	31.1	665		
HR-41	33-10-803	SEARS ROEBUCK CO. WELL	505.4	32.2	816		
HOSSTON/TRINITY AQUIFER							
HR-15	33-27-202	CITY OF WILMER NO. 2	1118.3	45.6	1294		
HR-17	33-03-401	CITY OF RICHARDSON NO. 3	1015.9	47.2	1099		
HR-25	33-02-402	BROOKHAVEN COUNTRY CLUB NO. 1	781.8	41.1	929		
HR-34	33-10-401	EASTMAN KODAK WELL	819.6	42.8	1044		
HR-38	33-10-705	CITY OF DALLAS NO. 38	802.8	40.0	1107		CAPPED
HR-50	33-17-801	CITY OF DUNCANVILLE NO. 4	799.2	41.1	1785		
HR-54	33-20-102	DALLAS COUNTY WCID NO. 6 WELL NO. 2	1244.8	57.2	527		NOT USED
DELTA COUNTY (HU)							
PALUXY AQUIFER							
HU-12	17-34-605	WEST DELTA WSC NO. 2	1044.9	46.1	1111		
DENTON COUNTY (HW)							
HOSSTON/TRINITY AQUIFER							
HW-27	18-41-702	UNIDENTIFIED WELL	467.6	32.2	495		
HW-28	19-63-603	NORTH SHORE WSC NO. 1	388.6	37.8	639		
HW-29	18-57-602	COLONY MUD TRINITY NO. 1	734.3	37.8	1051		
DEWITT COUNTY (HX)							
OAKVILLE/JASPER AQUIFER							
HX- 2	67-62-207	CITY OF CUERO NO. 5	357.5	32.2	903	1230 (1963)	ABANDONED
HX- 5	79-04-402	CITY OF NORDHEIM NO. 3	329.8	32.2	574		
DIMMIT COUNTY (HZ)							
CARRIZO/WILCOX AQUIFER							
HZ- 4	77-18-707	JIM FERGUSON, JR. NO. 3	313.3	36.7	319		
HZ-20	77-28-601	SUN OIL WATER WELL	518.2	39.4	464		
HZ-39	77-37-101	C. I. MCCARLEY WELL	539.5	38.9			
HZ-43	77-42-801	BRISCOE RANCH WELL	418.8	37.2	879		
HZ-47	77-44-402	O. V. RAY WELL	436.5	34.4	7344		NOT USED
DUVAL COUNTY (JB)							
OAKVILLE/JASPER AQUIFER							
JB- 2	84-22-401	P. P. C. INDUSTRIES NO. 14	385.3	36.1	1551		
JB- 8	84-46-201	C. C. GLASSCOCK WELL	405.4	40.0	1119	76 (1969)	
CATAHOULA AQUIFER							
JB- 3	84-35-302	J. B. MUSGRAVE WELL	396.2	35.0		30 (1970)	*
JB- 5	84-44-104	WYATT RANCH WELL	540.5	42.2	1650	45 (1969)	*
ELLIS COUNTY (JK)							
WOODBINE AQUIFER							
JK-21	33-27-901	CITY OF FERRIS NO. 2	455.1	33.1	1625		
JK-33	33-36-201	CITY OF BRISTOL NO. 1	604.1	38.9	1829		
JK-35	33-45-502	MRS. TOM SEWELL WELL	244.4	31.7	1277		
JK-40	33-43-602	CITY OF ENNIS NO. 3	550.5	46.7	2014		
JK-42	33-53-601	N & S CONSTRUCTION CO. WELL	505.7	36.7	2303		
JK-46	33-49-602	CITY OF ITALY NO. 3	285.0	30.6	1496		
PALUXY AQUIFER							
JK-23	32-40-308	TX INDUSTRIES NO. 4	377.3	31.7	1250		*
HOSSTON/TRINITY AQUIFER							
JK- 3	33-33-101	CITY OF MIDLOTHIAN NO. 3	735.2	39.4	656		
JK-20	33-26-902	ROCKETT WSC NO. 2	968.7	37.2	1260		
JK-24	32-40-606	MOUNTAIN PEAK WSC NO. 1	734.9	38.3	648		
JK-26	33-34-801	ROCKETT WSC NO. 1	1001.3	37.2	1248		
JK-30	33-34-702	CITY OF WAXAHACHIE NO. 1	899.2	49.4	1212		
JK-38	33-42-702	NASH-FORRESTON WSC NO. 1	868.7	44.4	1309		
JK-45	33-49-607	CITY OF ITALY NO. 2	865.6	44.4	1403		
JK-48	33-50-202	AVALON WATER & SEWER SERV. NO. 2	976.6	45.6	1094		
EL PASO COUNTY (JL)							
BASIN AND RANGE UNDIFFERENTIATED AQUIFERS							
JL- 6	49-04-602	CITY OF EL PASO NO. 201	323.1	35.6	292		
JL- 9	49-05-608	CITY OF EL PASO TEST WELL	870.5	38.9	25700		TOTAL WELL DEPTH 1,529.8 M; ABANDONED
JL-10	49-12-602	LAYNE TEXAS CORP./GEO. HERVEY WELL	515.1	37.2	652		
JL-13	49-08-102	"SANTA CRUZ WELL"	137.2	58.0	7857		CAPPED
JL-14	49-15-906	HOMESTEAD MEADOWS WELL	146.3	38.0	285		
JL-16	49-16-101	SCHWARTZ'S QUARRY WELL	329.8	36.0	4071		
JL-17	49-04-113	CITY OF EL PASO NO. 206	367.6	35.0			
JL-19	49-05-203	CITY OF EL PASO NO. 2	452.0	34.4			NOT USED
JL-20	49-15-802	EL PASO NATURAL GAS TURBINE STA. NO. 4	195.1	37.8			
FALLS COUNTY (JR)							
HOSSTON/TRINITY AQUIFER							
JR- 1	40-48-201	GOLINDA WSC NO. 1	804.7	34.4	687		
JR- 5	40-48-801	CITY OF CHILTON NO. 2	876.0	48.9	769	+ (1969)	
JR-10	40-64-101	WESTPHALIA WSC WELL	932.7	43.3	1504		
JR-25	39-33-901	TRI-COUNTY WSC NO. 1	1147.3	42.0	943		
JR-35	39-41-6-	T-H-S MEMORIAL HOSPITAL GEOTHERMAL WELL	1184.2	68.9	3680		
JR-39	40-56-301	CITY OF LOTT NO. 1	1004.3	57.2	1561	2018 (1940)	NO LONGER FLOWING
JR-41	40-64-601	CITY OF ROSEBUD NO. 1	1125.3	55.6	1274	1123 (1940)	NOT USED
JR-43	39-33-301	TRI-COUNTY WSC NO. 4	1170.4	61.0	959		
FANNIN COUNTY (JS)							
WOODBINE AQUIFER							
JS-13	17-57-602	SELFS WSC NO. 1	368.2	32.2	947		
JS-14	17-25-401	CITY OF WINDOM NO. 1	515.4	33.3	1015		
JS-16	17-33-502	TOWN OF LADONIA WELL	777.5	39.4	7615		DESTROYED
JS-17	18-31-201	CITY OF BONHAM NO. 5	390.8	32.2	858		
JS-19	18-32-702	BARTLEY WOODS WSC WELL	539.5	37.2	654		
JS-20	18-38-801	WEST LEONARD WSC WELL	533.7	33.9	632		
JS-21	18-39-501	CITY OF BAILEY SCHOOL WELL NO. 1	486.2	33.3	800		
JS-23	18-47-101	CITY OF LEONARD NO. 2	489.2	33.3	753		PLUGGED
PALUXY AQUIFER							
JS-15	17-33-501	LADONIA WSC NO. 3	1026.0	48.9	907		
FRIO COUNTY (KB)							
QUEEN CITY AQUIFER							
KB-66	77-22-803	LEE EWALD WELL	395.7	35.6	879		
KB-109	77-24-204	PAN AM. PETR. CORP. NO. 1	305.4	37.8	301		
CARRIZO/WILCOX AQUIFER							
KB-38	77-08-713	CITY OF PEARSALL NO. 1	396.8	33.9	381		
KB-44	77-13-301	J. K. STARK WELL	460.6	33.9			
KB-63	77-23-701	MELVIN MCDERMAND NO. 1	623.3	40.0	415		
KB-69	77-22-303	JOSEY RANCH NO. 2	572.4	37.8	352		
KB-104	78-09-801	COCHRAN NO. 1	558.2	36.1	335	1893 (1932)	
KB-106	78-10-102	ANDRES GARCIA NO. 1	529.4	35.6	348		
KB-111	77-24-302	BENNETT BROS. NO. 2	660.5	40.0	307		
GAINES COUNTY (KD)							
DOCKUM AQUIFER							
KD- 1	27-26-301	HUMBLE OIL & REFINING WATER WELL	536.4	28.3	2388		
KD- 2	27-06-502	AMERADA PETR. CORP. WATER WELL	573.0	29.4	9519		
KD- 3	27-15-402	PAN AMERICAN-MONCRIEF NO. 3	563.9	28.3	6607		
GONZALES COUNTY (KR)							
CARRIZO/WILCOX AQUIFER							
KR-11	67-28-202	GONZALES WARM SPRINGS FOUNDATION WELL	471.8	39.0	1331	466 (1962)	
KR-16	67-30-401	PHILLIP KLEAS NO. 3	719.3	46.7	265	2620 (1969)	
KR-17	67-37-201	CITY OF GONZALES NO. 1	533.4	43.3	1820	3785 (1931)	
KR-29	67-43-203	HENRY CARAWAY NO. 1	370.3	37.2	368	3115 (1969)	
KR-38	67-44-201	[illegible] NO. 1	667.5	34.4	279	405 (1969)	
KR-41	67-44-701	LAMAR LESSOR NO. 1	904.3	54.4	1128	1329 (1969)	
KR-42	67-51-102	JACK WHEAT WELL	678.2	43.3	729	757 (1959)	
GRAYSON COUNTY (KT)							
WOODBINE AQUIFER							
KT-47	18-29-301	CITY OF BELLS NO. 1	216.1	31.7	401		NOT USED
KT-50	18-29-904	CITY OF WHITEWRIGHT NO. 4	423.1	30.6	625		
HOSSTON/TRINITY AQUIFER							
KT-45	18-20-713	CITY OF SHERMAN NO. CP-17	699.5	32.8	756		
KT-46	18-28-101	CITY OF SHERMAN NO. R-17	725.4	32.2	730		
GRIMES COUNTY (KW)							
YEGUA/JACKSON AQUIFER							
KW- 2	59-47-309	TOMMIE HOLIDY WELL	431.9	31.1	3186	38 (1970)	
HARDIN COUNTY (LH)							
OAKVILLE/JASPER AQUIFER							
LH- 2	61-44-7-	HIGGINS OIL & FUEL NO. 4	353.3	38.3	BRINE		*
LH- 3	61-44-7-	LIBBIE OIL CO. WELL (JOSEPH BLAKE TRACT)	292.0	37.8			
LH- 4	61-53-5-	GREAT WESTERN CO. WELL	259.1	37.8		+ (1914)	*
HARRIS COUNTY (LJ)							
GOLIAD/EVANGELINE AQUIFER							
LJ- 2	65-02-308	MCANELLY AND SONS WELL	267.0	39.0	3960		
LJ- 4	65-06-305	T. W. HORN NO. 1 (AT HUMBLE, TX)	262.1	37.5	1280	757	FLOWS FRESH WATER WITH SOME GAS
LJ- 6	65-15-825	A. O. SMITH CORP. WELL	515.7	31.1	571		
LJ- 7	65-21-804	HOUSTON LIGHT & POWER (HIRAM CLARKE PLANT) NO. 3	597.4	31.7	432		
LJ-10	65-22-603	HOUSTON EAST END NO. 4	765.0	36.1	602		
LJ-16	65-23-214	PHILLIPS CHEM. CO. NO. 5	595.9	32.2			
OAKVILLE/JASPER AQUIFER							
LJ- 3	65-03-501	(HOUSTON) HOT WELLS HEALTH RESORT	893.1	45.6	5230		NO LONGER A RESORT
LJ- 1	65-14-103	CITY OF HOUSTON NORTHEAST NO. 9	827.2	35.6	2990		
HIDALGO COUNTY (LU)							
GULF COAST UNDIFFERENTIATED AQUIFER							
LU- 1	87-23-9-	W. L. GOLDSTON WELL	624.8	40.6	1340	+ (1948)	QUESTIONABLE WELL DEPTH
LU- 2	87-31-2-	W. L. GOLDSTON WELL	624.8	41.1	1450	+ (1948)	QUESTIONABLE WELL DEPTH
LU- 4	87-31-5-	A. M. BEAURLINE WELL	458.1	36.4	1410	+ (1948)	
LU- 8	87-40-6-	CITY OF EDINBURG	521.2	35.6	1820	95 (1945)	
LU- 9	87-39-601	PAPE & ALLISON WELL	336.8	34.4	2250	757 (1948)	
LU-11	87-40-7-	J. C. TURNER WELL	610.0	36.1	2890	+ (1948)	
HILL COUNTY (LW)							
HOSSTON/TRINITY AQUIFER							
LW- 5	33-57-402	BRANDON-IRENE WSC WELL	808.1	37.2	808		
LW- 9	39-01-602	MALONE WSC "NEW WELL"	910.7	48.9	770		
LW-11	39-10-201	CITY OF HUBBARD NO. 2	1083.6	56.7	123		
LW-20	32-63-908	CITY OF HILLSBORO NO. 9	555.7	37.8	635		
LW-28	40-06-504	HILL COUNTY WSC NO. 1	448.1	33.3	559		
LW-32	40-15-101	A. D. URBANOVSKY WELL	456.3	33.9	628		NOT USED
LW-33	39-09-901	CITY OF MT. CALM NO. 1	1054.0	46.6	853		
HOUSTON COUNTY (PA)							
SPARTA AQUIFER							
PA- 6	60-03-302	TX DEPT CORRECTIONS NO. 2 (EASTHAM PRISON FARM)	498.3	36.7	184	4542 (1961)	
CARRIZO/WILCOX AQUIFER							
PA- 1	38-35-203	R. S. DAILEY ESTATE NO. 1	548.6	36.7	1125	568 (1961)	ORIG. DRILLED TO 1796.5 M; NOT PLUGGED
HUDSPETH COUNTY (PD)							
BASIN AND RANGE UNDIFFERENTIATED AQUIFERS							
PD- 3	48-64-901	SOUTHERN PACIFIC RAILROAD HOT WELLS STA. NO. 2	305.1	41.7	460		DESTROYED
PD- 5	51-05-904	USGS NO. 1 J. C. DAVIS	613.2	37.8	843		
PD- 6	50-14-1-	"INDIAN HOT SPRINGS"		37.0	960	50 (1976)	
PD- 7	50-14-501	"STUMP SPRING"		47.2	6766	45 (1973)	ONE OF THE INDIAN HOT SPRINGS GROUP
PD-12	48-54-401	HUDSPETH COUNTY WCID NO. 1	335.9	38.0	2050		SIERRA BLANCA MUNICIPAL WATER SUPPLY
PERMIAN LIMESTONE AQUIFER							
PD-11	48-10-6-	DOUBLE U RANCH WELL	731.5	33.8		568 (1956)	*CALIF. NO. 1 THEISON
HUNT COUNTY (PH)							
WOODBINE AQUIFER							
PH-22	18-48-402	WEBB HILL COUNTRY CLUB WELL	727.9	28.9	1183		
JEFF DAVIS COUNTY (PS)							
BASIN AND RANGE UNDIFFERENTIATED AQUIFERS							
PS- 5	51-29-4-	SW FARMS NO. 232	1219.5	45.0	268		
CRETACEOUS UNDIFFERENTIATED AQUIFER							
PS-10	52-02-405	PHANTOM LAKE SPRINGS		26.0	2250	9600 (1971)	PRODUCES MARGINALLY SUBTHERMAL WATER FROM LOWER CRETACEOUS STRATA (BRUNE, 1981)
JIM HOGG COUNTY (PU)							
CATAHOULA AQUIFER							
PU- 1	84-44-7-	W. W. JONES NO. 1	991.2	45.0		568 (1934)	
PU- 3	84-51-5-	T. P. MORGAN NO. 1	611.1	38.9	1479	757 (1934)	*
JIM WELLS COUNTY (PW)							
OAKVILLE/JASPER AQUIFER							
PW- 2	84-40-703	MOBIL OIL SEELIGSON GAS PLANT NO. 4	748.0	46.1	2327		
PW- 3	84-47-810	WILL PAUL WRIGHT, JR. WELL	670.6	39.4	1890	38 (1968)	*
PW- 5	84-24-401	NEIL ENGLISH WELL	582.2	37.0	1890		
JOHNSON COUNTY (PX)							
HOSSTON/TRINITY AQUIFER							
PX-11	32-38-102	BETHESDA WSC NO. 2	438.0	30.6	645		
PX-12	32-38-901	BETHANY WSC NO. 1	496.8	30.6	561		
PX-14	32-39-703	CITY OF ALVARADO NO. 1	511.1	31.9	845		
KARNES COUNTY (PZ)							
YEGUA/JACKSON AQUIFER							
PZ-11	79-01-9-	KARNES CITY MUNICIPAL WELL NO. 4	309.4	34.4	2020		PRODUCES FROM JACKSON AND CATAHOULA AQUIFERS
CARRIZO/WILCOX AQUIFER							
PZ- 3	78-08-3-	SO. MINERALS NO. 1 J. BARTOSH	1435.9	58.9	2260	+	
PZ- 5	67-50-8-	GEORGE H. COATES NO. 2	807.7	51.1	1500		NOT USED
PZ- 6	78-08-301	FALLS CITY MUNICIPAL WELL	1086.3	48.9	726	3502 (1969)	
PZ- 8	78-08-701	CONTINENTAL OIL CO. PLANT WELL	1160.4	60.0	726		
PZ- 9	78-08-9-	SEABOARD OIL NO. 4 E. N. HYSAW	1220.4	58.9			*
KAUFMAN COUNTY (RA)							
WOODBINE AQUIFER							
RA-21	33-21-802	CRANDALL DEEP WELL CO.	731.5	35.0	2781		PLUGGED AND ABANDONED
RA-25	33-21-102	FORNEY ICE & WATER CO. ARTESIAN WELL	625.1	37.8	1968		ABANDONED AND COVERED
KENEDY COUNTY (RD)							
GOLIAD/EVANGELINE AQUIFER							
RD-11	83-53-101	KENEDY RANCH PICACHO NUEVO ARTESIAN WELL	427.6	33.3		242 (1933)	
RD-13	83-53-501	VICKERS WATER WELL SERV./KENEDY RANCH	429.8	33.3		76 (1968)	
RD-19	83-60-301	KENEDY RANCH SARITA WELL	365.8	33.3		201 (1933)	
RD-31	88-03-901	KENEDY RANCH SAN FRANCISCO WELL	376.5	33.3		16 (1933)	
KINNEY COUNTY (RP)							
EDWARDS AQUIFER							
RP-17	70-44-802	WOODWARD RANCH WELL	429.2	34.5	2570	1893 (1956)	
RP-24	70-52-1-	GAEBLER BROS. WELL	489.2	36.1	2770	757	
KLEBERG COUNTY (RR)							
GOLIAD/EVANGELINE AQUIFER							
RR- 2	83-45-401	KING RANCH TULE WELL	394.7	34.4		19	
LAMAR COUNTY (RT)							
WOODBINE AQUIFER							
RT-16	17-26-202	PETTY WSC NO. 1	509.9	34.4	1038		
PALUXY AQUIFER							
RT-15	17-21-709	RENO WSC NO. 1	652.0	37.8	1133		
RT-17	17-29-103	MJC WSC NO. 1	781.2	36.1	1068		
RT-18	17-29-601	PATTONVILLE WSC NO. 1	805.9	43.3	1180		
LA SALLE COUNTY (RX)							
CARRIZO/WILCOX AQUIFER							
RX- 8	77-47-901	ALBERT MARTIN NO. 1	938.8	36.7	829		*
RX-12	78-49-802	COASTAL STATES FREER PLANT WELL	1280.2	62.2	1297	1514 (1959)	*
RX-23	78-18-702	S. J. WILLIAMS WELL	883.9	43.9	374		*
RX-26	77-29-901	PECO FARMS NO. 1	627.9	40.6	546		
RX-35	78-25-801	KIMBLE ESTATE WELL	914.4	45.6	549	378 (1959)	
RX-53	78-41-302	SOUTH TX SYNDICATE NO. 17	1099.1	53.3	807		* PLUGGED BACK FROM 1738.9 M
RX-57	77-39-6-	COTULLA INDEPENDENT SCHOOL DISTRICT WELL	739.1	43.0	495		
LEE COUNTY (RZ)							
QUEEN CITY AQUIFER							
RZ- 7	59-49-503	CITY OF GIDDINGS NO. 3	415.7	35.0	1063		
CARRIZO/WILCOX AQUIFER							
RZ-12	59-49-604	CITY OF GIDDINGS NO. 7 (BOYS STATE HOME)	658.4	37.8	630		
LIBERTY COUNTY (SB)							
OAKVILLE/JASPER AQUIFER							
SB- 2	60-48-202	CITY OF CLEVELAND NO. 4	500.2	31.7	466	227 (1966)	
LIVE OAK COUNTY (SJ)							
YEGUA/JACKSON AQUIFER							
SJ- 2	78-32-4-	W. L. O'BRIEN WELL	1084.5	34.4	6390	+ (1981)	
CARRIZO/WILCOX AQUIFER							
SJ- 1	78-23-502	HUMBLE OIL & REFINING WATER WELL	1475.8	65.6	969	757 (1956)	
MCCULLOCH COUNTY (SS)							
ELLENBURGER AQUIFER							
SS- 6	42-37-801	OLLIE LOHN LEASE WELL	746.8	31.0	876	76 (1971)	
HICKORY AQUIFER							
SS- 7	42-45-601	LOHN WSC DEEP WELL	837.0	34.0	472		
SS-10	42-54-701	CITY OF BRADY NO. 4	648.3	29.5			
SS-12	42-52-5-	MILLERSVIEW-DOOLE WSC WELL	975.4	36.2			DEPTH IS APPROXIMATE
MCLENNAN COUNTY (ST)							
HOSSTON/TRINITY AQUIFER							
ST- 9	39-17-701	CITY OF AXTELL NO. 1	953.7	53.5			
ST-11	40-39-106	MIDWAY WATER CO. NO. 4	557.2	43.9			
ST-19	40-38-801	SPRING VALLEY WSC NO. 1	445.0	33.3	799		
ST-21	40-46-402	CITY OF MOODY NO. 1	455.4	39.4	868		
ST-24	40-16-401	CITY OF WEST NO. 1	612.6	40.0	809		ABANDONED
ST-26	40-29-805	CITY OF CRAWFORD NO. 2	286.8	30.6	703		
ST-30	40-31-101	CITY OF WACO (AIRPORT NO. 1)	487.7	34.4	591		
ST-34	40-31-601	CITY OF WACO FILTRATION PLANT NO. 1	623.6	38.6	732		
ST-50	39-25-402	TX POWER & LIGHT TRADING HOUSE PLANT NO. 2	889.2	54.4	726		
ST-55	40-39-702	LORENA WSC WELL	575.5	36.1	768		
ST-56	39-33-101	TX POWER & LIGHT LAKE CREEK NO. 1	859.5	55.0	814		
ST-77	39-33-202	RIESEL MUD NO. 1	1076.3	50.5	1053		
ST-86	40-40-401	ROBINSON WATER CO. NO. 3	762.0	43.0			
MCMULLEN COUNTY (SU)							
YEGUA/JACKSON AQUIFER							
SU-22	78-29-603	JAMBERS RANCH WELL	261.8	33.9	8490	114 (1959)	
SU-31	78-46-102	EZZEL UNIT NO. 1 WATER WELL	351.1	37.8	19940	553 (1963)	AQUIFER ALSO CITED AS SPARTA
QUEEN CITY AQUIFER							
SU-12	78-26-502	J. L. DONNELL WELL	641.6	34.4	1363	11 (1970)	
SU-18	78-28-303	HUMBLE NO. 1 L. M. GUBBELS	842.8	36.7	2830	2271 (1959)	
SU-24	78-35-602	MARTIN RANCH WELL	1066.8	47.8	2356	3785 (1959)	AQUIFER ALSO CITED AS CARRIZO
SU-25	78-36-203	C. WHEELER WELL	1249.7	62.2	710	3218 (1962)	AQUIFER ALSO CITED AS CARRIZO
CARRIZO/WILCOX AQUIFER							
SU-14	78-27-503	BERNICE FAUCET WELL	1079.0	35.6	608	284 (1963)	
SU-26	78-36-201	CITY OF TILDEN WELL (COURTHOUSE)	1295.4	51.7	761	3785 (1959)	
SU-32	78-51-201	A. J. FLOWERS NO. 1	1539.2	48.9	1985	3028 (1959)	*
MADISON COUNTY (SW)							
SPARTA AQUIFER							
SW- 3	60-01-602	CITY OF MADISONVILLE NO. 2	401.1	32.2	181		
SW- 4	60-03-202	TX DEPT. CORRECTIONS NO. 3	455.4	36.1	185		
CARRIZO/WILCOX AQUIFER							
SW- 1	38-57-701	J. R. PARTEN WELL	462.1	32.2	505		
MEDINA COUNTY (TD)							
EDWARDS AQUIFER							
TD-34	68-49-813	USGS DEVINE TEST HOLE	973.5	41.7	786	151 (1973)	
TD-45	69-56-507	FRED YANTA WELL	833.0	35.4	1060		
MILAM COUNTY (TK)							
EDWARDS AQUIFER							
TK-13	58-31-201	CRAZY CRYSTAL MINERAL WATER CO. WELL	680.0	52.2	10472	76 (1971)	ABANDONED
HOSSTON/TRINITY AQUIFER							
TK- 1	58-07-901	CITY OF BUCKHOLTS WELL	1051.0	54.0	1783	1037 (1957)	
MILLS COUNTY (TL)							
HICKORY AND ELLENBURGER AQUIFERS							
TL- 4	41-33-502	FRANK GRIGGS/W. H. REEVES WELL	1008.0	34.5	5600	+	* TDS IS APPROXIMATE
NAVARRO COUNTY (TY)							
WOODBINE AQUIFER							
TY-21	33-60-6-	NAVARRO JUNIOR COLLEGE NO. 1 GEOTHERMAL WELL	812.3	51.7	5600		
TY-23	33-58-501	CITY OF FROST NO. 1	360.9	33.3	1557		
TY-24	33-59-102	CITY OF BLOOMING GROVE NO. 2	488.6	36.7	2165		
TY-25	33-59-301	CITY OF BARRY NO. 2	502.9	36.1	9671		NOT USED
TY-27	39-04-401	CITY OF PURDON NO. 1	533.4	32.8	3494		PUMP PULLED
PECOS COUNTY (US)							
PERMIAN LIMESTONE AQUIFER							
US- 2	45-49-103	R. C. CRABB WATER WELL	1219.2	34.0	3680	3785	
US- 4	45-49-2-	CHILDS WATER WELL	UNK	32.8		+ (1981)	
US- 5	45-50-3-	G. C. HOLLADAY WATER WELL	858.3	30.0		3028 (1957)	
US- 6	52-16-608	BELDING FARMS NO. 24	487.7	28.5	1780		
US- 7	52-16-6-	BELDING FARMS NO. 25	502.9	28.5			
PRESIDIO COUNTY (UW)							
BASIN AND RANGE UNDIFFERENTIATED AQUIFERS							
UW- 1	51-28-703	CHIL RIPLEY/KING RANCH, INC.	305.1	36.1	309		CAPPED
UW- 2	51-43-201	GULF NO. 1 PRESIDIO TRUST	958.1	72.0	3253	8300	PLUGGED BACK FROM 1893 M
UW- 3	51-51-305	O. C. DOWE/BOYD CHAMBERS WELL	6.1	37.0	324		DUG 1929
UW- 4	51-52-501	"CAPOTE SPRINGS"		36.7	329	400 (1974)	
UW- 5	51-52-702	"NIXON SPRING"		31.7	507	117 (1974)	
UW- 6	51-60-401	ANDREW BRISCOE, JR. WELL	27.0	42.2	805	45	TOTAL DEPTH 42.1 M
UW- 7	51-60-701	"HOT SPRINGS RUIDOSA"		45.0	549	75 (1974)	
UW- 9	74-04-203	RICHARD JOHNSON WELL	74.1	32.5			
UW-11	51-43-101	GULF NO. 1 R. P. SWAFFORD	874.0	69.0	1697	3785 (1965)	* ORIGINAL DEPTH 2688 M; BHT 100.6° C
UW-15	51-28-9-	SW FARMS NO. 266	557.8	60.0	296		
UW-18	51-29-7-	SW FARMS NO. 193	1234.4	45.0	312		
RED RIVER COUNTY (WB)							
PALUXY AQUIFER							
WB-16	17-22-902	CITY OF DETROIT NO. 1	617.2	37.8	1151		
REEVES COUNTY (WD)							
CRETACEOUS UNDIFFERENTIATED AQUIFERS							
WD- 8	46-50-201	TRAVIS LATTNER, JR. WELL	397.8	31.1	2632		
WD- 9	46-51-516	JERRY JENKINS WELL	269.1	30.0	2181		
WD-10	46-51-511	KEN LINDEMANN WELL	423.7	30.0	2943		
ROCKWALL COUNTY (WL)							
PALUXY AQUIFER							
WL- 6	33-05-401	CITY OF ROCKWALL NO. 2	930.0	46.7	1019		
SAN SABA COUNTY (WX)							
ELLENBURGER AQUIFER							
WX- 6	41-52-101	DARREL TERRY WATER WELL	902.2	32.8	867	38	
HICKORY AQUIFER							
WX- 3	41-42-601	N. SAN SABA WSC NO. 1	1063.1	40.6	690	312 (1973)	
WX- 4	41-43-901	CAYCE OLIA, HANA	1072.9	31.7	2989	38 (1959)	* ABANDONED
WX- 1	41-33-801	WILTON MARTIN ESTATE WELL	839.7	31.7	1942	818 (1961)	
SMITH COUNTY (XH)							
CARRIZO/WILCOX AQUIFER							
XH- 7	34-38-302	SKELLY OIL WATERFLOOD WELL NO. 42	386.8	30.0	1219		
TARRANT COUNTY (XU)							
HOSSTON/TRINITY AQUIFER							
XU-11	32-07-402	KELLER RURAL WSC NO. 1	447.4	31.1	1459		
XU-12	32-08-503	CITY OF GRAPEVINE NO. 2	545.6	32.8	1110		PLUGGED
XU-19	32-15-403	CITY OF RICHLAND HILLS (PARK PLACE)	389.2	31.1	865		
XU-26	32-16-504	FT. WORTH INTERNATIONAL AIRPORT NO. 1	562.7	32.2	831		ABANDONED
XU-38	32-23-307	CITY OF PANTEGO NO. 4	493.5	31.7	827		
XU-44	32-31-605	CITY OF MANSFIELD NO. 4	528.8	32.8	700		
TERRELL COUNTY (XX)							
EDWARDS AQUIFER							
XX- 1	54-35-4-	SULPHUR SPRINGS		29.0	9510	11	MARGINALLY SUBTHERMAL (BRUNE, 1981)
TRAVIS COUNTY (YD)							
HOSSTON/TRINITY AQUIFER							
YD-17	58-44-204	CITY OF MANOR NO. 2	940.6	43.3	1785		
YD-18	58-42-[illegible]	CITY OF AUSTIN STACY PARK WELL	684.6	37.0	1328	424 (1932)	
YD-40	58-51-901	ALLEN & STOLLEY/PHILQUIST WELL	916.8	37.8	2741	132 (1939)	DESTROYED
YD-50	58-43-704	"NATATORIUM WELL"	617.2	37.8	1746	644 (1899)	NOT USED
YD-56	58-51-701	TALFRED COLLINS WELL	739.1	33.3	2202	76 (1973)	
UVALDE COUNTY (YP)							
EDWARDS AQUIFER							
YP-19	69-44-703	BRISCOE RANCH WELL	513.6	32.8			
YP-22	69-52-401	B. TURNER RANCH WELL	429.8	33.3	2240		
YP-31	69-52-902	WOODLEY RANCH WELL	683.4	38.0			
HOSSTON/TRINITY AQUIFER							
YP-32	69-53-2-	REHM RANCH DEEP WELL	1368.6	HOT	2220	1060	ABANDONED; NO LONGER FLOWING
VAL VERDE COUNTY (YR)							
EDWARDS AQUIFER							
YR-71	71-31-7-	GOODENOUGH SPRINGS		28.9		232764	INUNDATED BY LAKE AMISTAD; MARGINALLY SUBTHERMAL; SIMILAR TO SPRINGS DISCHARGING FROM BASIN AND RANGE AQUIFER
WALKER COUNTY (YU)							
CATAHOULA AQUIFER							
YU- 3	60-20-6-	CITY OF HUNTSVILLE NO. 15	399.3	29.8			
SPARTA AQUIFER							
YU- 1	60-03-902	WINDSWEPT DOWNS UTIL DIST. NO. 1	705.3	40.6	357	144 (1976)	
WARD COUNTY (YX)							
PERMIAN LIMESTONE AQUIFER							
YX- 1	46-32-901	HUMBLE WICKETT WATER SUPPLY NO. 1	1347.5	32.2	13072	3445 (1967)	
YX- 8	46-24-814	GULF O'BRIEN WATER SUPPLY NO. A-10	1341.1	32.5	6300		TDS IS APPROXIMATE
YX-15	46-32-304	GULF O'BRIEN WATER SUPPLY NO. A-11	1371.6	33.0	23000		TDS IS APPROXIMATE
YX-23	46-32-620	GULF O'BRIEN WATER SUPPLY NO. 12	1371.6	33.0	23000		TDS IS APPROXIMATE
WASHINGTON COUNTY (YY)							
CATAHOULA AQUIFER							
YY- 2	59-53-905	CITY OF BRENHAM NO. 5	463.8	32.8	354		DESTROYED
WEBB COUNTY (YZ)							
CARRIZO/WILCOX AQUIFER							
YZ- 1	85-28-901	LAREDO WATER WELL NO. 1	763.5	42.2			TEST WELL
YZ- 4	85-12-102	G. A. COX WELL	563.9	34.4	1220		
YZ- 5	77-59-401	ESPEJO RANCH TIERRITAS WELL	548.6	35.6	773		
WILLACY COUNTY (ZJ)							
GOLIAD/EVANGELINE AQUIFER							
ZJ- 1	88-34-9-	CITY OF LYFORD WELL	589.8	33.3	3530	+	
WILLIAMSON COUNTY (ZK)							
HOSSTON/TRINITY AQUIFER							
ZK-12	58-13-503	CITY OF BARTLETT NO. 3	797.7	42.0	1206		
ZK-13	58-21-203	CITY OF GRANGER NO. 3	794.3	41.0	1406		
ZK-19	58-29-607	CITY OF TAYLOR NO. 5	1028.1	48.0			
WILSON COUNTY (ZL)							
CARRIZO/WILCOX AQUIFER							
ZL-32	68-55-703	CITY OF FLORESVILLE NO. 3	426.7	37.8	358		
ZL-35	68-56-502	REX MCCLOSKEY WELL	358.2	32.2	542		
ZL-42	68-62-601	W. E. MOSS WELL	411.2	35.6	331		
ZL-50	68-63-802	FAY RHODES WELL	433.7	36.1	338		
ZL-53	68-64-402	CITY OF POTH NO. 2	619.4	47.2	475		
ZAVALA COUNTY (ZX)							
CARRIZO/WILCOX AQUIFER							
ZX-32	77-04-606	R. BRACHER NO. 2	324.3	32.2	354		
ZX-35	77-04-418	ROLAN CARNES NO. 2	274.3	32.8	304		
ZX-62	77-11-701	DEL MONTE CORP. NO. 3	354.5	34.4	464		
ZX-81	77-17-603	BYRD FARMS NEW LAKE WELL	279.5	33.3	306		
ZX-95	77-20-101	MRS. NORMAN W. GATES WELL	1432.0	35.6	372		
EDWARDS AQUIFER							
ZX-13	69-61-526	HERB DIRKSEN WELL	1063.3	46.5	3329	+ (1977)	

[a]MUD - Municipal Utilities District
WCID - Water Control & Improvement District
WSC - Water Supply Corporation
WSD - Water Supply District
[b]TDS values from some sources are cited in parts per million. At these concentrations, however, the correction factor for mg/L is so small that it is negligible.
[c]Year in parentheses if available. The symbol "+" means that the available data indicate that the well or spring was flowing, but that no rate of flow is cited.
[d]The symbol "*" indicates an oil test converted to a water well.
BHT - Bottom-Hole Temperature.



INTRODUCTION

This map is a "state-of-knowledge" presentation of geothermal resources in Texas. It is based on the most reliable information available. But as new data are acquired, future studies may change our perception of the resources. The data presented on this map were obtained from several sources: published reports, state- and federal-agency files, and Bureau of Economic Geology (BEG) field measurements of water temperatures.

The term "low-temperature geothermal waters" is used here mainly as defined by Reed (in press): namely, as ground water with a consistent well-head or spring-discharge temperature less than 90°C (194°F), but at least 10°C (18°F) above the local mean annual air temperature. This definition is based on the common observation that shallow ground-water temperatures are at or slightly above the local mean annual air temperature. Because of the size and geographic (hence climatic) diversity of Texas, the minimum temperatures of these waters range from 22°C (72°F) in the northwest corner of the Panhandle to 33°C (92°F) in the state's southernmost tip. Low-temperature geothermal waters may be put to many energy-related uses. Examples include direct space heating, heating for agricultural purposes, such as crop drying, and any other industrial or commercial processes for which warm or hot water is required. Supplemental heating using fossil fuels may be needed, but because geothermal waters contain a natural heat subsidy, much less fuel will be required.

The feasibility of using low-temperature geothermal resources at any locality poses economic and site-specific questions that this map cannot answer. The map delineates broad areas that locally contain thermal waters, but the limits of these areas are not definite, and all sites within a designated area do not necessarily yield waters having the required elevated temperatures. Measurements of depth, water temperature, water chemistry, and flow rates for selected wells accompany the map (table 1). Also, because of either notable historical use or current potential for resource development, certain geothermal localities are emphasized by brief discussions (denoted in red) on the map.

MAP EXPLANATION

This map uses colors to depict four major sets of low-temperature geothermal aquifers. Three of these sets are defined on the basis of geologic age of the thermal-water-producing rock units (table 2). The fourth set delineates the part of the Basin and Range structural province in Trans-Pecos Texas. The three categories based on geologic age comprise 14 of a statewide total of 15 thermal aquifers, not including geopressured aquifers. These 14 aquifers occur as layered (sedimentary) strata whose thermal-water-producing zones are largely predictable, based on regional geologic conditions. Line patterns distinguish aquifers within each category; the corresponding aquifer names are noted in red. Schematic cross sections (Section ABC, Section K, and Section T), along with a generalized map of the major geologic provinces of Texas (fig. 2), show the areal and vertical relations among these aquifers.

Basin and Range Undifferentiated Aquifers

General extent of Basin and Range Undifferentiated Aquifers

Local areas having well-documented geothermal potential

The gray map patterns represent areas where low-temperature geothermal waters are obtained from aquifers of various ages in the geologically complex Trans-Pecos region. Thermal waters discharge from wells throughout the region and from springs located along faults that juxtapose Quaternary (Cenozoic) bolson (basin-fill) deposits, Tertiary (Cenozoic) volcanic rocks, and Cretaceous (Mesozoic) and Paleozoic strata. Because it is uncertain which rock unit is the source of the water, we have informally named these "Basin and Range Undifferentiated Aquifers." This region is similar geologically to the rest of the Basin and Range of the western United States between the Rocky Mountains and the Sierra Nevada. These Basin and Range resources in Texas have been studied in detail by Henry (1979), Henry and Gluck (1981), Roy and Taylor (1979), and Taylor (1981). The lighter shade of gray denotes the general areas where thermal resources of this type occur. Dark gray highlights areas in the Hueco and Presidio Bolsons where data indicate local geothermal resources that are especially promising.

Cenozoic Aquifers

Thermal water produced from rocks of Tertiary age

Cenozoic low-temperature geothermal aquifers all occur within the Gulf Coast Basin and all are sandstone strata of Tertiary age (table 2). The Gulf Coast Basin is a major downwarp of the earth's crust. Aquifers that produce cool potable water in their shallow reaches dip into this basin, and the temperature of this ground water increases with depth because of the prevailing geothermal gradient of the region. Simply put, if you drill enough deep holes, you are likely to find warm or hot water. Hence, extensive petroleum exploration has revealed geothermal potential in almost all the aquifers considered in the Gulf Coast Basin. However, the quality and quantity of these waters determine whether or not a usable geothermal resource exists. Commonly, as water temperatures increase, both water quality and sustainable well yield decrease. Vertical relations among these strata are shown in a schematic stratigraphic column of the Gulf Coast Basin region (Section T).

Tertiary Geopressured Aquifers

Geopressured aquifers, although deep-basin continuations of rock units that yield low-temperature geothermal resources in their shallow reaches, constitute a type of resource different from all other geothermal aquifers mapped in Texas. These geopressured aquifers are discrete sand lenses containing hot water (93° to 177°C, or 200° to 350°F) under very high pressures; they are located in the deep reaches of the Tertiary Gulf Coast Basin (Section T). The geopressured systems are described in general terms by Dorfman and Kehle (1974) and by Wallace and others (1979); an up-to-date overview of these resources throughout the Gulf Coast region is given by Bebout and Bachman (1981).

Mesozoic Aquifers

Thermal water produced from rocks of Mesozoic age

In terms of potential for use, the Mesozoic aquifers along the Balcones/Ouachita trend are probably the most important of all the low-temperature geothermal aquifers in Texas. This is because of the location of cities (and hence, potential users of the resource) along this trend and also because of proven feasibility of geothermal applications there (see note for Marlin Area). All four aquifers that occur along this trend are of Cretaceous age, and all are sandstones except the Edwards Limestone. A schematic north-to-south cross section of Cretaceous rock units along the Balcones/Ouachita trend shows the relations among these Central Texas aquifers (Section K). Two Mesozoic aquifers exist elsewhere in the state: An undifferentiated Cretaceous unit occurs southwest of Pecos in West Texas, and a Triassic sandstone unit (the Dockum Group) occurs in the Midland Basin and adjacent areas (fig. 2).

Paleozoic Aquifers

Thermal water produced from rocks of Paleozoic age

There are three Paleozoic low-temperature geothermal aquifers presently identified in Texas: Two of these are of early Paleozoic age and occur mainly in Central Texas; the other is of late Paleozoic age and occurs in the Trans-Pecos region. The two aquifers that occur in Central Texas are the Hickory Sandstone and the Ellenburger Limestone, both of which rim the Llano Uplift (fig. 2). The Hickory Sandstone is an aquifer of variable composition and thickness lying directly on the Precambrian basement complex. The Ellenburger comprises a thick section of limestone strata that are locally important as petroleum reservoirs. Besides yielding low-temperature geothermal waters north of the Llano Uplift, the Ellenburger may also yield high-temperature waters and perhaps hydrocarbons along the Ouachita overthrust belt (see note for Marathon Area). Elsewhere in West Texas, warm water is produced from various upper Paleozoic, Permian (280 million to 230 million years old; table 2) limestones. These Permian aquifers generally yield saline waters and are located far from population centers and potential users of thermal waters.

Thermal Springs and Wells

Thermal Springs
- Warm; surface temperature 50°C or lower

Thermal Wells
- Warm; surface temperature 50°C or lower
- Hot; surface temperature higher than 50°C

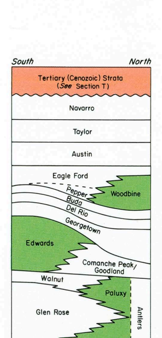
METRIC CONVERSION FACTORS

1 liter = .2642 gallon
1 meter = 3.281 feet
1 milligram/liter = 1 part per million
°Celsius = 5/9 (°Fahrenheit − 32)
°Fahrenheit = 9/5 °Celsius + 32

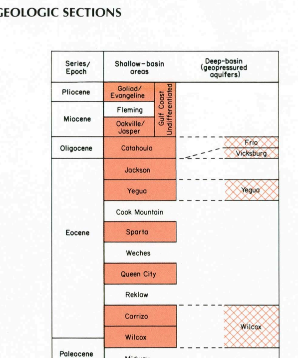
Table 2. Simplified geologic time chart
(Time intervals not to scale)

Era	Period	(Epoch)
CENOZOIC	Quaternary	
	Tertiary	(Pliocene)
		(Miocene)
		(Oligocene)
		(Eocene)
		(Paleocene)
65 million years ago		
MESOZOIC	Cretaceous	
	Jurassic	
	Triassic	
230 million years ago		
PALEOZOIC	Permian	
	Pennsylvanian	
	Mississippian	
	Devonian	
	Silurian	
	Ordovician	
	Cambrian	
~600 million years ago		
PRECAMBRIAN		

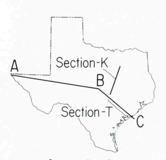
GEOLOGIC SECTIONS



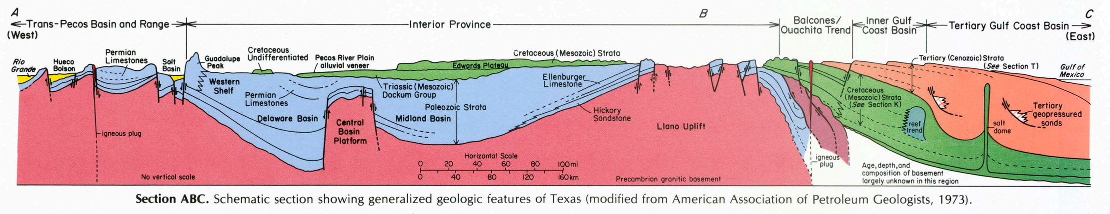
Section K. Schematic north-south section of major Cretaceous (Mesozoic) rock units in Central Texas.



Section T. Generalized column of major Tertiary (Cenozoic) rock units in the Gulf Coast Basin of Texas.



Index to Sections.



Section ABC. Schematic section showing generalized geologic features of Texas (modified from American Association of Petroleum Geologists, 1973).

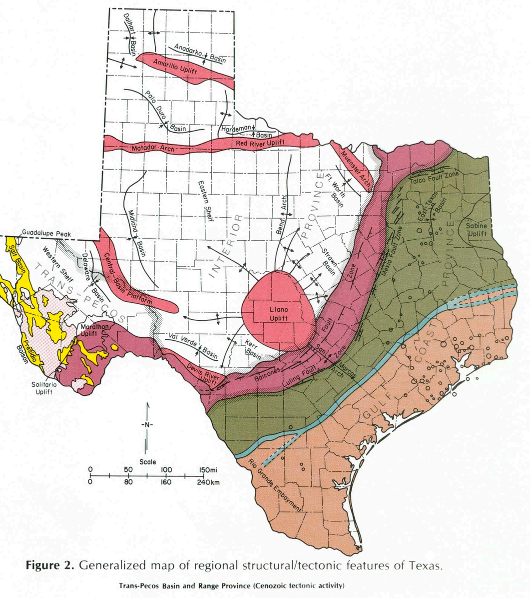


Figure 2. Generalized map of regional structural/tectonic features of Texas.

Trans-Pecos Basin and Range Province (Cenozoic tectonic activity)
- Bolson (basin-fill) deposits—commonly bounded by faults that may be locations of thermal springs.
- Tertiary volcanic areas—contain local thermal wells.

Gulf Coast Basin Province (Mesozoic and Cenozoic tectonic activity)
- Inner Gulf Coast Basin—the site of most Tertiary low-temperature geothermal aquifers; also includes the deep parts of the various Cretaceous (Mesozoic) aquifers.
- Lower Cretaceous Shelf Edge—major buried reef trends that separate the inner and outer (Tertiary) parts of the Gulf Coast Basin.
- Tertiary Gulf Coast Basin—the site of major growth-fault zones that are controlling features of Tertiary geopressured aquifers; this area also includes some of the Tertiary thermal aquifers.

Ouachita Province (Paleozoic tectonic activity)
- Ouachita Overthrust Belt—except for the Marathon and Solitario Uplifts, this belt is buried throughout Texas. The part of the overthrust belt that extends beneath Central Texas is termed the Balcones/Ouachita trend; the normal faults in this area are probably related to the buried Ouachita belt, but fault movement is of post-Paleozoic age. The Balcones/Ouachita trend is the location of most of the Mesozoic low-temperature geothermal aquifers.

Interior Province (Precambrian and Paleozoic tectonic activity)
- Major uplift areas probably involve basement rocks; may locally control occurrence of thermal resources such as with Paleozoic strata north of the Llano Uplift.

General Map Features
- Axis of linear uplift
- Axis of basin (if known)
- Generalized normal fault within or marginal to Balcones/Ouachita trend; tic indicates downthrown side.
- Salt dome
- Tectonic province boundary

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BASE MAP EXPLANATION

- U.S. Department of Energy reservation
- Indian reservation
- Military reservation
- National park, national seashore, national recreation area, national preserve, national wildlife refuge, or selected state park
- National forest, national grassland, or state forest

Private land may exist within federal boundaries

- State capital
- County seat
- City, town, or village
- Scheduled service airport
- Corporate boundary shown for towns over 25,000 population
- Built-up area shown for towns over 10,000 population
- Interstate highway
- U.S. highway
- State highway
- Other principal roads

POPULATION KEY

HOUSTON	more than 100,000
ODESSA	50,000 to 100,000
Victoria	10,000 to 50,000
Dumas	5,000 to 10,000
Jacksboro	less than 5,000

Population indicated by size of letters
Population data from 1965 base

Geothermal data for this map were compiled and interpreted by
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of the
BUREAU OF ECONOMIC GEOLOGY
THE UNIVERSITY OF TEXAS AT AUSTIN

Map prepared by the
National Geophysical Data Center
National Oceanic and Atmospheric Administration
for the
Geothermal and Hydropower Technologies Division
United States Department of Energy

Scale 1:1,000,000
1 centimeter equals 10 kilometers
1 inch equals approximately 16 miles
10 0 10 20 30 40 50 Kilometers
10 0 10 20 30 40 Miles

Contour interval 200 feet
Supplemental 100 foot contour in coastal region
Datum is mean sea level
1927 North American datum
Lambert conformal conic projection based on standard parallels 33° and 45°

Base map is reduced from the 1:500,000 scale topographic map of Texas (U.S. Geological Survey, 1965)

Map produced by Ronald H. Smith, Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado/NOAA, Boulder, Colorado and David M. Clark, NGDC/NOAA, Boulder, Colorado, in cooperation with the Earth Science Laboratory/University of Utah Research Institute, Salt Lake City, Utah.

Map available free of charge from:
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