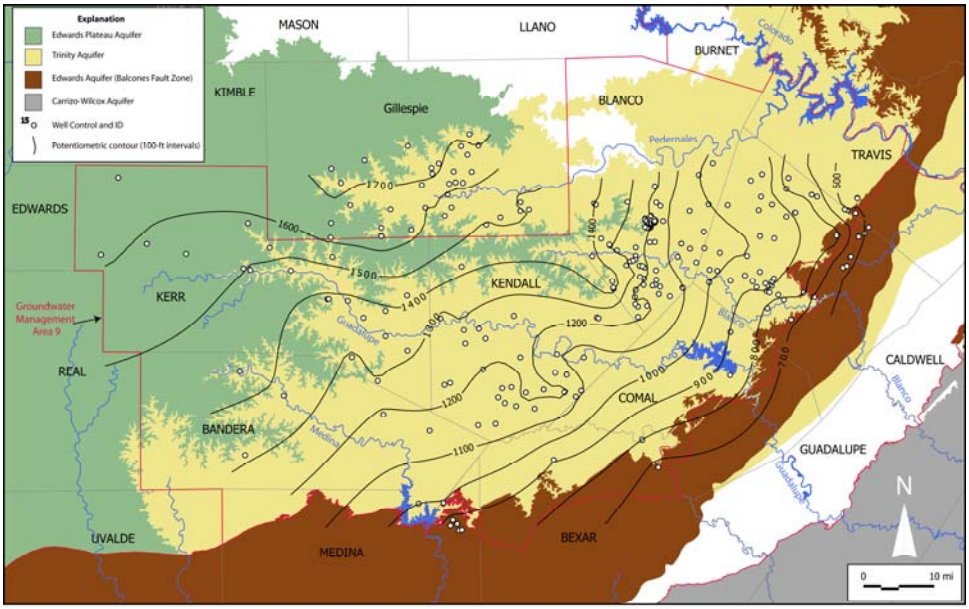
Barton Springs
Edwards Aquifer
CONSERVATION DISTRICT

SPRING 2009 POTENTIOMETRIC MAP OF THE MIDDLE TRINITY AQUIFER IN GROUNDWATER MANAGEMENT AREA 9, CENTRAL TEXAS



Basemap data provided by the Texas Water Development Board: Major Aquifers of Texas, Major Rivers, and Groundwater Management Areas.

Potentiometric Map of the Middle Trinity Aquifer, Texas Hill Country
March 2009

BSEACD Report of Investigations 2010-0501

Barton Springs/Edwards Aquifer Conservation District
1124 Regal Row
Austin, Texas

Disclaimer
All of the information provided in this report is believed to be accurate and reliable; however, the Barton Springs/Edwards Aquifer Conservation District and the report's authors assume no liability for any errors or for the use of the information provided.

Cover. Potentiometric Map of the Middle Trinity Aquifer (see Figure 7).

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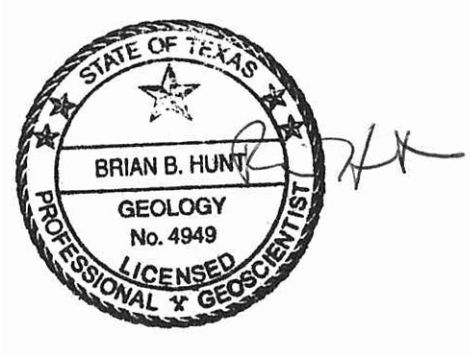
Brian B. Hunt, P.G., and Brian A. Smith, Ph.D., P.G.,
Barton Springs/Edwards Aquifer Conservation District



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CONTENTS

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Brian B. Hunt, P.G., and Brian A. Smith, Ph.D., P.G.,

INTRODUCTION

The Trinity Aquifer is the primary groundwater source for a variety of needs throughout the Texas Hill Country. Groundwater Management Area 9 (GMA-9) is composed of nine Groundwater Conservation Districts (GCDs) within the Texas Hill Country that are tasked with managing groundwater resources. Recent State law requires Districts to periodically meet to discuss the future availability of groundwater within the aquifers of GMA-9. Increasing water-supply demands have raised concerns about the availability of groundwater in the Texas Hill Country. In particular, the Middle Trinity Aquifer is the primary aquifer for water-supply needs. At an early 2009 GMA-9 meeting, it was discussed that a potentiometric (water level) map of the Middle Trinity Aquifer constructed during the ongoing drought would provide useful information. All GCDs in the GMA agreed to participate and send the authors water-level data collected from the Middle Trinity Aquifer during the Spring of 2009.

Groundwater levels and potentiometric surface maps provide critical information about the hydrologic relationships of recharge, discharge, and storage within an aquifer, and the direction of groundwater flow. This report contains historic potentiometric maps and a new Spring 2009 potentiometric map representing moderate drought conditions within the Middle Trinity Aquifer of the central Texas Hill Country. The purpose of this report is to provide a foundation of information and data for future hydrogeologic investigations and evaluations of water resources. These maps and data will be useful for computer modeling, sustainable yield determinations, and resource protection.

BACKGROUND

Setting

The study area is primarily GMA-9, which encompasses most of the central Texas Hill Country and includes portions or all of the following counties: Bexar, Kendall, Kerr, Medina, Bandera, Hays, Travis, Comal, and Blanco. Data were also compiled from outside of GMA-9 boundaries within Gillespie, Bexar, Hays, and Travis Counties **(Figure 1**).

A description of the background hydrogeology is beyond the scope of this report. Barker *et al.* (1994) provides a summary of the hydrogeology of the area. Mace *et al.* (2000) is another good reference providing hydrogeologic background information.

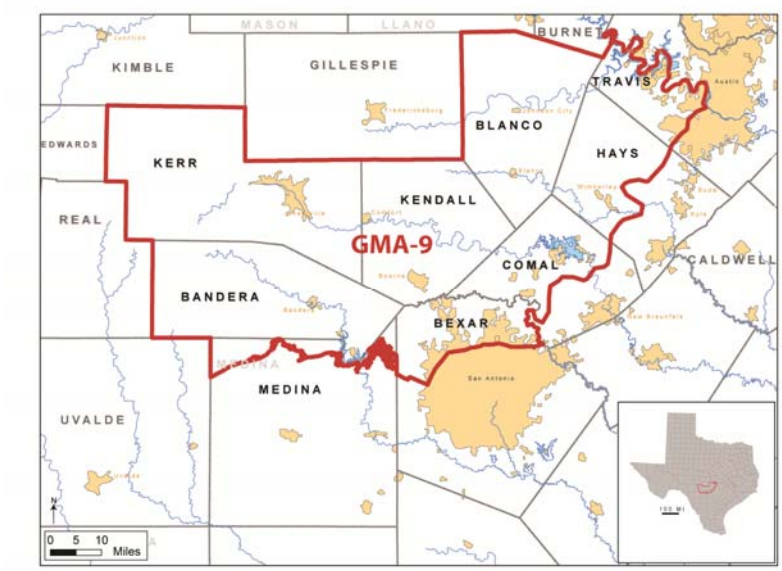


Figure 1. Location map showing study area.

Hydrologic Conditions

This investigation into water levels of the Middle Trinity Aquifer of the Texas Hill Country occurred as the region was experiencing an "extreme" to "exceptional" (meteorological) drought according to the U.S. Drought Monitor (**Figure 2**). Impacts to groundwater typically lag in time compared to meteorological impacts. Although the map reflects drought conditions, it does not reflect total impact of the drought that became more severe and ended in September 2009. Twenty four-month running rainfall totals in March and August 2009 were 53 and 25 inches, respectively (**Figure 3**).

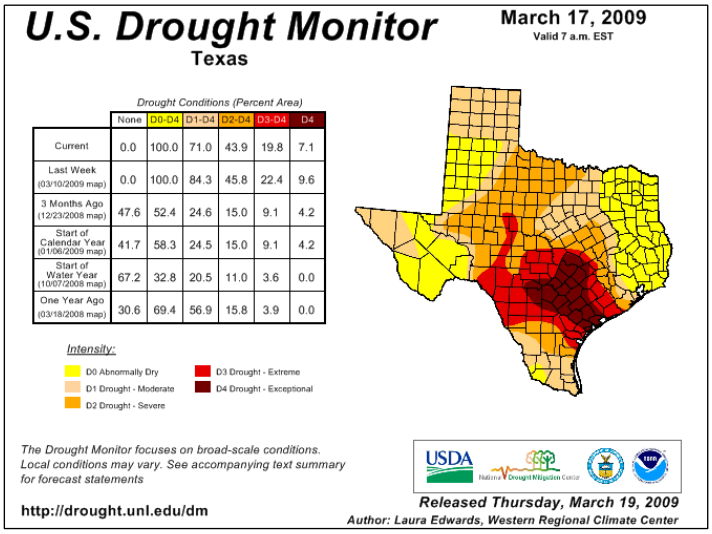


Figure 2. Drought graphic showing the extent and severity of the 2009 drought during the time the data was collected for this report. Graphic from the U.S. Drought Monitor.

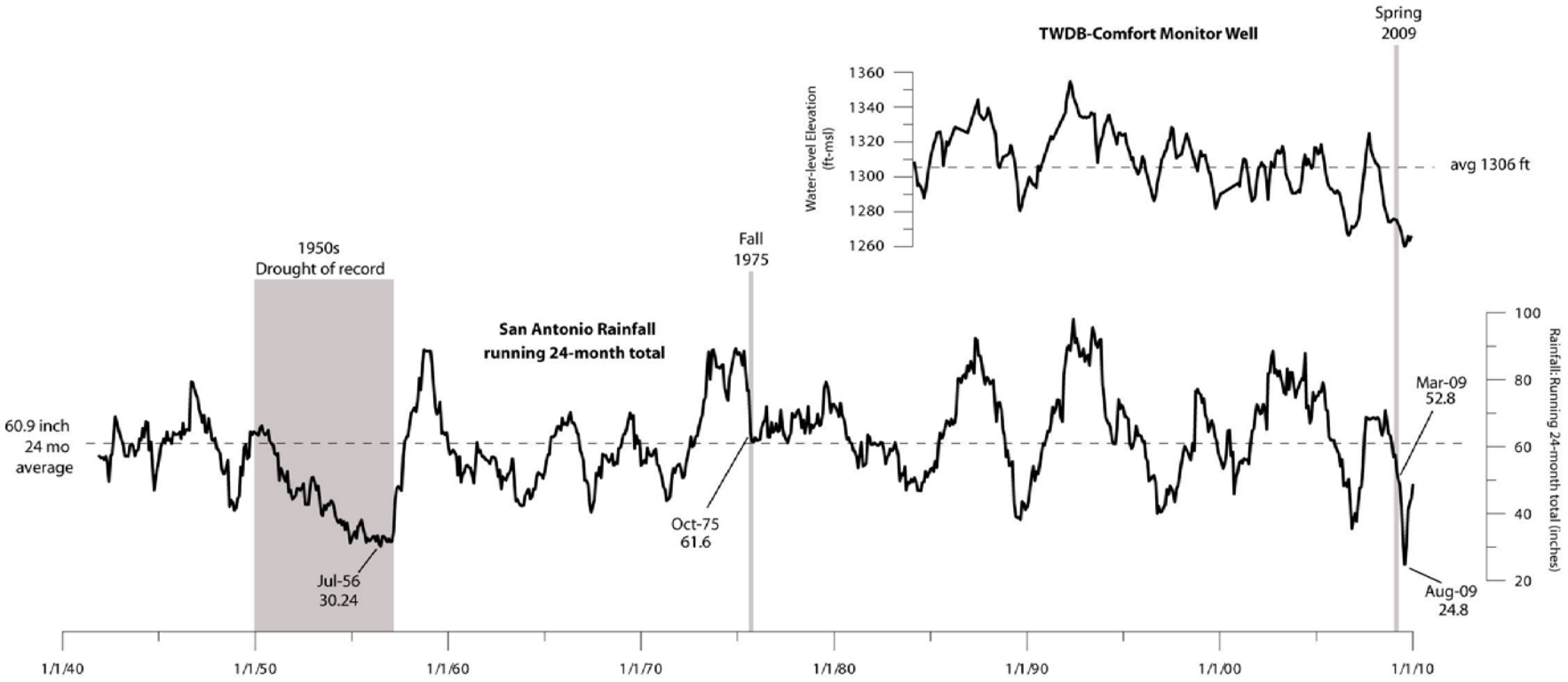


Figure 3. Hydrograph of rainfall and water levels. Rainfall is shown as a running 24-month total. Water-level elevation data is from the TWDB Comfort well (68-01-314) in Kendall County. For reference, the drought of record (DOR), Fall 1975, and Spring 2009 time periods are indicated with running 24-month rainfall totals of 30.2, 61.6 and 52.8 inches, respectively. Note that by the end of the 2009 drought (August) the rainfall total was lower than the DOR.

Previous Work

There are many investigations on the water resources of the Texas Hill Country. Some of the most relevant to this report include:

Mace *et al.* (2000) provide a historical (Fall 1975) Middle Trinity potentiometric map that was used for calibration of the model (**Figure 4**). In addition, Mace *et al.* (2000) map an area of net water-level decline from 1980 to 1999 **(Figure 5**).

Bush *et al.* (1993) provide a pre-development, or historical potentiometric map for the Edwards-Trinity Aquifer System and contiguous hydraulically connected units (**Figure 6**). This map includes the Edwards-Trinity Plateau, Hill Country Trinity, and Edwards aquifers. Water levels in the Hill Country portion of the map reflect the Middle Trinity Aquifer. The Bush *et al.* (1993) map was generated from data spanning 6 decades, and hydrologic conditions representing wet to dry conditions. The authors report that data were collected during very wet conditions for Gillespie County; moderately wet conditions for Blanco and Comal Counties; average conditions for Kerr, Kendall, Bandera, and Medina Counties; and moderately dry conditions for Hays and Travis Counties. The authors discuss observations by Brune (2002) that suggest the map does not reflect water-level conditions completely unaffected by human activities such as poor range management (overgrazing) and pumping, which could have resulted in lower water levels. Nonetheless, the Bush *et al.* (1993) map represents "pre-development" conditions.

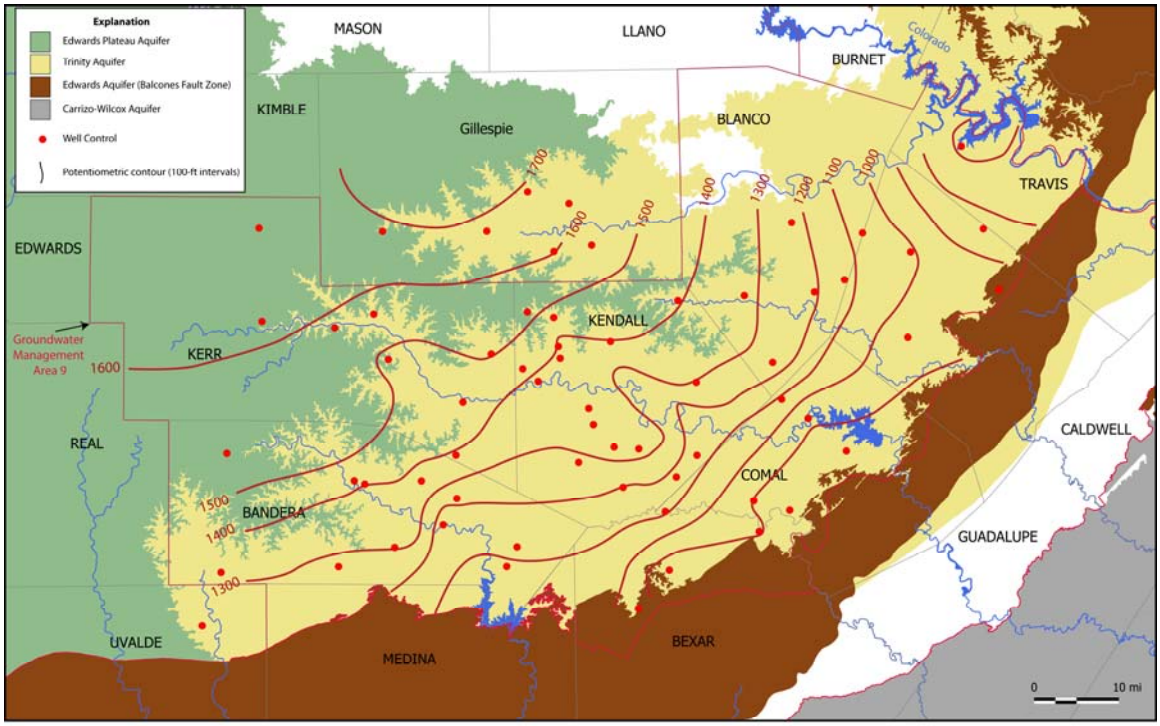


Figure 4. Potentiometric Map of the Middle Trinity Aquifer, Fall 1975. Figure modified from Mace *et al.* (2000).

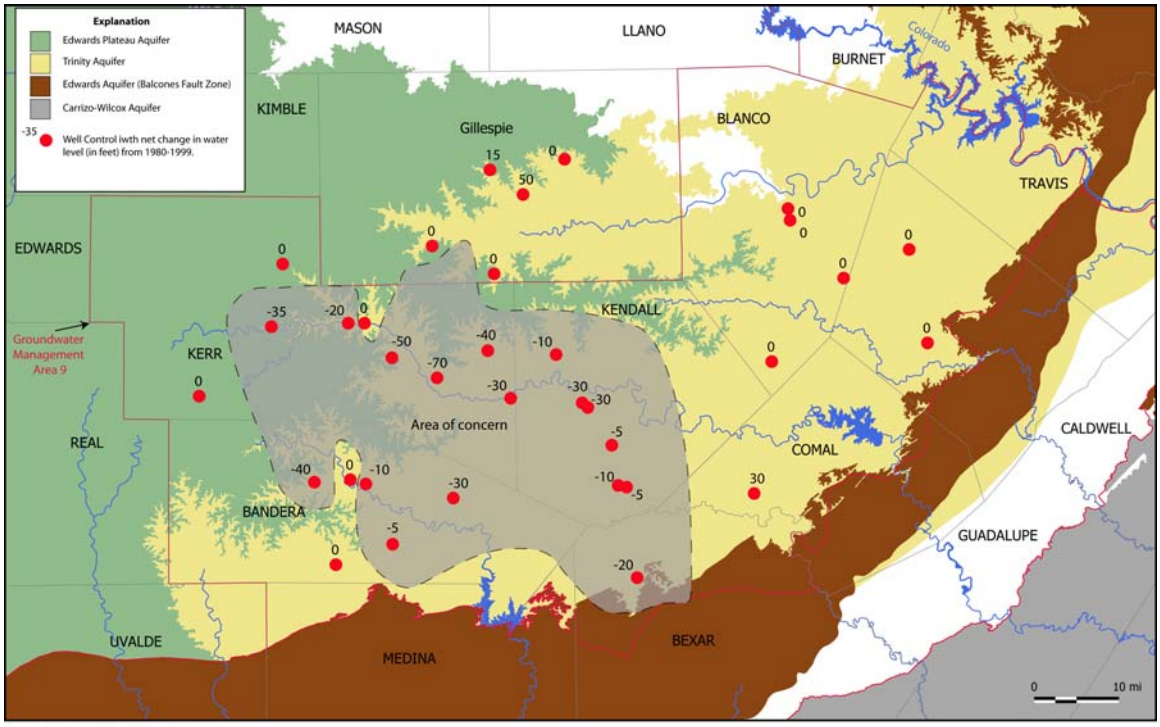


Figure 5. Net water-level change map of the Middle Trinity Aquifer from 1980 to 1999. Figure modified from Mace *et al.* (2000). An "area of concern" that has overall declining levels over that time period is shaded in light grey.

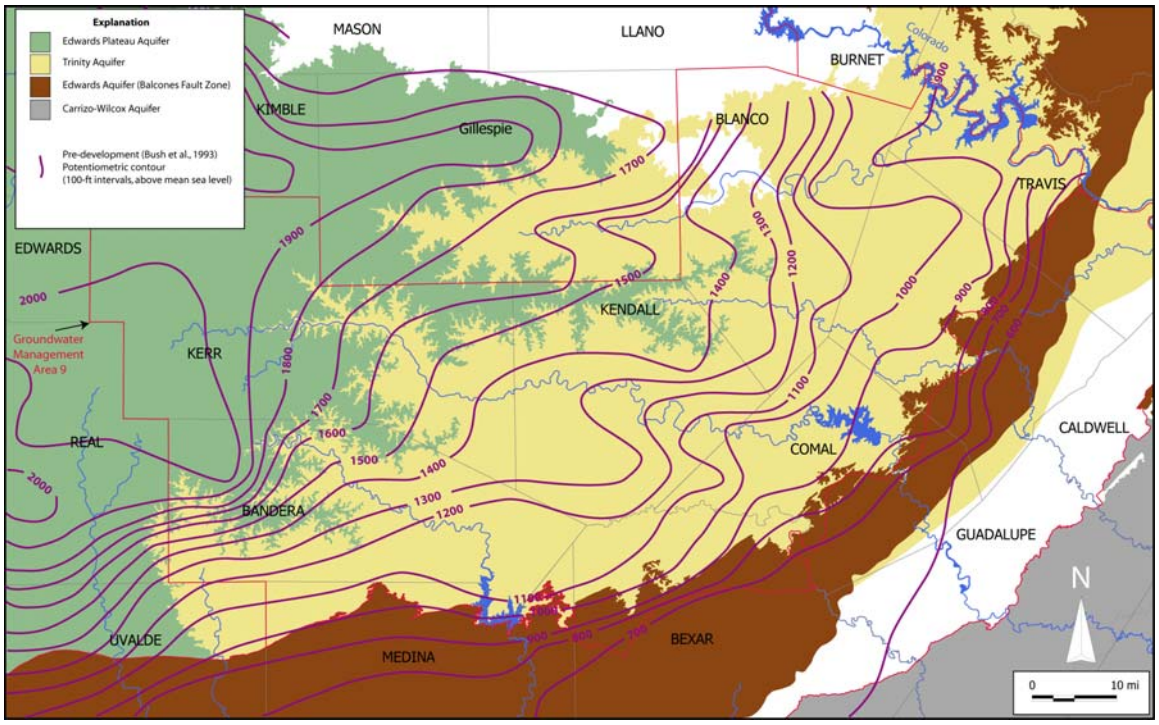


Figure 6. Historical (Predevelopment) Potentiometric Contour Map of the Edwards-Trinity System and Hydraulically Connected Units, Central Texas. This map is modified after Bush *et al.* (1993).

Boghici (2008) shows water-level changes for a 10-year period (1990-2000) in the (undifferentiated) Trinity Aquifer. In summary, Boghici (2008) notes "the area of Bandera, Kerr, western Kendall, and northern Bexar experienced water-level declines of up to 100 feet."

METHODS AND DATA

Water-level measurements were collected using either manual measurements or with automated recorders. Manual measurements were most often made with a calibrated electric tape (e-line) or, less commonly, a steel tape. Automated instruments include pressure transducers with data loggers. Manual measurements are generally accurate to within ±0.01 feet.

Data Sources

Data were compiled from 13 sources, with most data provided by GCDs within and around GMA-9. **Table 1** is a summary of the source and number of data compiled for this report.

Table 1. Summary of data sources

Data Source/Agency	*County*	*2009 month data collected*	*Number of data*
Blanco-Pedernales Groundwater Conservation District (BPGCD)	Blanco	February-April	85
Barton Springs/Edwards Aquifer Conservation District (BSEACD)	Hays and Travis	February-March	9
Cow Creek Groundwater Conservation District (CCGCD)	Kendall	March	30
City of Austin (COA)	Travis	March	3
Hill Country Underground Water Conservation District (HCUWCD)	Gillespie	April-May	33
Headwaters Groundwater Conservation District HGCD	Kerr	March	20
Hays-Trinity Groundwater Conservation District (HTGCD)	Hays	February	37
Medina County Groundwater Conservation District (MCGCD)	Medina	February-April	7
Other	Hays	March	1
Texas Water Development Board (TWDB)	Comal, Bexar, and Hays	February	4
United States Geological Survey (USGS)	Hays	March	1
United States Geological Survey and San Antonio Water Systems (USGS/SAWS)	Bexar	April	1
United States Geological Survey and Trinity-Glen Rose Groundwater Conservation District (USGS/TGRGCD)	Bexar	March	1
		Total	***232***

Data Compilation, Validation, and Quality Assurance

Data were compiled into a spreadsheet and mapped within proprietary Geographic Information System (GIS) software called Manifold®. Within the GIS software, the water elevations were contoured and compared to historic published potentiometric maps. All data were carefully reviewed, and were omitted from the compilation if suspected of

questionable well completion, significant influence from pumping, or other anomalous or non-representative conditions.

Contouring and Mapping

All water-level data were gridded using a kriging interpolation (linear model) algorithm within Manifold®. Potentiometric contours were then generated from the grid. It should be noted that a grid using a linear interpolation algorithm generated essentially the same results as the kriging, but extended the interpolation beyond the boundaries of the data. To calculate water-level declines, data from Fall 1975 and Spring 2009 maps were gridded and then subtracted from each other using Goldenware's Surfer® software. Computer-generated contours were then manually reinterpreted to account for hydrogeologic boundaries, data gaps, and experience of the authors.

Datums and Coordinates

Horizontal coordinates are in latitude and longitude. Many of the horizontal coordinates were collected with a Global Positioning System (GPS), or by locating the well on a U.S. Geological Survey (USGS) topographic map, and by survey. Horizontal datums are in World Geodetic System 1984 (WGS84) or North American Datum 1983 (NAD83) or North American Datum 1927 (NAD27). Accuracy of the locations is likely a few hundred feet, although most are probably better.

Water-level measurements are made in reference to a measurement point (MP) at the well head. Commonly, the MP corresponds to the top of casing (TOC). The MP or TOC measurement is subtracted from the depth-to-water measurement to reflect a depth from the land surface datum (LSD). LSD is generally defined as the top of the concrete slab around the casing, or from ground level if no slab exists. All depth to water measurements are referenced to LSD (in feet). Elevations for LSDs are in feet above mean sea level and were generally obtained from USGS topographic maps (10- to 20-ft contours) or from surveys. Vertical datums from those maps are either National Geodetic Vertical Datum 1929 (NAVD29) or National Geodetic Vertical Datum 1988 (NAVD88). The accuracy of the elevation of a well is the largest source of error for the data in this report, and is likely less than 10 feet. However, given the 100-ft contour interval used, this accuracy is considered sufficient for the regional scale of the map.

Timing of Synoptic Map

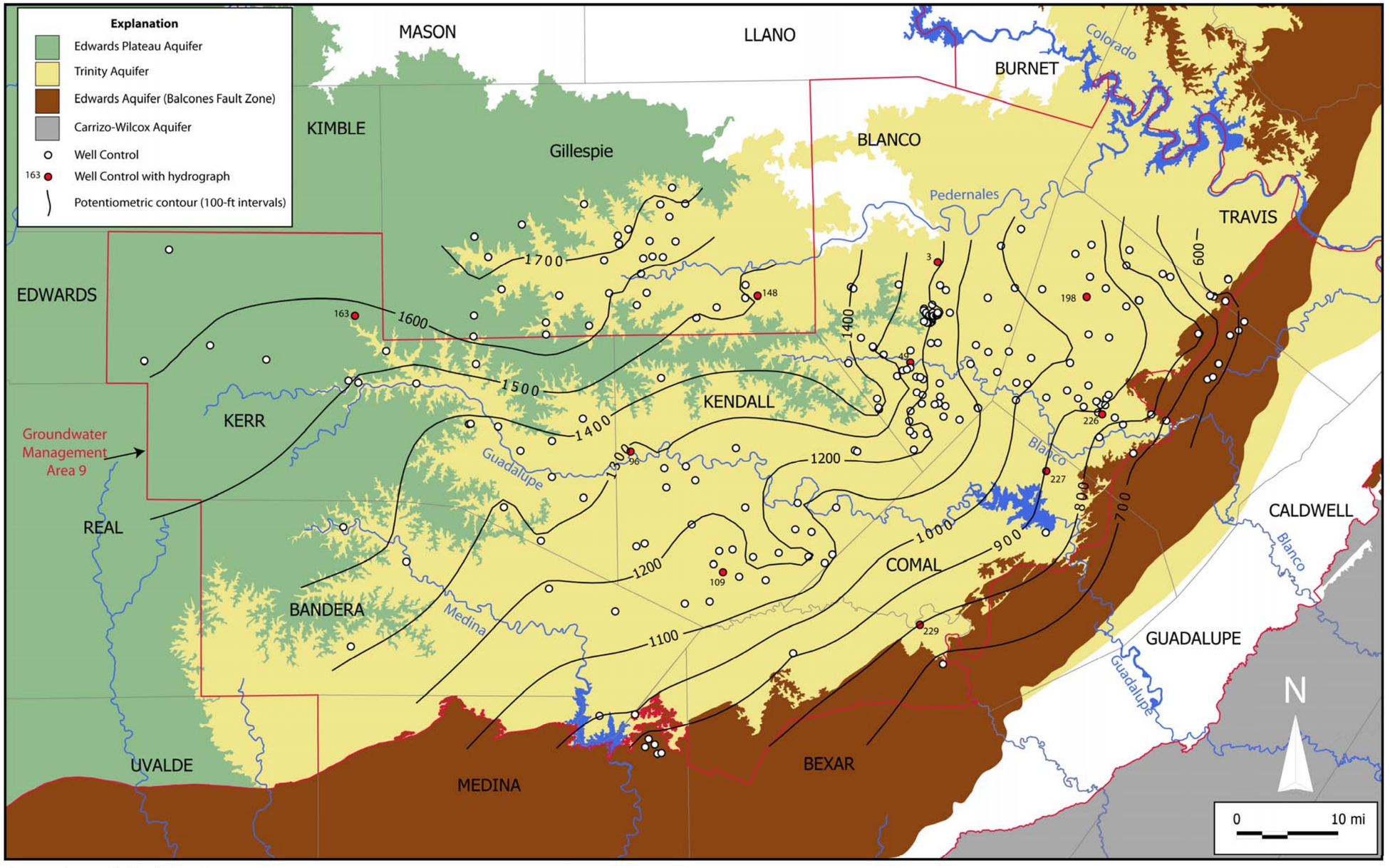
Data were collected generally between late February and early March 2009. This time period reflected in the map will hereafter be referred to as Spring 2009. **Table 1** lists the range in dates of the data. Data provided by the Hill Country Underground Water Conservation District (Gillespie County) are from late April to early May 2009.

RESULTS

Figure 7 is a potentiometric map of the Middle Trinity Aquifer. Appendix A contains the well control data used to produce the contour map. Appendix A also contains the same Figure 7 map with well ID numbers. A few wells were selected to graph their water-level elevations over time (**Figure 8**). Most of these wells were selected for their geographic distribution and relatively long period of record. **Table 2** is a list of the wells graphed in Figure 8. **Figure 9** combines the Fall 1975 and the Spring 2009 potentiometric map of the Middle Trinity Aquifer for direct comparison.

Table 2. List of wells with hydrographs presented in Figure 5. Wells are denoted on Figure 4. Table excerpted from Appendix A.

Map ID	Well #	Source	Owner/Name	Water Level elevation (ft-msl)	Date	TD	Comment
3	5753305	BPGCD	BPGCD Hensel Monitor Well	1226.50	02/19/09	344	
49	57612BR	BPGCD	BPGCD Middle Trinity Monitor Well	1240.80	02/19/09	?	
96	6801314	CCGCD	Comfort TWDB	1274.35	03/17/09	280	Hensel
109	6811417	CCGCD	Schwope TWDB	1151.71	03/17/09	500	Kgrl, Kh, Kcc
148	R -00648	HCUGCD		1495.49	05/04/09		Hensel
163	5654405	HGCD	HGCD MW #4	1583.13	03/30/09		
198	5755607	HTGCD	Whit Hanks	949.89	02/13/09	381	Middle Trinity
226	5764705	TWDB	Wimberley WSC	819.29	02/14/09	400	
228	6815116	TWDB	Canyon Lake WSC (Comal Co.)	871.74	02/14/09	655	upper Glen Rose mistakenly reported as aquifer
229	6821213	TWDB	Emory Hamilton (Bexar Co.)	799.00	02/15/09	625	218GLRSL



Basemap data provided by the Texas Water Development Board: Major Aquifers of Texas, Major Rivers, and Groundwater Management Areas.

Figure 7. Potentiometric Map of the Middle Trinity Aquifer, Texas Hill Country, Spring 2009

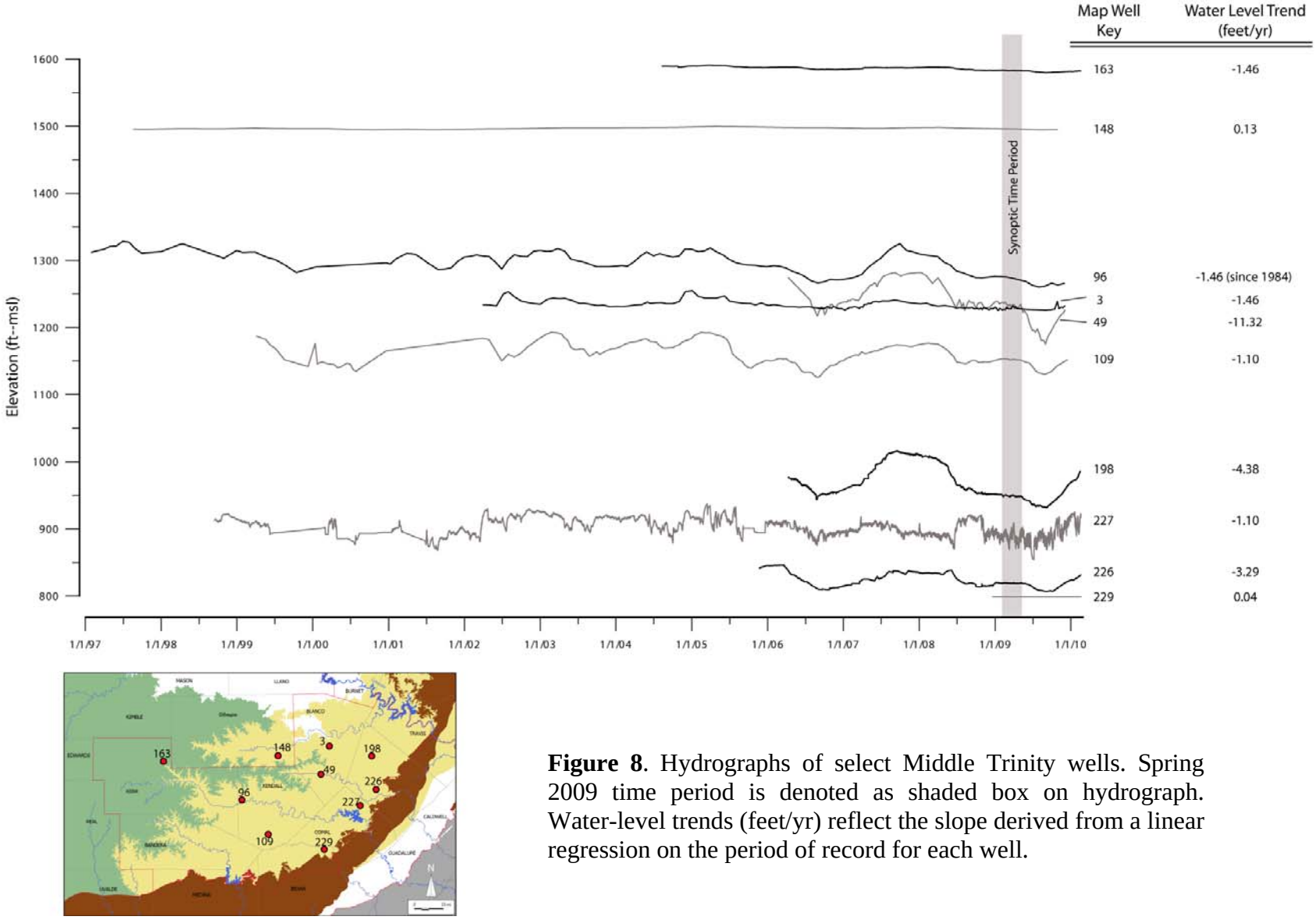
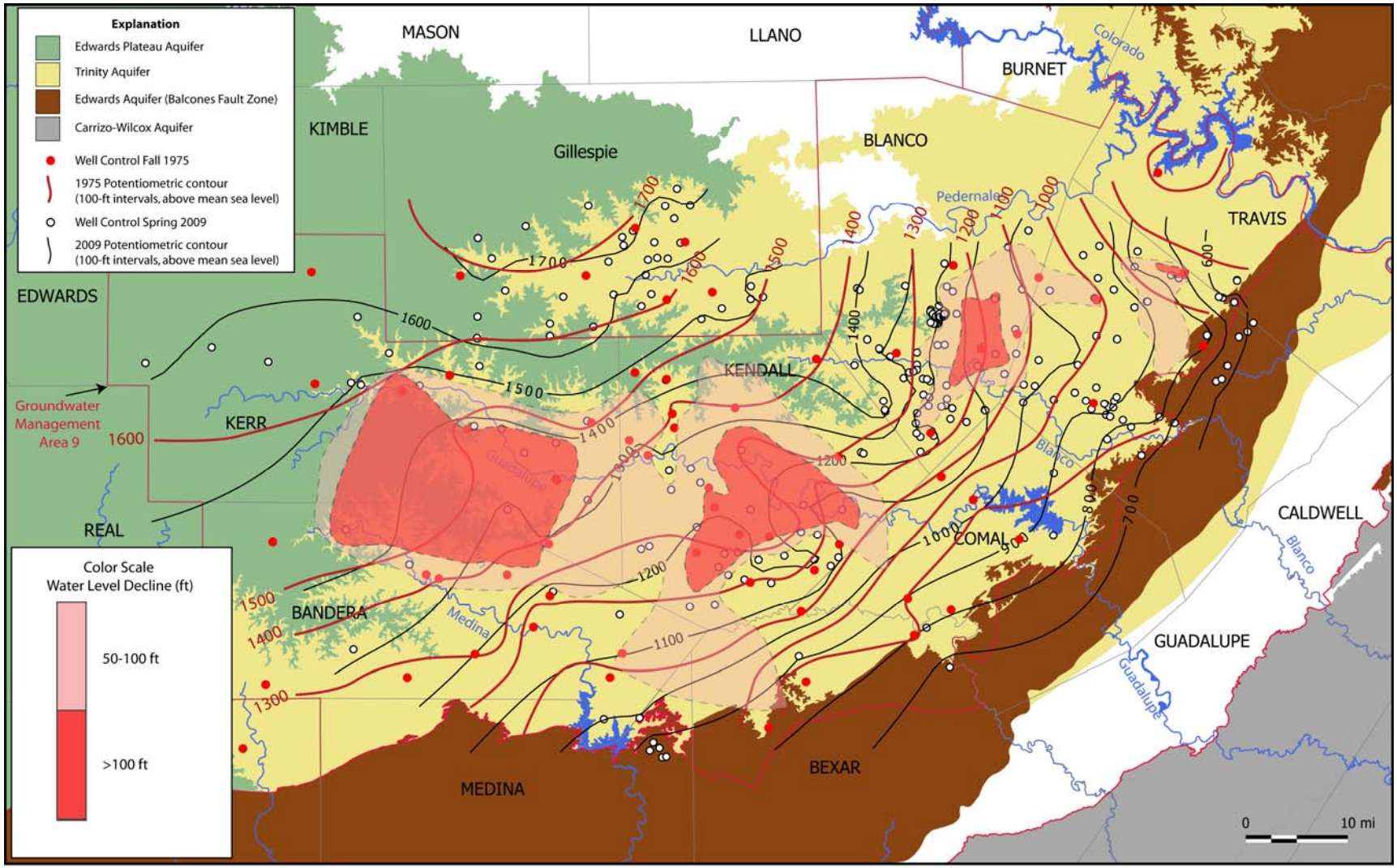


Figure 8. Hydrographs of select Middle Trinity wells. Spring 2009 time period is denoted as shaded box on hydrograph. Water-level trends (feet/yr) reflect the slope derived from a linear regression on the period of record for each well.



Basemap data provided by the Texas Water Development Board: Major Aquifers of Texas, Major Rivers, and Groundwater Management Areas.

Figure 9. Combined Fall 1975 and Spring 2009 potentiometric and water-level decline maps. Fall 1975 map from Mace *et al.* (2000). Note that categorized areas of water-level declines have dashed boundaries and are only an approximation of the geographic extent.

DISCUSSION

On the basis of the Spring 2009 potentiometric map, flow within the Middle Trinity is generally from northwest to southeast. This is predominantly down-dip of the geologic units from outcrop into the confined subsurface. A prominent potentiometric ridge exists along the Blanco-Kendall County line and separates a more west to east flow system within Blanco, Hays, and Travis Counties. A portion of the flow appears to deviate to the northeast along the Balcones Fault Zone as it approaches Travis County. The Lower Glen Rose is exposed along the Colorado River west of the Balcones Fault Zone and could be the discharge point for the Middle Trinity in that area. Other features noted in the map include predominantly converging flow centered along the Guadalupe River west of Canyon Lake. A prominent ridge is defined by the 1,200-ft contour line in Kendall County south of the Guadalupe River. All of these features described above are consistent with **Figure 4**, the 1975 map produced by Mace *et al.* (2000), and **Figure 6**, the historic map produced by Bush *et al*. (1993).

Comparison of the Spring 2009 map with the historical maps is problematic since the maps represent different hydrologic conditions. The Bush *et al*. (1993) map is particularly problematic since hydrologic conditions varied by county. For this paper, a comparison was made between the Fall 1975 and the Spring 2009 map. However, the precursor hydrologic conditions in the Fall 1975 and Spring 2009 are not the same. The running 24-month rainfall total for the Fall 1975 and the Spring 2009 were 62 and 53 inches, respectively (**Figure 3)**. Nevertheless, a comparison of the change in water levels from the Fall 1975 to Spring 2009 may provide some insight to long-term water–level changes on a regional scale. Visual comparison of the change in water levels from Fall 1975 to Spring 2009 in **Figure 9** reveals heterogeneous water-level declines of up to 100 feet throughout the aquifer. Areas of greater decline greater than 100 feet are noted south of Kerrville, north of Boerne, east of Blanco, and a small area along the Hays-Travis County line. No measureable change in water levels occurred in most of Gillespie County, and along the potentiometric ridge straddling the Blanco-Kendall County line. The net water-level change map of **Figure 5** (from Mace *et al*. 2000) appears to under-estimate the water-level declines shown in **Figure 9**. For example, no drawdown is noted on **Figure 5** for Blanco and Hays County. Possible explanations for this difference between **Figures 5** and **9** include increased water-level declines since 1999, or the geographic distribution of the data (in either map) does not accurately reflect representative conditions.

Although climatic variability must contribute to the majority of water-level declines from 1975 to 2009, it appears reasonable that increases in pumping may also contribute. To highlight this hypothesis, we focus on the area around the Comfort Well (well 96 in **Figure 7**), which shows about 100 feet of water-level decline from 1975 to 2009 in **Figure 9**. Over the period of record (since 1984) the Comfort Well has, on average, declined about 36 feet (-1.46 ft/yr) when a linear trend line is plotted on the data (**Figure 10**). The 24-month running rainfall total since 1940 does not show significant upward or downward trends (**Figure 3**), so we assume long-term regional climatic variability has negligible impact on water-level trends in the Comfort Well. However, short-term

climatic variability reflected in water-level changes in the Comfort Well is significant, and has a maximum range of about 75 feet from a dry period (Aug-1989), to a subsequent wet period (Mar-1992) (**Figure 10**). Therefore, if we assume that long-term climate variation had negligible effect on water-level trends, and there is about 100 feet of drawdown from 1975 to 2009, then perhaps a maximum of 75% of the drawdown in the Comfort Well could be explained by short-term climatic variability. That leaves a minimum of about 25% of the water-level decline since 1975 attributed to increasing pumping over the long-term. More data is needed to fully evaluate this hypothesis.

Mace et *al.*, (2000) report that pumping in 1975 was estimated to be about 6,932 acre-ft/yr for the Middle Trinity Aquifer (including Gillespie County). In 2008 GMA-9 estimated pumping to be 32,099 acre-ft/yr (not including Gillespie County), a 460% increase.

Recent groundwater model simulations (Hutchison, 2010) suggest that groundwater levels in GMA-9 would have long-term declines of about 40 ft, on average, after 50 years of pumping at current estimated levels. This is similar to the long-term trend discussed in the example above.

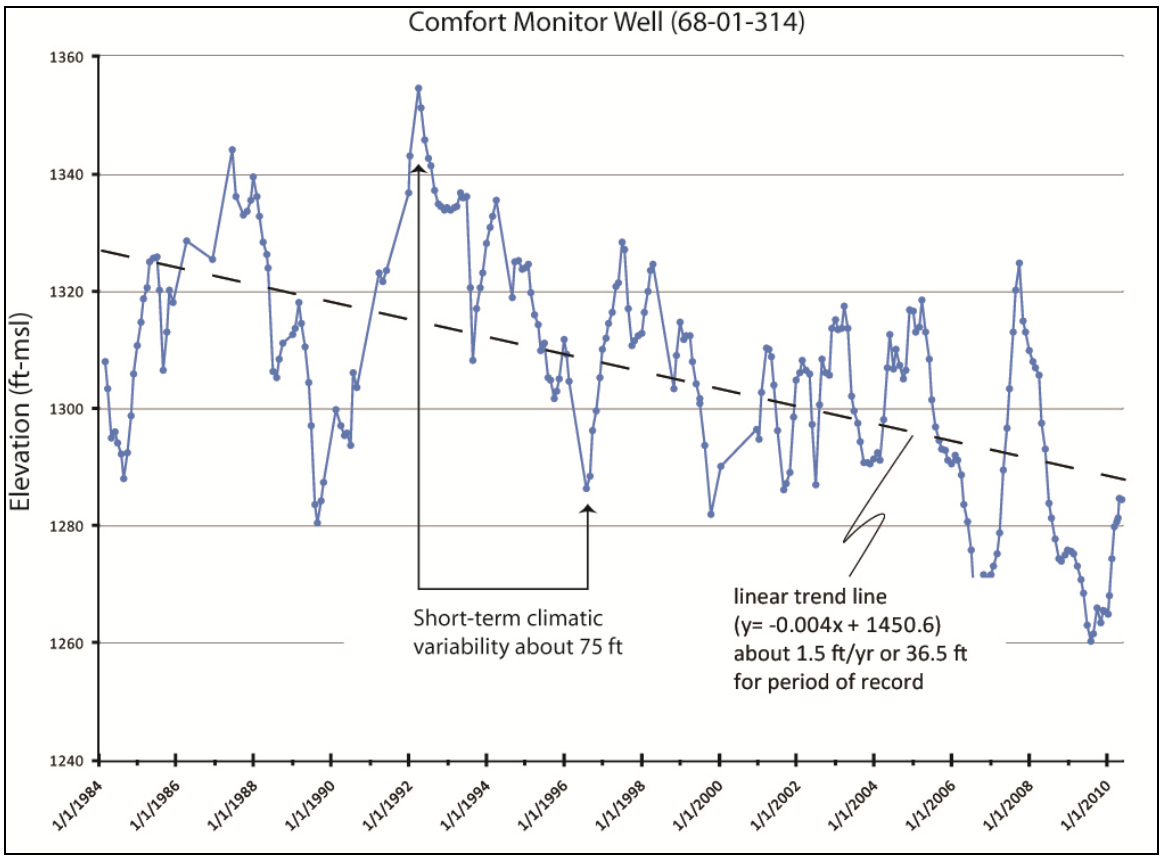


Figure 10. Hydrograph of the period of record for the Comfort Well (#96 this study) illustrating short-term climatic variability and long-term declining trends in water levels.

The Comfort well contains the longest period of record for wells in the study area. Other wells shown in the hydrograph (**Figure 8)** have shorter periods of record and some (e.g. wells 49 and 198) show a strong bias toward the last two recent droughts in 2006 and 2009, and are not likely representative of long-term trends. However, all the wells with greater than 10 years of data (wells 96, 109, and 227) show the same declining trend of more than 1 ft/yr. The exception is well 148 showing a slight increase in water levels of 0.13 ft/yr. This well, unlike the others, is located within an unconfined (recharge zone) setting.

CONCLUSIONS

The Spring 2009 potentiometric map accurately illustrates the overall flow patterns of the Middle Trinity Aquifer, and those patterns conform with the historic Fall 1975 potentiometric map published by Mace *et. al* (2000). Short-term regional climatic variability likely contributes most of the water-level decline from 1975 to 2009. However, increased pumping also appears to contribute to long-term water-level decline.

Future Work

To truly assess long-term water level trends and impacts, more synoptic potentiometric maps, utilizing many of the same wells in this report, should be attempted under a variety of hydrologic conditions. A series of maps representing a variety of hydrologic conditions would make direct comparison of maps more accurate, and possibly more meaningful with regard to long-term trends. Comparison of the Spring 2009 map to simulated potentiometric maps (with similar recharge conditions) could also be useful to test the validity of model results.

ACKNOWLDEGMENTS

This report would not have been possible without the full cooperation and support of all the GCDs in GMA-9 and the Hill Country Underground Water Conservation District. Ronald G. Fieseler, P.G. (BPGCD) helped facilitate and motivate the data transfer. We would like to acknowledge and thank all the land owners and agencies that provided access to their wells for data collection.

Numerous people and agencies helped provide data beyond those acknowledged as contributors, and they include: John Dupnik (BSEACD), Guy Rials (BSEACD), Joe Beery (BSEACD), Rob Esquilin (EAA), Nico Hauwert (COA), Ken Davis (HTGCD), Ali Chowdhury (TWDB), U.S. Geological Survey (USGS), and San Antonio Water Systems (SAWS).

Kirk Holland, P.G., John Dupnik, P.G., Ronald G. Fieseler, P.G., and Doug A. Wierman, P.G. provided additional technical and editorial review of this report.

REFERENCES

Barker, R., Bush, P., and Baker, E. (1994). *Geologic History and Hydrogeologic Setting of the Edwards-Trinity Aquifer System, West-Central Texas.* U.S. Geological Survey, WRI 94-4039.

Boghici, R., 2008. Changes in Water Levels in Texas, 1990 to 2000. Texas Water Development Board Report 371, November 2008, 34 p.

Brune, G., 2002, Springs of Texas: College Station, Texas A&M University Press, 2d ed., 566 p.

Bush, Peter W., Ardis, Ann F.; Wynn, Kirby H., 1993, Historical potentiometric surface of the Edwards-Trinity aquifer system and contiguous hydraulically connected units, west-central Texas; U.S. Geological Survey Water-Resources Investigations Report, WRi no. 92-4055; 1 map + 2 data sheets

Hutchison, B., 2010, Draft GAM Task 10-005, Report by the Texas Water Development Board, May 28, 2010, 12 p.

Mace, R., Chowdhury, A., Anaya, R., and Way, S., 2000, Groundwater Availability of the Trinity Aquifer, Hill Country Area, Texas: Numerical Simulations through 2050: Texas Water Development Board, 172 p.

Appendix A: Middle Trinity Potentiometric Data

Map ID	Well Number	Data Source	Owner/Name	DDlat	DDlong	Land Surface Datum (ft-msl)	Depth Water (ft)	MP	Water Level elevation (ft-msl)	Date Measured	Well Total Depth	Comment
1	5747705	BPGCD	Texas Parks & Wildlive Dept.	30.282528	-98.245778	1170	194.30	1.80	977.50	02/19/09	283	BPGCD Monitor Well
2	5752609	BPGCD	James Sultemeier	30.203500	-98.528083	1485	61.20	2.30	1426.10	02/24/09	183	
3	5753305	BPGCD	Stanton Ranch	30.237444	-98.384278	1445	219.00	0.50	1226.50	02/19/09	344	BPGCD Monitor Well
4	5753614	BPGCD	Amil Baker	30.177000	-98.394417	1510	322.55	1.50	1188.95	02/19/09	505	BPGCD Monitor Well
5	5753620	BPGCD	Miller Creek Lavender Farm	30.204222	-98.381000	1293	153.70	2.00	1141.30	02/20/09	304	
6	5761507	BPGCD	Joe & Jonelle Haas	30.083556	-98.444611	1420	96.43	1.00	1324.57	02/19/09	120	Old Rosa Winn well, BPGCD Monitor Well
7	6805209	BPGCD	Alvis L. Smith	29.991278	-98.427944	1390	128.90	2.00	1263.10	02/18/09	223	
8	6817215	BPGCD	Bowie	29.743556	-98.922528	1365	201.20	0.00	1163.80	04/21/09	485	R-1561
9	6825211	BPGCD	Lakehills Co. Yard	29.595361	-98.950000	1154	154.80	0.00	999.20	04/21/09	403	
10	6914104	BPGCD	Lautzenheiser	29.867694	-99.368611	1693	257.10	0.00	1435.90	04/23/09	550	
11	6914609	BPGCD	Medina Springs	29.817389	-99.265194	1515	129.12	0.00	1385.88	04/23/09	465	
12	6916906	BPGCD	Mason Creek Shallow	29.777250	-99.031028	1380	174.60	0.00	1205.40	04/21/09		
13	6916907	BPGCD	Mason Creek Deep	29.777250	-99.031028	1380	200.50	0.00	1179.50	04/21/09	480	
14	6922402	BPGCD	Daughtry	29.696861	-99.357278	1592	278.70	0.00	1313.30	03/18/09	400	R-3079
15	57469SH	BPGCD	Susan Hill	30.259417	-98.279361	1078	82.14	1.50	997.36	03/09/09	?	
16	57526BJ	BPGCD	BJ Sultemeier	30.201139	-98.524222	1545	161.78	2.00	1385.22	02/24/09	325	
17	57529D1	BPGCD	Dos Canalles	30.130861	-98.512694	1518	145.31	2.00	1374.69	02/26/09	?	Ronny & Sandra Irving
18	57535BA	BPGCD	Bamberger Ranch	30.206083	-98.449083	1605	294.82	0.20	1310.38	04/10/09	340	Main Ranch House Well, unused
19	57539A1	BPGCD	Brushy Top Well 1-A Lot 3	30.152778	-98.395417	1484	280.55	1.70	1205.15	02/24/09	465	No Pump
20	57539A2	BPGCD	Brushy Top Well 1-B Lot 119	30.154000	-98.395750	1517	314.50	2.80	1205.30	02/24/09	510	No Pump
21	57539B2	BPGCD	Brushy Top Well 2-B Lot 4	30.151083	-98.398250	1522	325.15	2.00	1198.85	02/24/09	490	No Pump
22	57539C1	BPGCD	Brushy Top Well 3-A Lot 6	30.151361	-98.401472	1535	319.90	1.80	1216.90	02/24/09	?	No Pump
23	57539C2	BPGCD	Brushy Top Well 3-B Lot 7	30.151472	-98.403639	1538	324.80	1.10	1214.30	02/24/09	490	No Pump
24	57539D1	BPGCD	Brushy Top Well 4-A Lot 9	30.153333	-98.408444	1712	490.62	2.60	1223.98	02/24/09	670	No Pump

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25	57539L1	BPGCD	Brushy Top Well 12-A Lot 40	30.171550	-98.407840	1718	469.53	2.00	1250.47	02/20/09	665	No Pump
26	57539M1	BPGCD	Brushy Top Well 13-A Lot 47	30.169080	-98.408580	1735	481.18	2.30	1256.12	02/20/09	680	No Pump, Gamma Ray Log
27	57539N1	BPGCD	Brushy Top Well 14-A Lot 85	30.164610	-98.405340	1701	418.03	2.00	1284.97	02/20/09	650	No Pump
28	57539N2	BPGCD	Brushy Top Well 14-B Lot 58	30.165680	-98.404560	1700	464.25	2.10	1237.85	02/20/09	650	No Pump
29	57539O1	BPGCD	Brushy Top Well 15-B Lot 81	30.162820	-98.397870	1468	255.90	2.00	1214.10	02/20/09	430	No Pump
30	57539O2	BPGCD	Brushy Top Well 15-A Lot 82	30.162290	-98.399440	1480	258.42	2.00	1223.58	02/20/09	430	No Pump
31	57539P1	BPGCD	Brushy Top Well 16-A Lot 79	30.164010	-98.395070	1464	252.31	2.00	1213.69	02/20/09	450	No Pump
32	57539P2	BPGCD	Brushy Top Well 16-B Lot 80	30.162170	-98.395210	1441	228.65	1.10	1213.45	02/20/09	?	No Pump
33	57539Q1	BPGCD	Brushy Top Well 17-A Lot 62	30.165220	-98.392280	1492	287.80	2.10	1206.30	02/20/09	445	No Pump
34	57539Q2	BPGCD	Brushy Top Well 17-B Lot 58	30.165750	-98.393460	1527	318.30	2.30	1211.00	02/20/09	510	No Pump
35	57539R2	BPGCD	Brushy Top Well 18-B Lot 77	30.161280	-98.392770	1420	214.97	1.90	1206.93	02/20/09	410	No Pump
36	57539S1	BPGCD	Brushy Top Well 19-A Lot 75	30.161660	-98.387830	1420	219.70	2.10	1202.40	02/20/09	410	No Pump
37	57539S2	BPGCD	Brushy Top Well 19-B Lot 74	30.162110	-98.385560	1428	229.90	1.60	1199.70	02/20/09	410	No Pump
38	57539T1	BPGCD	Brushy Top Well 20-A Lot 72	30.164580	-98.385770	1451	248.30	2.20	1204.90	02/20/09	450	No Pump
39	57539T2	BPGCD	Brushy Top Well 20-B Lot 71	30.165640	-98.385540	1468	186.33	2.90	1284.57	02/20/09	470	No Pump
40	57544SM	BPGCD	Sheri Moore	30.197111	-98.371444	1325	197.65	2.00	1129.35	02/18/09	?	
41	57545EP	BPGCD	Franklin Ranch	30.185472	-98.302500	1359	317.53	1.60	1043.07	03/04/09	?	East Pasture well; water level very deep
42	57546B3	BPGCD	Randy Barton	30.198667	-98.257500	1342	341.30	1.40	1002.10	03/10/09	440	Frank & Karen Dick-Armadillo Bar
43	57547TO	BPGCD	Todd & Erin Oyler	30.165278	-98.365528	1310	192.59	2.00	1119.41	03/03/09	323	
44	57549GG	BPGCD	Gene Guthrie	30.141806	-98.269722	1548	499.45	1.90	1050.45	03/07/09	645	
45	57603HH	BPGCD	Hal Hammond	30.094806	-98.534111	1512	93.79	1.00	1419.21	02/26/09	?	2019 RR1888 Blanco
46	57611BM	BPGCD	Bonnie Markel	30.116528	-98.492361	1443	147.90	1.80	1296.90	02/24/09	?	
47	57611MC	BPGCD	Michael Cooley	30.118167	-98.493389	1462	140.06	2.00	1323.94	02/24/09	385	
48	57611TW	BPGCD	Trey Wyatt	30.106222	-98.475722	1385	102.63	2.00	1284.37	02/24/09	448	
49	57612BR	BPGCD	City of Blanco River Well	30.094333	-98.431917	1325	91.20	7.00	1240.80	02/19/09	?	BPGCD Monitor Well
50	57612L3	BPGCD	Cielo Springs Lot 123	30.087150	-98.432670	1343	105.07	2.00	1239.93	02/17/09	?	No Pump, CTD drilled well

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51	57612L4	BPGCD	Cielo Springs Lot 124	30.087170	-98.432050	1330	91.81	1.80	1239.99	02/17/09	?	No Pump, CTD drilled well
52	57612LE	BPGCD	Ralph de Leon	30.111611	-98.431306	1445	217.80	1.80	1229.00	03/04/09	505	
53	57613KR	BPGCD	Kim Robertson	30.121778	-98.397611	1386	202.67	2.00	1185.33	02/20/09	445	
54	57613S1	BPGCD	Ann Wynn	30.122083	-98.386056	1340	164.95	2.00	1177.05	03/03/09	365	Previous Owner CTS Ranch
55	57614LC	BPGCD	Linda Cox	30.043222	-98.487500	1805	344.24	2.00	1462.76	02/19/09	?	
56	57615CW	BPGCD	Cielo Springs Lot 65	30.084770	-98.437720	1342	41.88	0.09	1300.21	02/17/09	?	Creek Well, No Pump, 6" PVC
57	57615DL	BPGCD	David Lageman	30.075556	-98.453972	1465	166.05	1.80	1300.75	02/24/09	484	
58	57615DW	BPGCD	Cielo Springs Lot 12	30.074110	-98.422100	1387	180.43	2.10	1208.67	02/17/09	?	Damaged Well, No Pump, Damaged PVC Casing
59	57615PH	BPGCD	Hawn Holt Ranch	30.051528	-98.421861	1446	134.60	0.40	1311.80	02/26/09	?	Old Phonish House Well
60	57615TW	BPGCD	Cielo Springs Lot 14	30.074240	-98.422470	1384	180.71	5.40	1208.69	02/17/09	?	Tall Well, No Pump, Tall stub out in shallow drainage
61	57616DA	BPGCD	Nelson Jonas	30.035111	-98.413944	1454	279.70	2.00	1176.30	02/18/09	461	
62	57616DS	BPGCD	David Seymour	30.064278	-98.383944	1305	165.08	1.60	1141.52	02/18/09	300	
63	57616EW	BPGCD	Cielo Springs Lot 24	30.070430	-98.411080	1460	237.13	1.70	1224.57	02/17/09	?	Entrance Well, Irrigation, Spring Branch Well Serv.
64	57616FW	BPGCD	Cielo Springs Lot 5	30.073470	-98.415750	1398	159.08	2.20	1241.12	02/17/09	310	Fence Line Well, No Pump, Gamma Ray Log
65	57616JE	BPGCD	Rockin J Ranch Subdivison	30.045028	-98.383556	1385	224.73	1.40	1161.67	02/24/09	?	Permitted/Aggregate
66	57616MH	BPGCD	Hawn Holt Ranch	30.047694	-98.412417	1480	301.43	2.00	1180.57	02/26/09	?	Matt's House Well
67	57617RH	BPGCD	Renker House Well	30.027960	-98.484570	1502	72.30	1.00	1430.70	02/22/09	?	Domestic Well
68	57617RN	BPGCD	Renker New Well	30.030440	-98.485270	1564	127.61	1.70	1438.09	02/22/09	263	Domestic Well
69	57618GP	BPGCD	Hawn Holt Ranch	30.025028	-98.432639	1452	275.31	2.00	1178.69	02/26/09	?	New Well at Game Preserve
70	57618RT	BPGCD	Hawn Holt Ranch	30.010611	-98.435000	1350	168.51	2.00	1183.49	02/26/09	?	Race Track Pasture
71	57619AB	BPGCD	Alex & Ann Broyles	30.035222	-98.386167	1405	234.08	1.90	1172.82	02/19/09	?	Site of 2006 Vandalism
72	57619JG	BPGCD	Rockin J Ranch Subdivison	30.031222	-98.375111	1330	153.93	1.90	1177.97	02/24/09	?	Permitted/Aggregate
73	57619RT	BPGCD	Richard & Tracy Cole Well	30.033750	-98.392750	1438	261.13	1.00	1177.87	02/25/09	?	Domestic Well
74	57619SP	BPGCD	Sydonia Ponish	30.016167	-98.378389	1320	153.95	2.00	1168.05	02/18/09	285	
75	57622A2	BPGCD	Arnosky Farms	30.107778	-98.303028	1305	268.89	1.00	1037.11	02/18/09	360	
76	57622CV	BPGCD	Chimney Valley Ranch Well	30.091270	-98.332600	1210	152.11	1.50	1059.39	02/22/09	?	Domestic/Livestock Well

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77	57622RP	BPGCD	Randy Parker	30.118111	-98.323222	1382	334.75	1.30	1048.55	02/20/09	425	
78	57623AR	BPGCD	Arnosky Office Well	30.107917	-98.269083	1281	270.00	1.40	1012.40	02/25/09	?	Hays County Well
79	57626ER	BPGCD	Eddy Rogers	30.079250	-98.288778	1253	225.00	1.50	1029.50	03/06/09	324	Well slowly recovering
80	57627WA	BPGCD	Roger Wallace	30.011389	-98.352139	1235	70.00	0.30	1165.30	02/18/09	?	
81	57628HY	BPGCD	Sandra and Lea Hyman	30.028139	-98.321944	1170	67.47	1.20	1103.73	03/06/09	200	
82	57628JG	BPGCD	Dr. James Glenn	30.027444	-98.321111	1165	60.00	1.70	1106.70	03/06/09	204	
83	68052JS	BPGCD	John Schuchert	29.996472	-98.434056	1435	226.61	1.50	1209.89	02/18/09	400	
84	68052MW	BPGCD	Melissa Weisbrich	29.970083	-98.428111	1455	245.22	1.50	1211.28	02/18/09	345	
85	68053KB	BPGCD	Howard & Beverly Koch	29.992556	-98.406056	1318	103.36	2.00	1216.64	02/18/09	?	106 Koch-Bass Lane
86	5849913	BSEACD	Aqua Tx-Cardinal Plant	30.132778	-97.889442	827	224.41	0.00	602.59	02/24/09	850	Middle Trinity
87	5849925	BSEACD	Borheim Trinity	30.125940	-97.903820	790	170.85	3.63	622.64	02/23/09	1000	Middle Trinity
88	5849928	BSEACD	AQUA TEXAS, INC.	30.145320	-97.879840	745	178.80	1.45	567.65	02/24/09	820	Middle Trinity
89	5857211	BSEACD	KBDJ - Trinity Production Well	30.085583	-97.924028	820	206.15	2.05	615.90	03/05/09	1100	Middle Trinity
90	5857507	BSEACD	City of Austin - Prop 2	30.063580	-97.942520	837	241.90	3.20	598.30	02/23/09	1006	Middle Trinity
91	5857513	BSEACD	BSEACD Westbay Well	30.066729	-97.933189	815	184.60	2.00	632.40	03/03/09	n/a	zone 3 Westbay Multiport Well-upper Cow Creek
92	58495IH	BSEACD	Irene Hussey	30.181800	-97.929300	966	371.25	1.45	596.56	03/11/09	520	Middle Trinity
93	58496LD	BSEACD	Spillar Test Well	30.175000	-97.910277	985	312.10	2.15	675.05	03/12/09	840	Middle Trinity
94	58572OB	BSEACD	KBDJ - Trinity Observation Well	30.085528	-97.923333	820	203.30	2.32	619.02	03/05/09	1100	Middle Trinity
95	5758402	CCGCD	David Langford	30.076896	-98.843075	1585	161.30	-0.58	1424.28	03/17/09	315	Kh
96	6801314	CCGCD	Comfort TWDB	29.972222	-98.894722	1405	130.65	0.00	**1274.35**	03/17/09	280	Kh
97	6802508	CCGCD	Waring VFD	29.950000	-98.803889	1340	91.70	-1.67	1249.97	03/17/09	280	Kh Kcc
98	6802609	CCGCD	Waring TWDB	29.930000	-98.788611	1355	121.25	-1.25	**1235.00**	03/17/09	281	Kgrl Kh
99	6803109	CCGCD	Sisterdale VFD	29.975556	-98.721111	1293	59.60	-1.58	1234.98	03/17/09	200	Kh Kcc
100	6803804	CCGCD	Bergenplatz	29.890833	-98.706944	1431	200.10	-1.50	1232.40	03/17/09	396	Kh Kcc
101	6804312	CCGCD	BKS Estate Trust	29.970278	-98.525278	1371	132.70	-2.17	1240.47	03/17/09	310	Kh Kcc
102	6804313	CCGCD	Kendalia VFD	29.968611	-98.521389	1385	156.20	-1.42	1230.22	03/17/09	350	Kgrl Kh Kcc

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103	6804705	CCGCD	River Mountain Ranch	29.896389	-98.620556	1280	179.00	-1.58	1102.58	03/17/09	235	Kh Kcc
104	6804809	CCGCD	Waterstone 3351	29.889167	-98.557222	1121	73.40	-1.50	1049.10	03/17/09	180	Kcc
105	6809303	CCGCD	1658 Turkey Knob	29.836667	-98.886667	2001	769.60	-1.33	1232.73	03/17/09	1018	Kgrl Kh Kcc
106	6810101	CCGCD	554 Turkey Knob	29.840556	-98.873056	2007	767.50	0.00	1239.50	03/17/09	1035	Kgrl Kh Kcc
107	6810616	CCGCD	KCUC at Mission	29.809964	-98.760133	1527	**429.40**	-2.00	1099.60	03/17/09	560	Kgrl Kh Kcc
108	6811302	CCGCD	Cordillera Trace	29.858611	-98.625000	1308	167.40	-1.33	1141.93	03/17/09	295	Kgrl Kh Kcc
109	6811417	CCGCD	Schwope TWDB	29.798333	-98.744722	1422	271.89	-1.60	1151.71	03/17/09	500	Kgrl Kh Kcc
110	6811418	CCGCD	Twin Canyon	29.830556	-98.728611	1576	433.80	-2.92	1145.12	03/17/09	585	Kcc
111	6811509	CCGCD	Spring Creek	29.819444	-98.695000	1540	314.00	-1.50	1227.50	03/17/09	440	Kgrl Kh
112	6811611	CCGCD	Micah	29.825000	-98.652778	1526	314.50	-2.00	1215.50	03/17/09	560	Kgrl Kh Kcc
113	6811708	CCGCD	City of Boerne	29.791575	-98.718272	1395	**213.25**	-3.42	1185.17	03/17/09	357	Kh
114	6812106	CCGCD	Rio Cordillera	29.854444	-98.598333	1234	102.20	-0.83	1132.63	03/17/09	255	Kh Kcc
115	6812413	CCGCD	Coveney Ranch	29.818889	-98.603889	1462	228.00	-1.25	1235.25	03/17/09	500	Kgrl Kh Kcc
116	6812507	CCGCD	Kendall Wood	29.809722	-98.577222	1374	270.80	-2.00	1105.20	03/17/09	410	Kgrl Kh Kcc
117	6812509	CCGCD	Meadow Springs	29.821667	-98.564444	1346	234.60	-2.25	1113.65	03/17/09	385	Kcc
118	#29533	CCGCD	Woodridge	29.947778	-98.839444	1560	260.00	-1.33	1300.00	03/17/09	420	Kgrl Kh
119	#32659	CCGCD	Diamond Ridge	29.753611	-98.808056	1705	493.60	-1.86	1148.26	03/17/09	770	Kgrl Kh Kcc
120	#42759	CCGCD	Pfeiffer Ranch	29.828611	-98.750556	1510	380.30	-2.25	1131.95	03/17/09	500	Kgrl Kh Kcc
121	#56929	CCGCD	Ammann Ranch	29.786111	-98.674722	1389	231.60	-1.33	1158.73	03/17/09	420	Kh Kcc
122	#65068	CCGCD	Estancia	29.756111	-98.767222	1598	452.80	-1.33	1146.53	03/17/09	610	Kgrl Kh Kcc
123	#79167	CCGCD	Joshua Crossing	29.920278	-98.836389	1606	346.30	-2.67	1262.37	03/17/09	580	Kh Kcc
124	Vista	CCGCD	Vista Real	29.867306	-98.795389	1600	**401.20**	-2.00	1200.80	03/17/09	575	Kgrl Kh Kcc
125	5849604	COA	COA Hafif tennis court	30.206496	-97.905214	827	335.30	0.28	492.05	03/06/09	565	Hafif tennis court well. Erratic beep at 102.3-101.5'. Lose weight at 375 on 3/6/09.
126	58495WM	COA	Wes Maconi	30.183083	-97.935454	900	310.40	0.20	589.41	03/04/09	495	8403 N.Madronne Tr. 78737 rmaconi@austin.rr.com. Owner reports drilled by Tom Arnold sept 1978 to 495' deep
127	58496H4	COA	COA Hafif pipeline	30.205535	-97.905037	823	317.05	2.15	508.22	03/06/09	458	
128	ER-00099	HCUGCD		30.268889	-98.910278				1720.30	04/30/09		Hensel

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129	ER-00643	HCUGCD		30.297500	-99.070556				1709.35	04/30/09		Hensel
130	ER-01740	HCUGCD		30.250556	-98.855278				1610.80	05/01/09		Hensel
131	ER-01777	HCUGCD		30.153056	-98.961111				1629.00	05/01/09		Hensel
132	ER-01851	HCUGCD		30.348611	-98.821667				1770.45	05/01/09		Hensel
133	ER-02077	HCUGCD		30.325833	-98.967500				1789.73	05/01/09		Hensel
134	ER-02608	HCUGCD		30.162500	-98.783889				1489.82	05/04/09		Hensel
135	KK-57427.	HCUGCD		30.272778	-98.859722				1641.95	05/01/09		Hensel
136	PL-00001	HCUGCD		30.249444	-98.838056				1615.51	05/01/09		Hensel
137	PL-00064	HCUGCD		30.226111	-98.874444				1571.12	05/01/09		Hensel
138	R -00035	HCUGCD		30.140556	-99.032222				1655.08	04/30/09		Hensel
139	R -00053	HCUGCD		30.245833	-98.935278				1681.76	04/30/09		Hensel
140	R -00094	HCUGCD		30.138611	-99.151944				1620.34	04/30/09		Hensel
141	R -00163	HCUGCD		30.289444	-98.894722				1714.01	05/01/09		Hensel
142	R -00173	HCUGCD		30.168889	-99.150833				1690.95	04/30/09		Hensel
143	R -00209	HCUGCD		30.251944	-99.126667				1707.00	04/30/09		Hensel
144	R -00238	HCUGCD		30.198611	-98.927500				1596.07	05/01/09		Hensel
145	R -00432	HCUGCD		30.177222	-98.750278				1524.85	05/04/09		Hensel
146	R -00511	HCUGCD		30.271667	-98.816944				1631.06	05/01/09		Hensel
147	R -00566	HCUGCD		30.205556	-99.105000				1685.45	04/30/09		Hensel
148	R -00648	HCUGCD		30.192778	-98.682500				1495.49	05/04/09		Hensel
149	R -00785	HCUGCD		30.281111	-99.149167				1716.08	04/30/09		Hensel
150	R -00876	HCUGCD		30.306667	-98.826667				1640.45	05/01/09		Hensel
151	R -00888	HCUGCD		30.324444	-98.841389				1651.84	05/01/09		Hensel
152	R -00895	HCUGCD		30.158056	-99.032222				1648.58	04/30/09		Hensel
153	R -00940	HCUGCD		30.248056	-98.870556				1645.84	05/04/09		Hensel
154	R -00968	HCUGCD		30.181667	-98.881944				1601.67	05/04/09		Hensel

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155	R -01006	HCUGCD		30.208333	-98.702222				1477.07	05/04/09		Hensel
156	R -01009	HCUGCD		30.325000	-98.800278				1698.97	05/01/09		Hensel
157	R -01147	HCUGCD		30.196111	-99.010000				1660.02	04/30/09		Hensel
158	R -01153	HCUGCD		30.190000	-98.702778				1518.84	05/04/09		Hensel
159	R -01168	HCUGCD		30.198611	-98.865556				1594.50	05/04/09		Hensel
160	R -01205	HCUGCD		30.280556	-98.912222				1729.73	05/01/09		Hensel
161	5643901	HGCD	HGCD MW #8	30.265080	-99.653860	2042	442.10	0.00	1599.90	03/30/09		
162	5652704	HGCD	HGCD MW # 12	30.127970	-99.586580	2242	646.60	0.00	1595.40	03/30/09		
163	5654405	HGCD	HGCD MW #4	30.169667	-99.347389	2020	436.87	0.00	1583.13	03/30/09		
164	5659201	HGCD	HGCD MW #9	30.105940	-99.695290	2318	706.50	0.00	1611.50	03/30/09		
165	5661101	HGCD	HGCD MW #5	30.107083	-99.494056	2067	498.22	0.00	1568.78	03/30/09		
166	5662205	HGCD	Johnson Creek RV	30.118528	-99.296167	1804	263.30	0.00	1540.70	03/27/09		
167	5662414	HGCD	Stonehenge	30.076639	-99.358639	1790	281.60	0.00	1508.40	03/27/09		
168	5662415	HGCD	La Hacienda	30.073667	-99.342417	1840	354.50	0.00	1485.50	03/27/09		
169	5663305	HGCD	James Avery	30.099139	-99.148222	1785	250.05	0.00	1534.95	03/30/09		
170	5663415	HGCD	HCAF/ Point Theater	30.072028	-99.246694	1682	232.00	0.00	1450.00	03/27/09		
171	5663916	HGCD	Donna Drive	30.013000	-99.160556	1740	362.00	0.00	1378.00	03/26/09		
172	5663923	HGCD	HGCD MW #11 MT	30.013556	-99.157667	1700	315.80	0.00	1384.20	03/26/09		
173	5664711	HGCD	Ag Barn/ @ Kerr Co. Fairgrounds	30.009333	-99.112667	1576	198.60	0.00	1377.40	03/26/09		
174	5757703	HGCD	Cypress Ck	30.019444	-98.972778	1565	124.90	0.00	1440.10	03/30/09		
175	6801703	HGCD	HGCD MW #1 MT/ Lane Valley RD	29.906944	-98.972917	1525	209.30	0.00	1315.70	03/27/09		
176	6908201	HGCD	Shady Grove	29.974778	-99.076083	1640	293.30	0.00	1346.70	03/26/09		
177	6908305	HGCD	HGCD MW #7 MT	29.988389	-99.024028	1662	279.00	0.00	1383.00	03/26/09		
178	6908624	HGCD	J. Hayes	29.936778	-99.024583	1525	182.80	0.00	1342.20	03/27/09		
179	6908705	HGCD	Camp Verde @ Camp Verde Store	29.894611	-99.104083	1620	327.80	0.00	1292.20	03/27/09		
180	6916201	HGCD	Niblett	29.845833	-99.043611	1552	251.80	0.00	1300.20	03/27/09		

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181	57553	HTGCD	Godfey	30.246228	-98.156670	1296	372.42	0.70	924.52	02/13/09	460	Middle Trinity
182	57559	HTGCD	Juneau	30.130867	-98.137199	1240	255.25	1.08	985.34	02/13/09	420	Middle Trinity
183	57564	HTGCD	Roger Hanks Park	30.196007	-98.107437	1191	251.50	1.19	940.56	02/13/09	420	Middle Trinity
184	57565	HTGCD	Al Broun	30.178380	-98.053441	1118	234.50	1.00	884.22	02/13/09	280	Middle Trinity
185	57626	HTGCD	Still Well # 4 (First Windmill)	30.063666	-98.257505	1203	179.79	0.25	1023.43	02/14/09	?	
186	57629	HTGCD	Still Well # 1 (Whitehouse)	30.038169	-98.258734	1079	82.58	0.16	996.80	02/14/09	?	
187	57631	HTGCD	Cabler Windmill	30.098188	-98.232457	1407	376.08	0.65	1031.32	02/14/09	465	Middle Trinity
188	57632	HTGCD	Storm Ranch Toenail	30.090497	-98.168541	1297	296.33	1.10	1001.30	02/14/09	?	Middle Trinity
189	57634	HTGCD	Still Well # 5 (Second Windmill)	30.061540	-98.239310	1125	114.17	0.70	1012.02	02/14/09	?	Al Broun says probably Cow Creek
190	57647	HTGCD	Wanda Graham	30.033323	-98.123804	964	35.63	0.75	929.42	02/14/09	153	Middle Trinity
191	57647	HTGCD	Gumbert Windmill	30.010770	-98.096230	885	57.04	1.20	829.05	02/13/09	220	Middle Trinity
192	57648	HTGCD	Blue Hole Wimberley WSC	30.000663	-98.082997	921	139.33	1.50	783.07	02/13/09	444	Middle Trinity
193	57649	HTGCD	Hermosa Paloma	30.005150	-98.011559	1122	444.54	1.75	678.80	02/13/09	900	Middle Trinity
194	57649	HTGCD	Cox	30.014264	-98.036130	1072	247.58	0.75	825.59	02/13/09	620	Middle Trinity
195	5747901	HTGCD	Curtis Johnson	30.258816	-98.129803	1230	224.33	1.80	1007.36	02/13/09	420	Middle Trinity
196	5755301	HTGCD	Jack Brown	30.212821	-98.133139	1309	397.25	1.20	913.33	02/13/09	510	Middle Trinity
197	5755401	HTGCD	Henly Church	30.196291	-98.212441	1326	358.67	1.20	968.42	02/13/09	460	Middle Trinity
198	5755607	HTGCD	Whit Hanks	30.184465	-98.139256	1128	179.63	1.60	949.89	02/13/09	381	Middle Trinity
199	5756513	HTGCD	Richard Schmidt	30.170246	-98.074056	1170	244.42	1.00	926.69	02/12/09	450	Middle Trinity
200	5756710	HTGCD	O'Neill Ranch Road	30.125851	-98.103438	1193	215.38	1.00	978.21	02/13/09	420	Middle Trinity
201	5849840	HTGCD	Terry Tull	30.128940	-97.956086	990	139.00	1.37	852.46	02/11/09	460	Middle Trinity
202	57563BR	HTGCD	Bret Raymis	30.215203	-98.013044	1092	310.00	1.15	783.16	02/12/09	378	Middle Trinity
203	57563GR	HTGCD	Grolnic	30.210847	-98.000510	1178	446.90	1.50	732.17	02/12/09	450	Middle Trinity
204	5763903, G1050039B	HTGCD	Woodcreek well 22	30.039252	-98.156196	1033	121.00	2.57	914.53	02/18/09	300	Middle Trinity
205	57647, G1050060A	HTGCD	Camp Young Judaea	30.029481	-98.118796	955	40.83	1.92	916.35	02/13/09	250	Middle Trinity

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206	Double L Ranch Cow Creek well	HTGCD	Double L Ranch Cow Creek well	30.228340	-98.072720	1152	**360.70**	1.33	792.63	02/19/09	?	e-line sticking; Middle Trinity (Cow Creek)
207	Foreman	HTGCD	Foreman	30.178201	-98.052486	1130	247.21	1.63	884.62	02/19/09	320	Middle Trinity (Lower Glen Rose)
208	G1050111A	HTGCD	Mountain Crest WSC	30.038312	-98.109760	1164	247.00	1.45	918.18	02/18/09	480	Middle Trinity
209	Hargrave	HTGCD	Hargrave	30.051063	-98.174132	1157	**240.20**	1.32	917.86	02/19/09	320	e-line sticking; owner described several sediment spikes over the past 3-4 years not obviously correlated to rain events;Middle Trinity
210	Holbrook	HTGCD	Holbrook	30.043739	-98.105892	1058	**149.90**	1.88	909.75	02/19/09	?	access hole too small for e-line
211	Lederman	HTGCD	Lederman	30.041254	-98.208569	1212	274.79	1.90	939.16	02/20/09	305	Middle Trinity (Cow Creek)
212	Warner	HTGCD	Warner	30.057818	-98.138816	1136	219.58	0.79	917.19	02/18/09	340	Glen Rose (driller)
213	Woodcreek golf north (by maintenance shed)	HTGCD	Woodcreek golf north (by maintenance shed)	30.028910	-98.111620	974	49.50	1.50	926.00	02/18/09	?	out of use well with no pump
214	Woodcreek Section 25 golf well	HTGCD	Woodcreek Section 25 golf well	30.027200	-98.147320	1026	120.10	3.00	908.90	02/18/09	284	
215	WWSC5	HTGCD	WWSC5	29.983580	-98.122380	983	200.00	2.00	785.00	02/19/09	550	
216	WWSC6	HTGCD	WWSC6	30.018420	-98.123510	1054	154.83	2.00	901.17	02/19/09	380	
217	Wyatt	HTGCD	Wyatt	29.959890	-98.066830	1072	**360.50**	1.50	713.00	02/20/09	800	e-line sticking
218	Bear	MCGCD	Dancing Bear	29.596690	-98.891770	1523	523.00	0.00	1000.00	02/27/09	880	
219	Fothergill	MCGCD	Fothergill, Don	29.540620	-98.848930	1257	404.40	0.00	852.60	04/22/09	880	
220	Jenicek	MCGCD	Jenicek, Tony	29.561080	-98.869800	1365	496.70	0.00	868.30	04/22/09	820	
221	Moore	MCGCD	Moore, Jason	29.539720	-98.855560	1218	335.00	0.00	883.00	03/20/09	840	
222	Nino	MCGCD	Nino, Fernando	29.549590	-98.875680	1302	438.40	0.00	863.60	04/21/09	840	
223	Patterson	MCGCD	Patterson, Robert	29.540620	-98.848930	1266	218.00	0.00	1048.00	03/20/09	640	
224	Torres	MCGCD	Torres, Jesse	29.553040	-98.859920	1355	475.90	0.00	879.10	04/22/09	840	
225	Joe Vickers	Other	Joe Vickers	30.250333	-98.067333	1130	405.12	0.00	724.88	03/06/09	500	
226	5764705	TWDB	Wimberley WSC	30.015833	-98.116944	938	118.71	0.00	819.29	02/14/09	400	
227	6807407	TWDB	Canyon Lake WSC (Comal Co.)	29.936388	-98.210555	1185	288.47	0.00	896.53	02/14/09	575	
228	6815116	TWDB	Canyon Lake WSC (Comal Co.)	29.848611	-98.213056	1010	138.26	0.00	871.74	02/14/09	655	upper Glen Rose mistakenly reported as aquifer

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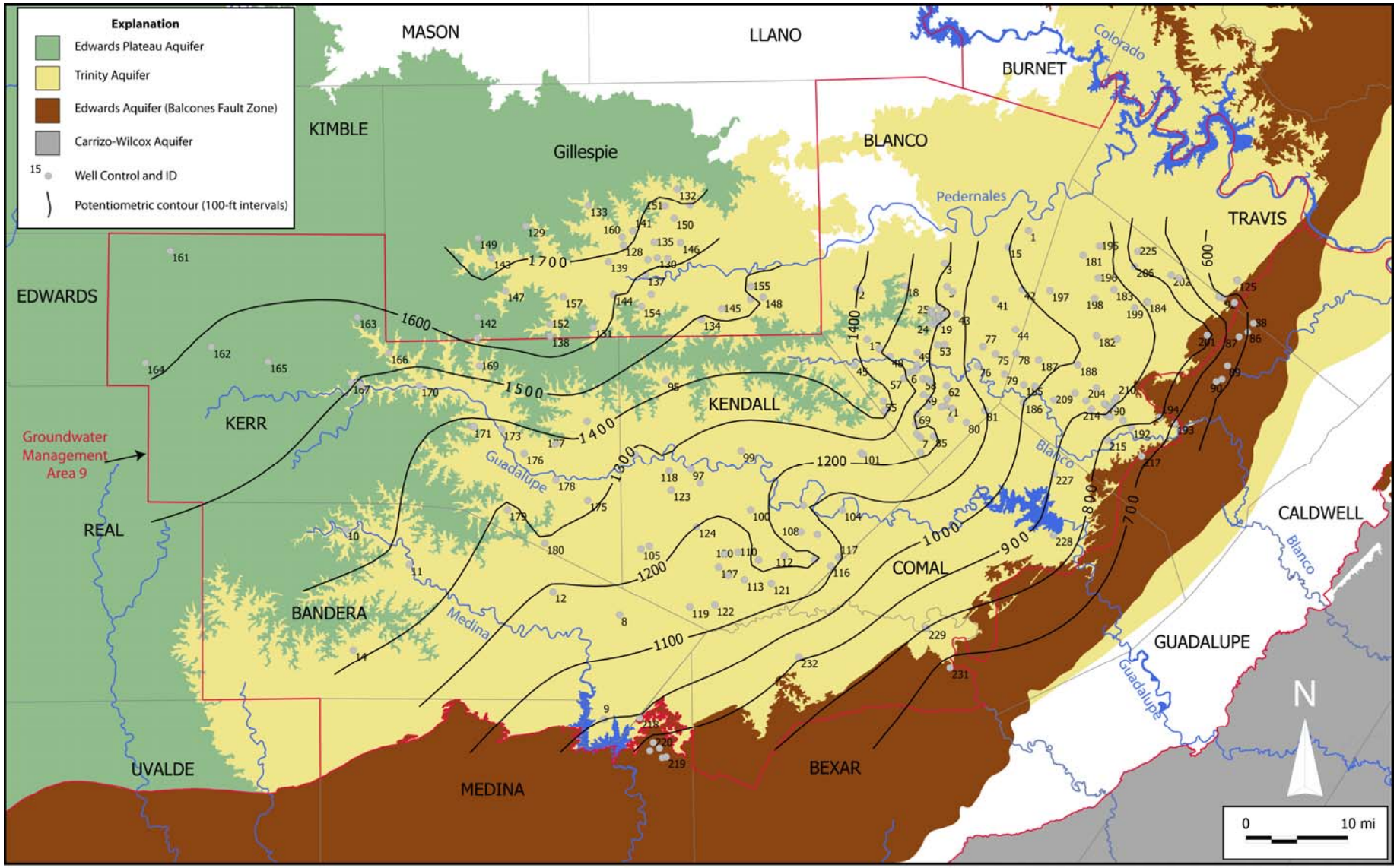
229	6821213	TWDB	Emory Hamilton (Bexar Co.)	29.719443	-98.422221	1100	301.00	0.00	799.00	02/15/09	625	218GLRSL
230	8170990	USGS	Jacob's Well Spring	30.034444	-98.126111	923	0.00	0.00	922.84	n/a	n/a	middle trinity spring
231	6821902	USGS/TGRGCD	WR-3	29.662777	-98.385277	968.00	296.86	0	671.14	3/15/2009	1130	Glen Rose, Hensel, Cow Creek
232	6819643	USGS/SAWS	MW8	29.681388	-98.631110	1201.55	298.06	0	903.49	4/23/2009	496	Cow Creek, near Camp Stanley; geology confirmed



Basemap data provided by the Texas Water Development Board: Major Aquifers of Texas, Major Rivers, and Groundwater Management Areas.

Potentiometric Map of the Middle Trinity Aquifer, Texas Hill Country
March 2009