April 15, 2009

Mr. David Jeffery, General Manager
Bandera County River Authority and Ground Water District
P.O. Box 177
Bandera, TX 78003

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Jeffery:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

As noted in your letter dated October 22, 2008, the desired future condition submitted for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9 was as follows:

- Allow for no net increase in average drawdown.

Managed available groundwater is defined in the Texas State Water Code as the amount of water that may be permitted by a district for beneficial use in accordance with the desired future condition of the aquifer as determined under Texas State Water Code, Section 36.108. For various planning purposes the managed available groundwater estimates have been reported at the combined aquifer, county, river basin, regional water planning area, groundwater management area, groundwater conservation district (if applicable), and geographic area (if designated) level.

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Sincerely,

J. Kevin Ward
Executive Administrator

Attachment: GAM Run 08-90mag

c w/att.: Cary Betz, Texas Commission of Environmental Quality, Water Supply Division

Kelly Mills, Texas Commission of Environmental Quality, Groundwater Planning and Assessment Division

Robert E. Mace, Ph.D., P.G., Deputy Executive Administrator, TWDB, Water Science and Conservation

Rima Petrossian, P.G., Manager, TWDB, Groundwater Technical Assistance Section

Cindy Ridgeway, P.G., Manager, TWDB, Groundwater Availability Modeling Section

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David Meesey, Planner - Region K, TWDB, Regional Water Planning Section

Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Kirk Holland, General Manager
Barton Springs/Edwards Aquifer Groundwater Conservation District
1124-A Regal Row
Austin, TX 78748

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Holland:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Executive Administrator

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

TEXAS WATER DEVELOPMENT BOARD

April 15, 2009

Mr. Ron Fieseler, General Manager
Blanco-Pedernales Groundwater Conservation District
P.O. Box 1516
Johnson City, TX 78636

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Fieseler:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Executive Administrator

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David Meesey, Planner - Region K, TWDB, Regional Water Planning Section

Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Micah Voulgaris, General Manager
Cow Creek Groundwater Conservation District
215 Market Avenue, Suite 105
Boerne, TX 78006

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Voulgaris:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Ms. Velma Danielson, General Manager
Edwards Aquifer Authority
1615 North Saint Mary's Street
San Antonio, TX 78215

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Ms. Danielson: Velma

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Andrew Backus, Board President
Hays Trinity Groundwater Conservation District
P.O. Box 1648
Dripping Springs, TX 78620

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Backus:

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Gene Williams, General Manager
Headwaters Groundwater Conservation District
125 Lehmann Drive, Suite 102
Kerrville, TX 78028

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Williams:

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David Meesey, Planner - Region K, TWDB, Regional Water Planning Section

Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Ms. Luana Buckner, General Manager
Medina County Groundwater Conservation District
1613 Avenue K , Suite 105
Hondo, TX 78861

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Ms. Buckner:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. George Wissman, General Manager
Trinity-Glen Rose Groundwater Conservation District
6335 Camp Bullis Road, Suite 17
San Antonio, TX 78257

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Wissman:

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Mark Lowry, AECOM

April 15, 2009

Mr. Jonathan Letz
Region J Chair
700 Main Street
Kerrville, TX 78028

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Letz:

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Mark Lowry, AECOM

TEXAS WATER DEVELOPMENT BOARD

April 15, 2009

Mr. John Burke
Region K Chair
P.O. Drawer P
Bastrop, TX 78602

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Burke:

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Managed available groundwater is defined in the Texas State Water Code as the amount of water that may be permitted by a district for beneficial use in accordance with the desired future condition of the aquifer as determined under Texas State Water Code, Section 36.108. For various planning purposes the managed available groundwater estimates have been reported at the combined aquifer, county, river basin, regional water planning area, groundwater management area, groundwater conservation district (if applicable), and geographic area (if designated) level.

We understand that groundwater conservation district have options on how to distribute managed available groundwater in a groundwater management area; therefore we encourage open communication and coordination between groundwater conservation districts, regional water planning groups, and the TWDB to ensure that managed available groundwater reported in regional water plans and groundwater management plans are not in conflict. In addition, please

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Sincerely,

J. Kevin Ward
Executive Administrator

Attachment: GAM Run 08-90mag

c w/att.: Cary Betz, Texas Commission of Environmental Quality, Water Supply Division

Kelly Mills, Texas Commission of Environmental Quality, Groundwater Planning and Assessment Division

Robert E. Mace, Ph.D., P.G., Deputy Executive Administrator, TWDB, Water Science and Conservation

Rima Petrossian, P.G., Manager, TWDB, Groundwater Technical Assistance Section

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David Meesey, Planner - Region K, TWDB, Regional Water Planning Section

Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Bill West, General Manager
Guadalupe-Blanco River Authority
933 East Court Street
Seguin, TX 78155

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. West:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Executive Administrator

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Thomas Mason, General Manager
Lower Colorado River Authority
P.O. Box 220
Austin, TX 78767

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Mason:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Executive Administrator

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Kelly Mills, Texas Commission of Environmental Quality, Groundwater Planning and Assessment Division

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Ms. Suzanne Scott, General Manager
San Antonio River Authority
100 East Guenther Street
San Antonio, TX 78204

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Suzanne

Dear Ms. Scott:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Executive Administrator

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Raymond Buck, Jr., General Manager
Upper Guadalupe River Authority
125 Lehmann Drive, Suite 100
Kerrville, TX 78028

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Buck, Jr.:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Sincerely,

J. Kevin Ward
Executive Administrator

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Kelly Mills, Texas Commission of Environmental Quality, Groundwater Planning and Assessment Division

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Sam Vaugh, HDR Engineering, Inc.

John Ashworth, LBG-Guyton Associates

Mark Lowry, AECOM

April 15, 2009

Mr. Con Mims, Executive Director
Nueces River Authority
P.O. Box 349
Uvalde, TX 78802

Re: Managed available groundwater estimates for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9

Dear Mr. Mims:

The Texas State Water Code, Section 36.108, Subsection (o), states that Texas Water Development Board's executive administrator shall provide each district and regional water planning group located wholly or partly within a groundwater management area with the managed available groundwater in the management area based upon the desired future condition of the groundwater resource. This letter and the attached report (GAM Run 08-90mag) are in response to this directive.

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Mark Lowry, AECOM

GAM Run 08-90mag

by Ali H. Chowdhury, Ph.D., P.G.
Texas Water Development Board
Groundwater Availability Modeling Section
(512) 463-3132
March 6, 2009

REQUESTOR:

Mr. Ronald G. Fieseler of the Blanco Pedernales Groundwater Conservation District acting on behalf of Groundwater Management Area 9.

DESCRIPTION OF REQUEST:

In a letter dated October 22, 2008, Mr. Ronald G. Fieseler provided the Texas Water Development Board (TWDB) with the desired future conditions for the Ellenberger, Hickory, Marble Falls, and the Edwards Group of the Edwards-Trinity (Plateau) aquifers in Groundwater Management Area 9 and requested that TWDB estimate managed available groundwater values. This groundwater availability modeling run presents the managed available groundwater estimate for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9.

DESIRED FUTURE CONDITIONS:

Desired future condition for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer submitted to TWDB by the groundwater conservation districts in Groundwater Management Area 9:

> Allow for no net increase in average drawdown from current conditions in the Edwards Group of the Edwards-Trinity (Plateau) Aquifer.

EXECUTIVE SUMMARY:

We ran the groundwater availability model for the Hill Country portion of the Trinity Aquifer to determine the managed available groundwater based on the desired future conditions for the Edwards Group Aquifer adopted by the groundwater conservation districts in Groundwater Management Area 9. We estimate a total of about 2,264 acre-feet of managed available groundwater for the Edwards Group Aquifer in Groundwater Management Area 9. Detailed results by geographic subdivisions are listed in Table 1.

METHODS:

This report is based on previous GAM Run 08-15 (Chowdhury, 2008). In that groundwater flow simulation, pumpage for 2008 was assigned in the model based on pumpage estimates provided by groundwater conservation districts in Groundwater Management Area 9. Average recharge rates were used for each year of the predictive simulation to 2060. The water level decline in 2060 using the specified pumpage resulted in no net increase in

average drawdown for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer. Since the desired future condition for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer prescribes no changes in drawdown from the simulated water level elevations in 2008, the assigned pumpage in the model layer representing the Edwards Group forms the managed available groundwater for the aquifer. However, some parts of counties in Groundwater Management Area 9 are located outside the model boundary (Figure 1). To consider these areas in the managed available groundwater calculation, we calculated geographic areas outside the model extent but within the county lines and aquifer boundaries. We averaged the pumpage values for all active cells within the model and determined average pumpage per square mile. This estimated average pumpage per square mile was then assigned to the area of the aquifer that lies outside the model boundary within Groundwater Management Area 9. In addition, a pod of the Edwards Group occurs in southern Kendall and Kerr counties that geographically lie outside the aquifer outline of the Edwards-Trinity (Plateau) Aquifer. We assigned the managed available groundwater for this pod to the Edwards Group of the Trinity Aquifer as it lies over the aquifer outline of the Trinity Aquifer. Pumpage for areas outside the model containing the aquifer and pumpage inside active cells within the model formed the managed available groundwater for each county and/or groundwater conservation district.

Estimates of managed available groundwater were calculated for several geographic areas created by the geographic information systems overlay analysis of counties, groundwater conservation districts, regional water planning areas, major river basins, the boundary extents of Groundwater Management Area 9, and the extent of the Edwards Group of the Edwards-Trinity (Plateau) Aquifer. These geographically divided sections of managed available groundwater values provide the greatest amount of flexibility to the groundwater management districts for summarizing managed available groundwater for both desired future conditions of the groundwater management area and for district level groundwater management planning. The geographically divided sections of managed available groundwater values also assist the regional water planning areas with their planning efforts (Table 1).

PARAMETERS AND ASSUMPTIONS:

- We used the groundwater availability model for the Hill Country portion of the Trinity Aquifer developed by Mace and others (2000).

- See Mace and others (2000) for details on model construction, recharge, discharge, assumptions and limitation of the model. A slightly updated version of this model (version 1.03) was used for this run (Chowdhury, 2007).

- The model has three layers: layer 1 represents the Edwards Group, layer 2 represents the Upper Trinity Aquifer, and layer 3 represents the Middle Trinity Aquifer.

- The model has a total of 79 stress periods with 2 stress periods representing pre-development conditions, 24 monthly stress periods for representing transient conditions (1996 to 1997), and 53 predictive annual stress periods (2008 to 2060).

- The calibrated model has a root-mean squared error of 56 feet .The root-mean squared error means that, on average, the simulated water level differs by about 56 feet. This root-mean squared error is about 5 percent of the total hydraulic head drop across the modeled area.

- The rivers, streams, and springs were simulated in the model using MODFLOW's Drain package. MODFLOW's drain package was also used to simulate spring flow along bedding contacts of the Edwards Group and the Upper Trinity Aquifer in the northwestern parts of the model area. This resulted in the assignment of numerous drain cells along this outcrop contact.

- Reservoirs/lakes in the model area were simulated using constant heads.

- Pumpage used for the predictive period was developed as per instruction of the groundwater conservation districts in Groundwater Management Area 9.

- We assigned the baseline pumpage to the first predictive stress period in the model to represent 2008 pumping conditions based on the assumption that the aquifers in the area recharges rapidly and groundwater movement is fast enough to bring about a dynamic equilibrium relatively quickly. Comparison of water level changes in selected hydrographs in the predictive period suggests that the aquifer attains a dynamic equilibrium within a year.

- The pumpage specified by the districts in Groundwater Management Area 9 was developed using the spatial pattern of initial predictive pumpage included in the groundwater availability model (Mace and others, 2000).

- Average recharge was used throughout the predictive period for this model run. Average recharge in the model was estimated for normal climatic conditions by using the average precipitation for the period 1960 to 1990 and the recharge coefficients estimated from baseflow analyses for each model cell (Mace and others, 2000).

- In assigning pumpage to areas outside the model boundary but within county areas covered by the aquifer, we assumed that the areal average pumpage in those areas equal to areal average pumpage inside the model area. This assumption was considered valid in the absence of a precise groundwater pumping estimate in the area outside the model. We used ESRI ArcGIS version 9.2 to calculate the area outside the model.

- The Edwards Group of the Edwards-Trinity (Plateau) Aquifer also extends out to a small area in the central part of Blanco County. However, this portion of the aquifer was not considered in the calculation of managed available groundwater as the aquifer was considered to be too thin to be suitable for meaningful groundwater production.

The model was run in Processing Modflow for Windows (version 5.3; Chiang and Kinzelbach, 1998).

RESULTS:

We estimated a total of 2,264 acre-feet of managed available groundwater for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9. Of this amount, 1,950 acre-feet of water is located inside the model boundary and 314 acre-feet of water is located outside the model boundary but within the county and groundwater conservation district boundaries. We reported managed available groundwater for the Edwards Group Aquifer split by county, regional planning group, groundwater conservation district, and river basins (Table 1 and Figure 2).

Based on our calculations, Bandera County River Authority and Ground Water District has 683 acre-feet per year, Cow Creek Groundwater Conservation District has 318 acre-feet per year including units outside the official aquifer boundary, Headwaters Groundwater Conservation District has 1,263 acre-feet per year including units outside the official aquifer boundary, and Blanco-Pedernales Groundwater Conservation District has 0 acre-feet per year of managed available groundwater from the Edwards Group of the Edwards-Trinity (Plateau) Aquifer. The Plateau Regional Planning Group (RWPG J) has 1,935 acre-feet per year and the South Central Texas (RWPG L) has 129 acre-feet per year of managed available groundwater from the Edwards Group of the Edwards-Trinity (Plateau) Aquifer located within Groundwater Management Area 9.

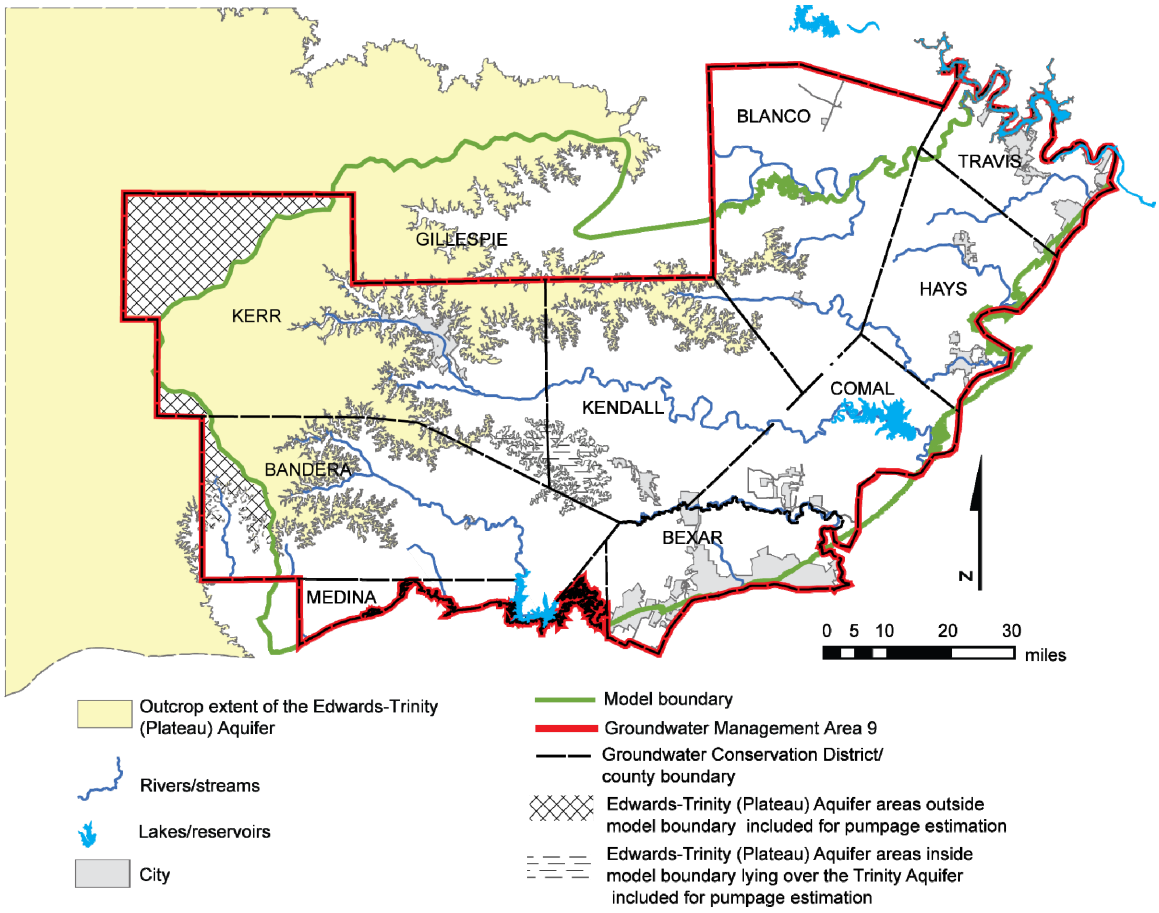


Figure 1. Map showing outcrop extent of the Edwards-Trinity (Plateau) Aquifer, rivers/streams, lakes/reservoirs, counties, and cities in Groundwater Management Area 9. Outlines of Groundwater Management Area 9 and the model boundary are also shown. Note the aquifer also includes areas outside Groundwater Management Area 9.

Table 1. Estimates of managed available groundwater for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer by geographic sections (See figure 2 for map reference).

MapRef	Aquifer	County	RWPA	River Basin	GCD	GMA	GeoArea	Year	MAG (acre-feet per year)
2	Edwards Group of the Edwards-Trinity (Plateau)	Bandera	J	Guadalupe	Bandera	9	n/a	n/a	21
4	Edwards Group of the Edwards-Trinity (Plateau)	Bandera	J	San Antonio	Bandera	9	n/a	n/a	561
6	Edwards Group of the Edwards-Trinity (Plateau)	Bandera	J	Nueces	Bandera	9	n/a	n/a	14
44	Edwards Group of the Edwards-Trinity (Plateau) located outside model boundary	Bandera	J	Nueces	Bandera	9	n/a	n/a	87
23	Edwards Group of the Edwards-Trinity (Plateau)	Kendall	L	Colorado	Cow Creek	9	n/a	n/a	46
25	Edwards Group of the Edwards-Trinity (Plateau) located outside official aquifer boundary	Kendall	L	Guadalupe	Cow Creek	9	n/a	n/a	20
26	Edwards Group of the Edwards-Trinity (Plateau)	Kendall	L	Guadalupe	Cow Creek	9	n/a	n/a	83
28	Edwards Group of the Edwards-Trinity (Plateau) located outside official aquifer boundary	Kendall	L	San Antonio	Cow Creek	9	n/a	n/a	169
30	Edwards Group of the Edwards-Trinity (Plateau)	Kerr	J	Colorado	Headwaters	9	n/a	n/a	18
32	Edwards Group of the Edwards-Trinity (Plateau) located outside official aquifer boundary	Kerr	J	Guadalupe	Headwaters	9	n/a	n/a	11
33	Edwards Group of the Edwards-Trinity (Plateau)	Kerr	J	Guadalupe	Headwaters	9	n/a	n/a	1,004
35	Edwards Group of the Edwards-Trinity (Plateau) located outside official aquifer boundary	Kerr	J	San Antonio	Headwaters	9	n/a	n/a	0
36	Edwards Group of the Edwards-Trinity (Plateau)	Kerr	J	San Antonio	Headwaters	9	n/a	n/a	3
43	Edwards Group of the Edwards-Trinity (Plateau) located outside model boundary	Kerr	J	Colorado	Headwaters	9	n/a	n/a	227

RWPA = Regional Water Planning Area, GCD = Groundwater Conservation District, GMA = Groundwater Management Area, GeoArea =Geographic subdivisions defined by unique desired future conditions by the Groundwater Managed Area, MAG = Managed available groundwater in acre-feet per year, n/a = not applicable, GAM = Groundwater Availability Model for the Hill Country portion of the Trinity Aquifer.

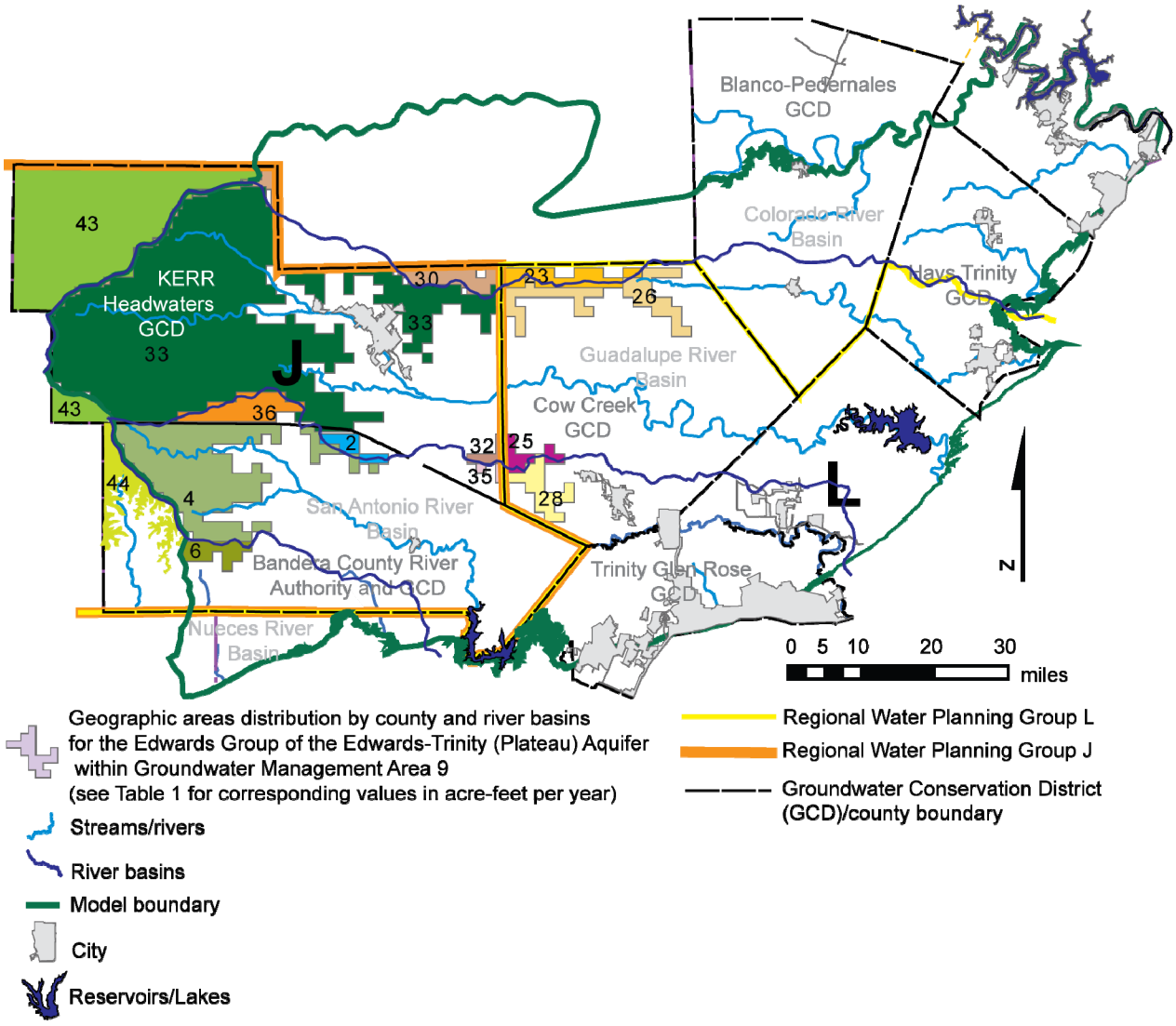


Figure 2. Geographic divided sections of managed available groundwater for the Edwards Group of the Edwards-Trinity (Plateau) Aquifer in Groundwater Management Area 9. See Table 1 for descriptions of the geographic sections.

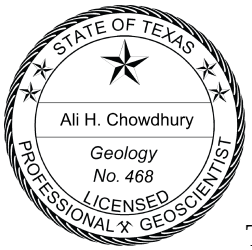
REFERENCES:

Chiang, W.H. and Kinzelbach, W., 1998, Processing Modflow: A simulation system for modeling groundwater flow and pollution: Hamburgh, Zurich, variously paginated.

Chowdhury, A.H., 2008, GAM Run 8-15, Texas Water Development Board unpublished report, 25 p.

ESRI ArcGIS 9.2, 2006, Environmental Research System Institute, Inc., Redlands, California.

Mace, R.E., Chowdhury, A.H., Anaya, R., and Way, S-C., 2000, Groundwater availability of the Trinity Aquifer, Hill Country Area, Texas—Numerical simulations through 2050: Texas Water Development Board Report 353, 119 p.



The seal appearing on this document was authorized by Ali H. Chowdhury, P.G., on March 6, 2009.