DRAFT MEMORANDUM TO FILE

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[NTD02182] T:\Task 3\Carrizo-Wilcox GAM Results.doc

Project: NTD-02182, Region C 2006 Regional Water Plan

Subject: Results of the Northern and Central Carrizo-Wilcox Groundwater Availability Models (GAM)

BACKGROUND

During July and August, the Region C Water Planning Group (RCWPG) requested that the Texas Water Development Board (TWDB) run the Northern and Central Carrizo-Wilcox GAMs, respectively. The RCWPG adopted an operational policy that each GAM assumes that the total water availability is based on 100% of recharge with the result broken down by basin and county.

In August and September, the TWDB completed their runs of the two GAMs and submitted the results to the RCWPG. This memorandum discusses the results presented by the two GAMs, and make recommendation for further analysis.

Region C has three counties that overlay the Carrizo-Wilcox (C-W) aquifer: Freestone, Henderson and Navarro. The TWDB developed GAMs with boundaries that overlap each other. Because of this, the three Region C counties are included in both the Northern Carrizo-Wilcox GAM and the Central Carrizo-Wilcox GAM. The region requested the TWDB run both models with the same operation policy. The two models resulted in significant differences in water availability in most cases.

The Northern Carrizo-Wilcox GAM resulted in higher water availability that the Central Carrizo-Wilcox GAM. The difference is due to the way the recharge rates were developed. Both approaches to determine the rate of recharge are acceptable. However, they provide significantly different results.

RESULTS OF GAMs

The GAM results were provided for average year and drought year conditions. The regional water planning groups are charged with planning for drought year conditions. As I stated previously, the two models provided significantly different results. The Northern Carrizo-Wilcox GAM drought conditions are similar to the Central Carrizo-Wilcox GAM average conditions for all three counties. Table 1 shows the results of the Northern Carrizo-Wilcox GAM during average year and drought conditions. Table 2 shows the water availability according to the Central Carrizo-Wilcox GAM during average year and drought conditions. Figure 1 visually displays the projected water availability for average and drought conditions for both models.

Table 1
Northern Carrizo-Wilcox Groundwater Availability

County	Basin	Weather Condition	2000	2010	2020	2030	2040	2050
Freestone	Trinity	Average	92,243	92,243	92,243	92,243	92,243	92,243
Freestone	Trinity	Drought	37,535	37,535	37,535	37,535	37,535	37,535
Freestone	Brazos	Average	19,150	19,150	19,150	19,150	19,150	19,150
Freestone	Brazos	Drought	9,100	9,100	9,100	9,100	9,100	9,100
Henderson	Trinity	Average	26,610	26,610	26,610	26,610	26,610	26,610
Henderson	Trinity	Drought	22,562	22,562	22,562	22,562	22,562	22,562
Navarro	Trinity	Average	7,155	7,155	7,155	7,155	7,155	7,155
Navarro	Trinity	Drought	3,757	3,757	3,757	3,757	3,757	3,757

Table 2
Central Carrizo-Wilcox Groundwater Availability

County	Basin	Weather Condition	2000	2010	2020	2030	2040	2050
Freestone	Trinity	Average	31,096	31,096	31,096	31,096	31,096	31,096
Freestone	Trinity	Drought	17,301	17,301	17,301	17,301	17,301	17,301
Freestone	Brazos	Average	5,320	5,320	5,320	5,320	5,320	5,320
Freestone	Brazos	Drought	3,120	3,120	3,120	3,120	3,120	3,120
Henderson	Trinity	Average	10,008	10,008	10,008	10,008	10,008	10,008
Henderson	Trinity	Drought	5,112	5,112	5,112	5,112	5,112	5,112
Navarro	Trinity	Average	2,199	2,199	2,199	2,199	2,199	2,199
Navarro	Trinity	Drought	1,258	1,258	1,258	1,258	1,258	1,258

RECOMMENDATION

I recommend that the RCWPG request the TWDB to rerun both models using the results of the Central Carrizo-Wilcox GAM during average conditions as the demand in the aquifer. I would request the TWDB to provide us information regarding the impacts of the proposed demands on the spring discharges and groundwater levels. With these results, we can better determine the potential impact of such demands on the Carrizo-Wilcox aquifer and decide whether the demands are acceptable.

Figure 1
Water Availability in the Carrizo-Wilcox Aquifer