Bistone Water

At Your Service

Bistone Municipal Water Supply District

June 29, 2011

Re: Adoption of inappropriate DFC Values

Dear GMA-12 Member Districts:

Bistone Municipal Water Supply District (Bistone) depends on the production of groundwater from the Wilcox Group aquifers to provide potable water for our customers in Limestone County. Although our system is not within the boundaries of a groundwater conservation district, we appreciate the hard work put forth by the GMA-12 member districts to comply with the state's unfunded mandate to adopt the "Desired Future Conditions" (DFC) for the aquifers in our region.

However, I am concerned that the DFCs adopted by GMA-12 do not accurately account for the future groundwater needs of the region. It has come to my attention that the model used to develop the current DFCs does not appear to include all of the currently permitted pumpage in several groundwater conservation districts. It also appears it does not include the groundwater use described in the Region G Water Plan for water systems (such as Bistone) outside conservation district jurisdiction. As a result, the modeled changes in water levels will not accurately reflect future aquifer conditions. If this is the case, the currently adopted DFCs may be inappropriate management criteria for the shared aquifer resources in GMA-12.

On August 11, 2010, GMA-12 adopted a resolution establishing DFCs for the Wilcox Group aquifers, which correspond to feet of water level decline in the interval between the beginning of the years 2000 to 2060. As part of the DFC process, the GMA-12 member districts utilized the Central Carrizo-Wilcox-Queen City-Sparta Groundwater Availability Model (GAM) distributed by the Texas Water Development Board (TWDB). A compilation of potential future pumpage in the region was used to generate predictive model inputs, which are referred to as "GAM12_7B". Table 1 below lists the adopted DFCs and GAM12_7B modeled drawdown for the three Wilcox members (Calvert Bluff, Simsboro, and Hooper Formations).

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Table 1: GMA-12 DFCs vs. Modeled GAM12_7B Drawdown (DFC/7B)

Area	*Calvert Bluff*	*Simsboro*	*Hooper*
Brazos Valley GCD	106/109	270/271	170/177
Lost Pines GCD	99/94	237/236	129/133
Mid-East Texas GCD	70/67	115/114	95/96
Post Oak Savannah GCD	140/137	300/298	180/178
Falls County	-	0/-1	20/20
Limestone County	9/9	43/43	40/40
Navarro County	0/-1	1/1	1/1
Williamson County	-10/-11	50/47	55/56

*Note – All values represent feet of water level (water table and/or artesian pressure) from January 2000 through December 2059.

The DFC resolution states that "one reason" that GMA-12 performed predictive simulations was to show that the selected DFCs were compatible with one another and physically possible. Given that the water level declines listed in Table 1 are distinctive and show a direct correlation to the Revision 7B model run, it is apparent that another reason that predictive simulations were performed was to generate the DFCs themselves. While this approach has been widely promoted, in reality it should be avoided because the results (DFCs) generated by the model only reflect current predictions of the locations, production rates, and schedules of future groundwater use. In other words, using this approach the DFC/MAG process is reversed; the MAG is selected first and then DFCs are calculated from the MAG.

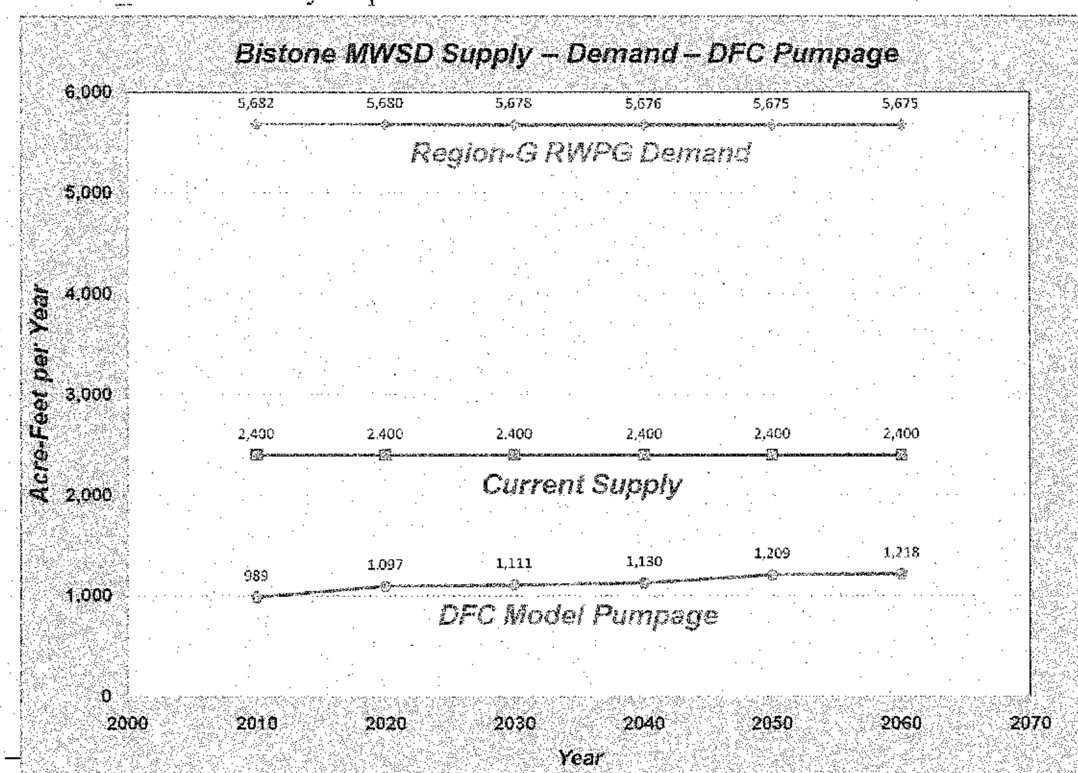
The chief problem with generating regulatory management criteria (DFCs) from a model that incorporates assumptions about future groundwater use is that you know up-front that the model pumpage inputs must be wrong to some degree. This is the case with the GAM12_7B model inputs; the locations and rates of pumpage do not accurately reflect currently permitted pumpage within various groundwater conservation districts or groundwater use strategies for areas outside district jurisdiction.

Table 2 compares the current (2010) Simsboro aquifer pumpage in the Brazos Valley Groundwater Conservation District (BVGCD), the Lost Pines Groundwater Conservation District (LPGCD), and the Post Oak Savannah Groundwater Conservation District (POSGCD) associated with currently approved groundwater production permits and modeled pumpage (Simulation GAM12_7B in 2010).

Table 2: Permitted vs. Modeled Pumpage (2010)

Area	Permitted Pumpage (Ac-Ft/Yr)	Modeled Pumpage (Ac-Ft/Yr)	Difference (Ac-Ft/Yr)
Brazos Valley GCD	102,843	62,515	-40,328
Lost Pines GCD	35,369	30,319	-5,050
Post Oak Savannah GCD	79,003	34,075	-44,928

As shown by Table 2, the locations and rates of pumpage included in Simulation GAM12_7B do not accurately reflect the currently permitted Simsboro aquifer groundwater use. In addition, Simulation GAM12_7b model inputs do not incorporate groundwater use as described in Region G water management strategies. For example, Bistone MWSD currently produces about 2,400 ac-ft/yr from the Wilcox, but the total modeled pumpage in the Bistone well field area is less than 1,000 ac-ft/yr in 2010. Future demands on Bistone will require over 3,000 ac-ft/yr of additional development from the Wilcox, and this management approach is described in both the 2007 State Water Plan and the 2011 Region G Water Plan. However, as shown by the chart below, while this need for increased Wilcox production was documented in these plans, modeled Wilcox pumpage in the Bistone area increased by only 229 ac-ft/yr in Simulation GMA12_7B over a 50-year period.



The information provided herein shows that significant inconsistencies exist between the pumpage inputs incorporated into Simulation GMA12_7B and existing allocations/production permits and regional water planning estimates available at the time the modeling was performed. As a result, the specific water level declines output by the model and adopted by GMA-12 as DFCs are not achievable.

At this point, it seems appropriate to revisit the DFC/MAG process given the information at hand. Luckily, there is a window of opportunity in the coming months to fix the known problems with the DFCs because of the offset in the GMA and RWPG planning cycles. In the short term, we recommend developing model pumpage inputs that incorporate the best information available. At a minimum, DFC/MAG model simulations should reflect currently permitted pumpage within the GMA-12 member districts, as well as planned pumpage in areas outside district boundaries.

More realistic model inputs may be an improvement on the DFC process as it stands today, but determining DFCs based on modeled estimates of what pumpage may occur over the next 50 years should be abandoned because it inevitably produces results that arbitrarily favor some stakeholders at the expense of others. Instead, desired future conditions should be selected that correspond to physical aspects of the aquifer system that must be maintained to achieve defined environmental and economic goals. These goals should be derived from an assessment of the benefits and costs associated with selecting one potential aquifer condition over another. For example, if it is determined that the environmental and economic benefits of maintaining a certain level of flow from a spring outweigh the costs associated with reduced groundwater withdrawals, a DFC should be selected to specifically accomplish that goal. By documenting the environmental and economic objectives a DFC was chosen to achieve, the member districts of GMA-12 can help assure stakeholders that the resulting regulations are reasonable and fair.

The DFC/MAG process can work, but it needs to be carried out impartially, transparently, and in the correct order. By choosing to institute a process whereby the MAG is estimated from carefully selected desired future conditions of an aquifer and not the other way around, GMA-12 can be a model for Texas groundwater regulation. Again, thank you for your ongoing efforts and for taking the time to consider these remarks.

Sincerely, R. Brent Locke

R. Brent Locke

GM

BISTONE MUNICIPAL WATER SUPPLY DISTRICT
Total Production Analysis

	Surface Acre Feet	Groundwater Acre Feet	Total Acre Feet
1987	380.000	1,123.000	1,503.000
1988	346.000	1,283.000	1,629.000
1989	293.000	1,206.000	1,499.000
1990	272.000	1,231.000	1,503.000
1991	207.110	1,042.700	1,249.810
1992	397.940	1,298.510	1,696.450
1993	403.430	1,334.230	1,737.660
1994	412.960	1,285.990	1,698.950
1995	504.840	1,276.560	1,781.400
1996	358.750	1,320.770	1,679.520
1997	299.470	1,294.000	1,593.470
1998	94.731	1,583.380	1,678.111
1999	46.216	1,565.430	1,611.646
2000	183.200	1,742.400	1,925.600
2001	93.410	1,699.760	1,793.170
2002	90.880	1,522.530	1,613.410
2003	76.924	1577.481	1654.405
2004	0.000	1,593.199	1,593.199
2005	76.434	1,650.723	1,727.157
2006	77.425	1,832.840	1,910.265
2007	0.000	1,920.312	1,920.312
2008	71.79	1,826.24	1,898.03
2009	90.001	1,773.694	1,863.695
2010	44.235	1,757.799	1,802.034
Total	4,820.743	35,741.551	40,562.294
Annual Average		1,489.231	