

Preliminary Affidavit Language

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The Colorado River gains groundwater as it flows across the outcrops of the Carrizo-Wilcox, Queen City, and Sparta aquifers in Bastrop County.¹ Studies performed by the U.S. Geological Survey and the Lower Colorado River Authority show that the river gains between 30 and 50 cubic feet per second (cfs) as it flows between Uteley and Smithville.² On a yearly basis, 30 and 50 cfs are equivalent to approximately 22,000 and 36,000 acre feet, respectively.

Increased pumpage of groundwater, as reflected in the GMA-12 DFCs, will probably reduce, and may eliminate, this gain of groundwater. This conclusion is supported by modeling performed by GMA-12.

According to MODFLOW runs performed by GMA-12³, groundwater pumpage will cause groundwater discharge to the Colorado River to decrease from approximately 10,000 acre feet per year in 2010, to minus 700 acre feet per year in 2060 (see figure 1). In other words, the model predicts that the Colorado River will change from a stream that gains water as it flows across the aquifer outcrops, to a stream that loses water.

There is uncertainty associated with predictions produced by models and any particular number it generates must be taken with a grain of salt. However, the long-term trend predicted by the GMA-12 model is reasonable. That is, increased groundwater pumpage (from 13,200 acre-feet in 2010 to 24,800 acre-feet in 2060)⁴ will result in reduced groundwater levels, which will result in decreased discharge of groundwater to streams. Until additional, valid, modeling is performed, the GMA-12 model results represent the best available information regarding the effect of pumping on the flow of the Colorado River.

References

GMA-12, 2010, MODFLOW simulations of groundwater pumpage, 1975 – 2060.

Saunders, G.P., 2006, *Low Flow Gain-Loss Study of the Colorado River in Texas*, in: Aquifers of the Gulf Coast of Texas, Texas Water Development Board Report 365, February 2006.

¹ Saunders, 2006, page 295.

² Saunders, 2009, page 164.

³ GMA-12, 2010.

⁴ Pumpage values for Colorado River basin in Bastrop County. Texas Water Development Board, 2010a, page 8; Texas Water Development Board, 2010b, page 7; and Texas Water Development Board, 2010c, page 7.

Saunders, G.P., 2009, *Low-Flow Gain-Loss Study of the Colorado River in Bastrop County, Texas*, in: *Aquifers of the Upper Coastal Plains of Texas*, Texas Water Development Board Report 374, October 2009.

Texas Water Development Board, 2010a, *Draft Report GAM Run 10-044 MAG*, November 23, 2010.

Texas Water Development Board, 2010b, *Draft Report GAM Run 10-045 MAG*, November 29, 2010.

Texas Water Development Board, 2010c, *Draft Report GAM Run 10-046 MAG*, November 29, 2010.