

Proposed Desired Future Condition(s) for Aquifer(s) in GMA 12

Environmental Stewardship

Supplemental to Considerations 3, 4 & 8.

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Proposed Desired Future Condition(s): Environmental Stewardship has but one interest in this GMA-12 DFC review process; to protect the integrity and functioning of the ecological systems that form the basis of the Colorado and Brazos river basins and the Carrizo-Wilcox and associated aquifers for current and future generations. **In conformance with the Conservation Amendment of the Texas Constitution, it is the duty of the Texas Legislature and Groundwater Conservation Districts to conserve and preserve the natural resources of the state -- our groundwater, our rivers, our springs, and our ecosystems -- by passing laws, rules, and for the purposes of this effort, adopting desired future conditions, that achieve a balance between conservation and development of those resources *in perpetuity*. To protect our aquifers as we found them while respecting the ownership rights of landowners. Though the ability to preserve an aquifer for future generations is not totally in our control -- its rate of replenishment, and its hydrologic characteristics, are largely a function of Mother Nature and must be accepted and respected -- development of an aquifer, and ultimate depletion of an aquifer and/or the surface water and ecosystems which depend on groundwater, *is the voluntary human action in which we are currently engaged.***

The essence of conservation and preservation of an aquifer resource is that the rate at which we deplete our aquifers must be in balance with the conservation of the aquifer. That the depletion not be driven only by the desire for development, against which we simply wait for damage to the aquifer's sustainability before attempting to bring it back "in balance". Only as a bright "conservation standard" describing a sustainable aquifer is established -- an aquifer that is preserved in perpetuity -- can we then determine how much of that aquifer we can develop in balance with the conservation standard. Conservation and protection of an existing aquifer for the *common good of future generations* must be the priority, not the *development* of an aquifer to satisfy every current and speculated human demand on it. Civilizations that have disappeared have failed to realize this distinction when they exploited natural resources.

ES recommends that the GMA-12 districts debate and adopt its own version of this conservation standard to guide in adopting desired future conditions during this cycle.

Please be as detailed as possible in describing your proposed DFC. Include the quantifiable value and a description of the method for measuring or calculating the value. Attach additional pages as needed.

Aquifer	Proposed DFC and Measuring/Calculating Method
Carrizo Aquifer	ES recommends the Districts re-adopt ¹ the currently adopted DFCs unchanged until the GMA-12 GAM improvements have been completed and adopted. The Districts should consider DFCs for the unconfined portions of the aquifer.
Calvert Bluff Aquifer	ES recommends the Districts re-adopt the currently adopted DFCs unchanged until the GMA-12 GAM improvements have been completed and adopted. The Districts should consider DFCs for the unconfined portions of the aquifer.
Simsboro Aquifer	ES recommends the Districts re-adopt the currently adopted DFCs unchanged until the GMA-12 GAM improvements have been completed and adopted. The Districts should consider DFCs for the unconfined portions of the aquifer.
Hooper Aquifer	ES recommends the Districts re-adopt the currently adopted DFCs unchanged until the GMA-12 GAM improvements have been completed and adopted. The Districts should consider DFCs for the unconfined portions of the aquifer.
Queen City Aquifer	ES recommends the Districts re-adopt the currently adopted DFCs unchanged until the GMA-12 GAM improvements have been completed and adopted. The Districts should consider DFCs for the unconfined portions of the aquifer.
Sparta Aquifer	ES recommends the Districts re-adopt the currently adopted DFCs unchanged until the GMA-12 GAM improvements have been completed and adopted. The Districts should consider DFCs for the unconfined portions of the aquifer.
Yegua-Jackson Aquifer	ES recommends the Districts re-adopt the currently adopted DFCs unchanged until the GMA-12 GAM improvements have been completed and adopted. The Districts should consider DFCs for the unconfined portions of the aquifer.
Brazos Alluvium Aquifer	ES recommends the Districts develop DFCs after the GMA-12 GAM improvements have been completed and adopted.
Colorado Alluvium Aquifer	ES recommends the Districts develop DFCs after the GMA-12 GAM improvements have been completed and adopted.

¹ ES does not endorse the currently adopted DFCs as being adequately and sustainably protective of the environment and the aquifers, but does recognize that this is the current legal standard and, as such, should not be changed until the GAM has been improved and better data are available on the nine factors for consideration prior to adopting changed DFCs. This footnote reference applies to all aquifers listed in this section.

Consideration of Proposed Desired Future Condition(s)

The Texas Water code requires that the GMA develop DFCs that “provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence in the management area.” In the space below, or on additional attached pages², please provide your considerations with regard to the nine items that must be considered, per the Texas Water Code, for the proposed DFC(s).

CONSIDERATION 3 – “Hydrological conditions, including for each aquifer in the management area the total estimated recoverable storage as provided by the executive administrator, and the average annual recharge, inflows, and discharge.”

ES Supplementary Comments:

- Observation from ES June 18, 2015 comments demonstrated that the GAM results indicate that the two most significant contributors of groundwater for pumping of the Simsboro aquifer are from 1) a reduction in outflows to surface waters, and 2) the flow of groundwater out of other aquifers within the districts.
 - **ES submits a new GAM analysis by George Rice titled "GAM Predictions of the Effects of Baseline Pumping Plus Proposed Pumping by Vista Ridge, End OP, Forestar, and LCRA" dated March 22, 2016** (Attached). The report examines the effects of pumping on groundwater and surface water in the Lost Pines Groundwater Conservation District (LPGCD), the Post Oak Savannah Groundwater Conservation District (POSGCD), and surrounding counties.
 - The Rice report demonstrates that the GAM predicts:
 - Significant communication between the Simsboro, Hooper, Carrizo and Calvert Bluff aquifers in the Carrizo-Wilcox Group.
 - Significant decrease in outflow from these aquifers to the Colorado River and its tributaries (see Consideration 4).
 - Significant drawdown from anticipated pumping of the Simsboro aquifer in the Simsboro, Hooper Carrizo and Calvert Bluffs aquifers regionally in counties outside GMA-12 (as far away as Gonzales, Lavaca, Colorado, Austin, Grimes, and Walker counties).
 - Baseline plus additional pumping will exceed current and proposed DFCs in the Simsboro Aquifer by 2060 (see Consideration 8).
 - **ES Requests:**
 - The information requested in March 27, 2015 letter needs to be provided in order to understand and manage potential impacts of vertical leakage on exempt well owners.
 - Exempt well owners in the other aquifers in the Carrizo-Wilcox Aquifer Group be notified when permit applications are being considered for the Simsboro and other aquifers that communicate.
- **See also ES Comments dated August 6, 2015:** Comments were primarily on the communication between aquifers in the Carrizo-Wilcox Group (Vertical leakage).

² ES has provided extensive comments on previous occasions that are documented in January 27, 2016 comments (mistakenly dated 2015). It is our expectation, in consideration of 36.108(d-3) that these will be included in the explanatory report along with reasons why they were, or were not, incorporated into the desired future conditions. On a practical basis, it would be desirable that these concerns be addressed prior to the deadline for the explanatory report.

- **ES Recommendation:** The GMA-12 Districts consider the Carrizo-Wilcox Aquifer Group as a single communicating aquifer such that the DFCs for the individual aquifers are combined and evaluated together for purposes of considering the impact of pumping on the aquifers, for management policies and actions necessary to protect against exceedance of the DFCs, and to estimate and minimize impacts of reduced discharges to surface waters, and domestic wells.

CONSIDERATION 4 – “Other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water:”

ES Supplementary Comments:

- **Rice report:** The report demonstrates that the GAM predicts (see Consideration 3):
 - Significant reduction in outflow from the Carrizo-Wilcox Aquifer Group to the Colorado River and its tributaries.
 - During times of drought more than half the flow of the Colorado River may be due to groundwater discharge.
 - Most of the discharge appears to come from the Simsboro aquifer.
 - Baseline pumping in LPGCD will reduce outflows by an estimated 16,000 ac-ft/yr during the planning period thereby reducing river flow.
 - Baseline pumping in LPGCD plus additional pumping will reduce outflows by an estimated 26,000 ac-ft/yr during the planning period thereby reducing river flow.
- **ES Requests:**
 - Reduced outflows during drought conditions may have significant ecological impact on the Colorado River, its tributaries, and terrestrial environment. ES requests that the GMA-12 Representative instruct the Consultants to seek assistance from TPWD to better understand environmental impacts related to decreased outflows to surface waters and the terrestrial environment as predicted by the GAM.

CONSIDERATION 8 – “The feasibility of achieving the desired future condition:”

ES Supplementary Comments:

As noted in Consideration 3, the baseline plus additional pumping (permitted and anticipated) cause the DFCs in the Simsboro Aquifer to be exceeded for both the current and proposed DFCs. It is likely such pumping will also cause the DFCs to be exceeded in the other aquifers, though we have not calculated the average drawdown values to verify this observation.

In discussions with LPGCD regarding its proposed DFCs, ES was informed that the LPGCD DFCs are constrained by the MAG currently in place. ES would like answers to the following questions before the proposed DFCs are considered for adoption:

- Are the proposed DFCs for all Districts constrained by the MAG volumes resulting from the currently adopted DFCs?

- Will the proposed DFCs, if adopted, lead to a recalculation of MAG that would likely result in an increase in MAG?
- Is this the start of DFC creep?

The implications of the Rice analysis, where additional permitted and anticipated pumping is modeled, is that the additional pumping will cause the DFCs in most, if not all, of the Carrizo-Wilcox Aquifers to be exceeded within a few decades if not sooner.

ES Request: ES requests that the GMA-12 Districts, as a part of this consideration, prepare a written management plan, specific to this situation, that the Districts agree to implement in order to avoid exceedances.