Comments to
Lost Pines GCD Board of Directors and GMA-12
regarding Proposed Desired Future Conditions adopted by GMA-12.

By Steve Box, Executive Director, Environmental Stewardship

A. Environmental Stewardship, as a nonprofit corporation and landowner, owns groundwater in place and has a constitutionally-protected right to conserve and protect its fair share of the water resources associated with the commonly shared aquifers.

Environmental Stewardship (ES) is a 501(c)(3) Texas nonprofit organization whose purposes are 1) to meet current and future needs of the environment and its inhabitants by protecting and enhancing the earth's natural resources, 2) to restore and sustain ecological services using scientific information, and 3) to encourage public stewardship through environmental education and outreach. ES is a landowner in Bastrop County within the territorial jurisdiction of the Lost Pines Groundwater Conservation District (LPGCD or District).

As the owner of property[1] located adjacent to the Colorado River in the Calvert Bluff recharge zone[2], ES has ownership of groundwater in the Colorado River Alluvium, Carrizo, Calvert Bluff, Simsboro, and Hooper aquifers beneath its property, as a matter of state law.

The Texas Supreme Court (Court) and Legislature have confirmed by decision and statute that 1) landowners own, as real property, the groundwater in place beneath their land[3], 2) the landowner is entitled to produce groundwater without causing waste or malicious drainage of other property or negligently causing subsidence[4], 3) that nothing in the statutes shall deprive or divest that ownership[5], and 4) that groundwater conservation districts are the State's preferred method of regulating groundwater[6] and that GCDs working cooperatively together, on a regional basis, are the preferred method of developing and adopting desired future conditions (DFCs) for groundwater aquifers.

The Texas Supreme Court opined in the EAA v. Day decision[7] that, though groundwater is different in many respects from oil and gas, it is appropriate in certain circumstances to apply oil and gas law to the regulation of groundwater, with the caveat that "[u]nlike oil and gas, groundwater in an aquifer is often being replenished from the surface, and while it may be sold as a commodity, its uses vary widely, from irrigation, to industry, to drinking, to recreation. Groundwater regulation must take into account not only

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[1] Tahitian Village UNIT 4, Block 14, Lot 4-0950

[2] Geologic Atlas of Texas, Austin Sheet.

[3] Section 36.002 (a) of the State Water Code.

[4] Section 36.002 (b) of the State Water Code.

[5] Section 36.002 (c) of the State Water Code.

[6] Section 36.0015 of the Texas Water Code.

[7] Day Decision: The Edwards Aquifer Authority and the State of Texas, Petitioners, v. Burrell Day and Joel McDaniel, Respondents (Case No. 08-0964) Argued February 17, 2010; Opinion delivered February 24, 2012.

historical usage but future needs, including the relative importance of various uses, as well as concerns unrelated to use, such as environmental impacts and subsidence."[8] Even given such differences, however, the court felt that these differences were outweighed by the common principle that both represent "a shared resource that *must* be conserved under the Constitution"[9]. Notably, the State of Texas urged this principle on the Court in its petition for review of the lower court's decision in Day: "[W]hile there are some differences in the rules governing groundwater and hydrocarbons, at heart both are governed by the same fundamental principle: each represents a shared resource that *must* be conserved under the Constitution[10]."

Applying principles of oil and gas law, the Court found it critically important that the conflict between absolute ownership in place, as opposed to the rule of capture's absolution for draining oil and gas from the property of another, were resolved through the existence of correlative rights in the common pool[11]. Such correlative rights afford each landowner a reasonable opportunity to produce his fair share of oil and gas under his property in consideration of his absolute ownership of the oil and gas in place[12]. Pursuant to such rights, each landowner has privileges against other landowners in the common pool to take oil and gas therefrom by lawful operations; each owner has duties not to exercise his rights in a way that injures the common source of supply; each owner "has rights that other landowners not exercise their privileges of taking in such a way as to injure the common source of supply."[13]

In the oil and gas context, it is the Railroad Commission that serves as the expert to equitably balance the interests of different landowners. In the groundwater context, it is the role of groundwater districts to serve as experts, resolving conflicts of interests between not only landowners who want to produce the groundwater they own "to the limit" versus other landowners who wish to keep their groundwater in the ground, but also non-commercial uses, sustainability, and environmental considerations.

Accordingly, it is the duty of the groundwater conservation districts (GCDs) comprising Groundwater Management Area 12 (GMA-12) to protect the property rights of landowners like ES and others who want to conserve and preserve their groundwater in place for future use, non-commercial uses, sustainability, and environmental considerations by adopting desired future conditions that balance between the *development* and *conservation* of groundwater resources. As will be demonstrated in these comments, LPGCD is not in a position to demonstrate, and should not claim that the proposed DFCs achieve such balance.

[8] Day at 831
[9] Day at 832 (emphasis in original)
[10] State of Texas, Petition for Review at page 11.
[11] Elliff at 562.
[12] Elliff at 562.
[13] Elliff at 562-563.

B. Environmental Stewardship has attempted to participate in the proceedings regarding the GMA-12 review and adoption of the Desired Future Conditions (DFCs) for aquifers within its jurisdiction, but has received insufficient response.

Environmental Stewardship, as a landowner with groundwater ownership in place in the Colorado River Alluvium, Carrizo, Calvert Bluff, Simsboro and Hooper aquifers, and in seeking to fulfill its purpose to conserve and protect the water resources underlying its property, has for many years advocated before the member districts of GMA-12 and in particular before LPGCD to fulfill the District's and the GMA districts' respective duties to consider the impacts of groundwater pumping on surface waters, groundwater and surface water permits prior to permitting groundwater pumping and prior to establishing desired future conditions. ES has been joined by other organizations in its advocacy before LPGCD on permitting matters, and is now joined in these comments on DFCs by other organizations that represent a variety of local constituent interests that are aligned with ES's position as both environmental steward and landowner.

In this interest, ES attempted to participate in the DFC review process before GMA-12 and the District. Unfortunately, this has been a one-sided process whereby ES has provided the GMA and Districts with its concerns but the GMA and Districts have not, to date, adequately considered ES' concerns. Nor have the GMA and Districts provided ES with a response and conclusions regarding ES' concerns, either orally or in writing, demonstrating how these concerns were, or were not, incorporated in the Proposed DFCs other than to say that the tools currently available are not adequate to make quantitative judgments regarding the impacts of pumping on surface waters, groundwater and the requirement to balance conservation and development of these resources. Without adequate consideration of these critical factors, no assurances can be given that balance between development and conservation have been achieved.

Lost Pines District's reported considerations

There are only two Lost Pines District documents that reference any evaluation of the impact of requested pumping on groundwater or surface water. The first is a memorandum from Mr. Donnelly to Joe Cooper[14], and the second is General Manager Joe Cooper's recommendations to the Board[15].

Donnelly's report on item 2 - whether the proposed use of water unreasonably affects existing groundwater and surface water resources or existing permit holders - reports on the impact of End Op's pumping on two Aqua wells, two City of Elgin wells, and two Manville wells. With a caveat regarding the use of the GAM to estimate drawdown, the report concludes that

> *"it is not unreasonable to expect* that pumpage from the End Op project would result in additional drawdown of hundreds of feet over 50 years in the two existing Aqua permitted wells"; "it is not unreasonable to expect that pumpage

[14] Donnelly, Andy. February 6, 2013. Subject: End Op permit review items (2 & 8).
[15] Cooper, Joe. March 20, 2013. End Op LP's Applications for Well Registration, Operating Permits and Transfer Permits for Well Nos. 1-4. Presumably there are similar sets of documents for other permit applications.

> from the End Op project would result in additional drawdown of between 100 and 200 feet in the existing Elgin wells"; and of the Manville wells, "We might expect that these wells may see additional drawdown over 50 years of 100 to 200 feet". (emphasis added)

No consideration is given to other known registered Simsboro wells, and no consideration is given to known registered wells in the Carrizo, Calvert Bluff, or Hooper aquifers. Most telling, no justification is given for the implied conclusion that the impacts on the Aqua, Elgin and Manville wells are *not unreasonable*.

Donnelly's total evaluation of the impact of the proposed End Op pumping on surface waters is contained in a single paragraph:

> "*A quantitative evaluation of the impact of the proposed pumpage on surface water resources within the District is difficult to make. The only quantitative tool available is the GAM, and this model is a poor tool to effectively evaluate impacts to surface water within the District based on this application. However, because the majority of the flow of the Colorado River is controlled by the release of water from the Highland Lakes, the impacts from this project on flow in the Colorado River will not be unreasonable."*

Unlike in the evaluation of Aqua, Elgin and Manville wells, no attempt is made to inform the General Manager or the District of the predictions the GAM makes on the impact on surface waters nor the implications of those predictive trends. Certainly no justification is given for the conclusion that the impacts "*will not be unreasonable*".

The Cooper memorandum to the Board merely reflected the Donnelly report and dismissed any need to further investigate the impact of proposed pumping on other aquifers, other permits, other registered wells, or rivers, streams and surface water features without justification.

Donnelly did not use the methodology that he authored[16] titled *"Instructions for Running the Carrizo-Wilcox Ground-Water Model and Surface Water Models to Determine the Impacts of Carrizo-Wilcox Aquifer Pumping on Surface Water Flows"* to provide the General Manager or the District with estimates of the impacts of End Op pumping on the Colorado River and its tributaries. The following quotes from the report demonstrate the value of such an evaluation:

- *"All of these studies, at least to some degree, recognized that the Carrizo-Wilcox aquifer and the major streams and rivers ... are interrelated in-stream aquifer systems where ground water is in hydraulic connection with the surface-water bodies."*
- *"The outputs from the ground-water model were used with surface-water models to demonstrate how streamflows respond to changes in ground-water*

[16] Donnelly, Andrew, LBG-Guyton Associates. Date stamped October 1, 1998. "Instructions for Running the Carrizo-Wilcox Ground-Water Model and Surface Water Models to Determine the Impacts of Carrizo-Wilcox Aquifer Pumping on Surface Water Flows in the Nueces and Guadalupe-San Antonio River Basins", preface to "Interaction Between Ground Water and Surface Water in the Carrizo-Wilcox Aquifer" prepared for the Texas Water Development Board, August 1998.

levels, and also to demonstrate how water rights, streamflows and fresh-water inflows to the ... estuaries may be affected."

- *"Additionally, the results of the study indicate that average annual streamflows will be reduced in each of the two major river systems that drain the area."*
- *"The models indicate an interaction between ground water and surface water. As ground-water levels change, surface-water discharge also changes, but we currently lack the data to accurately define the magnitude of these changes."*
- *"The collection of basic hydrogeological data pertaining to the Carrizo-Wilcox aquifer should be continued and expanded in order to better understand the following: (f) degree of hydraulic connection between the Carrizo aquifer and streams, rivers, and other surface-water bodies on the outcrop."*

We infer that the District thinks Donnelly's claim that the GAM is a poor tool for evaluating the impact of the proposed pumping on surface waters is acceptable to explain its response, or lack thereof, to whether certain impacts of DFCs (or pumping) -- effects on surface water, groundwater and other permits ---- are reasonable or unreasonable. In fact, the proper tools are not “available”, at least in part, simply because in the period since desired future conditions and permitting were required to consider these factors, neither the State acting through the Legislature or the Texas Water Development Board, nor groundwater management areas and groundwater districts thought it mandatory to engage in a meaningful analysis of what could be argued to be the three most important factors in deciding how much drawdown we can tolerate. *Had ES not intervened to put GMA-12 and its member districts on the spot, it is reasonable to conclude no progress would have been made to develop those tools in the next five years. Likewise, no progress would be made toward achieving any certainty that balance between development and conservation has been achieved.*

As it stands now, the GMA and districts’ virtual silence in addressing even the *need* to do better in their deliberations has essentially rendered these factors superfluous for at least the next five-year planning period, without any attempt by the GMA 12 districts to even leave a “marker” that these three factors may potentially be determined to be *unreasonably* impacted, requiring a significant adjustment to the DFCs in the 2020 planning period. Negative impacts on surface water as important as those ES has raised, as well as whether impacts on groundwater (a/k/a the aquifers) and on other permits may likewise be unreasonable, should not be dismissed from the process in the meantime.

The standard definition of “consider” is to think carefully about something before making a decision. In order to demonstrate careful thought, it would seem a groundwater management area or groundwater conservation district must first make a *quantitative* analysis of the effects on groundwater, surface water, existing permits, and whether the required balancing has been achieved, in order to then actually “consider” whether such effects are unreasonably negative or balanced --- essentially, a *qualitative* analysis of the negative impacts.

Barring being in a position to quantify, let alone analyze, these impacts, it is imperative that LPGCD at least take steps to put all stakeholders on notice that the District, as the state's regulators of groundwater, has resolved to be actively engaged in promoting the public right and duty to have our natural resources preserved and protected and their use balanced between conservation and development. After all, the Conservation Amendment is the source of their regulatory authority --- the Legislature is commanded under the Conservation Amendment to "pass all such laws as are appropriate to so protect natural resources", and the Legislature has in turn spoken through the Water Code and authorized GCDs, working cooperatively together in a GMA, to be the state's preferred regulators of groundwater.

And we would also argue that reasonable regulation of groundwater by GCDs, cooperatively working together in a GMA, is a recognized exception to the rule of capture, making the adoption of DFCs or issuing permits, in circumstances where the GCD is exercising reasonable regulation, a *per se reasonable impact* on landowners' rights to sell the groundwater they own. Specifically, not being permitted to pump out and sell as much water as a person would like is a potential *reasonable* result (impact) of the state's regime of using groundwater district regulation to protecting natural resources in furtherance of the constitutional mandate of preservation and conservation. Stated another way, construing a *failure* by a GCD or GMA to reasonably establish DFCs or regulate pumping as a failure that violates the public trust, is also a reasonable construction of the Conservation Amendment.

Repeating that, while it is the Railroad Commission that serves as the expert to equitably balance the interests of different landowners in the oil and gas context, groundwater districts are the experts on groundwater that essentially must resolve the conflicts of interests between not only landowners who want to produce their groundwater "to the limit" versus other landowners who wish to keep their groundwater in the ground, but also the conflicts between maximum desired production and non-commercial uses, sustainability, and environmental considerations. We believe this equitable balance is explicitly required by the Conservation Amendment's requirement to balance development with conservation.

Accordingly, it is the duty of the GCDs comprising GMA-12 to protect the property rights of landowners like ES and others who want to conserve and preserve their groundwater in place for future use, non-commercial uses, sustainability, and environmental considerations.

We cannot emphasize enough our view that GCDs must *actively* regulate the production of groundwater, rather than being merely passive adopters of DFCs or issuers of permits with the hope of being allowed, politically and practically, to put their foot down, figuratively speaking, *after* their decisions begin to permanently harm our aquifers. The District's indifference and absence of any meaningful response to ES's input will signal just the opposite and perpetuate expectations of water marketers that the Carrizo-Wilcox Aquifer is capable of being exploited even further in future.

In short, the District will be seen as not taking its duties seriously, or at least seriously enough to lay a predicate for the District's willingness, if warranted to avoid

unreasonable impacts, to make significant changes to DFCs *in the next planning round* – changes that might well reverse the drawdowns that will have previously been *inferred* to produce reasonable impacts for the first two planning periods, rather than actually having been *considered and determined to be reasonable* as the Water Code requires.

ES and other landowners have a right to expect adequate consideration of their concerns, with adequate and complete written responses provided in the explanatory report to demonstrate how our concerns were, or were not, incorporated into the finally adopted DFCs. The District should be dedicated to documenting its openness, and its resolve, to affirmatively pursue its mandate to achieve balance between development and preservation of the aquifer..

C. The Proposed Desired Future Conditions (DFCs), while far from adequate, are the best available option to enable the DFC process to move forward without compromising the currently adopted DFC. Adoption of the Proposed DFCs will allow for the Districts and GMA-12 to move to the next round of review where better information can be developed to inform on two key issues that have not been fully or adequately considered:

1. **the impacts of groundwater pumping on surface waters, other aquifers, and all landowners, and**
2. **what is required to conserve and preserve our groundwater resources.**

To do otherwise would be *premature* because GMA-12 and the Districts have not fully or adequately complied with Section 108(d)(4) and (7) to consider the impacts on the environment -- including groundwater-surface water interaction, interests and rights of landowners, and the duty to balance *conservation* and *development*.

The District and GMA-12 have not fulfilled their duty to consider, prior to adopting DFCs, the impacts of the DFCs on surface water, groundwater[17] and other permits[18]. Environmental Stewardship and others do not endorse the currently adopted DFCs[19] as being adequately and sustainably protective of the environment and the aquifers, or of property rights, but does recognize that the currently adopted DFCs are the current legal standard and, as such, should not be significantly changed until the GAM has been improved and better data is available on the nine factors for consideration prior to adopting changed DFCs. The following discussion should be read from this perspective --- our purpose is to include in the official record of the District's proceedings the extensive substance of what ES has offered for deliberation during the DFC process.

[17] Including all aquifers.
[18] Including surface water permits.
[19] ES does not endorse the currently adopted DFCs or the Proposed 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 significantly 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. ES appealed the currently adopted DFCs. Though the appeal was dismissed on basis of administrative procedural matters, the merits of ES' appeal were never considered or answered.

ES takes this opportunity to remind GMA-12 and the Districts that the 80th Legislature established environmental flow standards[20] for the major river systems of the state, including the Colorado and Brazos rivers. ES brought this to the attention of the GMA and Districts in its June 27, 2014 presentation[21] regarding groundwater-surface water interactions. In setting these standards, the TCEQ, working through Bay and Basin Area Stakeholder Committees (including the Colorado-Lavaca[22] and Brazos Stakeholder Committees), established critical subsistence flow standards need to maintain a healthy biological soundness of these rivers and their tributaries through drought and extreme drought conditions. These critical flow standards are threatened by groundwater pumping and must be considered and mitigated in establishing DFCs for aquifers that impact the Colorado and Brazos rivers and their tributaries. To date, GMA-12 has not demonstrated that it has considered this concern and has not provided written response as to how it has, or has not, incorporated that consideration in the Proposed DFCs.

The Texas Water Code also requires[23] that groundwater conservation districts, before voting on the proposed desired future conditions of the aquifers under Subsection (d-2), *shall* consider nine conditions, including:

> Consideration (4) other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water; and
> Consideration (7) the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002;

Consideration (4) - other environmental impacts: Consultants presented information regarding the shortcomings of the current GMA-12 groundwater availability model (GAM) in providing quantitative information regarding the impacts of groundwater pumping on springs, streams, rivers and other surface water resources on August 13, 2015[24]. Though the presentation detailed the limitations of GAM, it did not present information and data from GAM runs to indicate what the GAM DOES predict, nor data

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[20] Senate Bill 3 Passed by 80th Session of the Texas State Legislature. Signed into Law June 16, 2007. SECTION 1.06. (b) Maintaining the biological soundness of the state's rivers, lakes, bays, and estuaries is of great importance to the public's economic health and general well-being. The legislature encourages voluntary water and land stewardship to benefit the water in the state.

(c) The legislature has expressly required the commission while balancing all other public interests to consider and, to the extent practicable, provide for the freshwater inflows and instream flows necessary to maintain the viability of the state's streams, rivers, and bay and estuary systems in the commission's regular granting of permits for the use of state waters. "Environmental flow regime" means a schedule of flow quantities that reflects seasonal and yearly fluctuations that typically would vary geographically, by specific location in a watershed, and that are shown to be adequate to support a sound ecological environment and to maintain the productivity, extent, and persistence of key aquatic habitats in and along the affected water bodies.

[21] Environmental Stewardship. June 27, 2014. PowerPoint presentation: GMA-12 DFCs, GW-SW Considerations.

[22] Established the Colorado and Lavaca Basins and Matagorda and Lavaca Bays Area Stakeholder Committee (CL BBASC) that completed its recommendations report in September 2011.

[23] Section 36.108 (d)(4) and (7).

[24] Consultant's presentation on Environmental Impact Considerations: file 08.13.2015_Presnetation-Environmental-Impacts.pdf

from other sources that had been previously provided by Environmental Stewardship[25], nor did the presentation indicate the trends the GAM predicts -- regardless of whether the predictions are quantitatively accurate -- and the implication of those trends for consideration by the District Representatives.

ES acknowledged in its comments[26] on the Environmental Impact Presentation on September 21, 2015, that the GMA-12 GAM does not appear to be a sufficient tool to fully model and predict, on a quantitative basis, the impacts of modeled pumping on surface waters and springs at the level needed and requires improvements. However, ES asserted, and still asserts, that the relationship between groundwater pumping and the impacts of that pumping on the rivers and streams (outflow to surface water), springs (drains), and on the lowering of water tables and dewatering of regions of the aquifer will have significant, and, in some cases, unacceptable impacts on the ecology and biological life in the rivers, streams and springs, and on terrestrial life at or near the land surface.

These same impacts will also be experienced by human inhabitants in the form of reduced capacity or dry wells, less productive terrestrial landscape, reduced economic value of land, and increased economic costs as the ecological services provided by both groundwater and surface waters are lost and it becomes necessary to replaced those services in order to maintain a quality lifestyle in the region.

GAM Predicted Impacts on the Colorado River and aquifers

To demonstrate the impacts that the GAM predicts, ES provided GMA-12[27] and the Districts with a report by George Rice on the impacts of combined[28] pumping (baseline + End Op + Forestar + LCRA + Vista Ridge) on the Simsboro, Carrizo, Calvert Bluff and Hooper aquifers. This report also provides qualitative and quantitative data on the impact of proposed pumping on the Colorado River and its tributaries. The report contains a detailed analysis of the GAM's ability to predict trends related to pumping

[25] Box, Steve. July 25, 2013. Letter and attachments re: Data and information regarding groundwater-surface water interactions between the Carrizo-Wilcox aquifer Group and the Colorado and Brazos rivers; December 19, 2013. Letter and attached Rice Report (December 12, 2013) re: Impacts of Groundwater Pumping on the Colorado River; June 27, 2014. PowerPoint presentation titled "GMA-12 DFCs, GW-SW Considerations; March 27, 2015. Letter and five attachments re: Review of predictive scenarios for comparison to adopted desired future conditions, Attachment 1. ES DFC and MAG comparison tables, Attachment 2. Colorado River-Simsboro Aquifer Connection. Attachment 2A. Saunders, Geoffrey P. February 2006. Low Flow Gain-Loss Study of the Colorado River in Texas. TWDB Report 365, Chapter 19; Attachment 2B. Saunders, Geoffrey P. February 2009. Low-Flow Gain-Loss Study of the Colorado River in Bastrop County. TWDB Report 374, Chapter 8; Attachment 2C. Rice, George. February 2015. Evaluation of Drawdowns Resulting from Baseline Pumping and Potential Pumping from the Simsboro Aquifer in Bastrop and Lee Counties, Texas.

[26] Environmental Stewardship. September 21, 2015. Comments on Environmental Impact Presentation (on GMA-12 DFC Form).

[27] Box, Steve. March 24, 2016. ES presentation to GMA-12 of Rice report dated March 22, 2016.

[28] Rice, George. March 22, 2016. GAM Predictions of the Effects of Baseline Pumping Plus Proposed Pumping by Vista Ridge, End OP, Forestar, and LCRA.

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rate, pumping duration, and distance of pumping from the river that support the use of the trend information in public policy decision-making.

Rice's Combined pumping report concludes that baseline pumping would:

- Reduce hydraulic heads (i.e., water levels or hydraulic pressure) in the Hooper, Simsboro, Calvert Bluff and Carrizo aquifers.
- Where these aquifers are confined, the reduced heads would cause water levels in wells to decline.
- Where these aquifers are unconfined (recharge areas), the reduced heads would cause dewatering of portions of the aquifers.
- Reduce groundwater discharge to the Colorado River, thereby reducing its flow.
- Additional pumping by Vista Ridge, End Op, Forestar, and LCRA would result in greater head reductions than would baseline pumping alone, and a greater decrease in groundwater discharge to the Colorado River (Figure 1).

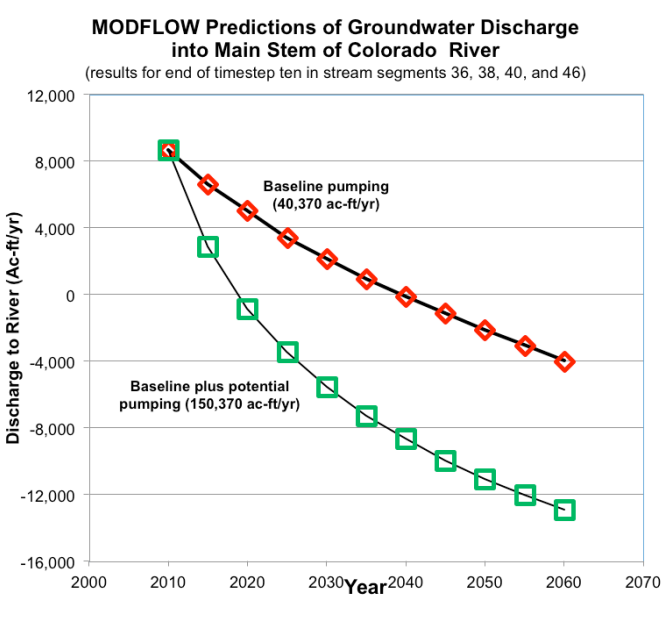

Figure 1: Predicted reduction of discharge of groundwater into the mainstream Colorado River due to combined pumping.

The GAM predicts that there will be a trend toward reduced outflows of groundwater from the aquifers into the Colorado River over the 50-year pumping period (Figure 1). Though we agree that the GAM is not suitable for making reliable quantitative predictions[29] regarding the amount of reduction or the rate of reduction, the Rice report confirms that the GAM is reliable in predicting the trend. The trend indicates that, over time, the relationship between the Colorado River -- which is currently a "gaining

[29] The limitations of the GAM in making reliable quantitative predictions is discussed in the Rice report and has been reviewed by the GMA-12 District representatives. GMA-12 districts, along with the Lower Colorado River Authority, Brazos River Authority, the Colorado-Lavaca Bay and Basin Stakeholder Committee, and Environmental Stewardship have also recognized this limitation and have raised nearly $300,000 to enable a robust groundwater-surface water interaction package to be included in the GAM improvements being implemented by INTERA under contract with the Texas Water Development Board (contract currently pending).

stream" -- and the Carrizo-Wilcox aquifer group will likely be reversed within the planning period. The GAM estimates that this change from a "gaining stream" to a "losing stream" will occur earlier with the combined pumping (perhaps as early as 2020) than with baseline pumping alone (perhaps as early as 2040). This is a significant, and unreasonable impact of groundwater pumping on the Colorado River, especially during drought conditions. This is an impact that deserves due diligence to study, monitor and mitigate potential impacts. Such due diligence has not been done and the GMA has not documented that it has considered this concern, nor how it has, or has not, included this concern in the Proposed DFCs.

The drawdown maps (Figures 2-5) associated with the combined pumping study demonstrate that the effects of groundwater pumping within Lost Pines and Post Oak Savannah Groundwater Conservation Districts (GCD), and mainly in the Simsboro aquifer, are predicted to impact not only the Simsboro aquifer, but also the Carrizo, Calvert Bluff and Hooper aquifers extending to points as far away as Gonzales, Lavaca, Colorado, Austin, Grimes and Walker counties. These aquifers are hydraulically connected throughout the Carrizo-Wilcox Aquifer Group.

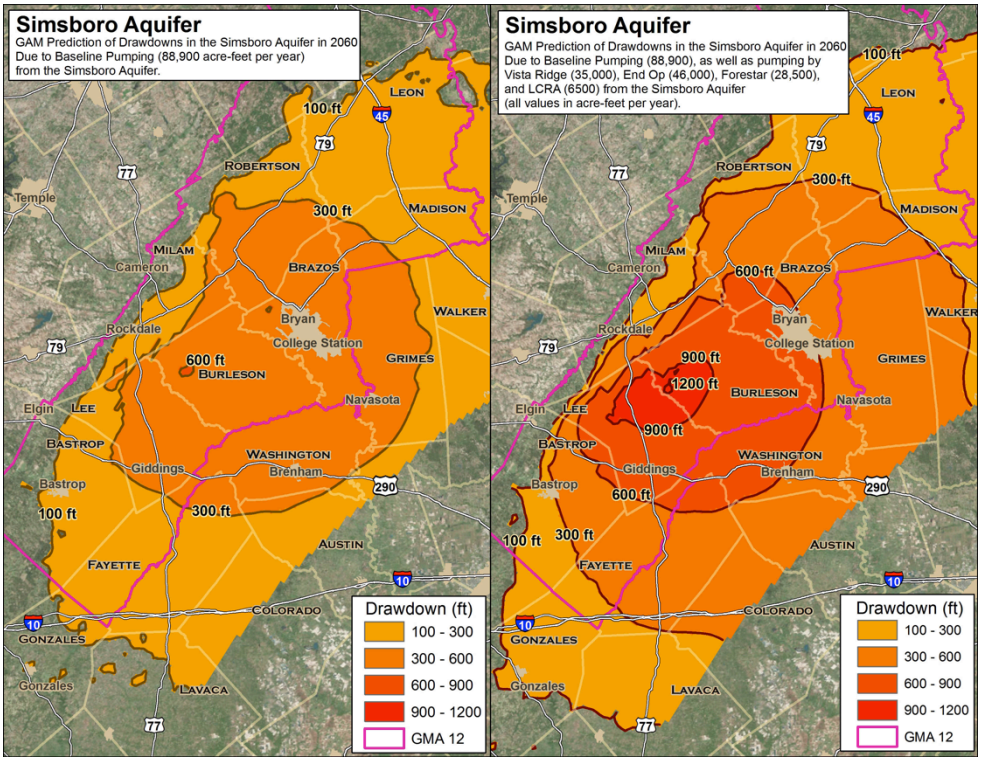

Figure 2. GAM predicted drawdowns in the Simsboro Aquifer due to baseline pumping (left) and baseline pumping plus additional pumping by Vista Ridge, End Op, Forestar, and LCRA 2000-2060 (right).

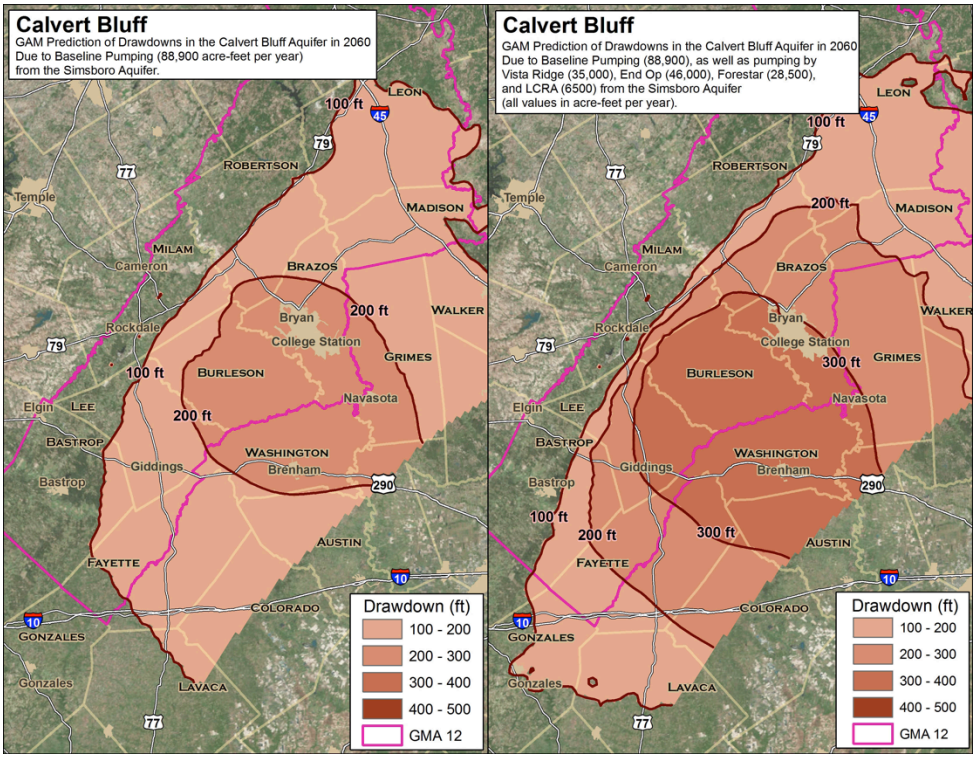

Figure 3. GAM predicted drawdowns in the Calvert Bluff Aquifer due to baseline pumping (left) and baseline pumping plus additional pumping by Vista Ridge, End Op, Forestar, and LCRA 2000-2060 (right).

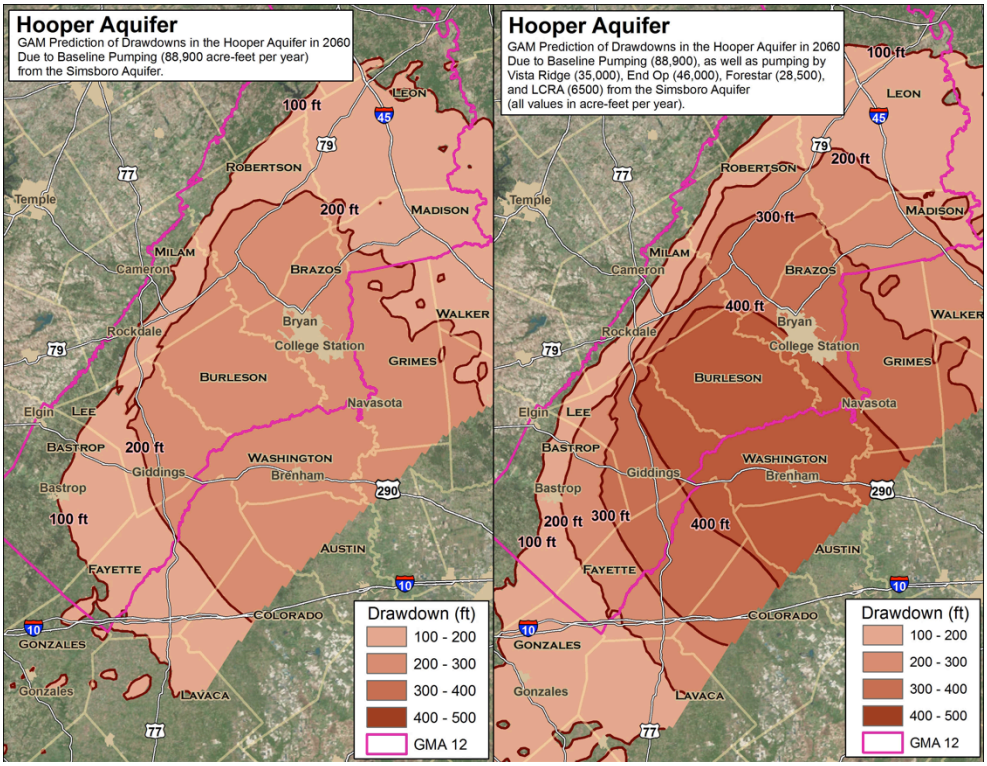

Figure 4. GAM predicted drawdowns in the Hooper Aquifer due to baseline pumping (left) and baseline pumping plus additional pumping by Vista Ridge, End Op, Forestar, and LCRA 2000-2060 (right).

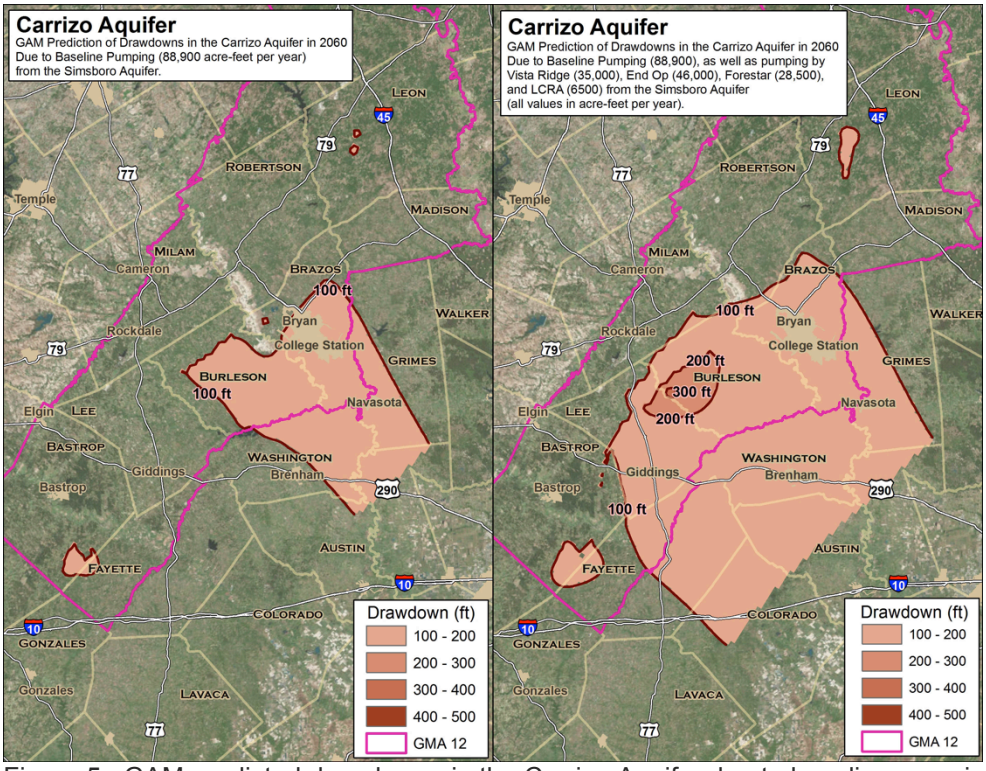

Figure 5. GAM predicted drawdowns in the Carrizo Aquifer due to baseline pumping (left) and baseline pumping plus additional pumping by Vista Ridge, End Op, Forestar, and LCRA 2000-2060 (right).

GMA-12 and the District have failed to consider the information provided to them in developing the adopted and proposed DFCs. GMA-12 has been reviewing the adopted DFCs and is considering revisions as mandated by the Texas Water Code[30]. Consultants provided information to the GMA-12 representatives on May 28, 2015, for the PS-4 scenario that included a full water budget for the current planning period through 2070 and the 1975-1999 calibration period. Environmental Stewardship analyzed the water budgets as reported on June 18, 2015[31]. The following observations, which were provided to GMA-12 and the District, demonstrate that significant impacts to surface waters, other aquifers, and shallow domestic wells are likely as a result of the anticipated pumping. The analysis indicates that:

1. Outflows to surface waters are the most significant contributor of groundwater for pumping: Outflows to surface waters are modeled to have decreased by a total of 100,000 ac-ft/yr since 1975 with the greatest declines occurring in Post Oak Savannah, Lost Pines, and Mid-East Texas respectively.
2. Vertical leakage from other aquifers into the Simsboro is the second most significant contributor of groundwater for pumping. Other aquifers have been the second most significant contributors of groundwater for pumping since 1975 and is the most significant contributor during the DFC period. Vertical inflow to the Simsboro is most significant in Post Oak Savannah, Brazos Valley, and Lost Pines respectively during the DFC period.

[30] Section 36.108(d)
[31] ES comments to GMA-12 on June 18, 2015, regarding Hydrological Conditions on GMA-12's DFC Form. See comments document for details.

3. Lateral flow (leakage) from neighboring counties is the third most significant contributor of groundwater for pumping. Lateral flow from other districts into the Simsboro in Brazos Valley is significant during the DFC period. Lateral flows out of Lost Pines and Mid-East Texas are the most significant with moderate outflows from Post Oak Savannah.
4. Storage change is the least significant contributor of water for pumping since 1975. Storage increased during the calibration period and decreases during the DFC period but is net neutral for the period. Thus it is false to state that most of the groundwater pumped is contributed from storage.

Again, to date, the GMA has not demonstrated that it has considered this concern and indicated how it has, or has not, incorporated this concern in the Proposed DFCs. As stated in our above-cited comments, ES believes that these impacts are important considerations in determining the amount of water that is available for development from the aquifers in balancing conservation and development. As such, an appropriate action is to improve the tools, as is being done with the GMA-12 GAM improvements project, and to defer significant changes in the adopted desired future conditions until we have better information available from monitoring and the improved tools to predict impacts. The Proposed Desired Future Conditions provide the deferment requested, however, to date, GMA-12 has not demonstrated that it has considered this concern, nor how it has, or has not, incorporated that consideration in the Proposed DFCs.

Consideration (7) - impact on the interests and rights in private property:
Consultants presented information regarding this consideration at the June 26, 2015 meeting[32]. ES commented[33] on August 6, 2015, that ES strongly agrees, and continues to agree, with the continuum of interests -- where interests and rights range from those benefitted by present use of groundwater, to those that are benefited by leaving a significant amount of groundwater in place. ES contends that the Conservation Amendment to the Texas Constitution requires a balancing of these interests in such a way as to provide for the long-term availability of groundwater for use in perpetuity.

The statutory mandate to achieve a *balance* between the "highest practicable level of groundwater production versus the conservation, preservation, protection, recharging and prevention of waste of groundwater" must be considered in the DFC review process in order to protect the property rights of landowners. This balancing has not yet been done.

As such, ES requested in its August 6, 2015, comments that the consultant team be requested to prepare a report that quantitatively considers the impact of the pumping anticipated under the adopted desired future conditions on the property and surface water rights of landowners as described above. ES requested that the report estimate the number and percent of landowners that are beneficially and un-beneficially impacted

[32] Presentation by Monique Norman titled "Consideration of the impact on the Interests and Rights in Private Property in the Adoption of Desired Future Conditions of Aquifers."
[33] Environmental Stewardship. August 6, 2015. Comments on Needs & Strategies, Property Rights Presentation, and supplemental comments on Hydrological Conditions.

by the pumping to determine whether or not there is balance in the current and anticipated District practices.

Unfortunately, though the GMA-12 Representatives were provided with presentations regarding the requirements under Section 36.108(d), they have not developed adequate information to fully consider the impacts required by paragraphs (4) and (7).

Overall, GMA-12 and the Districts have fail, to date, to adequately consider the impacts of the currently adopted DFCs -- and the Proposed DFCs -- on spring flow, river and stream flow, and other interactions between groundwater and surface water. The GMA has not, to date, demonstrated that it has considered ES' concern, nor how it has, or has not, included that consideration in the Proposed DFCs. To their credit, the GMA-12 Districts have recognized the limitations of the GAM and have initiated work to improve the GAM with regard to its handling of faults, to update data used to develop and calibrate the model, and to install a robust package to predict the impact of groundwater pumping on rivers, streams and springs. The Districts, LCRA, BRA and the Colorado-Lavaca Bay and Basin Stakeholder Committed[34] contributed funds for this effort.

To date, the GCD's and GMA-12's efforts to "consider" whether impacts of pumping as reflected in the DFCs unreasonably impact ground and surface water, and other permits fall very short of the mark. Therefore these Proposed DFCs are *premature* with respect to protecting groundwater-surface water relationships because GMA-12 and the Districts have not yet complied with the Texas Water Code that is designed to protect surface features and shallow wells, and to guide permit decisions.

D. The amount of pumping expected jeopardizes the Desired Future Conditions (DFCs) for the aquifers, the District, adjacent Districts, and GMA-12.

The GAM predicts that permitted (baseline) pumping plus additional planned pumping will exceed the current and proposed desired future conditions (DFCs) by 200-300 feet of drawdown for the Simsboro Aquifer by 2060 (see Table 3 from Rice Report). Though not tabulated here, it is reasonable to expect that the Simsboro pumping will also have a significant effect on the DFCs of the Calvert Bluff, Hooper and Carrizo aquifers. Those impacts should be calculated by GMA-12 and the District and included in its evaluation of the effects of the proposed combined pumping on the DFC in the other aquifers. The maps (Figures 2-5) represent the drawdown of these other aquifers that results from Simsboro pumping.

[34] Environmental Stewardship initiated a project associated with the Colorado-Lavaca Bay and Basin Stakeholder Committee Senate Bill 3 funding to contribute $60,000 to the study to enable upgrading the groundwater-surface water package to a robust level that will support use of the GAM to predict local impacts of groundwater pumping on the Colorado River.

Table 3
GAM Predictions of Average Drawdowns in the Simsboro Aquifer from 2000 to 2060 Due to Baseline Pumping and Pumping by Vista Ridge, End Op, Forestar, and LCRA

GCD	DFC (ft)	Baseline drawdown (ft)	Drawdown due to additional pumping (ft)	Baseline plus additional drawdown (ft)
LPGCD	256	209	296	505
POSGCD	318	279	238	517

The GAM predicts that expected pumping in the region (baseline pumping + End Op pumping + Forestar pumping + LCRA pumping + Vista Ridge Pumping) will cause the desired future conditions of the Simsboro Aquifer to be exceeded by 200-300 ft. of drawdown.

- This level of exceedance will trigger "pro-rata" curtailment of all permitted pumping. However, once investments in contracts and pipelines have been made, and communities have been made dependent on the water, we believe it is very unlikely that such curtailment will be possible.
- Though not tabulated in the Rice Report, it is reasonable to conclude, and would be prudent to evaluate, the effect of the proposed pumping in the Simsboro aquifer on the desired future conditions (DFCs) for the Carrizo, Calvert Bluff and Hooper aquifers.

Again, to date, the GMA has not demonstrated that it has considered this concern and indicated how it has, or has not, incorporated this concern in the Proposed DFCs.

E. Sections 36.108(d)(4) and 36.113(d)(2) have a direct impact on interests and rights of persons who have been granted *surface water rights* in the Colorado River and Brazos rivers.

ES contends that, in balancing the use of groundwater at the *highest practicable* level of production, the GMA and Districts must also consider the impacts of groundwater withdrawal on surface water interests and rights. Two statutes[35] have been in the Texas Water Code for a number of years that reflect the Legislatures' acknowledgement that the State and GCDs have the duty to manage these resources in the manner described in the Conservation Amendment.

ES further contends that the aforementioned Sections 36.108(d)(4) and 36.113(d)(2) have a direct impact on interests and rights in private property and the rights of management area landowners, *and* have a direct impact on the rights of those who have been granted *surface water rights* in the Colorado River and its tributaries that are impacted when water withdrawn from under the ground has a consequential impact on the amount of groundwater that outflows from the aquifers into surface waters that are owned by the State and have previously been allocated for private use. As such, it is

[35] Section 36.108(d)(4) and Section 36.113(d)(2).

proper that the impact on *surface water rights* be considered under Section 36.108(c)(7).

State of Texas v. New Mexico and Colorado

The ownership relationship of groundwater and surface water is currently before the United States Supreme Court in State of Texas v. State of New Mexico and State of Colorado[36]. The State of Texas (Texas) argues that *"New Mexico, through the actions of its officers, agents and political subdivisions, has increasingly allowed the diversion of surface water, and has allowed and authorized the extraction of water from beneath the ground, downstream of Elephant Butte Dam, by individuals or entities within New Mexico for use within New Mexico. Texas argues that the excess diversion of Rio Grande surface water and the hydrologically connected underground water downstream of Elephant Butte Reservoir adversely affects the delivery of water that is intended for use within the Rio Grande Project in Texas[37]".*

The cause before the U.S. Supreme Court has not been adjudicated or otherwise settled[38], but is cited here as an example of the arguments that Texas and other persons might make should a person apply the same logic to similar situations within the State of Texas (See Attachment 1[39]).

Applying the same logic, a person might argue that Groundwater Conservation Districts (GCD, or Districts), located in Groundwater Management Area 12 (GMA-12), have taken action[40], and are continuing to take actions, that reduce Texas' surface water supplies and the apportionment of surface water it is entitled to from the Colorado and Brazos rivers, and the Highland Lakes project on the Colorado River, under the adjudication and allocation of water rights (surface water permits). The allocation of Colorado and Brazos river surface water rights is predicated on the understanding that delivery of surface water to water right holders in the Colorado and Brazos river basins would not be subject to depletions beyond those that were occurring at the time the Colorado and Brazos river surface waters were adjudicated. GCDs, through the actions of their Boards, officers, and agents, has allowed and authorized the extraction of

[36] State of Texas v. State of New Mexico and State of Colorado No. 220141 (January 2013) in the U.S. Supreme Court.

[37] Texas v. NM & CO, paragraph 18 (Attachment 2).

[38] Texas v. NM & CO. Cause No. 141 (original) in the Supreme Court of the United States, State of Texas (Plaintiff) v. State of New Mexico and State of Colorado (Defendants) was given over to a Special Master on November 3, 2014. Special Master's Case Management Order No. 11, issued on July 1, 2016, notifies that a Pre-Filing Inspection Draft of the First Interim Report which addresses four motions has been issued for review and comment and that the Special Master intends to file his report on the motions after August 1, 2016. The four motions are: New Mexico's Motion to Dismiss Texas' Complaint; New Mexico's motion to Dismiss the United States' Complaint in Intervention; and the motions to intervene filed by Elephant Butte Irrigation District and El Paso County Water Improvement District No. 1.

[39] Texas v. NM & CO, Paragraph 18 (Attachment 2).

[40] Authorized by the Texas Legislature that are, or may be, contrary to the Conservation Amendment of the Texas Constitution, in that they allow waters allocated as surface water appropriations (water rights) to be captured and made available as groundwater subject to ownership rights of landowners, but unallocated until permitted.

water[41] from beneath the ground, downstream of the Highland Lakes (in the Colorado River basin), by individuals or entities, within GCD's jurisdiction, for use both within the Districts and for export from the Districts, and have thereby increasingly allowed the diversion of surface water into underground aquifers[42]. The excess diversion of the hydrologically connected underground water, and thereby Colorado and Brazos river surface waters, adversely affects the delivery of water that is intended for use within the Colorado and Brazos river basins as allocated surface water and for environmental flows in Texas.

Despite Environmental Stewardship's request that Groundwater Conservation Districts and Groundwater Management Area 12 take action to cease or otherwise consider and manage these extractions of water from beneath the ground and the diversion and extraction of surface waters[43] and have increased over time until, in 2000, they amounted to tens of thousands of acre feet of water annually (estimated at 38,000 ac-ft/yr in 1999, and 100,000 ac-ft/yr in 2000) and are projected to increase at a high rate over the next few decades to an estimated 244,000ac-ft/yr ins 2070[44].

These extractions of water from beneath the ground[45] and the resulting surface water diversions into underground aquifers, *intercept water* that has historically been available for use by surface water right holders and for environmental flows (instream flows and freshwater inflows into bays and estuaries) in Texas, and *convert that water* for use as groundwater extracted and used within the Districts, and as groundwater extracted and transferred out of the Districts for use in other regions within Texas.

The extraction of groundwater and diversion[46] of surface water also require more water to be released from the Highland Lake reservoir, and reservoirs in the Brazos Rivers basin, depleting Highland Lake reservoir and other reservoir storage. These extractions also create deficits in tributary underground water which must be replaced before the Colorado and Brazos rivers can efficiently deliver Highland Lake and other reservoir water to water right holders and for environmental flows (instream flows and freshwater inflows to bays and estuaries). This requires additional releases of water from the Highland Lake reservoirs, and Brazos basin reservoirs, which has a detrimental effect on the amount of water stored in the Highland Lake and other reservoirs for future use.

[41] Districts (for permits) have allowed extraction of groundwater by way of groundwater permits under 36.113(d)(2) that have the result of reducing historical outflows of groundwater to surface waters without adequate consideration of the impact of such pumping on surface waters and on surface water permits.

[42] The GMA-12 (for DFCs) and Districts (for permits) have allowed diversion of surface water into groundwater aquifers without adequate consideration of the impacts of groundwater pumping on surface waters and surface water permits as required by 36.108(d)(3)-(4) and 36.113(d)(2). The result of these actions are that historical outflows from the aquifers to the rivers and tributary streams have been reduced over time and will be further reduced as additional pumping is allowed.

[43] Texas v. NM & CO. Texas argues such diversions are unlawful.

[44] GMA-12 Hydrological Conditions Presentation by Consultants, May 28, 2015; estimates taken from PS4 scenario water budget for GMA-12 consolidated.

[45] Texas v. NM & CO. Texas argues such diversions are unlawful.

[46] Texas v. NM & CO. Texas argues such diversions are unlawful.

Depleted reserves in the Highland Lake and other reservoirs have adverse impacts on future water supplies that should otherwise be available to the Colorado and Brazos rivers for environmental flows and for delivery to water rights holders in these basins within Texas. These extractions have a direct adverse impact on the amount of water delivered to the Colorado and Brazos rivers, Matagorda Bay, and water right holders in Texas pursuant to the Colorado and Brazos river surface water allocations and adjudications, and the Lower Colorado River Authority's Water Management Plan as authorized by the Texas Commission on Environmental Quality (TCEQ). These extractions were not occurring when the Texas State Legislature established rules regarding the apportionment of surface water through the allocation of surface water rights in Texas to equitably apportion these surface waters. Thus, the Districts and GMA-12 have changed the conditions that existed when legislation was passed to establish a system to allocate surface water[47], to the detriment of the water right holders, environmental flows in the rivers and to the bays and estuaries, and to the State of Texas.

Evidence in Support of ES' Arguments

ES contends that the Sections 36.108(d)(4) and 36.113(d)(2) have a direct impact on interests and rights in private property and the rights of management area landowners, *and* have a direct impact on the rights of those who have been granted *surface water rights* that are impacted when water withdrawn from under the ground has a consequential impact on the amount of groundwater that outflows from the aquifers into surface waters that are owned by the State and have previously been allocated for private use. As such, it is proper that the impact on *surface water rights* be considered under Section 36.108(c)(7).

To illustrate the impact of planned groundwater withdrawal on surface water rights that would result from the GMA-12 Adopted DFCs, Environmental Stewardship retained a licensed geoscientist with the Texas Board of Professional Geoscientists. The naturalized flows of the Colorado and Brazos rivers were modified by removing a volume of water equivalent to the historic outflows from the aquifers to the river. A volume of withdrawal was selected to represent historical inflows from the Colorado River and Brazos Rivers. The contractor provided Environmental Stewardship with information on each water right and how it was affected by the adjustment in flow. Attachment 2[48] provides evidence of the estimated impact of groundwater withdrawals on surface water rights.

F. The resolution adopting the Proposed Desired Future Conditions (DFCs) *falsely* states that the Proposed DFCs provide a balance between highest practicable levels of groundwater production and the conservation, preservation, protection recharging, and prevention of water of groundwater in the management area.

The GMA-12 District Representatives adopted a resolution[49] concerning the proposed

[47] And subsequent adjudication allocated water-to-water rights holders (permits).

[48] Attachment 1: ES Comments on Needs & Strategies, Property Rights, and supplemental comments on Hydrological Conditions submitted August 6, 2015, page 11 and Attachment 2.

[49] GMA-12 Adopted Resolution. July 15, 2016. RESOLUTION TO ADOPT PROPOSED DESIRED FUTURE CONDITIONS FOR AQUIFERS IN GROUNDWATER MANAGEMENT AREA 12

DFCs for the aquifers within their jurisdiction that includes the following paragraph:

> **WHEREAS, the proposed desired future conditions provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater in the management area;** (emphasis added)

Based on the evidence presented herein, ES asserts, and asserted in its oral comments at the April 15, 2016 meeting, that this paragraph is not supported by the technical information presented during the review process and should be deleted from the resolution or revised to more accurately reflect the status of the DFC review process leading to the Proposed DFCs. No specific analyses have been done to quantitatively evaluate scenarios whereby the aquifers are conserved. How then can one then determine that the desired future conditions are in balance between conservation and development?

To the contrary, the evidence from the GAM pumping scenarios indicate that the aquifers associated with the Carrizo-Wilcox have not come into equilibrium -- as evidenced by the fact that using essentially the same pumping rates, but extending the DFC from 2060 to 2070, increased the amount of drawdown -- and therefore are not being pumped at a sustainable rate as required by the Conservation Amendment to the Texas Constitution and the statutes. No GAM scenario was run to estimate how long, if ever, it might take before the aquifers reach equilibrium. At no point in the review did the GMA consider or evaluate what it would mean technically to conserve, preserve, recharge and prevent waste of groundwater (what we consider a "bright line" test of protection). We re-iterated ES' challenge to the GMA that it establish a "conservation standard" that would provide the means to balance between development and conservation.

The only justification -- provided by counsel -- is that the language is statutory and required". Though the statement is not accurate, in our view, the District Representatives adopted the resolution without dissent.

If the language "is statutory and required", then, having not met those statutory requirements, the Proposed DFCs are insufficient, and should not be adopted. If, on the other hand, the resolution is required to be accurate in its description of the status of the balancing process, the paragraph needs to be re-written to indicate that the Proposed DFCs are *interim*, and the full review will be completed when the GAM improvements are in place and additional information is available for consideration.

Adopting such an erroneous statement in the resolution -- just because it is statutorily required -- brings question to the credibility of the Proposed DFCs.

As such ES is on record as having questioned the accuracy of the paragraph prior to the vote being taken.

ES' CONCERN: We are concerned that the resolution adopting the proposed DFCs *falsely* states that the DFCs are, in fact, a balance between conservation and development of these natural water resources, when, in fact, no studies presented during the review period evaluated what conditions would be necessary to sustainably conserve the aquifers or that would supported the conclusion stated in the resolution that the aquifers are, in fact, in balance. ES anticipates that once adequate tools and information are available during the next round of DFC review, these balancing considerations can be adequately evaluated and DFCs adopted that do, in fact, "balance" as described in the resolution.

F. CONCLUSIONS AND RECOMMENDATIONS:

We urge the Board and GMA-12 to 1) adopt the Proposed DFCs and 2) amend the adopting resolution to a) accurately state that the review process cannot be completed until adequate tools and information are available, and b) therefore the Proposed DFCs do not yet provide a balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater in the management area.

WHEREAS:

1. As a landowner, with groundwater ownership as real property, ES and other landowners have rights to a fair share of the common pool. It is the duty of the groundwater conservation districts (GCDs) to protect the property rights[50] of landowners who want to conserve and preserve their groundwater in place for future use, non-commercial uses, sustainability, and environmental considerations, by adopting desired future conditions that balance between the *development* and *conservation* of groundwater resources.
2. The GMA and Districts have not adequately considered ES' concerns, nor have the GMA and Districts provided ES with a response and conclusions regarding ES' concerns demonstrating how these concerns were, or were not, incorporated in the Proposed DFCs.
3. ES and other landowners have a right to expect adequate consideration of their concerns and adequate and complete written responses in the explanatory report demonstrating how our concerns were, or were not, incorporated into the finally adopted DFCs. -- with opportunity for public comment and discussion -- prior to adoption of the final DFCs.
4. Critical environmental flow standards for the Colorado and Brazos rivers are threatened by groundwater pumping and must be considered and mitigated in establishing DFCs for aquifers that impact the Colorado and Brazos rivers and their tributaries.
5. The relationship between groundwater and surface water interaction, and the impact of groundwater pumping on the groundwater-surface water interactions are important considerations in determining the amount of water that is available for development from the aquifers in balancing conservation and development.

[50] Including the right to participate as party to administrative processes such as contested case hearings.

6. The GAM, as currently constructed, is not an adequate tool to quantitatively predict the impact of groundwater pumping on surface waters, springs, and other terrestrial environments.
7. The limitations of the GAM have been recognized and a GAM improvement project is underway to correct the deficiencies so that better information will be available to predict impacts.
8. The current GAM is sufficient to predict trends regarding the impact of groundwater pumping on surface waters, springs, and other aquifers.
9. The current GAM predicts that the groundwater-surface water relationship will reverse within the 50-year planning period
10. The current GAM predicts significant drawdown in aquifers that communicate with the Simsboro aquifer where the majority of pumping is proposed to occur.
11. Drawdown of the communicating aquifers can have a significant and potentially unreasonable impact on surface waters, springs and shallow domestic wells.
12. The District and GMA-12 have not fulfilled their duty to, prior to adopting desired future conditions (DFCs), consider the impacts of the DFCs on the Colorado River and its tributaries.
13. The GAM predicts that permitted (baseline) pumping plus additional planned pumping will exceed the current and proposed desired future conditions (DFCs) by 200-300 feet of drawdown for the Simsboro Aquifer by 2060.
14. There are logical arguments and credible evidence that the groundwater pumping proposed in the Proposed DFCs will have an adverse impact on surface water permits making it proper that the impact on *surface water rights* be considered under Section 36.108(c)(7).
15. The District and GMA-12 have not fulfilled their duty to, prior to adopting DFCs, consider the impacts of the DFCs on the other groundwater aquifers that hydrologically communicate with the Simsboro Aquifer from which the pumping is requested. Specifically, the impact on the Colorado and Brazos River Alluviums, Carrizo, Calvert Bluff, and Hooper aquifers.
16. The District and GMA-12 have not fulfilled their duty to, prior to adopting DFCs, consider the impacts of the DFCs on other permits, including registered domestic wells in hydrologically communicating aquifers referenced above.
17. The District and GMA-12 have not fulfilled their duty to, prior to adopting DFCs, consider the impacts of the DFCs on other permits, including surface water permits.
18. Environmental Stewardship and others do not endorse the currently adopted DFCs[51] as being adequately and sustainably protective of the environment and the aquifers, but does recognize that the currently adopted DFCs are the current legal standard and, as such, should not be significantly changed until the GAM has been improved and better data are available on the nine factors for consideration prior to adopting changed DFCs. This applies to all aquifers in the GMA.
19. The Proposed DFC do not significantly change the currently adopted DFCs.
20. ES disputes the accuracy of the resolution adopting the Proposed DFCs.

[51] ES appealed the currently adopted DFCs. Though the appeal was dismissed on basis of administrative procedural matters, the merits of ES' appeal were never considered or answered.

THEREFORE, ES recommends and requests the following to remedy the inadequacies in the Proposed DFCs and the adopting resolution:

1. It is necessary and essential that the District and GMA-12 adopted the Proposed DFC in order to defer consideration of the DFCs under Section 36.108(d) when better information regarding the impact on groundwater, surface water and other permits becomes available, hopefully during the third (next) round of review.
2. The third and next round of DFC review should adequately consider:
    a. The impact of the DFCs and the pumping allowed by the DFCs on surface waters;
    b. The impact of the DFCs and the pumping allowed by the DFCs on hydrologically connected aquifers;
    c. The impact of the DFCs and the pumping allowed by the DFCs on domestic wells in hydrologically connected aquifers; and
    d. Changes that should be made in the DFCs to ensure that the DFCs are sustainable and accurately reflect a balancing of conservation and development of the aquifers.
3. The resolution adopting the DFCs must, before these DFCs are finally adopted, be revised to accurately reflect that the current review and consideration of the nine considerations under Section 36.108(d) is incomplete and the DFCs do not yet balance conservation and development of the aquifers.

Attachment 1.

STATE OF TEXAS, *Plaintiff*, v. STATE OF NEW MEXICO and STATE OF COLORADO, *Defendants*.

Paragraph 18 lays out Texas' argument to the U.S. Supreme Court

18. New Mexico's actions have reduced Texas' water supplies and the apportionment of water it is entitled to from the Rio Grande Project and under the Rio Grande Compact. The Rio Grande Compact is predicated on the understanding that delivery of water at the New Mexico–Texas state line would not be subject to additional depletions beyond those that were occurring at the time the Rio Grande Compact was executed. New Mexico, through the actions of its officers, agents and political subdivisions, has increasingly allowed the diversion of surface water, and has allowed and authorized the extraction of water from beneath the ground, downstream of Elephant Butte Dam, by individuals or entities within New Mexico for use within New Mexico. The excess diversion of Rio Grande surface water and the hydrologically connected underground water downstream of Elephant Butte Reservoir adversely affects the delivery of water that is intended for use within the Rio Grande Project in Texas. Despite the State of Texas' request that New Mexico take action to cease these diversions and extractions, these unlawful surface water diversions and extractions of water from beneath the ground have increased over time until, in 2011, they amounted to tens of thousands of acre-feet of water annually. These unlawful surface water diversions and extractions of water from beneath the ground intercept water that in 1938 would have been available for use in Texas, and convert that water for use in New Mexico. The unlawful diversion of surface water and extraction of underground water also require more water to be released from Elephant Butte Reservoir depleting Rio Grande Project storage. These extractions also create deficits in tributary underground water which must be replaced before the Rio Grande can efficiently deliver Rio Grande Project water. This requires additional releases of water from Elephant Butte Reservoir, which has a detrimental effect on the amount of water stored in Elephant Butte Reservoir for future use. Depleted reserves at Elephant Butte Reservoir have adverse impacts on future water supplies that should otherwise be available to the Rio Grande Project for delivery in southern New Mexico, Texas and Mexico. These extractions have a direct adverse impact on the amount of water delivered to Texas pursuant to the Rio Grande Project authorization and the Rio Grande Compact. These extractions were not occurring in 1938 when Colorado, New Mexico, and Texas entered into the Rio Grande Compact to equitably apportion these waters. Thus, New Mexico has changed the conditions that existed in 1938 when the Compact was executed to the detriment of the State of Texas.

Attachment 2 (Attachment 2 from ES August 6, 2015 comments)

IMPACT OF GROUNDWATER WITHDRAWAL ON SURFACE WATER PERMITS

To investigate the impact that would result from the planned withdrawals from the GMA-12 Adopted DFCs, Environmental Stewardship retained a licensed geoscientist with the Texas Board of Professional Geoscientists. The naturalized flows of the Colorado River at Bastrop were modified by removing a volume of water equivalent to the historic outflows from the aquifers to the river. A volume of 25,000 acre-feet per year was selected to represent historical inflows from the Colorado River. The contractor provided Environmental Stewardship with information on each water right and how it was affected by the adjustment in flow (Kennedy, 2012 - see endnote). Tables 1 & 2 illustrate this information.

Two scenarios were run for the Colorado River. In the first scenario (Table 1) 25,000 acre-feet per year of water was removed to simulate the withdrawal of historic groundwater outflows. Over 1,100 water rights were impacted up and down the Colorado River, involving over 7,300 acre-feet per year of water (that's about 2.4 billion gallons of water per year). Freshwater inflows to Matagorda Bay were reduced by about 16,000 acre-feet per year.

Table 1. Impact of groundwater withdrawal of 25,000 acre-feet per year on Colorado River Water Rights

Colorado River Water Rights

Water Rights Negatively Impacted with 25,000 ac-ft/yr removed						
Ac-Ft/Yr Range of Impact:	>500	100-500	10-100	1-10	<1	TOTAL
No. Water Rights Impacted:	4	11	25	228	890	1,158
Average Ac-Ft/Yr Impacted:	3,271	2,421	889	544	231	7,356

Average % Reduced:	>= 4%	3.0-3.9%	2.0-2.9%	1.0-1.99%	<1.0%	TOTAL
No. Reduced:	2	8	25	237	879	1,151

- TCEQ WAM Run 3 for Colorado River with 1401 Water Records (1940-1998)
- Flow Adjustment Record was used to reduce naturalized flow at Bastrop by 25,000 ac-ft/yr
- Comparing Volume Reliability Indexes
- **No changes were made to any water rights records**
- **Freshwater inflows to Matagorda Bay are reduced 16,196 ac-ft/yr.**

In the second scenario (Table 2) 40,000 acre-feet per year was removed to simulate loss of the historical gain to the Colorado River (25,000 acre-feet per year) and an additional volume to model predicted inflow to the aquifers as the river becomes a "losing" stream (15,000 acre-feet per year). In this scenario, about the same number of water rights were impacted, involving about 10,800 acre-feet per year of surface water (about 3.5 billion gallons). In addition, and significantly, the uncommitted Highland Lakes water right had to be adjusted by 6,500 acre-feet per year to keep the modeled lakes from going dry. And freshwater inflows to Matagorda Bay were reduced by about 21,500 acre-feet per year.

Table 2. Impact of groundwater withdrawal of 40,000 acre-feet per year on Colorado River Water Rights

Colorado River Water Rights

Water Rights Negatively Impacted with 40,000 ac-ft/yr removed						
Ac-Ft/Yr Range of Impact:	>500	100-500	10-100	1-10	<1	TOTAL
No. impacted:	5	14	34	303	798	1,154
Average Ac-Ft/Yr Impacted:	5,383	3,161	1,245	800	237	10,826

Average % Reduced:	>= 4%	3.0-3.9%	2.0-2.9%	1.0-1.99%	<1.0%	TOTAL
No. Reduced:	16	10	116	473	547	1,162

- TCEQ WAM Run 3 for Colorado River with 1401 Water Rights (1940-1998)
- Flow Adjustment Record was used to reduce naturalized flow at Bastrop by 40,000 ac-ft/yr
- Comparing Volume Reliability Indexes

*** Uncommitted Highland Lakes Water Right was adjusted -6,500 ac-ft/yr to avoid taking lakes to zero**

*** Freshwater inflows to Matagorda Bay are reduced 21,522 ac-ft/yr.**

In the Brazos River scenario (Table 3) 265,700,000 acre-feet per year was removed to simulate loss of the historical gain to the Brazos River In this scenario, about 884 water rights were impacted, involving about 29,168 acre-feet per year of surface water.

Table 3. Impact of groundwater withdrawal of 40,000 acre-feet per year on Brazos River Water Rights

Brazos River Water Rights

Number of Water Rights Negatively Impacted with 265,700 ac-ft/yr removed						
Ac-Ft/Yr Range:	>1000	100-999	10-99	1-9.9	<1	TOTAL
No. impacted:	7	27	126	273	451	884
Average Ac-Ft/Yr Impacted:	17,044	7,151	3,910	916	147	29,168

Average % Reduced:	>= 10 %	5.0-9.9%	2.0-4.9%	1.0-1.9%	<1.0%	TOTAL
No. Reduced:	6	159	191	182	355	893

- TCEQ WAM Run 3 for Brazos River with 1307 Water Rights (1940-1997)
- Flow Adjustment Record was used to reduce naturalized flow at Hearn by 265,700 ac-ft/yr
- Comparing Volume Reliability Indexes

- No changes were made to any water rights records

USING ONLY WRID WITH 0 TARGET CHANGE (UNCOMPLICATED WATER RIGHTS)
DOES NOT CONSIDER WATER RIGHT RECORDS THAT HAD NO CHANGE OR POSITIVE CHANGE

The data shows that the water that GMA-12 intends to withdraw from the river to satisfy pumping is, for the most part, already allocated in surface water right permits. There is, for all practical purposes, no unallocated water available in the Bastrop segment of the Colorado River. That withdrawal of the historic groundwater inflows will impact the water rights of over 1,000 permit holders and involve over 10,000 acre-feet per year of surface water in the Colorado River basin and over 800 permit holders and involve over 29,000 acre-feet per year of surface water in the Brazos River basin. The water to implement the GMA-12 DFCs simply is not available without damaging surface water property rights and threatening river flows and freshwater inflows to the Bay, especially during extreme drought.

In reality, we know that the impact of a call on surface water rights does not spread the impact evenly among surface water right owners. To the contrary, since calls are made on a priority date basis, most of the impact is distributed among those water right permit holders that have a priority date later than that of the right being called.

Endnote:

Kennedy, Kirk, 2012. DETAIL RELIABILITY-25KAF BASTROP REDUCTION-pasted results-02202012.SWB.xls, DETAIL RELIABILITY-40KAF BASTROP REDUCTION-pasted results-02202012.SWB.xls. These are unpublished Excel files that will be provided to GMA-12 and/or Districts upon request.