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Of Counsel:

Rick Lowerre

September 19, 2018

Jim Totten

General Manager

Lost Pines Groundwater Conservation District

Via e-mail at jtotten@lostpineswater.org and hand delivery

Re: Request for Contested Case Hearing Regarding Application of Lower Colorado River Authority (LCRA) for Eight Operating and Transport Permits in Bastrop County, Texas (Well Nos. 58-55-5-0032; 58-55-5-0033; 58-55-4-0016; 58-55-4-0017; 58-55-4-0019; 58-55-4-0020; and 58-55-4-0021).

Mr. Totten:

On behalf of Environmental Stewardship, I am submitting this request for a contested case hearing regarding the above-referenced application. Environmental Stewardship is an organization whose purposes include ensuring that the supply and quality of water in the Colorado River Basin is adequate to meet environmental and inhabitant needs.

LCRA's proposed permit will result in unreasonable drawdowns within the impacted aquifers, which will have adverse impacts on groundwater and surface water resources.

Several members of Environmental Stewardship will be adversely impacted by the proposed permits.

Claire Snider Wunderlin and Michael Wunderlin are members of Environmental Stewardship. They own an approximately five-acre property near 352 Kelley Road near Bastrop, Texas. On this property they own a groundwater well, which is registered with Lost Pines Groundwater Conservation District as Well No. 5855712. This well is used as the source of water for the property, including the source of water for a pond that forms a wetland for a variety of flora and fauna including the endangered "Houston Toad" species. This well is relied upon to implement management activities that support the wildlife tax exemption for the property. The Wunderlin well draws water from the Carrizo and Calvert Bluff Aquifers, and are in such proximity to the proposed LCRA wells that the withdrawal of water as proposed will drain water

from beneath their property, and reduce the water level within their well. LCRA's modeling shows a drawdown at the Snider property of 250 feet to 300 feet in the Simsboro formation. Modeling by Mr. George Rice shows that the LCRA pumping will also result in drawdowns within the Calvert Bluff aquifer, including within the area where the Wunderlin well draws groundwater from that aquifer.¹ This drainage of water from beneath the Snider property, and drainage of water from the formations in which they own a well, will impact their use and enjoyment of their property and result in the impairment of their groundwater rights. Accordingly, Claire Snider Wunderlin and Michael Wunderlin would be adversely impacted by the proposed permits.

Hugh Brown is also a member of Environmental Stewardship. He owns more than 100 acres at 3026 County Road 316 near Lexington, Texas in Lee County. On his property he owns three wells, one which is completed into the Simsboro formation (Registration No. 5839948) and two completed in the Calvert Bluff formation (Registration No's 5839947 and 5839949). These wells are relied upon to implement management activities that support the wildlife tax exemption for the property. LCRA's modeling reflects a drawdown within the Simsboro Aquifer of approximately 150 feet beneath Mr. Brown's property. Considering the updip location of Mr. Brown's property, and the unconfined nature of the Simsboro Aquifer only a few miles from his property, the drainage of water from this aquifer as a result of LCRA's pumping in addition to other authorized pumping will potentially lower the water level to a degree that leaves his well dry.

Philip P. Cook is also a member of Environmental Stewardship. He owns three properties. The first is 4.981 acres at 1192 Shiloh Road with one well finished in the Hooper formation that is registered with Lost Pines Groundwater Conservation District (Registration No. 586120050) that is used for both domestic and agricultural uses. He owns two properties (2.2 acres) at 1182 Shiloah Road A and B with one well finished in the Hooper formation (Registration No. 586120016) that provides domestic use groundwater to both residences. Mr. Cook also owns part interest in a third well at 1193 Shiloh Road that is also finished in the Hooper formation and is for domestic use.

Environmental Stewardship is significantly concerned with the potential impact of the pumping requested by LCRA. George Rice, a hydrogeologist, has been engaged by Environmental Stewardship to examine the impact of LCRA's proposed pumping. As Mr. Rice's work shows, the Simsboro is connected to other aquifers in the area, and LCRA's pumping from the Simsboro will impact the water in those aquifers as well as the Colorado River.² LCRA's proposed pumping is not consistent with the desired future condition (DFC) for the area, and is not consistent with sustainable management of the aquifers in the area.

¹ Attachment A is a copy of a report compiled by George Rice regarding the impacts of LCRA's proposed pumping, which is incorporated into this request for all purposes.

² See Attachment A.

Please feel free to contact me if you have any questions.

Respectfully submitted,



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ATTACHMENT A

Evaluation of LCRA's Proposal to Pump 25,000 Acre-Feet per Year from the Simsboro Aquifer

George Rice
June 5, 2018

1.0 Introduction

The Lower Colorado River Authority (LCRA) is proposing to pump 25,000 ac-ft/yr from the Simsboro Aquifer in Bastrop County, Texas. The water would be pumped from eight wells.¹ The wells would be installed approximately eight miles north east of the city of Bastrop,² and would be screened from approximately 1000 feet to 1500 feet below land surface³. The pumping would be phased in: 8000 ac-ft/yr in phase I, 15,000 ac-ft/yr in phase II, and 25,000 ac-ft/yr in phase III.⁴

The effects of LCRA's pumping were estimated using the Lost Pines Groundwater Conservation District's (LPGCD) version of the *Central Queen City and Sparta Groundwater Availability Model (GAM)*⁵. The input files used to generate the results presented in this report were provided by the LPGCD⁶, or are modifications of LPGCD-provided files⁷. Figure 1 shows the geologic units represented in the GAM.

LCRA's pumping would affect groundwater levels and the discharge of groundwater to the Colorado River.

2.0 Effects on groundwater

2.1 Simsboro Aquifer

LCRA's pumping would reduce hydraulic heads in the Simsboro Aquifer. The effects would extend to both the confined and unconfined portions of the aquifer. Where the aquifer is confined, the reduction in heads will reduce water levels in wells that draw water from the aquifer. Where the aquifer is unconfined, the reduction in heads will dewater portions of the aquifer. Drawdowns in the Simsboro Aquifer due to LCRA's proposed pumping are shown in figure 2.

¹ LCRA, 2018, page 1 of 6.

² Proposed well 5 to be located approximately Lat. 30.183820, Lon. -97.219671 (LCRA, 2018, attachment C).

³ LCRA, 2018, page 2 of 6.

⁴ For the purposes of modeling it is assumed that phase I begins in 2020, phase II in 2023, and phase III in 2026 (DBS, 2018, page 2).

⁵ The GAM is based on the MODFLOW computer code developed by the U.S. Geological Survey (TWDB 2004, page 6-1).

⁶ LPGCD, 2013.

⁷ For example, the input flag in the stream flow routing file (qcsp_c_v1.02.str) was altered to instruct the model to print estimates of flow into or out of aquifers along each stream reach.

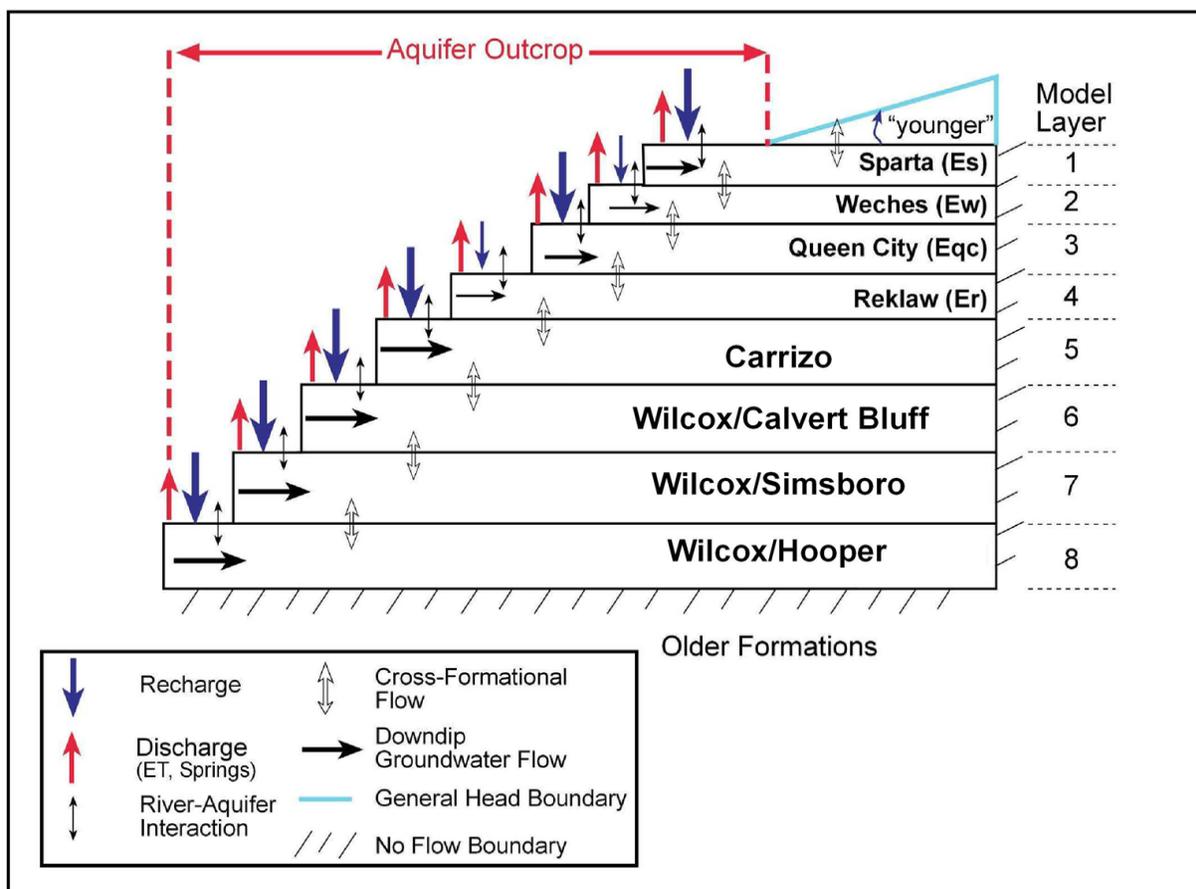


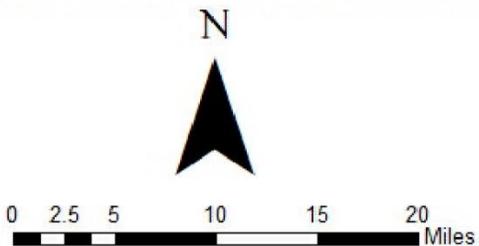
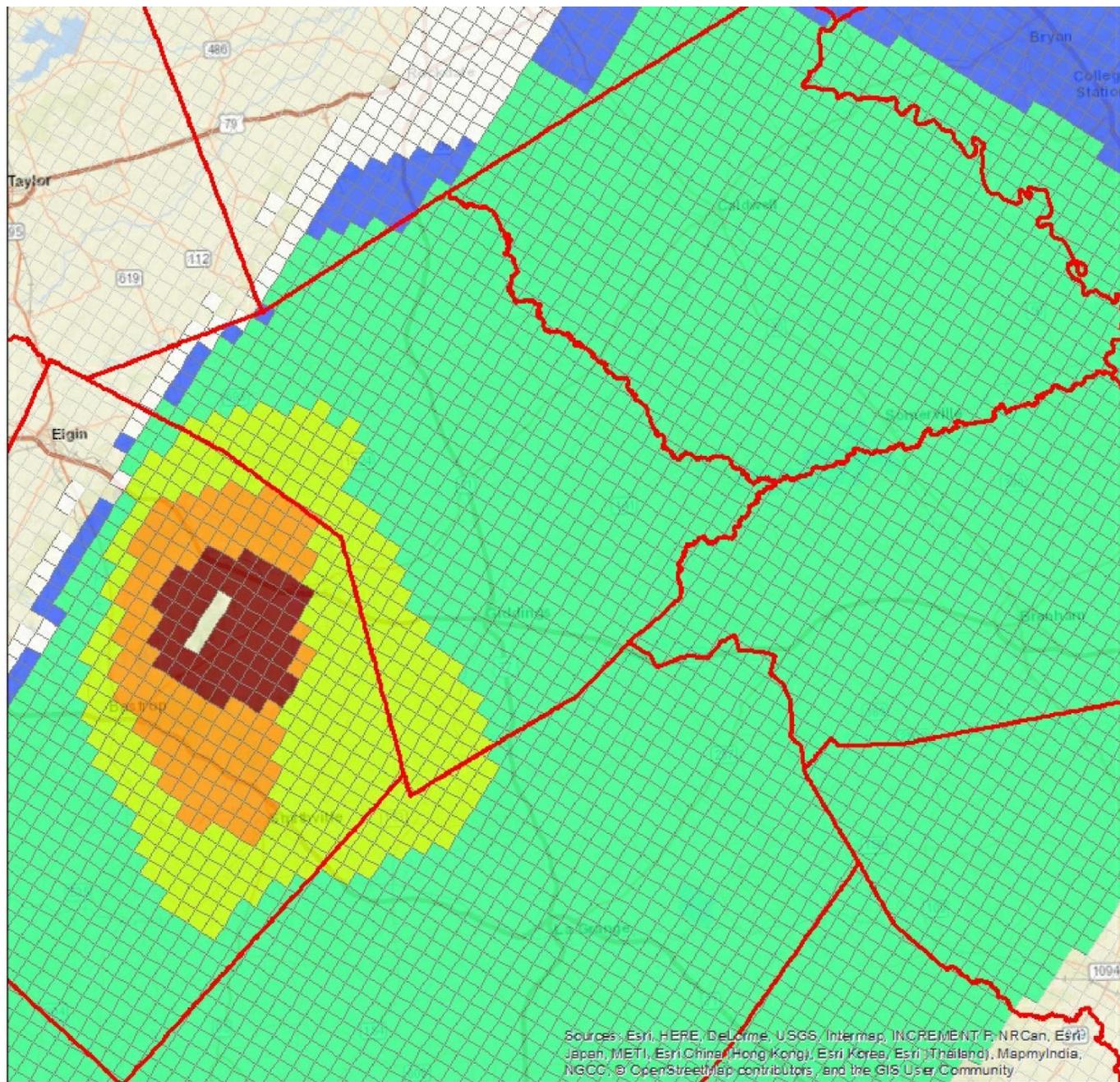
Figure 1
Geologic Units Represented in the GAM

2.2 Leakage from other aquifers

The effects of LCRA's pumping would not be limited to the Simsboro Aquifer. The pumping would induce leakage from the Calvert Bluff and Hooper aquifers. This leakage would reduce water levels in the Calvert Bluff and Hooper aquifers. In figure 1, leakage (cross-formational flow) between geologic units is indicated by double-headed arrows. In a 2009 pump-test conducted in Lee County, it was estimated that 22% of the water pumped from the Simsboro was derived from leakage from adjacent aquifers⁸.

Table 1 shows the effects of LCRA's pumping on the Calvert Bluff, Simsboro, and Hooper aquifers. It should be noted that the drawdowns shown in table 1 would be in addition to the drawdowns due to baseline pumping (table 2). Drawdowns in the Calvert Bluff and Hooper aquifers due to LCRA's proposed pumping are shown in figures 3 and 4.

⁸ Thornhill 2009, page 8.



Drawdown	
Light Green	10.000001 - 50.000000
Yellow-Green	50.000001 - 100.000000
Orange	100.000001 - 200.000000
Dark Red	200.000001 - 300.000000
White	-2.960000 - 0.000000
Light Blue	0.000001 - 5.000000
Dark Blue	5.000001 - 10.000000

Figure 2
Drawdown in Simsboro Aquifer Due to LCRA Proposed Pumping (2060)

Table 1
GAM Predicted Drawdowns in 2060 due to
LCRA Pumping of 25,000 acre-feet per year
From the Simsboro Aquifer⁹

Aquifer (model Layer)	Maximum drawdown at LCRA wellfield (ft)	Average drawdown throughout LPGCD (ft)	Average Drawdown in Bastrop County (ft)	Average Drawdown in Lee County (ft)
Calvert Bluff (6)	22	13	13	13
Simsboro (7)	339	60	80	37
Hooper (8)	22	17	16	18

Table 2
GAM Predicted Drawdowns between 2010 and 2060 due to Baseline Pumping¹⁰

Aquifer (model Layer)	Average drawdown throughout LPGCD (ft)	Average Drawdown in Bastrop County (ft)	Average Drawdown in Lee County (ft)
Carrizo (5)	28	20	34
Calvert Bluff (6)	84	53	118
Simsboro (7)	234	147	333
Hooper (8)	132	93	176

⁹ Drawdowns calculated by comparing GAM runs for baseline pumping, and baseline pumping plus proposed LCRA pumping of 25,000 acre-feet per year. The well file for the proposed pumping (Run151.wel) was created by DBS and provided by Jim Totten of LPGCD in May 2018. The baseline run used a modified version of Run151.well - the LCRA pumping of 25,000 ac-ft/yr was removed. The values were replaced with the values in the old baseline pumping file (Run50.wel).

¹⁰ Drawdowns for baseline pumping in 2060 minus drawdowns for baseline pumping in 2010.

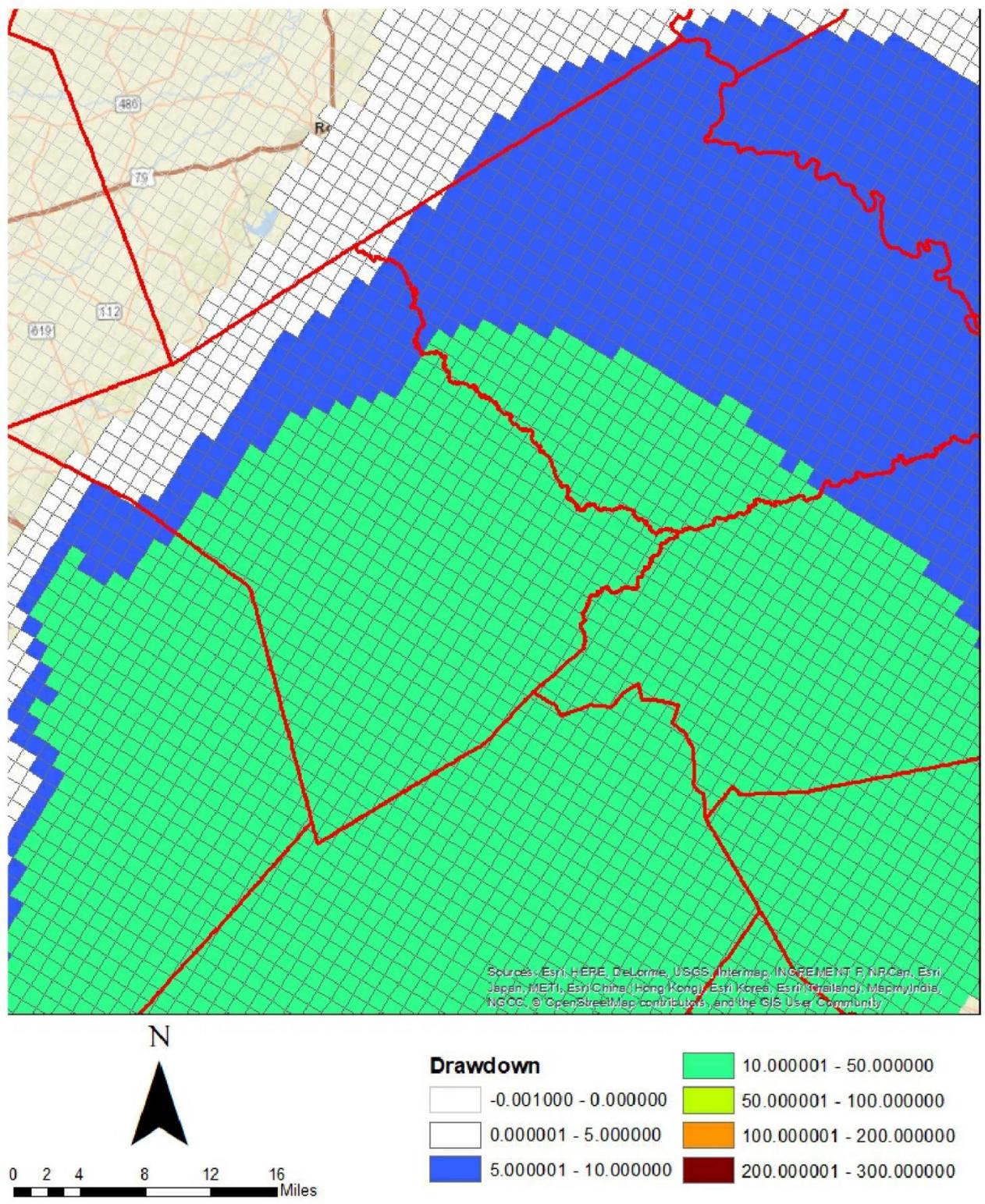


Figure 3
Drawdown in Calvert Bluff Aquifer Due to LCRA Proposed Pumping (2060)

3.0 Effects on groundwater discharges to Colorado River

As shown elsewhere, the GAM does not accurately predict the effects of pumping on the amount of groundwater discharged to the Colorado River. It does, however, reliably predict the trends in groundwater discharge resulting from pumping.¹¹ A new version of the GAM is being developed¹². One objective of the new GAM is *to help improve the capability to simulate surface water-groundwater interaction ...*¹³

Figure 5 shows that LCRA’s pumping would decrease groundwater discharge to the Colorado River.

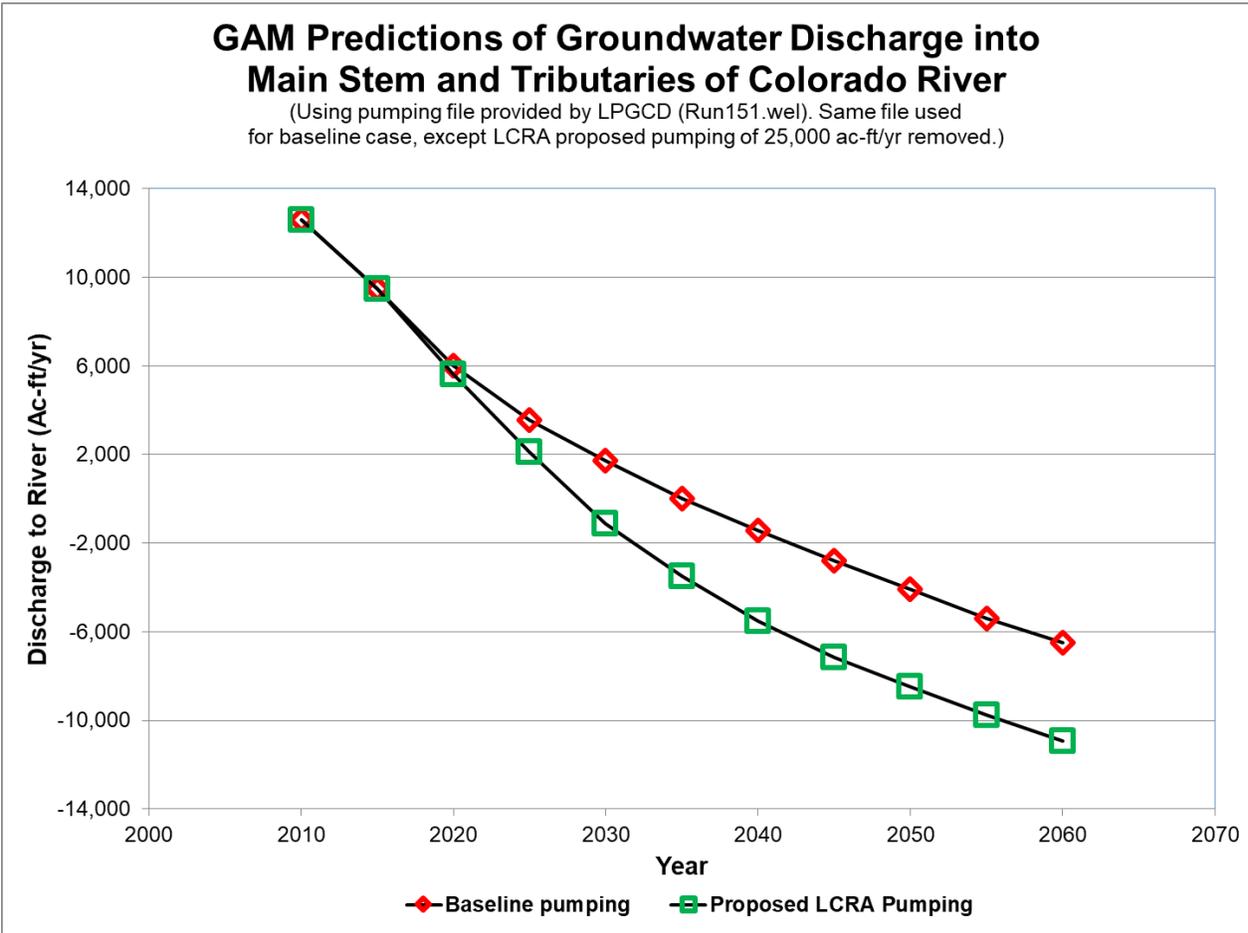


Figure 5
GAM Prediction of Groundwater Discharge to Colorado River and its Tributaries

¹¹ Rice, G., 2015, appendix 1.
¹² TWDB, 2017.
¹³ TWDB, 2017, page xiii.

4.0 Conclusions

LCRA's proposed pumping would:

- Reduce hydraulic heads in the Calvert Bluff, Simsboro, and Hooper aquifers.
- The reduced heads in the confined portions of these aquifers would cause water levels in wells to decline.
- Reduced heads in the unconfined portion of the aquifers (recharge area) would cause dewatering of portions of the aquifers.
- Reduce groundwater discharge to the Colorado River, thereby reducing the amount of water flowing in the river.¹⁴

References

DBS (Daniel B. Stephens & Associates, Inc.), 2018, *Memorandum to Jim Totten, General Manager, Lost Pines Groundwater Conservation District*, April 6, 2018.

LCRA (Lower Colorado River Authority), 2018, *Lower Colorado River Authority's Application for Groundwater Operating and Transport Permits for Griffith League Ranch*, submitted to the Lost Pines Groundwater Conservation District, February 21, 2018. Note: LCRA submitted eight applications on this date, one for each well.

LPGCD (Lost Pines Groundwater Conservation District), 2013, input, output, and summary files related to LPGCD's GAM runs.

Rice, G., 2015, *Effects of Vista Ridge Pumping on Groundwater and Surface Water in the Lost Pines and Post Oak Savannah Groundwater Conservation Districts*, Appendix 1
Reliability of GAM Groundwater Discharge Predictions, Amount and Trend of Discharge to Streams, September 22, 2015.

Thornhill (Thornhill Group, Inc.), 2009, *A Report of Results of Drilling and Testing Programs to Verify Ground-Water Supplies in the Simsboro Aquifer – Proposed End Op, LP Well Fields in Bastrop and Lee Counties, Texas*, April 15, 2009.

TWDB, 2004, *Groundwater Availability Models for the Queen City and Sparta Aquifers*, October, 2004.

TWDB, 2017, *Final Report: Field Studies and Updates to the Central Carrizo-Wilcox, Queen City, and Sparta GAM to Improve the Quantification of Surface Water-Groundwater Interaction in the Colorado River Basin*, August 2017.

¹⁴ It is possible that the reduction in flow caused by LCRA pumping would contribute to a reversal of the hydraulic relationship between the Colorado River and the Carrizo Wilcox aquifers. That is, LCRA's pumping, together with baseline pumping and other proposed pumping projects (e.g., End Op, Forestar), could result in the Colorado changing from a stream that gains water from the aquifers, to a stream that loses water to the aquifers.