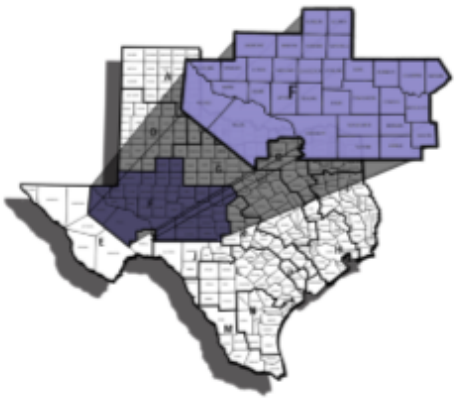

Texas Water Development Board
Regional Water Planning

Region F Regional Water
Planning Group

November 16, 2018

Jeff Walker
Executive Administrator
1700 North Congress Avenue
Austin, Texas78711-3231

RE: River Basin Modeled Available Groundwater Reallocation

Dear Mr. Walker,

The Region F Water Planning Group is proposing to reallocate Modeled Available Groundwater across River Basins in Upton County. The total Modeled Available Groundwater for the county **would not be altered**. The proposed changes are included in the attached memo.

These adjustments will help to eliminate artificial paper shortages that occur in this county due to methodologies applied to determine the availability by river basin. The fundamental differences between the DFC process and the regional planning process that are at the root of these artificial shortages are also documented in an attached detailed memo. Upton County lies within GMA 7, but has no GCD.

The Region F Water Planning Group considered and acted to approve this request at their November 15, 2018 RWPG meeting. Please call if you have any questions regarding this issue.

Sincerely,

John W. Grant

John Grant

Region F Chairman

**WSP AND**
**FREESE AND NICHOLS**
**TECHNICAL MEMORANDUM**

**TO:** Texas Water Development Board

**FROM:** James Beach, PG and Simone Kiel, PE

**SUBJECT:** River Basin MAG Reallocation –Upton County

**DATE:** October 8, 2018

WSP USA (formerly LBG-Guyton Associates) and Freese and Nichols, Inc. have performed an analysis to reallocate Modeled Available Groundwater (MAG) volumes between river basins in Upton County for the 2021 *Region F Water Plan.* In Upton County, it is proposed that 2,900 acre-feet of availability be shifted from the Colorado River Basin to the Rio Grande River Basin for the Edwards Trinity (Plateau), Pecos Valley and Trinity Aquifer. This is shown in Tables 1. **This would not change the total MAG availability for the county.**

**Table 1: Proposed Changes to Upton County Edwards Trinity (Plateau), Pecos Valley, and Trinity Aquifer Availability**

| **Upton County Edward-Trinity (Plateau) Aquifer** | **2020** | **2030** | **2040** | **2050** | **2060** |
|---|---|---|---|---|---|
| Existing Supply in Rio Grande Basin | 1,126 | 1,126 | 1,126 | 1,126 | 1,126 |
| Existing Supply in Colorado Basin | 21,243 | 21,243 | 21,243 | 21,243 | 21,243 |
| **Existing Total Supply in Upton County** | **22,369** | **22,369** | **22,369** | **22,369** | **22,369** |
| Proposed Supply in Rio Grande Basin | 4,026 | 4,026 | 4,026 | 4,026 | 4,026 |
| Proposed Supply in Colorado Basin | 18,343 | 18,343 | 18,343 | 18,343 | 18,343 |
| **Proposed Total Supply in Upton County** | **22,369** | **22,369** | **22,369** | **22,369** | **22,369** |

A brief description of the applied methodology follows:

Groundwater Availability Models (GAMS) are developed by locating and implementing pumping in grid blocks based on the location of existing public water supply wells, irrigated areas, and mining operations. In addition, distributed demands such as livestock and rural domestic pumping are distributed across aquifer areas based on population, land use, and other factors. This pumping distribution is generally used in the calibration runs and predictive runs with the GAM.

During the first round of joint planning in the groundwater management area (GMA) 7, a process employing predictive simulations was used to develop the modeled available groundwater (MAG) estimates. Total pumping was assigned only at the county scale and not on a more localized basis. The total pumping in a county in the predictive runs was then allocated to the grid block level (1 square mile) based on the percent of the total pumping that was allocated to each grid block in the calibration model. As an example, assume that the sum of all of the GAM pumping cells in a county equaled 5,000 acre-feet per year in the original calibration well file and that GMA 7 chose to increase that total pumping amount to 7,500 acre-feet per year in the predictive run. To "ramp up" the total pumping in the predictive run, the pumping in each cell would be multiplied by 1.5 (7,500 / 5,000). A side effect of the method used by GMA 7 is that pumping can be skewed toward a particular area or cell that had a higher pumping rate in the calibration model, and this could be done without considering the type of demand increase or the precise location of the pumping. For example, if a single cell had a pumping rate of 500 acre-feet per year, then the rate at that location would increase by 250 acre-feet per year. The result of applying an equal percentage increase is that the method can create skewed distributions of pumping to specific locations with disregard for the type of pumping increase or the location of that increased demand.

This type of "ramping" is adequate and perhaps even preferable for the purposes of estimating a desired future condition (DFC) on a county or regional basis. However, because the TWDB planning process requires that groundwater availability be split by county and basin, and because the basin split was usually not contemplated in developing the DFC and resulting MAG, the resulting TWDB MAG splits along county and basin boundaries can cause artificial needs. Simply put, the requirement to split MAGs along basin boundaries was not anticipated in the DFC process because it usually has no physical relevance to the DFC and is a construct of the regional water planning process. These artificial needs could be reconciled by acknowledging the disconnect between the joint groundwater planning (DFC) process and the TWDB Regional Water Planning process. For practical purposes, shifting a portion of the MAG from one river basin to another within the same county would avoid artificial needs and the resulting strategies required to meet those needs while maintaining the integrity of the DFC and RWP processes.