

October 27, 2022

Revised Comments following October 17, 2022, Initial public hearing for GMD No. 1 Proposed 4-County LEMA, original comments provided on October 13 & 14, 2022

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Kansas Department of Agriculture

re: GMD No. 1 4-County Proposed LEMA (LEMA)

Revised Comments regarding: Proposed LEMA Geographic boundaries and proposed LEMA pumping allocations within those proposed boundaries

As with my earlier comments, most of my analysis was done in Scott County where our family farm is located. Some additional analysis was also done for neighboring Lane County.

And let me state that I fully support the implementation of a LEMA as soon as possible to at least partially address significant water level decline issues that exist in much, but not all, of the 4-county area covered by the proposed GMD No. 1 LEMA.

However, one does not address a problem in an area of recent water level decline by using proposed LEMA calculation techniques such as the use of authorized acres for individual permits. The use of authorized acres in nearly all cases in Scott County does not relate in any significant way to recently irrigated acres and the recent historical water use on those acres. The record shows that the use of authorized acres for the LEMA calculation was chosen by the GMD to get more of the water users in a county to have “skin in the game” in the form of required LEMA pumping reductions. But, when over 63% of the recent historical irrigated water use is applied on only 33.5% of the area covered by GMD No. 1 in Scott County, this “spread the pain” effect is essentially sending a portion of the bill for the recent water level decline in heavy water use areas of Scott County to other users in the county that are not significantly causing or experiencing the continuing water decline problem that exists in one-third of the county that is using over 63% of the irrigated water that is under GMD management.

The two most significant guideposts of any proposed LEMA are as follows:

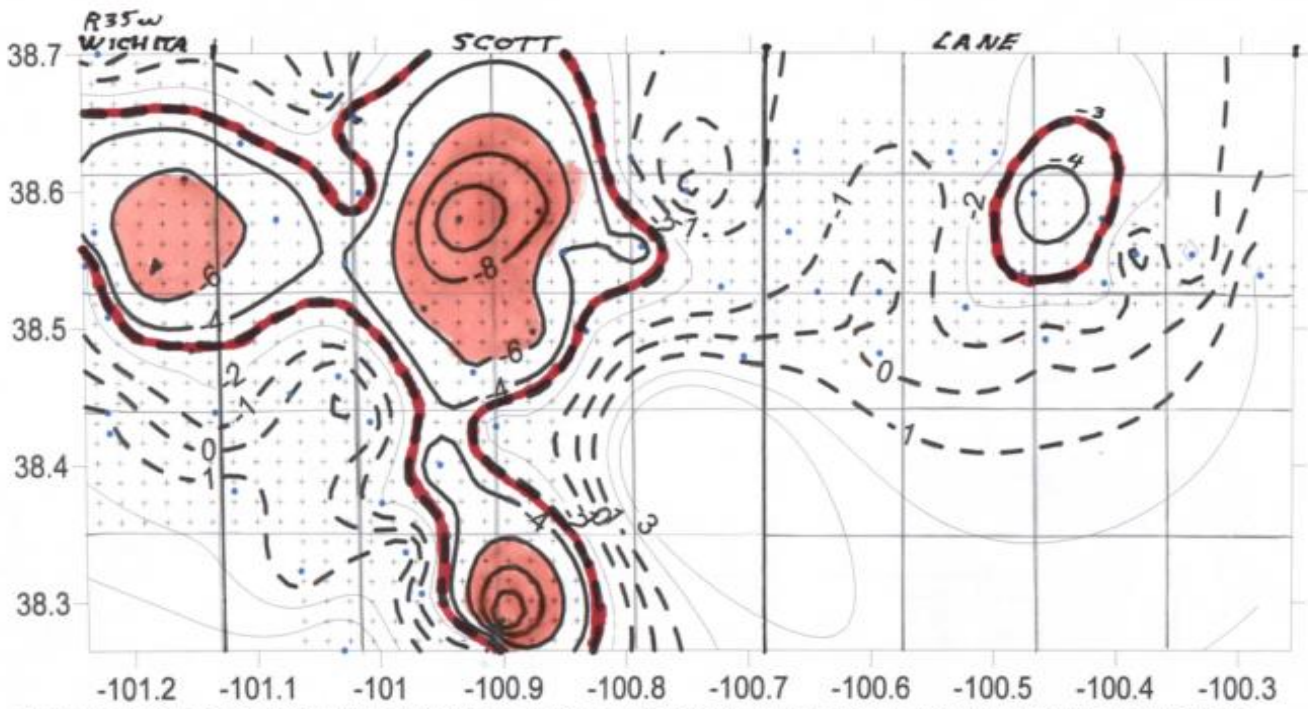
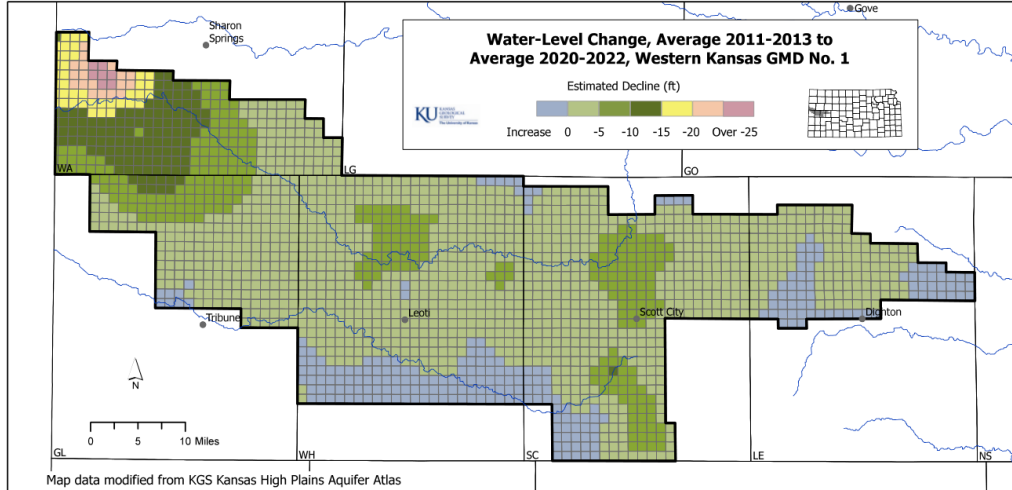
- (1) Is the area covered by the proposed LEMA conservation control measures experiencing a defined significant recent historical water level decline; and
- (2) Do the LEMA control measures effectively and fairly allocate any reductions in total water use within the areas with decline issues to all irrigation water users in those areas of decline?

The written testimony of GMD No. 1 at the Hearing on October 17 used water level declines from predevelopment water levels to current water levels to justify that it was appropriate the use “all of the GMD No. 1 in the 4-County area” as the appropriate geo boundary for the LEMA.

Only the attached KGS exhibit by Brownie Wilson showed areas of the GMD in the 4-County area where the water level showed an averaged increase in the most recent 10-year period. However, the KGS 5-foot contour levels are too wide to show the minus 2-foot contour that I recommend below that could be used as the “marker” for LEMA controls that are needed due to significant recent 10-year water level declines that are occurring in less than 50% of the GMD’s area in Scott and Lane counties. The minus 2-foot 10-year contour clearly shows that water level declines in the Scott County trough area are caused by and correlate to the high water use in the trough area (defined as water use within 2-mile radius of the section centers located in the trough area). The water level decline from the high-water use area west of Pence is shifted a few miles south due to being commingled with a nearby higher use area concentrated to the south and west in Wichita county that is outside the proposed 4-county LEMA.

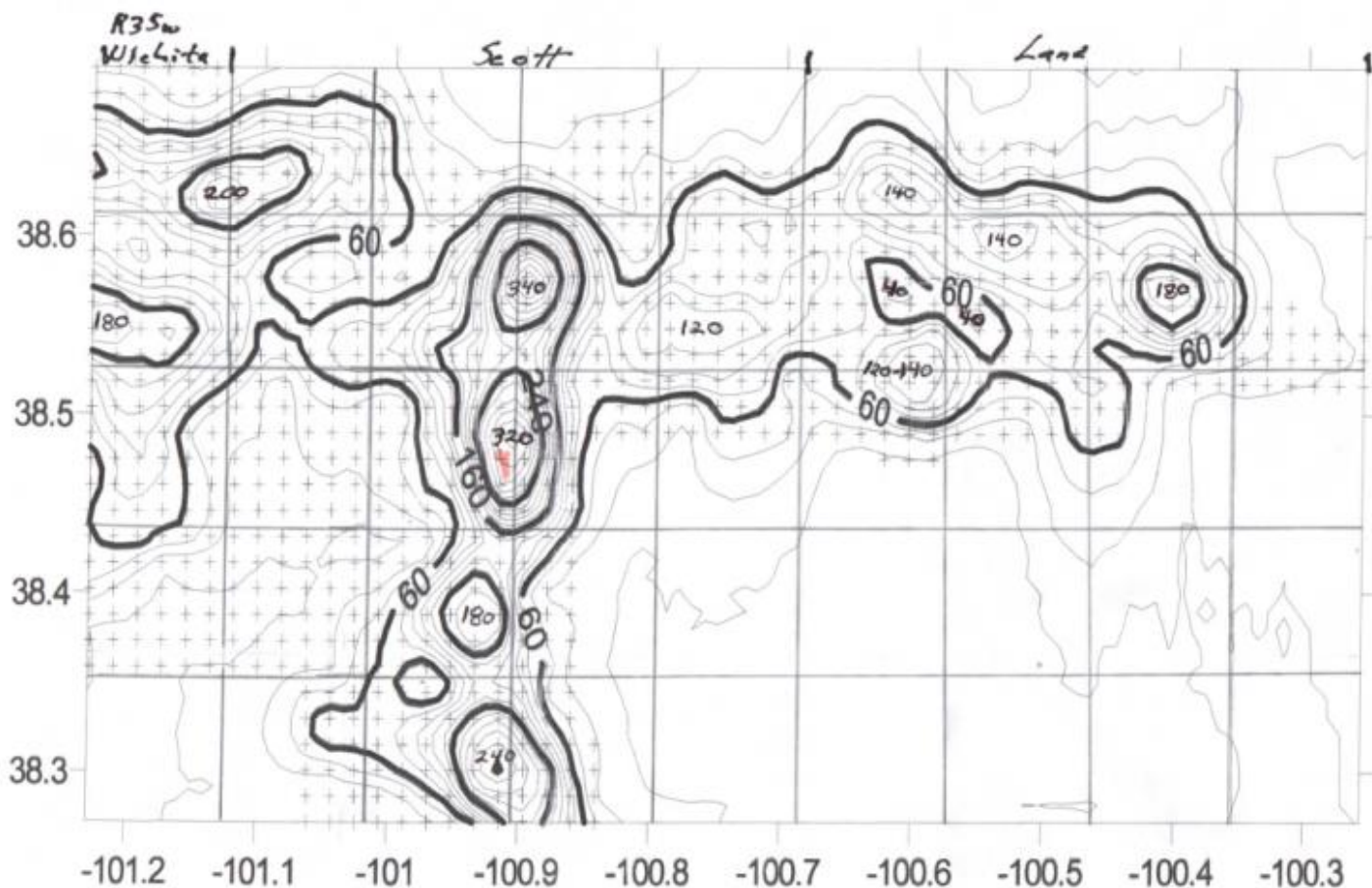
KGS recent water-level change map

final-written-testimony-1st-public-hearing-fci-with-exhibits-(01344696x3760)-1.pdf - [Microsoft Word - 01344630.DOCX] - SumatraPDF



10-Year (Jan2012 to Jan2022) Observation Well Water Level Change with Section centers (per 10 yrs, not per yr). Observation wells in blue.

Scott county, Lane county and Range 35 Wichita county areas within GMD No. 1



Average 10-Year (2012 to 2021) Water Use within a 2-mile radius of Indicated Section centers (not to scale to fit page)
 Range 35 Wichita county, Scott county and Lane County areas within GMD No. 1

The proposed LEMA boundaries and rules need to be revised to more fairly allocate LEMA conservation measures among water users in the areas of the GMD that are in decline and target LEMA conservation measures to only those areas of the GMD with significant water level declines. My modifications to the Proposed LEMA to accomplish these goals more effectively are as follows:

- (1) Areas of individual or neighboring counties within GMD 4-county area (Wallace and Greeley together or separate and Scott and Lane in the same manner) that are not experiencing a significant recent 10-year average water level decline (Jan 2012 to Jan 2022) should not be included within LEMA-controlled geographic boundaries for those counties.
- (2) Areas with significant recent water level declines within for each county or combined counties could be defined by the average 10-year water level decline of all measured observation wells within the GMD areas of the county or counties. This concept would also provide some incentive for water users in LEMA-controlled areas to try and get their individual areas of water level decline below the county average water level decline.

For instance, the average 10-year water level decline of all measured observation wells in Scott County is 2.56 feet according to my individually vetted annual water level measurements (includes a few observation wells in the county but outside the GMD), and this could be rounded down to the next whole number which is -2 feet to define the LEMA-controlled boundary more conservatively for points of diversion in significant decline areas of Scott County. Points of diversion within any section that touches the specified LEMA boundary would be subject to the LEMA-specified conservation measures for that area. One can see from the attached water level

change maps and historical water use maps that application of this concept closely targets proposed LEMA conservation measures to those areas with both large irrigation water use and larger-than-average water level declines for the county.

Lane County had an average decline of 1.36 feet which would be rounded down to the next whole number which is -1 feet to define the LEMA-controlled area for that county. This is cutting it pretty fine, and only modest LEMA controls may be appropriate for any Lane County LEMA-controlled area. Possibly, a minimum 10-year average decline of a least 2 feet should apply before defining the area in Lane County as needing LEMA-specified conservation measures at this time. At the minus 2 feet decline geo boundary definition, only a relatively small area of northeastern Lane County would be subject to LEMA controls.

- (3) Areas of counties that are not experiencing significant water level declines as defined in (1) and (2) either have their area's recent water use approximates the aquifer recharge rate or that their area is in equilibrium with close by neighboring areas and that the combined area's water use approximates the aquifer recharge rate for the combined area.

Use of even county-level data is problematic for appropriate definitions of geo boundaries for the LEMA. This is illustrated by the following KGS analysis of a portion of the high-use "trough" area north of Scott City. This study covered nine years of historical water use through 2016 that was done a few years ago for the GMD, but the finding would be very similar today. It showed that this high-use area of 5 miles radius from the Scott index well averaged approximately 207 ac-ft/year per square mile over this 78.5 square mile area for the 9-year period. To stabilize this area and bring water use into equilibrium with recharge, water use per square would need to be reduced by 38.6% to approximately 127 ac-ft/year per square mile. Significant high use also extends from this north "trough" area for another 10 miles south and west along 83 hwy to the Finney County line. The Pence west area is another high use area that is in the northwest part of Scott County.

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