



KANSAS STATE
UNIVERSITY

Preferences for GMD 1 Irrigation Water Management



You can complete this survey online
using the QR code or url.



<http://bit.ly/gmd1s1yr86>

Thank you for completing this survey so that we can better understand the true preferences of farmers over groundwater management.

Background Information

The board of directors of GMD 1 can recommend approval of a Local Enhanced Management Area (LEMA) to address water supply declines in specific areas. GMD 1's proposed LEMA for Wichita County was recently approved. GMD 1 is considering whether LEMAs in other portions of the District should be developed, and if so, what these other LEMAs should look like. Typically, a LEMA develops multi-year water use allocations to reduce the decline in the aquifer. To provide some context, Kansas Geological Survey (KGS) estimates that the following reductions in water use would stabilize water levels for the next decade or so for each county: 46% in Wallace, 22% in Greeley, 27% in Wichita, 17-38% (depending on location) in Scott, and 21% in Lane.

In the first part of the survey, to learn about your preferences regarding LEMAs, we will present you with several choice scenarios. In each, you will be asked whether you prefer to have a LEMA with certain characteristics or instead no LEMA. Each LEMA will be defined by the overall goal for reductions in water use and the means to accomplish the reductions (i.e., the method of assigning allocations).

Goal for Overall Reduction in Water Use

To keep the scenarios easier to understand, we express the water reduction goal as a percent reduction in area-wide average use. This does not necessarily mean that each water right in the area would be required to reduce water use by that percentage. How much each water right must reduce water use depends on the method of assigning the allocations.

Method of Assigning Allocations

Each method described in the table below can be implemented to give the same area-wide average reduction in water use, but the volume of water that your right is allocated depends on the method used to assign these allocations.

Allocation Method	Description
Percent of Historical Water Use	Allocation is equal to a percent of the average volume pumped in a recent multi-year period.
Percent of Water Right Authorized Quantity	Allocation is equal to a percent of the water right's authorized (certified) quantity.
Inches using Average Irrigated Acres	Allocation = Inches × LEMA Acres where LEMA Acres are calculated as the average of irrigated acres for a recent, multi-year period.
Inches using Maximum Irrigated Acres	Allocation = Inches × LEMA Acres where LEMA Acres are calculated as the maximum of irrigated acres for a recent, multi-year period.
Inches using Water Right Authorized Acres	Allocation = Inches × LEMA Acres where LEMA Acres are the authorized acres according to the water right.

To achieve a given reduction in water use within an area, the percent reduction would need to be larger if using water right authorized (certified) quantity versus historical water use. The inch allocation would need to be smaller if using maximum irrigated acres or water right authorized acres versus average acres.

According to Kansas water law, vested water rights cannot be affected. When considering the scenarios, please assume that vested water rights are exempt from LEMA allocations.

In each choice scenario below we ask whether you prefer a particular LEMA or instead No LEMA. Please consider each scenario separately. If you instead base your choice in one scenario on information provided in a different one, prior research suggests that this may provide inaccurate results, which we wish to avoid. Please mark your preference separately for each choice scenario.

1. Choice Scenario #1

	LEMA	No LEMA
Goal for Reduction in Water Use	10%	Water use only limited by existing water rights.
Method of Assigning Allocations	Inches using Average Irrigated Acres	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>



2. Choice Scenario #2

	LEMA	No LEMA
Goal for Reduction in Water Use	20%	Water use only limited by existing water rights.
Method of Assigning Allocations	Percent of Historical Water Use	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>

3. Choice Scenario #3

	LEMA	No LEMA
Goal for Reduction in Water Use	20%	Water use only limited by existing water rights.
Method of Assigning Allocations	Inches using Average Irrigated Acres	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>

4. Choice Scenario #4

	LEMA	No LEMA
Goal for Reduction in Water Use	15%	Water use only limited by existing water rights.
Method of Assigning Allocations	Percent of Water Right Authorized Quantity	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>

5. Choice Scenario #5

	LEMA	No LEMA
Goal for Reduction in Water Use	15%	Water use only limited by existing water rights.
Method of Assigning Allocations	Inches using Maximum Irrigated Acres	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>



6. Choice Scenario #6

	LEMA	No LEMA
Goal for Reduction in Water Use	20%	Water use only limited by existing water rights.
Method of Assigning Allocations	Inches using Water Right Authorized Acres	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>

7. Choice Scenario #7

	LEMA	No LEMA
Goal for Reduction in Water Use	25%	Water use only limited by existing water rights.
Method of Assigning Allocations	Inches using Maximum Irrigated Acres	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>



8. Choice Scenario #8

	LEMA	No LEMA
Goal for Reduction in Water Use	25%	Water use only limited by existing water rights.
Method of Assigning Allocations	Percent of Water Right Authorized Quantity	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>

9. Choice Scenario #9

	LEMA	No LEMA
Goal for Reduction in Water Use	10%	Water use only limited by existing water rights.
Method of Assigning Allocations	Inches using Water Right Authorized Acres	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>



10. Choice Scenario #10

	LEMA	No LEMA
Goal for Reduction in Water Use	10%	Water use only limited by existing water rights.
Method of Assigning Allocations	Percent of Historical Water Use	
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>

11. Indicate below what you think is the 1st best, 2nd best, and worst option for the overall goal of reductions in water use in the area where you irrigate.

	0%	2.5%	5%	10%	15%	20%	25%	>25%
1st Best	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2nd Best	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worst	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Indicate below what you think is the 1st best, 2nd best, and worst option for the method of assigning allocations if a LEMA were to be implemented in the area where you irrigate.

	Percent of Historical Water Use	Percent of Water Right Authorized Quantity	Inches using Average Irrigated Acres	Inches using Maximum Irrigated Acres	Inches using Water Right Authorized Acres
1st Best	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2nd Best	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worst	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

13. There are some areas in GMD 1 that have a larger remaining saturated thickness of the aquifer. These areas of the aquifer are often declining at a faster rate but also have a longer estimated life of the aquifer due to a larger current supply. Which option do you think is best?

- Decrease water use **less** in these areas
- Decrease water use **the same** in these areas
- Decrease water use **more** in these areas

14. Water right seniority is determined by when a water right was first established. Older water rights are more senior and have greater protection under the law. Should more senior non-vested water rights within the GMD be given larger LEMA allocations than junior water rights? (Note: Vested rights are exempt from any LEMA.)

Yes

No

15. Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The GMD should more actively manage groundwater use for the good of existing water rights.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The GMD 1 Board should just put together what they think is the best LEMA plan and start the approval process.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would like to provide additional input before the GMD 1 Board starts the approval process for a new LEMA plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The state is likely to regulate groundwater use if farmers do not take measures to reduce use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any reductions in water use should be voluntary.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Neighboring water rights in my area(s) would be willing to voluntarily reduce water use without mandatory reductions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irrigators should conserve groundwater for future generations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water rights are a private property right.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If no actions are taken to reduce water use, then water right owners in my area(s) are likely to file impairment complaints to reduce the use of those with junior water rights.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know the seniority of my water right(s) relative to neighboring rights in my area(s).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16. Please write the number of wells that you manage with the respective well capacities.

< 200 gpm	<input type="text"/>	wells	400-500 gpm	<input type="text"/>	wells
200-300 gpm	<input type="text"/>	wells	500-700 gpm	<input type="text"/>	wells
300-400 gpm	<input type="text"/>	wells	> 700 gpm	<input type="text"/>	wells

17. When thinking about groundwater management, it is important to consider how irrigators value future benefits versus current benefits. For each scenario below, select whether you would prefer to receive a payment of \$10,000 today or instead the indicated higher amount 5 years from now. Although these choices are hypothetical, please answer as if real money were on the line.

Scenario	Payment Today	Payment in 5 Years
1	\$10,000 <input type="checkbox"/>	\$12,763 <input type="checkbox"/>
2	\$10,000 <input type="checkbox"/>	\$16,105 <input type="checkbox"/>
3	\$10,000 <input type="checkbox"/>	\$20,114 <input type="checkbox"/>
4	\$10,000 <input type="checkbox"/>	\$30,518 <input type="checkbox"/>
5	\$10,000 <input type="checkbox"/>	\$44,840 <input type="checkbox"/>
6	\$10,000 <input type="checkbox"/>	\$75,938 <input type="checkbox"/>

18. Another important consideration is understanding irrigators' attitudes towards risk. The table below lists several choice options (gambles), each involving a 50% chance of receiving a high payment or a 50% of a low payment. The particular payment amounts vary across options. Please select the one option you would prefer most.

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Low Payment (50% chance)	\$10,000	\$9,750	\$9,500	\$9,250	\$9,000	\$8,750
High Payment (50% chance)	\$10,000	\$10,275	\$10,545	\$10,812	\$11,075	\$11,330
I would prefer... (check one)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. Consider all the water rights that you manage. Please write the percent of acres associated with each of your possible roles.

Your Role	Percent of acres (0-100)
Owner-operator	%
Tenant	%
Landlord	%
Other:	%

20. Do you expect a younger family member to continue farming after you retire?

Yes

No

Not applicable

21. On average, what percent of your total household income comes from farming?

%

22. What is the total size of your operation for which you are either owner-operator, tenant, or landlord? (Please remember that individual survey responses will never be shared. Results will be aggregated so that individual responses cannot be identified.)

	Size
Irrigated	acres
Nonirrigated	acres
Pasture	acres
Livestock	head

23. Please write the approximate percent of irrigated acres that you manage in each county.

County	Percent of irrigated acres (0-100)
Wallace	%
Greeley	%
Wichita	%
Scott	%
Lane	%

24. What is your gender?

Male

Female

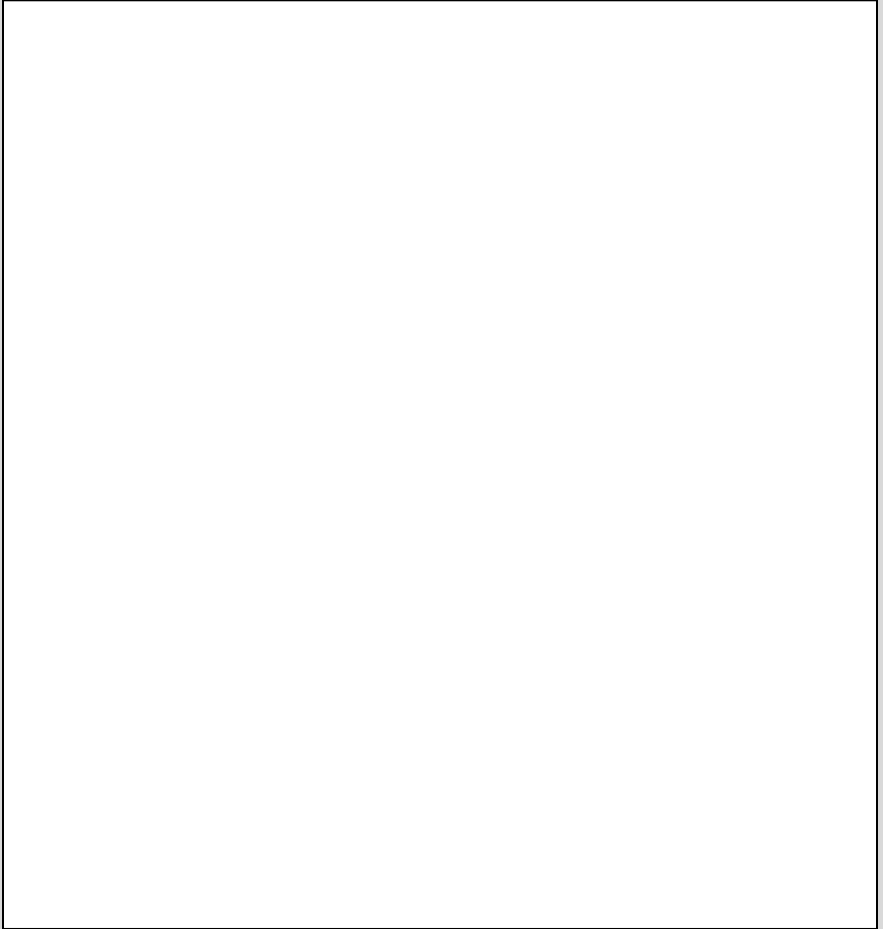
25. In what year were you born?

____ _

26. Please indicate the highest level of education you have completed.

<input type="checkbox"/> No diploma	<input type="checkbox"/> Technical / Junior college
<input type="checkbox"/> High school diploma / G.E.D.	<input type="checkbox"/> Bachelor's degree
<input type="checkbox"/> Some college, but no degree	<input type="checkbox"/> Graduate degree

27. Please provide any comments you may have concerning groundwater management in GMD 1 or any issues related to this research.

A large, empty rectangular box with a thin black border, intended for the respondent to provide comments on groundwater management in GMD 1 or related issues.

**THANK YOU VERY MUCH FOR COMPLETING AND
RETURNING THIS SURVEY!**



**WESTERN KANSAS GROUNDWATER
MANAGEMENT DISTRICT NO.1**

**KANSAS STATE
UNIVERSITY**

Dear GMD 1 Irrigator,

About a month ago, we sent a letter about a partnership between GMD 1 and Kansas State University to learn about the preferences of farmers and landowners as it relates to groundwater management within GMD 1, and in particular your views on Local Enhanced Management Areas (LEMAs). If you have already completed the survey you may discard this letter and the enclosed survey. If you have not yet completed the survey, we want to encourage you to complete and return the survey as soon as possible. Your honest responses to this survey will provide important information to assist in the development of future water policy in GMD 1.

The survey is being sent to all individuals who reported irrigation water use or own a water right in GMD 1. Please note that the survey responses will not impact the Wichita County LEMA that was recently approved to start this year. However, the responses will inform future water policy throughout the district. It is important for the accuracy of our analysis that you answer the questionnaire as completely and honestly as possible. For the results to be representative of irrigators in your area, it is important that everyone respond to the survey. Researchers at Kansas State University designed the survey and will analyze the responses. This study is being funded with support from the U.S. Department of Agriculture.

Your participation in this survey is voluntary and you may withdraw from the survey at any time. Only the research team will have access to information that identifies you. When reporting results, information collected from you will be combined with responses from others, and no individual responses will be identifiable to those outside this research study, nor with the GMD board. The addresses for the survey were provided by the Kansas Department of Agriculture as the address associated with the owner or a water use correspondent for a water right. You must be at least 18 years old to participate in the study.

If you have any questions about this study, please feel free to contact Nathan Hendricks.

Sincerely,

Kyle Spencer
GMD 1 Manager

Nathan P. Hendricks
Professor
Department of Agricultural Economics
Kansas State University
phone: (785) 320-0614
email: nph@ksu.edu

Western Kansas GMD No. 1 Considerations of Additional LEMAs

**For GMD 1's 2021 Annual Meeting
August 11, 2021**

**By Kyle Spencer, District Manager and
David Barfield, consultant**

1

Introduction

- The GMD 1 Board has long supported water conservation to extend aquifer benefits:
 - Cost-share programs, education and research
 - Support Wichita County WCA development
- 2012 Amendments to the GMD Act to allow for the creation of Local Enhanced Management Area (LEMAs).
 - 2013-14: District-wide LEMA development; total vote count showed insufficient support for the proposed plan
 - 2018-20: The Board again discusses LEMAs for the District; decided to move forward with Wichita County LEMA first as it had the greatest support, the most urgent need, and to gain experience in LEMA processes.
 - 2021: Approval and implementation of Wichita County LEMA for 2021-2025

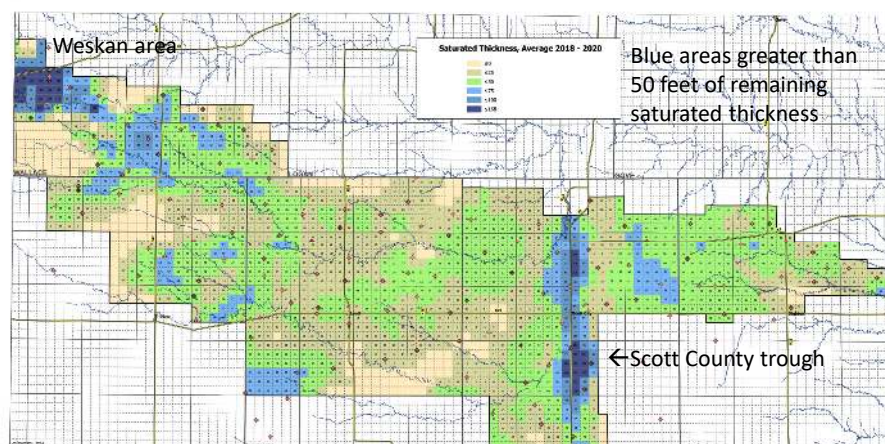
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Board's On-going Consideration of Additional LEMA(s)

- Fall 2020: The GMD Board re-starts discussions on additional LEMA(s) to fulfill its mission to extend the useful life of the aquifer.
- Hired technical help: David Barfield, retired Chief Engineer
- Board's objectives for additional LEMAs:
 - "Get Started LEMA": the goal is not sustainability, but a significant step to extend the life of the aquifer; encourage maximum economic benefit
 - Overall savings of approximately 10-15%
 - Maximum reduction of 25% to individual waterusers, smaller reductions for limited water users
 - Allocation method different than the Wichita County LEMA
 - Provide as much flexibility as possible: 5-year allocations; group allocations

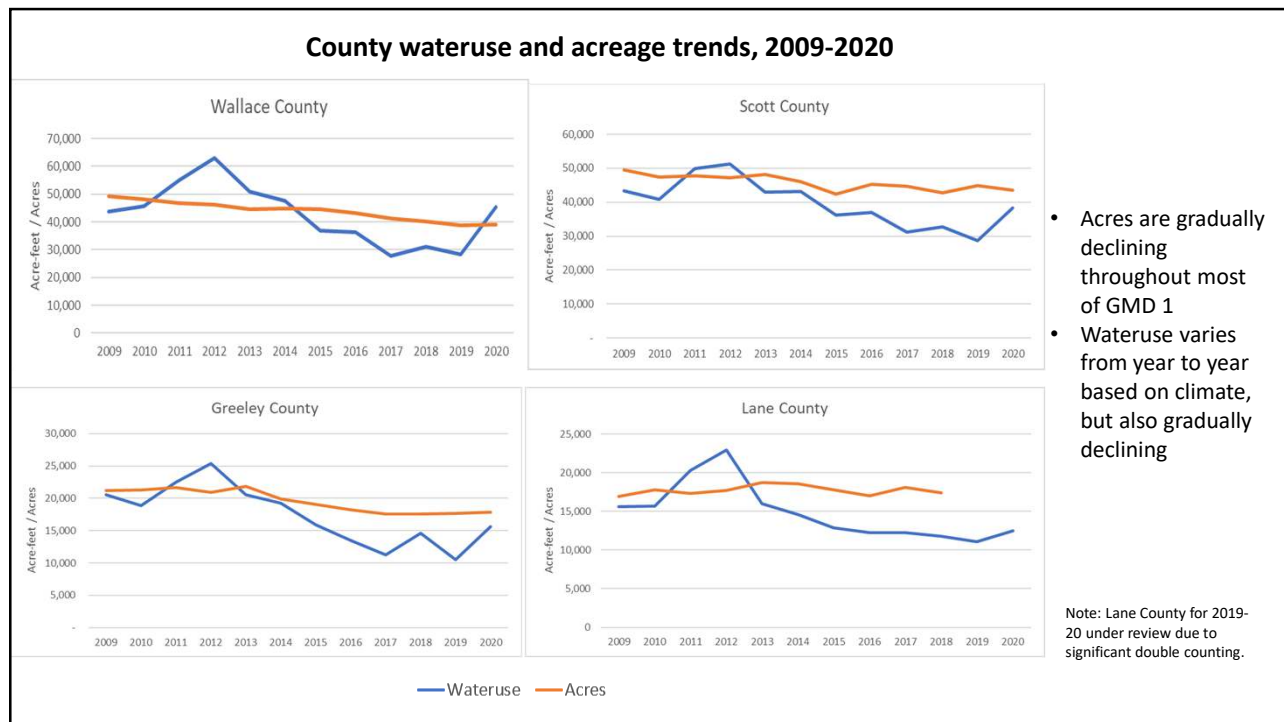
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Current situation



- Limited saturated thickness and well yields in much of the District, with the exception of the "Weskan" area and the Scott County trough.
- Yet, significant use remains and the desire to extend the benefits into the future

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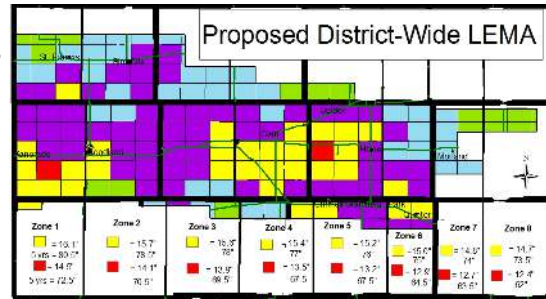
LEMA statute – Process and key provisions

- LEMA process
 - [Alternative to IGUCA process where the Chief Engineer conducts hearing(s) to determine “corrective controls” to address ground water declines.]
 - In LEMAs, GMD develops a plan to address groundwater declines, including goals and proposed regulation to reduce use. The Chief Engineer conducts hearings to determine if the GMD’s plan should be adopted.
- The heart of LEMAs is its **“corrective controls,”** typically water use **allocations** that implements reduced groundwater use.
- LEMAs typically **provide flexibility** in use of allocations (multi-year, and at times, allowing allocations to be grouped or moved around)
- Other elements: appeal process; enforcement

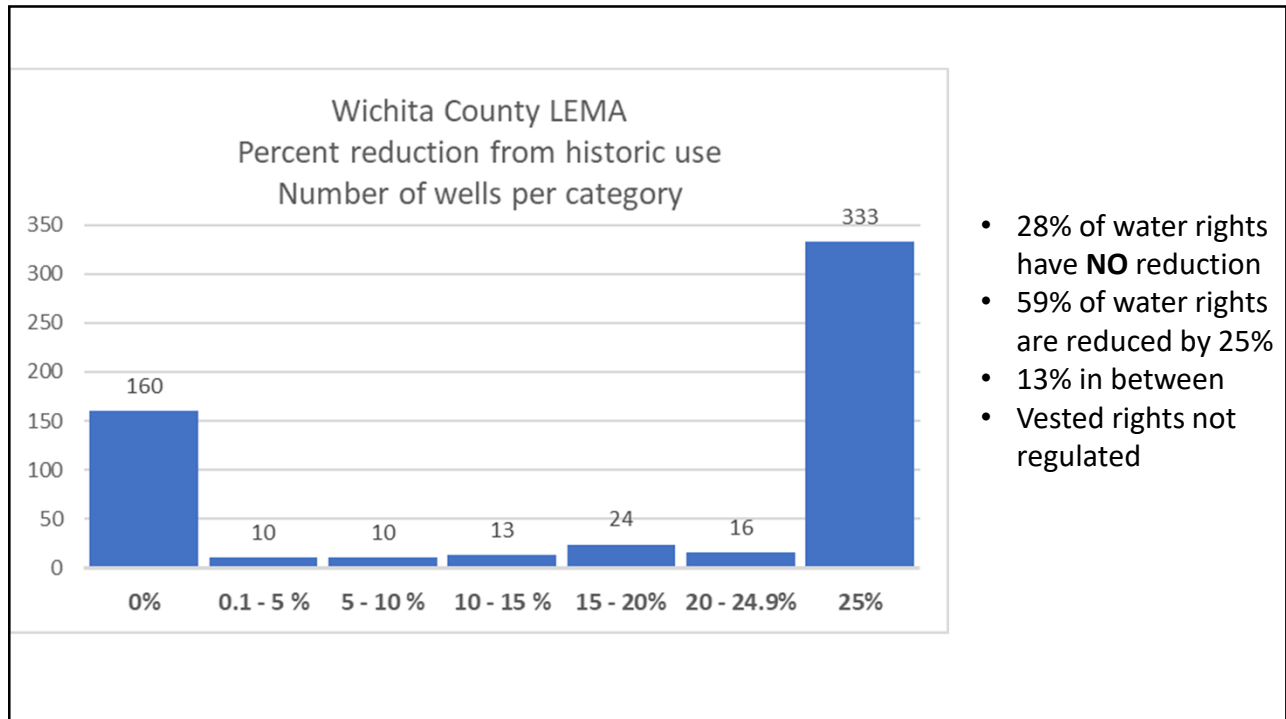
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Existing LEMA allocation methods

- Sheridan (2013, 2018): allocations = 11 inches on recent acres
- GMD 4 District wide (2018): allocations based on inches on recent acres, with the inches depending on rate of groundwater decline in the township but are generally greater than 15 inches/acre.
- Wichita County LEMA (2021): Allocations based on a 25% reduction from 2009-15 wateruse, except for those using less than 20% of their authorized quantity



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- 28% of water rights have **NO** reduction
- 59% of water rights are reduced by 25%
- 13% in between
- Vested rights not regulated

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Allocation methods initially reviewed

1. Allocations based on **fixed** percent of authorized quantity
2. Allocations based inches per authorized acre
3. Allocations based inches per maximum acres of a recent period
4. Allocations based inches per average acres of a recent period

None of these were found suitable as each method gives allocations greater than historic use to some; thus necessitating greater reductions of others to accomplish the overall reduction goal.

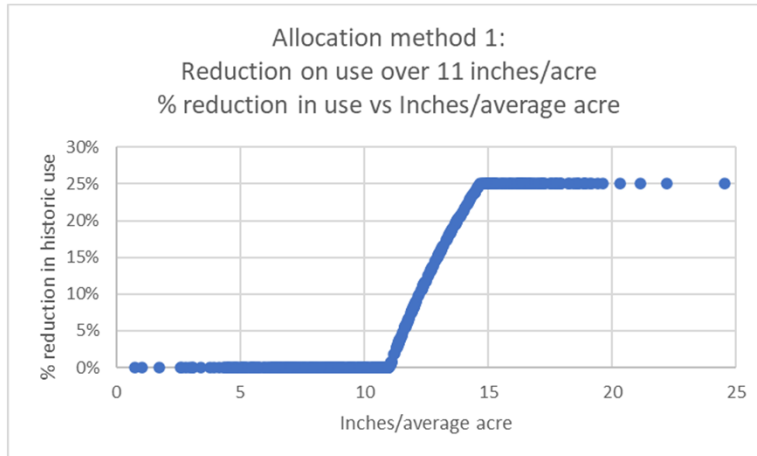
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Two new allocation methods evaluated

- Since March, the Board has been carefully examining two new allocation methods.
- Both use a “**sliding scale**” **percentage reduction of average historic use**, between 0% to 25%.
- Water users will be provided allocations as a single, shared, 5-year, allocation among **water right groups**. A water right group is composed of **all legally overlapped water rights**.
- **The time period** selected as basis for allocations is 2011-2020, the most recent, most reliable, and most defensible data.

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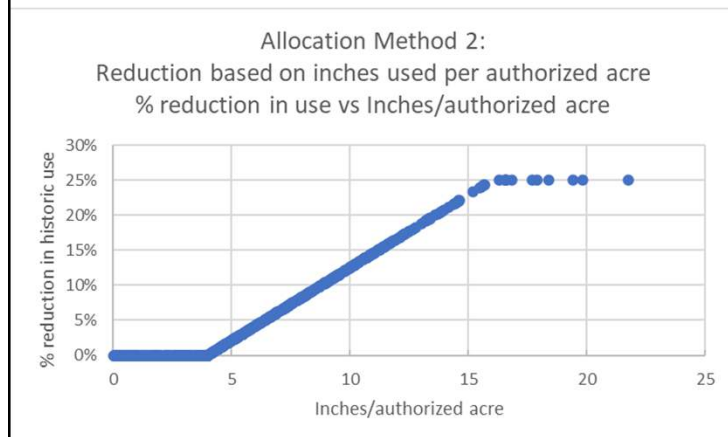
Allocation method 1: Reduction on use over 11 inches/acre



- Inches/acre = average wateruse/average acres
- When historic use is less than 11 inches/acre, 0% reduction
- When historic use is greater than 14.67 inches/acre, a 25% reduction.
- In between, a sliding scale reduction

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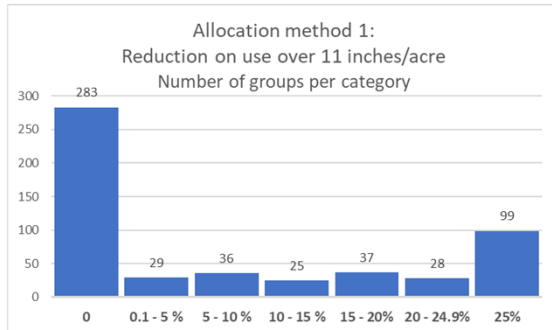
Allocation method 2: Reduction based on Inches used per Authorized Acre



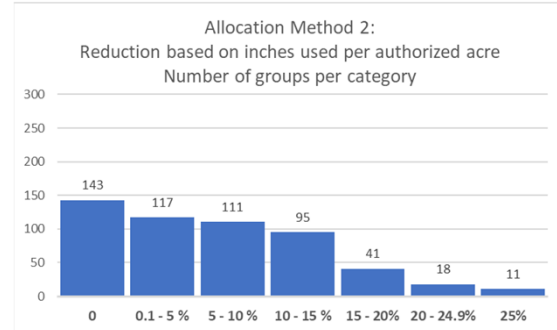
- Average use per authorized acres computed
- When use is less than 4 inches/authorized acre, a 0% reduction
- When use is more than 16 inches/authorized acre, a 25% reduction.
- In between, a sliding scale reduction

12

Effects of Two Allocation Methods



- Average reduction over the 4 counties: 10.4 %
- 53 % of water rights have **NO** reduction
- 18 % of water rights are reduced by 25%
- 29 % in between



- Average reduction over the 4 counties: 9.6 %
- 27 % of water rights have **NO** reduction
- 2 % of water rights are reduced by 25%
- 71 % in between

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GMD 1 Board's preferred allocation method

- The GMD 1 Board prefers the allocation method which reduces use based on use as **Inches/authorized acres**, as it more evenly and fairly distributes pumping reductions.
 - The allocation method reducing use over 11 inches/average acres is not preferred as it cuts waterusers who choose to stack their water but requires no reductions for those who spread their water.
- Again, for **flexibility**, water users will be provided allocations as a **single, shared, 5-year, allocation among water right groups**. A water right group is composed of all legally overlapped water rights.

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Estimated County reductions of Allocation Method 2

- The overall estimated savings achieved by Allocation Method 2 is 9.6%.
- The savings are greatest in Wallace County as it has the greatest average use by water right group.
- Scott County has the lowest reductions.
- The Wallace County sub-area analysis reinforces the finding that greatest reductions are in the areas of greatest water supply

Percentage reductions achieved by County and Wallace County sub-areas

County	Allocation Method 2
Greeley County	10.3%
Lane County	8.5%
Scott County	7.5%
Wallace County	11.6%
Sum/averages for the 4 counties	9.6%
Wallace County sub-areas	
Weskan subarea	13.2%
Sharon Springs subarea	12.6%
Outside special subareas	9.6%

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Potential elements of the LEMA plan

- Vested Water Rights would be exempt from the LEMA and excluded from utilizing LEMA flexibilities, unless voluntarily enrolled.
- One joint, five-year allocation would be provided for each Water Right Group, composed of all legally overlapped water rights.
 - While water rights would share the group allocation, each water right is limited each year to its annual authorized quantity, just as they are today.
- Allocations based on a sliding scale percent reduction of historical use based on inches applied to a Water Right Group's Authorized Acres where:
 - Average use of less than 4" per authorized acre = No reduction.
 - Maximum reduction capped at 25% for average use greater than 16" per authorized acre.
 - A sliding scale between these values

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Potential elements of the LEMA plan, con't

- Historical Use Period: 2011 – 2020 Inclusive – 10 year average use.
- Allocation appeal opportunities, per point of diversion, based on three reasons:
 1. Verification of water use history
 2. Consideration for previous voluntary conservation measures
 3. Water right ownership/control changes.
- Any unused LEMA allocation will be recommended as allowable carryover to a new 2028 LEMA plan without the carryover quantity being subjected to the new LEMA's conservation factor.

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Process ahead

- County meetings this fall / winter for additional input
- Refine the plan and present at the February 2022 annual meeting
- Submit plan spring of 2022 for hearings.
- If approved, plan will take effect January 1, 2023

18

Questions?

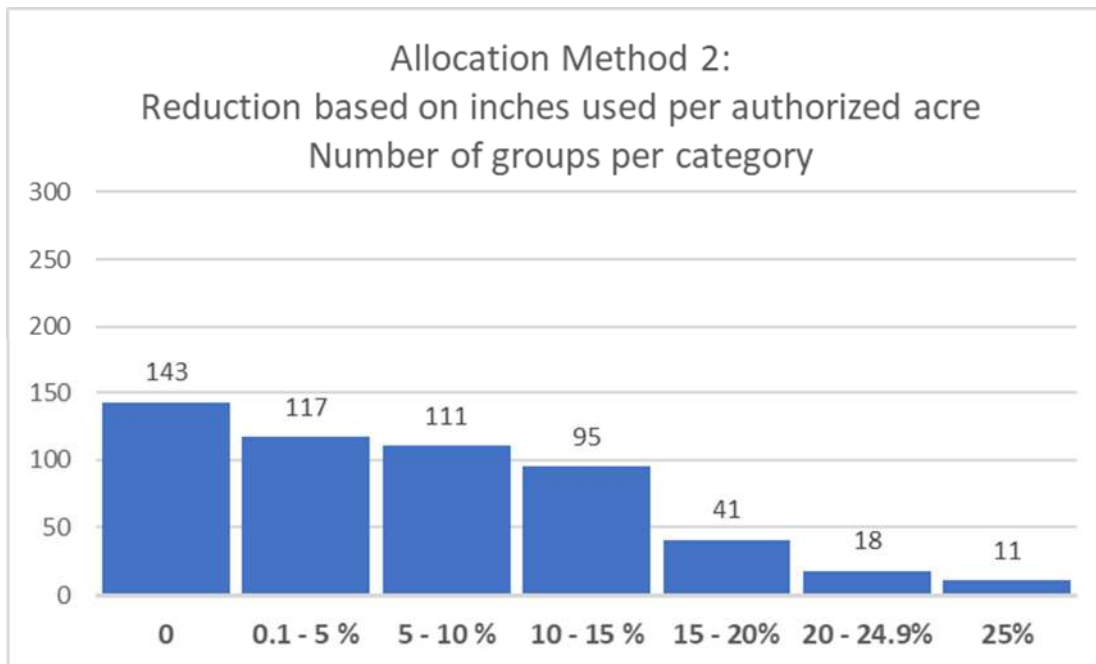
POTENTIAL LEMA ATTRIBUTES FOR THE COUNTIES OF GREELEY, LANE, SCOTT, & WALLACE

FIVE YEAR PLAN – (2023 – 2027)

- Vested Water Rights would be exempt from the LEMA and excluded from utilizing LEMA flexibilities, unless voluntarily enrolled.
- One combined, five-year allocation would be provided for each **Water Right Group**, composed of all legally overlapped water rights. While water rights would share the group allocation, each water right would be limited each year to its annual authorized quantity, just as they are today.
- Each group would be limited to the five-year allocation for the LEMA period. Again, a water right's annual authorized quantity may **Not** be exceeded in any year but there is no **annual** LEMA acre-foot limitation.
- Allocations would be based on a **sliding scale percent reduction** of historical use based on inches applied to a Water Right Group's **Authorized Acres**. Average use of less than 4" per authorized acre = No reduction. Maximum reduction capped at 25% for average use greater than 16" per authorized acre.
- Four County average reduction percentage = 9.6%. (See other side for individual county breakdowns)
- Historical Use Period: 2011 – 2020 Inclusive – 10 year average use.
- Allocation appeal opportunities, per point of diversion, based on three reasons: 1. Verification of water use history 2. Consideration for previous voluntary conservation measures 3. Water right ownership/control changes.
- Any unused LEMA allocation would be recommended as allowable carryover to a new 2028 LEMA plan without the carryover quantity being subjected to the new LEMA's conservation factor.

Percentage reductions achieved by County and Wallace County sub-areas

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Sum/averages for the 4 counties	9.6%



- Average reduction over the 4 counties: 9.6 %
- 27 % of water rights have **NO** reduction
- 2 % of water rights are reduced by 25%
- 71 % in between

**Western Kansas GMD No. 1
Considerations of Additional LEMAs**

**For GMD 1's 2022 Annual Meeting
February 23, 2022**

By David Barfield, consultant

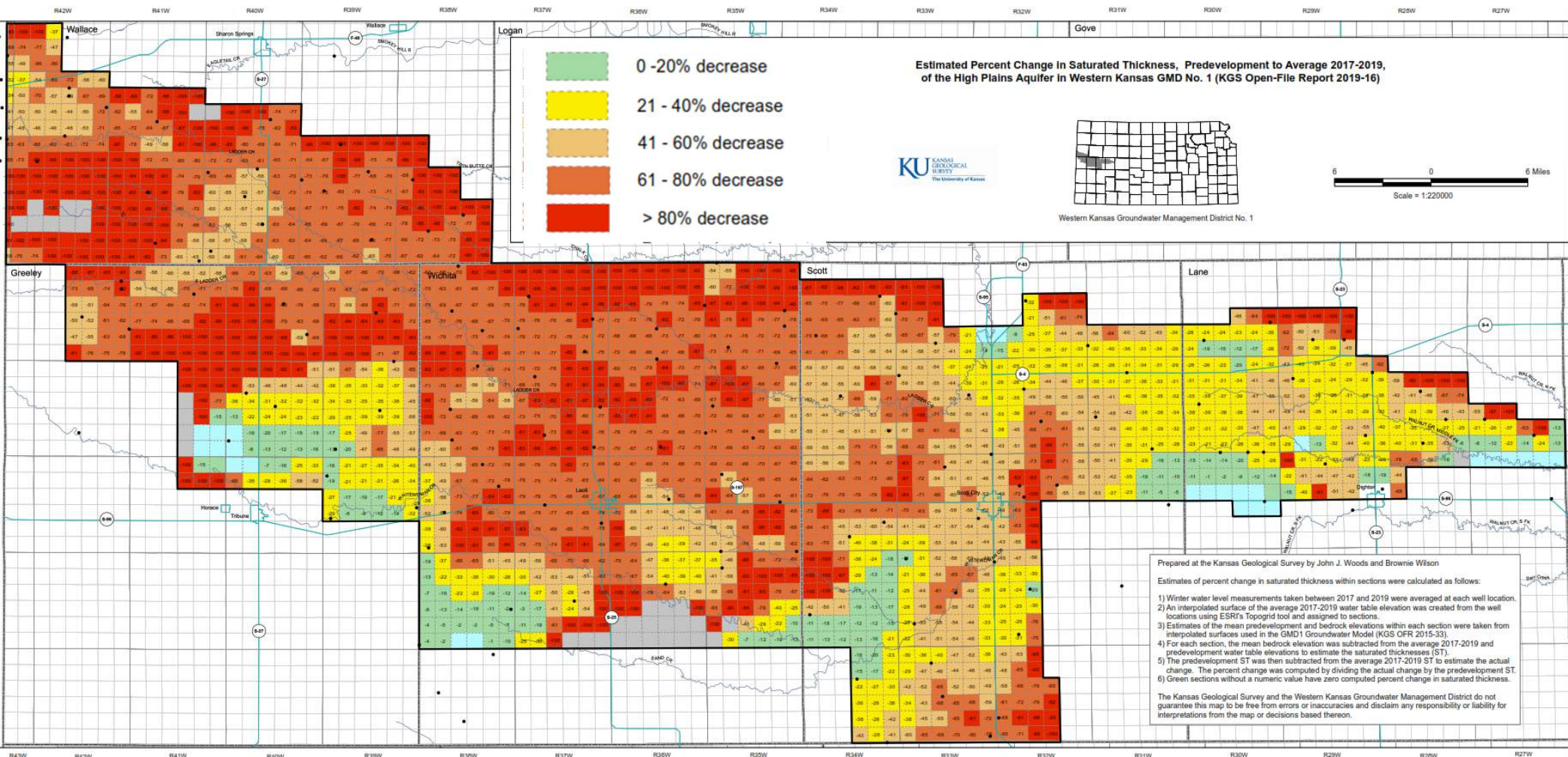
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 - 2018-20: The Board again discusses LEMAs for the District; decided to move forward with Wichita County LEMA first as it had the greatest support, the most urgent need, and to gain experience in LEMA processes.
 - 2021: Approval and implementation of Wichita County LEMA for 2021-2025

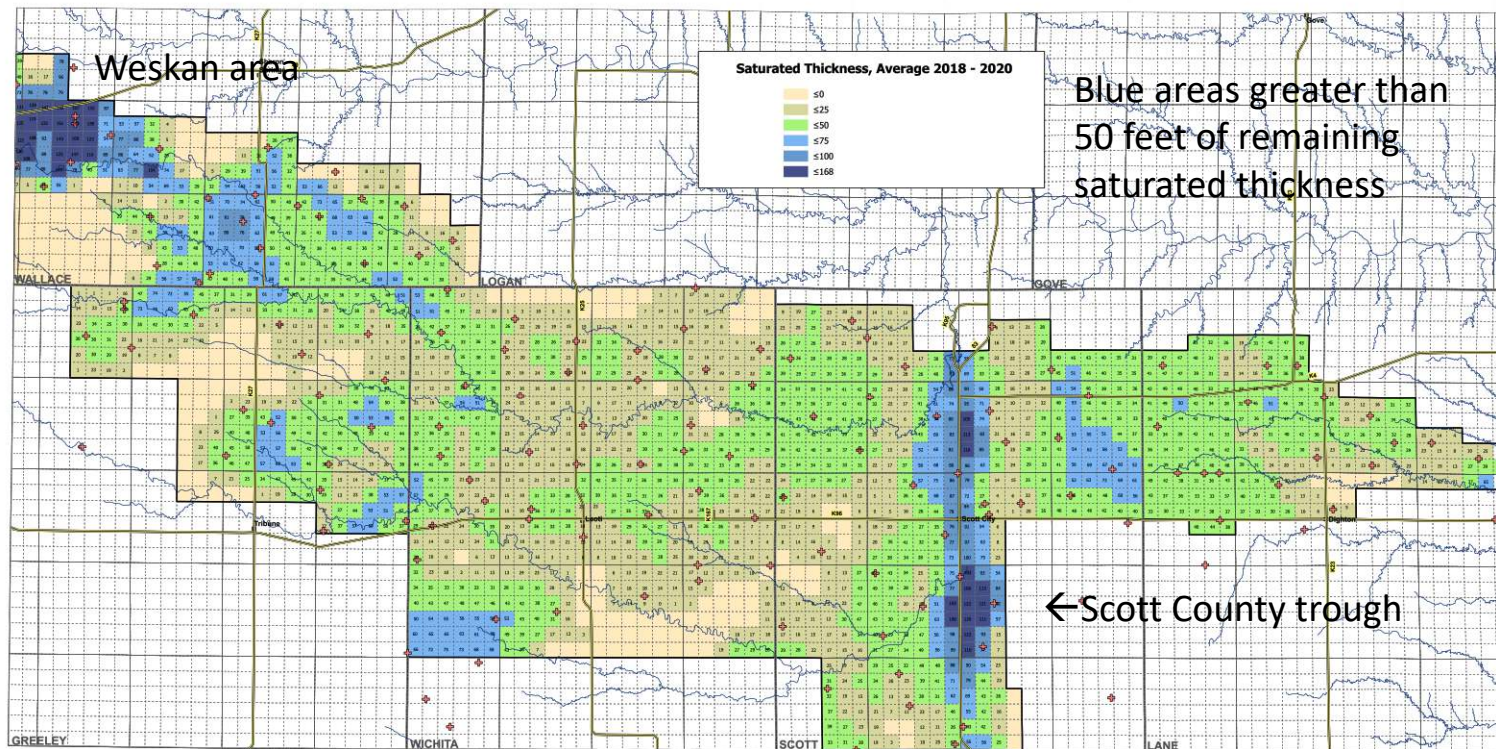
Board's On-going Consideration of Additional LEMA(s)

- Fall 2020: The GMD Board re-starts discussions on additional LEMA(s) to fulfill its mission to extend the useful life of the aquifer.
- Board's objectives for additional LEMAs:
 - "Get Started LEMA": the goal is not sustainability, but a significant step to extend the life of the aquifer; encourage maximum economic benefit
 - Overall savings of approximately 10-15%
 - Maximum reduction of 25% to individual waterusers, smaller reductions for limited water users
 - Allocation method different than the Wichita County LEMA
 - Provide as much flexibility as possible: 5-year allocations; group allocations
 - Robust allocation appeal process will be included in the LEMA plan

Current situation, water level declines



Current situation, remaining saturated thickness

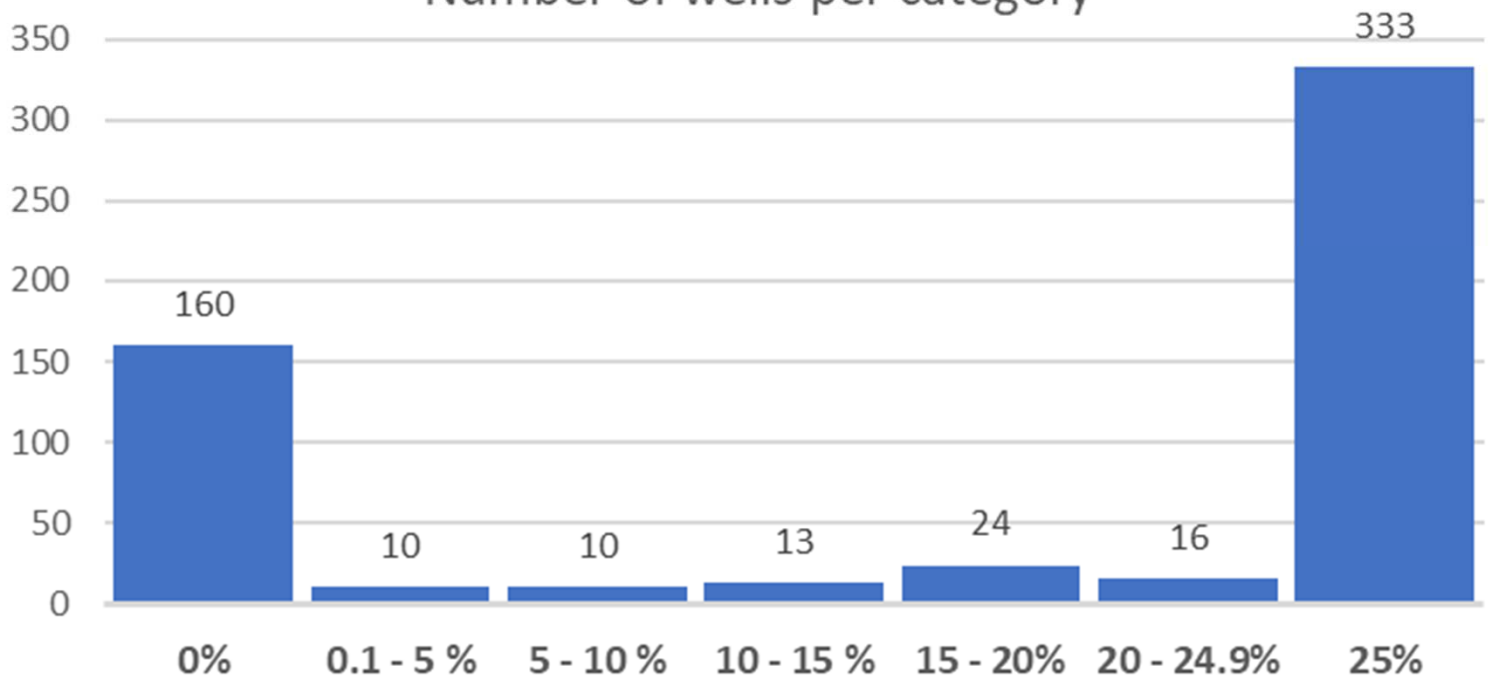


- Limited saturated thickness and well yields in much of the District, with the exception of the “Weskan” area and the Scott County trough.
- Yet, significant use remains and the desire to extend the benefits into the future

LEMA statute – Process and key provisions

- LEMA process
 - [Alternative to IGUCA process where the Chief Engineer conducts hearing(s) to determine “corrective controls” to address ground water declines.]
 - In LEMAs, GMD develops a plan to address groundwater declines, including goals and proposed regulation to reduce use. The Chief Engineer conducts hearings to determine if the GMD’s plan should be adopted.
- The heart of LEMAs is its “**corrective controls,**” typically water use **allocations** that implements reduced groundwater use.
- LEMAs typically **provide flexibility** in use of allocations (multi-year, and at times, allowing allocations to be grouped or moved around)
- Other elements: appeal process; enforcement

Wichita County LEMA
Percent reduction from historic use
Number of wells per category



- 28% of water rights have **NO** reduction
- 59% of water rights are reduced by 25%
- 13% in between
- Vested rights not regulated

Allocation methods reviewed

1. Allocations based on **fixed** percent of authorized quantity
2. Allocations based inches per authorized acre
3. Allocations based inches per maximum acres of a recent period
4. Allocations based inches per average acres of a recent period

None of these were found suitable as each method gives allocations greater than historic use to some; thus necessitating greater reductions of others to accomplish the overall reduction goal.

Subsequently, the Board reviewed **three Hybrid methods**, with allocations based on recent historic use, but varying reductions based on a “sliding scale” measure of historic use vs authorization.

GMD 1 Board's preferred allocation method

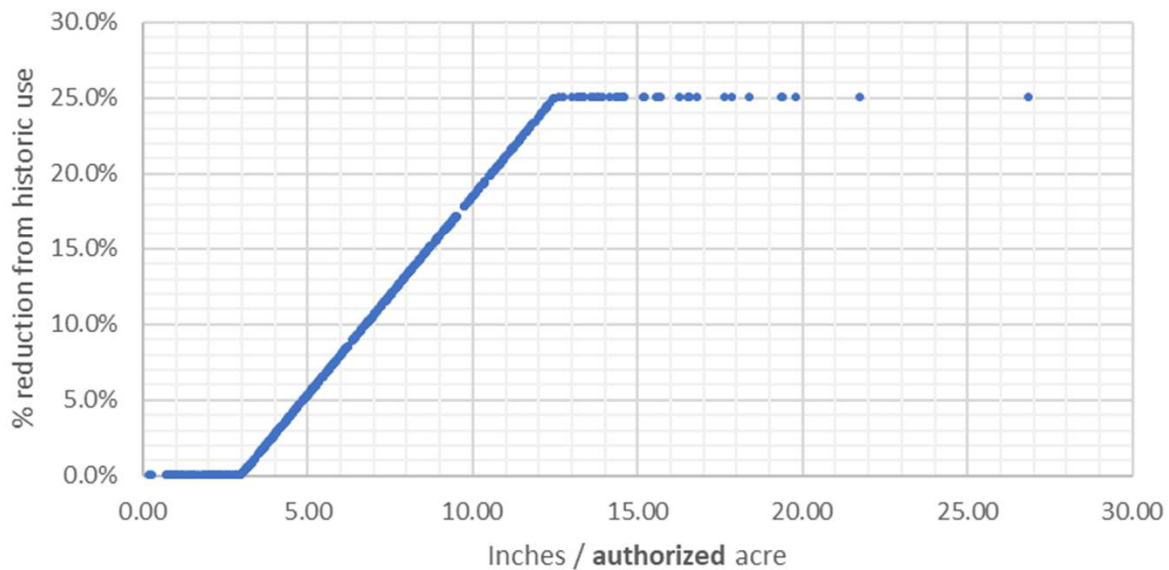
- After carefully examining the three hybrid, the GMD 1 Board decided on the allocation method which reduces historic use (2011-20) based on use as **Inches/authorized acres**, as it more evenly and fairly distributes pumping reductions.
- Again, for **flexibility**, water users will be provided allocations as a **single, shared, 5-year, allocation among water right groups**. A water right group is composed of all legally overlapped water rights.

Work since August 2021 annual meeting

- Worked with DWR to improve the data: DWR has proofed all wateruse data
- Worked with DWR to develop draft allocation reports to provide water users with improved understanding of the effect of its preferred allocation method on their specific water rights under the proposed LEMA.
- Carefully examining options for its **appeal procedures** to give due consideration for past conservation and ownership changes.
- As a first step for considering past conservation, the Board decided to exclude **years of non-use** from averaging.
- As the work presented in August 2021 included non-use years in the averaging, this has required adjustment of the sliding scale to achieve the same overall savings (approx. 10%).

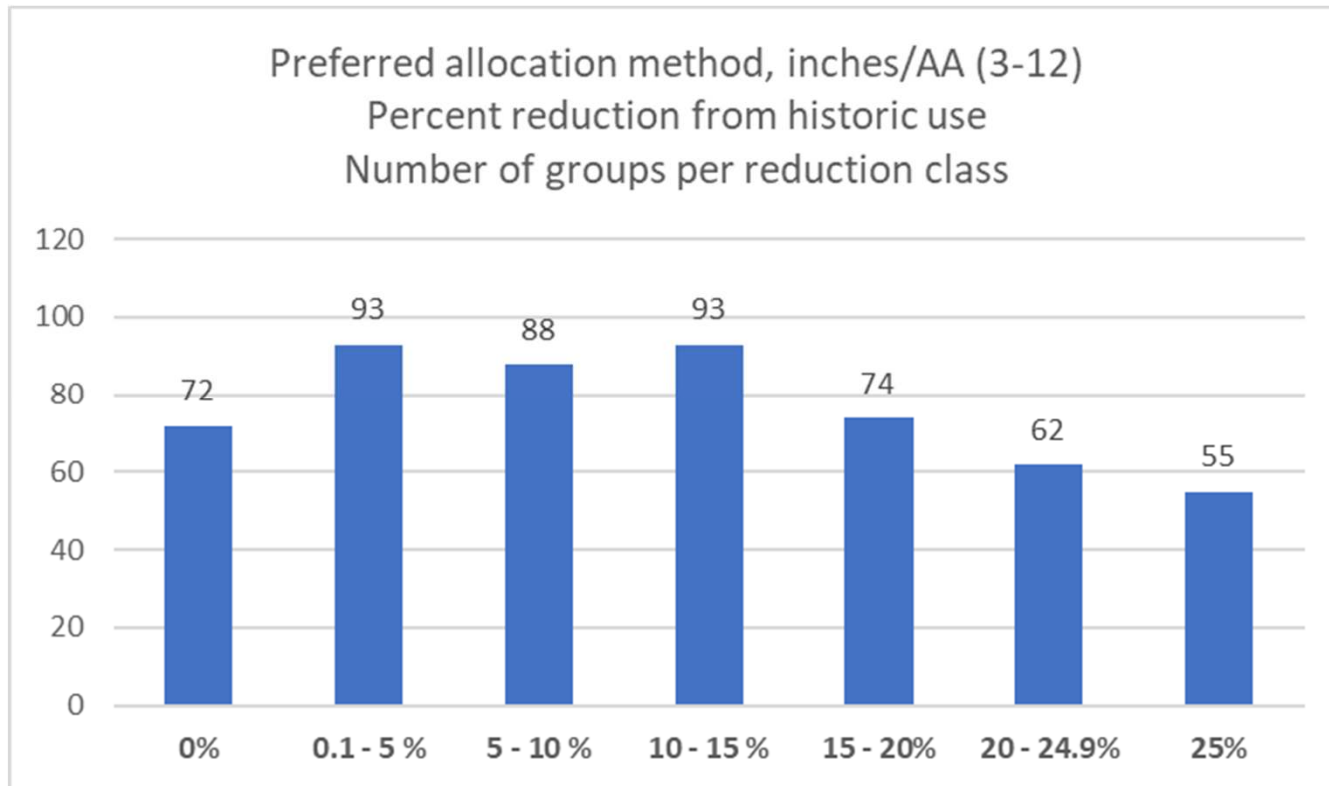
Allocation method selected: Reduction % based on Inches used per Authorized Acre

Preferred allocation method:
Sliding scale, 3-12 inches



- Average non-0 use per authorized acres computed
- When use is less than 3 inches/ authorized acre, a 0% reduction
- When use is more than 12 inches/authorized acre, a 25% reduction.
- In between, a sliding scale reduction

Effect of the Preferred Allocation Method



- Average reduction over the 4 counties (before appeal): 10.5 %
- 13 % of water rights have **NO** reduction
- 10 % of water rights are reduced by 25%
- 76 % in between

Appeal procedure considerations

- As with the Wichita County LEMA Plan, this proposed LEMA plan will include a comprehensive and fair appeal process, again considering:
 - Verification of water use history (user supplied data)
 - Consideration for previous voluntary conservation measures, as substantiated by water users, and
 - Water right ownership/control changes.
- It is expected that the appeal procedure will include a pump test.
- The Board continues to examine the appeal procedure since this LEMA has differences with the Wichita County LEMA:
 - Different allocation provisions (with lesser cuts for most),
 - Based on longer and a more recent wateruse period, and
 - Will encounter a greater diversity of situations (e.g higher pumping rates).

Proposed elements of the LEMA plan

- Vested Rights will be exempt from the LEMA. Other water rights in the group will be provided an allocation based on the same principle as non-vested groups.
- One **combined, five-year allocation** would be provided for each Water Right **Group**, composed of all legally overlapped water rights.
 - While water rights would share the group allocation, each water right is limited each year to its annual authorized quantity, just as they are today.
- Allocations based on a **sliding scale percent reduction** of historical use based on **inches applied** to a Water Right **Group's Authorized Acres** where:
 - Historical Use Period: 2011 – 2020
 - Non-use years will be excluded from the averaging
 - Average use of less than 3" per authorized acre = No reduction.
 - Maximum reduction of 25% for average use greater than 12" per authorized acre.
 - A sliding scale between these values

Potential elements of the LEMA plan, con't

- Allocation appeal opportunities, per point of diversion, based on three reasons:
 1. Verification of water use history
 2. Consideration for previous voluntary conservation measures
 3. Water right ownership/control changes.
- Any unused LEMA allocation will be recommended as allowable carryover to a new 2028 LEMA plan without the carryover quantity being subjected to the new LEMA's conservation factor.

Explanation of Allocation Reports

- Your allocation forms will be available after this presentation.
- Again, note you will have a chance to appeal these allocations, based on:
 - Better wateruse data
 - Consideration for previous voluntary conservation measures
 - Water right ownership/control changes.

Water Right Group 4 ■

For reference only

File Number	Point of Diversion	Group Authorized Quantity, AF	Group Authorized Acres	Group Average Historic Use 2011-2020, AF	Group Historic Inches on Authorized Acres	Group % Reduction from Historic Use	Group Proposed 5-Year Allocation AF	Group Average Reported on Acres	Group Inches, Allocation Reported on Acres	Group Inches, Historic Use Reported on Acres
SC 2 ■	3413N 933W	■	W 4							
803 ■	2621N 5250W AKA: 246'N O	■	2W 5							
252 ■	2805N 2574W	■	2W 1							
Group Information:		863.00	664.00	478.75	8.65	15.70%	2,017.93	758.60	6.38	7.57

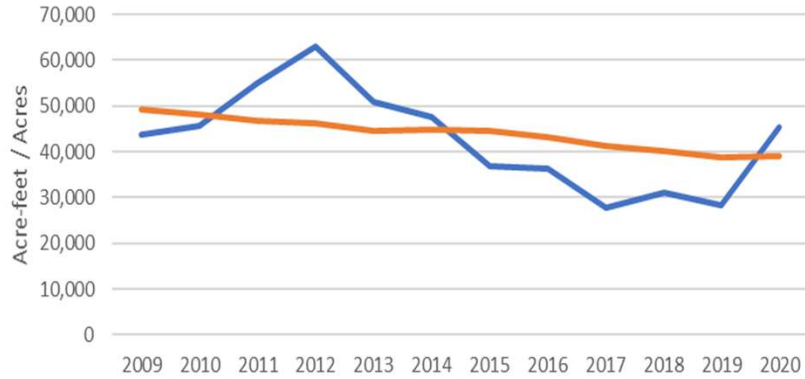
Process ahead

- County meetings this spring for additional input.
- The Board's hope is to finalize the LEMA plan and submit it to the Chief Engineer by June 30, 2022
- If the LEMA plan is submitted, the Chief Engineer will hold two hearings this fall on the LEMA Plan.
- If approved, LEMA Plan would take effect January 1, 2023.

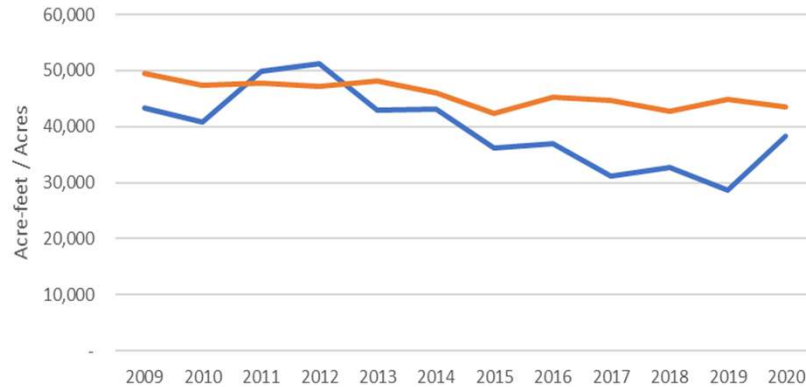
Questions?

County wateruse and acreage trends, 2009-2020

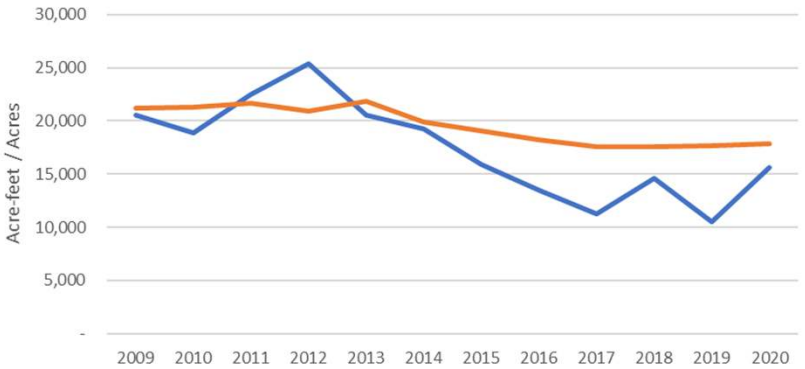
Wallace County



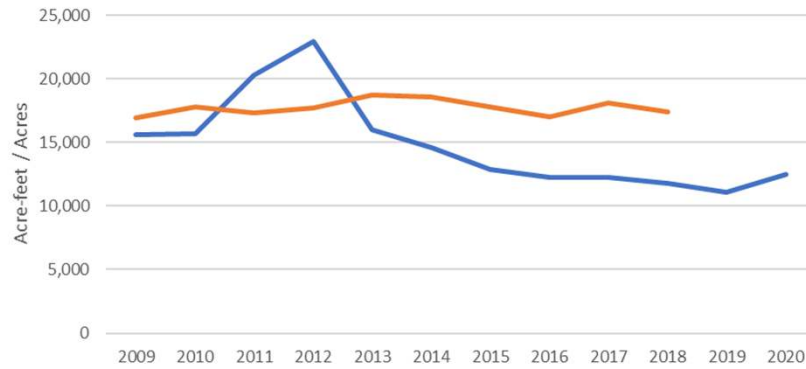
Scott County



Greeley County



Lane County



- Acres are gradually declining throughout most of GMD 1
- Wateruse varies from year to year based on climate, but also gradually declining

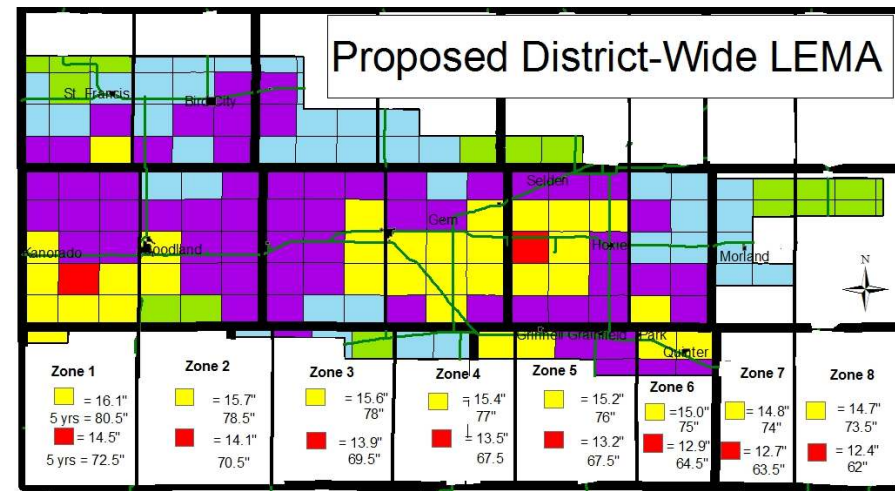
Note: Lane County for 2019-20 under review due to significant double counting.

— Wateruse — Acres

Existing LEMA allocation methods

- Sheridan (2013, 2018): allocations = 11 inches on recent acres

- GMD 4 District wide (2018): allocations based on inches on recent acres, with the inches depending on rate of groundwater decline in the township but are generally greater than 15 inches/acre.



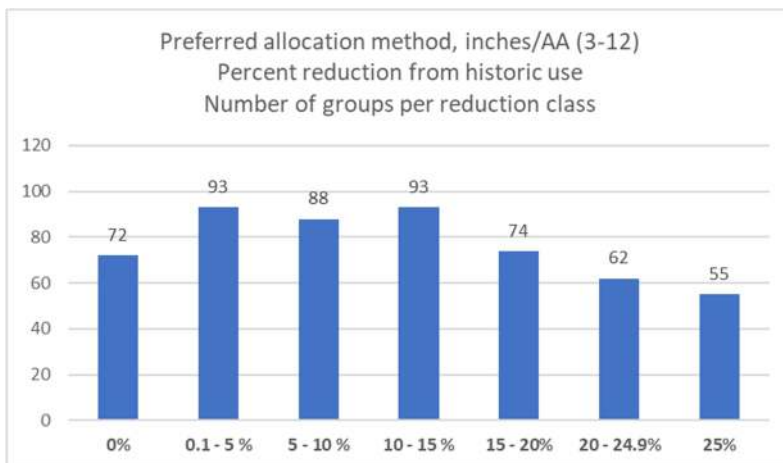
- Wichita County LEMA (2021): Allocations based on a 25% reduction from 2009-15 water use, except for those using less than 20% of their authorized quantity

PROPOSED LEMA ATTRIBUTES FOR THE COUNTIES OF GREELEY, LANE, SCOTT, & WALLACE

2/23/2022

FIVE YEAR PLAN – (2023 – 2027)

- **Vested Rights** will be exempt from the LEMA. Other water rights in the group will provided an allocation based on the same principle as non-vested groups.
- **One combined, five-year allocation** would be provided for each **Water Right Group**, composed of all legally overlapped water rights. While water rights would share the group allocation, each water right would be limited each year to its annual authorized quantity, just as they are today.
- Each group would be limited to the five-year allocation for the LEMA period. Again, a water right’s annual authorized quantity may **not** be exceeded in any year but there is no **annual** LEMA acre-foot limitation.
- Allocations would be based on a **sliding scale percent reduction** of historical use based on **inches applied** to a Water Right **Group’s Authorized Acres**. Average use of less than 3” per authorized acre = No reduction. Maximum reduction capped at 25% for average use greater than 12” per authorized acre.
- Years of non-use would be excluded from the averaging.
- Historical Use Period: 2011 – 2020 Inclusive – 10-year average use.
- The LEMA plan will allow for **the appeal of allocations** based on **any of three reasons**: 1. Verification of water use history 2. Consideration for previous voluntary conservation measures 3. Water right ownership/control changes.
- Any unused LEMA allocation would be recommended as allowable carryover to a new 2028 LEMA plan without the carryover quantity being subjected to the new LEMA’s conservation factor.
- Four County average reduction percentage = 10.5% (before appeals).



Average reduction over the 4 counties (before appeals):
10.5 %

- 13 % of water rights have NO reduction
- 10 % of water rights are reduced by 25%
- 76 % in between

**Explanation of the GMD 1 Potential Additional LEMA
Preliminary Draft Group Allocation Report
February 23, 2022**

- **These allocations are DRAFT** and subject to change based on: additional changes to the allocation method determined by the Board, corrections to the wateruse record from DWR's ongoing review, and **subject to an appeal procedure** under development to give due consideration of past conservation.
- **Water right group** – The Water Right Group is composed of all legally overlapped water rights (typically by place of use, point of diversion, or both).
- **Section 1** provides a listing of the individual Water Right File Numbers included within the Water right group, as well as their authorized individual points of diversion, and Group Authorized Quantity (the sum of the net authorized quantities for the water right included within the group).
 - Note: the letter immediately following the Water Right File Number indicates your interest in the water right: blank for none; "O" for owner; "W" for wateruse correspondent; and "O/W" for both.
- **Section 2** provides the **basis of the group allocation** determined in the Section 3 including the total **authorized** acres covered by the water rights of the group, the sum of average wateruse for 2011-20 for the group, the group reported use expressed as **inches on authorized acres**, and the percentage reduction from historic use that would be required under the LEMA for the group.
 - In computing the "group average historic use," any year(s) in which the **group use is zero** are **excluded** from the computation of the group average use.
 - The "group historic inches on authorized acres" is determined by dividing the average historical wateruse of the group by the group authorized acres.
 - The "group % reduction from historic use" is determined based on a sliding scale where no reduction is required for inches per **authorized** acre less than 3 inches and a maximum reduction of 25% is required where the inches per **authorized** acre is greater than 12 inches, with a sliding scale between these values.
- **Section 3** provides the preliminary draft 5-year group allocation for the water right group based on the information currently available to the Board.
 - Note: water rights would share this group allocation for the 5-year period, provided that each water right would be limited each year to its annual authorized quantity, just as they are today.
 - The Board will provide **an opportunity to appeal the allocation** based on previous voluntary conservation measures and water right ownership/control changes.
- **Section 4** includes information provided **for reference only**. It includes the group average reported acres for 2011-2020, the "Group Inches, Historic Use on Reported Acres" and the "Group Inches, Allocation on Reported Acres."
- **Note:** Vested Rights will be exempt from the LEMA. Other water rights in the group will provided an allocation based on the same principle as non-vested groups. This is not fully reflected in these reports.

Example Allocation Report

2/23/2022

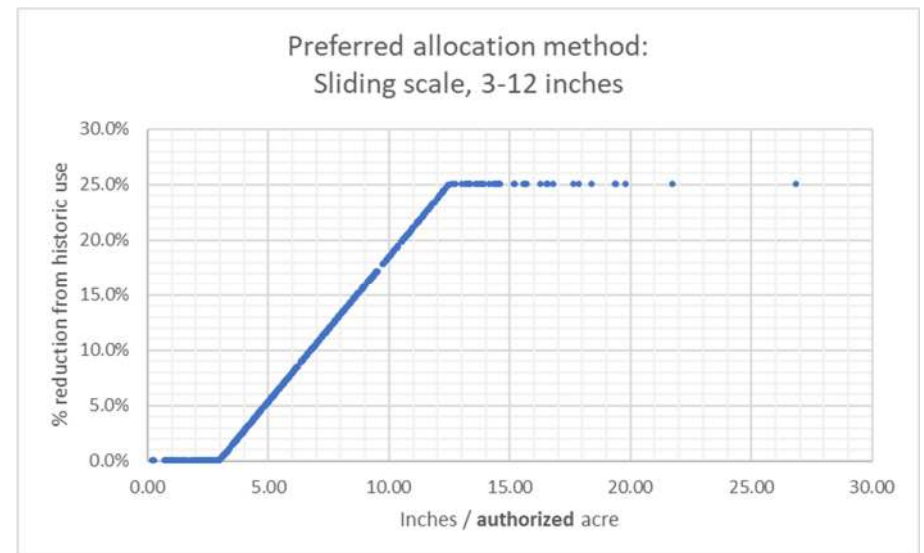
**GMD 1 Potential Additional LEMA
Preliminary Draft Group Allocation Report
All information preliminary and subject to change**

Water Right Group 4				For reference only							
File Number	Point of Diversion	Group Authorized Quantity, AF	Group Authorized Acres	Group Average Historic Use 2011-2020, AF	Group Historic Inches on Authorized Acres	Group % Reduction from Historic Use	Group Proposed 5-Year Allocation AF	Group Average Reported on Reported Acres	Group Inches, Allocation on Reported Acres	Group Inches, Historic Use on Reported Acres	
SC	3413N 933W		863.00	478.75	8.65	15.70%	2,017.93	758.60	6.38	7.57	
80	2621N 5250		664.00	478.75	8.65	15.70%	2,017.93	758.60	6.38	7.57	
	AKA: 246'N										
25	2805N 2574		664.00	478.75	8.65	15.70%	2,017.93	758.60	6.38	7.57	
Group Information:			863.00	664.00	478.75	8.65	15.70%	2,017.93	758.60	6.38	7.57

Note: the letter(s) immediately following the File Number indicates your interest in the water right: blank for none; "O" for owner; "W" for wateruse correspondent; and "O/W" for both.

Calculations

- Group historic use on authorized acres = $478.75 \text{ AF} / 664 \text{ acres} * 12 \text{ inches/foot} = 8.65 \text{ inches/authorized acre}$
- Group % reduction from Historic use.
Using the graph to the right, start at the bottom with 8.65 inches/authorized acre; go straight up to the line, then go left to read the % reduction from historic use of 15.7 %
- Group Proposed 5-year allocation = $478.75 \text{ AF/year} * (1 - 0.157) * 5 \text{ years} = 2,017.93 \text{ AF}$
- Group Inches, Allocation on Reported Acres = $2,017.93 \text{ AF} / 5 \text{ years} / 758.60 \text{ acres} * 12 \text{ inches/foot} = 6.38 \text{ inches}$
- Group inches, Historic Use on Reported acres = $478.75 \text{ AF/year} / 758.60 \text{ acres} * 12 \text{ inch/foot} = 7.57 \text{ inches}$



DISTRICT MANAGER

Katie Durham

gmdl@wbsnet.org

ADMISTRATIVE ASSISTANT

Toni Palen

admin@wbsnet.org

FIELD TECHNICIAN

Pat Ryan

BOARD PRESIDENT

Mark Callender, Lane County

VICE PRESIDENT

Travis Weaver, Greeley County

SECRETARY/TREASURER

Steve Compton, Scott County

MEMBER

Ray Smith, Wallace County

MEMBER

Brian Bauck, Wichita County

GMDI
906 W. 5th Scott City, KS 67871

Recipient Name
Address
City, ST ZIP Code

**Western Kansas
Groundwater
Management
District No. 1**

906 W. 5th
Scott City, Kansas 67871



The Waterline Newsletter

April 2022

Office Announcements

The District would like to thank Kyle Spencer and Maggie Morrison for their dedicated years of service. We wish them the very best on their future endeavors!

The District would also like to welcome and introduce its newest employees.

Toni Palen – Administrative Assistant

Katie Durham – Manager

Open House – May 6th 2022

With all the recent staff changes please swing by for coffee and a doughnut during our meet and greet Open House on May 6th.

9:00am CT – 12:00pm CT

Note from the Manager

Greetings,

My name is Katie Durham and I am very grateful for the opportunity to serve this community as GMD1's new Manager. I invite you to stop by the office anytime for an introduction or to discuss today's most important water issues facing Western Kansas.

My husband Colby and I will be settling in Scott City and we look forward to meeting you.

Regards,
Katie Durham

LEMA Development & Updates

As you may be aware, the District's Board of Directors have been working to develop criteria for a proposed GMD1 LEMA (Local Enhanced Management Area) that would cover the following counties; Lane, Greeley, Scott and Wallace.

A significant part of this process is establishing a methodology for how allocations would be established. As advertised at the GMD1 Annual Meeting in February, these draft allocations have been developed and are available for each individual landowner. We strongly encourage each landowner to reach out to District office staff to request a copy of your proposed allocation. District staff is available to answer any questions or concerns you may have, by contacting us at the email address and phone numbers listed on this newsletter.

Coming Up in May

The District will be holding public outreach meetings in each county of the District. These meeting times are TBD. A letter will be mailed out to all landowners with information on how you may plan to attend these meetings.

Board of Directors

The District would like to thank Bob Hoeme for his 35 years of service on the GMD1 Board of Directors. Your contribution is greatly appreciated, and tremendously valued.

New Board Member

The District would like to welcome Steve Compton from Scott County as the GMD's newest Board Member.

Welcome Steve!

Other News

The Kansas Department of Agriculture, Division of Conservation has initiated the **FY 2022 Irrigation Technology Initiative** to promote irrigation efficiency by providing cost-share assistance to landowners. For more information please contact your local Conservation District.

Contact Us

GMD1
906 W. 5th
Scott City, KS 67871
620-872-5563
GMD1@wbsnet.org
admin@wbsnet.org

Website
www.GMD1.org



WESTERN KANSAS GROUNDWATER MANAGEMENT DISTRICT NO.1

GMD1 Landowner,

You are receiving this letter because you are identified as a landowner or interested party within the **Western Kansas Groundwater Management District No. 1**. As previously noted, the District will be hosting public outreach meetings later this month. These meeting dates and locations are noted below.

May 19th – Weskan Community Building at 9am MST

201 School Avenue, Weskan KS

May 20th – William Carpenter 4-H Building at 9am CST

608 N Fairground Rd, Scott City KS

May 20th – Lane County 4-H Building at 2pm CST

Fairgrounds Rd, Dighton, KS

The District's Board of Directors have been working to develop criteria for a proposed GMD1 LEMA (Local Enhanced Management Area) that would cover the following counties; Lane, Greeley, Scott and Wallace. This proposed LEMA would be part of an effort to prolong the life of the Ogallala aquifer that encompasses the GMD1 service area. These public outreach meetings will serve as an opportunity to learn more about the proposed LEMA.

As previously noted in a letter that was sent out last month, the District strongly encourages each landowner to reach out to District office staff to request a copy of your proposed allocation. District staff is available to answer any questions or concerns you may have, by contacting us at the email address and phone numbers listed on this letter. It is important that every landowner have an opportunity to view their potential allocation, and ask questions accordingly.

Regards,

Katie Durham

Manager

Western Kansas Groundwater Management District #1

906 W. 5th

Scott City, Kansas

67871

(620) 872-5563

(620) 872-7375

Gmdl1@wbsnet.org

MEMO for GMD1 Board Discussion

The following works to capture discussions from the April 26th GMD1 Board Meeting. Specifically, information covered will include but is not limited to the definition of “conservation” as it pertains to the proposed LEMA, proposed Appeals and associated background information.

Section 1 – Defining Voluntary Conservation

Background and Consideration

Pursuant to K.S.A. 82a-1041, LEMA Plans submitted by GMDs are required to provide evidence so the Chief Engineer can conclude that the Plan “gives due consideration to water users who already have implemented reductions in water use resulting in voluntary conservation measures;”

Draft Definition of “Voluntary Conservation”

In direct regards to the LEMA and implementation overseen by GMD1, voluntary conservation is defined as the following. The intentional act of utilizing less water than is available in an unconstrained supply under a set water right, not contingent on water year type. Per KSA 82a-1041, the LEMA plan must show it “gives due consideration to water users who already have implemented reductions in water use resulting in voluntary conservation measures.” Therefore the act of conservation must be a physical and purposeful change to on farm management outside of natural changes and or causes.

Section 2 – Examples and Criterion of Voluntary Conservation

The following examples and criterion are hypothetical scenarios that may be deemed as actionable conservation by the GMD Board of Directors, on a case by case basis.

Voluntary Conservation Criteria

Example Criteria for Approving Conservation	Yes/No*
Is this action of conservation voluntary?	Yes
Can the landowner reasonably prove conservation through records, data, other?	Yes
Was less water used regardless of water year?	Yes
Was more water available, but not utilized? (ex. change of pump capacity)	Yes
If a high water use crop (corn) was purposefully or permanently replaced with a low water use crop (sorghum), were the overall acres maintained?	Yes
Was the irrigation year cut short due to hail damage?	Yes
Was extra-ordinary efficiency technology implemented to promote water savings? (ex. sub surface drip irrigation)	Yes
Is the landowner currently enrolled in a WCA?	Yes

*These example answers indicate a potential response that would be indicative of conservation.

Possible Examples of Voluntary Conservation (in accordance with the known interpretation of due consideration)

- In 2015 John Smith implemented subsurface drip irrigation which resulted in less water being applied in 2015 (Normal WY) than in 2016 (Normal WY). John Smith is able to demonstrate this because he can provide reasonable data and a written explanation that proves this was a voluntary act, not reliant on supply availability.
- In 2017, John Smith switched from irrigating corn to irrigating grass for seed, a crop that uses significantly less water, without expanding his irrigated area. This resulted in a demonstrated decline in water used. Thus years 2017-2020 will be excluded from determining the basis of his allocation.
- In 2018, John Smith signed onto a Water Conservation Area, which committed him to a reduction of 10% from his historic use. Thus 2018-2020 will be excluded from determining the basis of his allocation.
- In 2016, John Smith decreased his irrigated acres to purposefully reduce water use. This action was not dependent on water availability, rather the conscious effort to conserve. Similar with moving to a crop rotation that used less water over the long haul.
- Typically John Smith uses approximately 60% of his land to grow corn and 40% of his land for sorghum. Over the last several years he has adjusted these figures and now uses almost 95% of his acreage to grow sorghum, a lower water use crop thus potentially resulting in overall decreased water use.¹

Section 3 – Examples and Criterion that are not Conservation

The following examples and criterion are hypothetical scenarios that may be deemed as not voluntary conservative action by the GMD Board of Directors, on a case by case basis.

Example Criteria for Non-Conservation	Yes/No**
Is this action of conservation voluntary?	No
Can the landowner reasonably prove conservation through records, data, other?	No
Was less water used regardless of water year?	No
Is it considered conservation if less water was used due to an inability to pump?	No
Is it considered conservation if less water used due to a wet water year?	No
Was water saved due to management practices that go beyond standard good practice?	No
Are the low water use years of a crop rotation, part of their normal operations?	No

**These example answers indicate a potential response that would not be indicative of conservation.

Examples of Non-Voluntary Conservation (In accordance with the known interpretation of due consideration)

- In 2014 John Smith utilized a well that had a capacity of approximately 200 gpm. In 2016 that same well is functioning at a capacity of 100 gpm. This reduced capacity and/or extended use period would not be considered an act of voluntary conservation.
- John Smith has utilized a pivot irrigation system and drop nozzles for several years. This would not be deemed voluntary conservation, as this is considered standard, good management.

¹ Total acreage must stay the same in order for this example to be viable. Additionally, crop change to low water use crops due to reduced well capacity would not be considered conservation.

Section 4 – Draft Appeals Process

The following draft appeal processes summarize various avenues that the GMD 1 Board will use to give the required due consideration to past voluntary conservation in the appeal of LEMA allocations. For all appeal options, the appropriate reductions will be applied based off of previous discussions. Lastly, there is currently no deadline for submitting an appeal.

Draft For Discussion Only

Base Appeal Approach	New Owner/Operator Control With 3 or More Years of Record**	New Owner/Operator Control or Irrigation System Change With Less Than 3 Years of Record**	No Historic Use Appeal Approach*
<ul style="list-style-type: none"> • Appropriate for circumstances where there has <u>not</u> been a control/ownership change. • New owners/operators may utilize the Base Appeal Approach should they agree with and choose to use historical data provided by previous owner. • A minimum of three representative years of use data is required. • Years of demonstrated conservation will be excluded from averaging. • For example, if 2015 and 2016 had demonstrated conservation, then years 2011-2014 and 2017-2020 will be summed and divided by 8 to get the average water use to determine the required reduction. 	<ul style="list-style-type: none"> • Appropriate for circumstances where recent change of control/ownership <u>has</u> taken place with <u>3 or more</u> representative years of history This Appeal process requires written documentation proving such changes and must be deemed acceptable by the Board. (DWR/FSA Records) • Years of demonstrated conservation may be excluded from averaging. • Under new control, the new water use record may be used. • For example, the new ownership ownership/control was for the period 2017-2020, the water use in 2017-2020 will be summed and divided by 4 to determine the average for purposes of determining the required reduction and allocation. 	<ul style="list-style-type: none"> • Appropriate for circumstances where recent change of control/ownership <u>has</u> taken place with <u>less than 3</u> representative years of history. This Appeal process requires written documentation proving such changes and must be deemed acceptable by the Board. If a deficit in annual data is present NIR may be used to supplement data. Additional reductions will apply to years of historic data, and not to NIR. • A current owner who exceeds three years of data, but can provide proof that a new irrigation system change directly resulted in less than three years of reflective operational water use data shall qualify. • Years of demonstrated conservation may be excluded from averaging. • Under new control, the new water use record may be used. • For example, if a new owner only has 2 years of data they may supplement NIR data for the 3rd year. 	<ul style="list-style-type: none"> • Appropriate for circumstances of non-use for 2011-2020 or for a new owner/operator Jan 1st 2021 through Feb. 22nd 2022. NIR would be used for new owner/operator only. • Where the appeal is for Jan 1st 2021 through Feb. 22nd 2022, an allocation of NIR will be given where clear boundaries of irrigation can be demonstrated such as an irrigated circle or buried drip tape or consistent flood acres. Other cases will be reviewed if the boundary is not clear or clean, then the next option would be a pump test multiplied by 150 days.*** • Where a Group that has had use, but also has an individual point of diversion with non-use and is appealed, a pump test to demonstrate the ability to pump is required to provide an allocation of the pump test times 150 days.

Note: For all methods the Board reserves the authority to re-evaluate these methods in a future or current LEMA Appeals process within their discretion, and may address a special scenario in the current LEMA on a case by case basis.

*Where a non-use irrigation right is to be converted to a non-irrigation use, it will be processed according to DWR applicable regulations, which are not based on historic use.

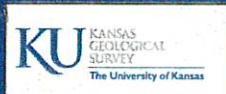
**Change of Owner/operator control/irrigation system change must have occurred prior to Feb. 22nd 2022 to qualify for this appeal as indicated at the 2022 Annual Meeting or per Board discretion.

***NIR Values Per County: Scott = 14.0”, Greeley =14.7”, Lane = 13.7”, Wallace=14.3”. Additional reductions to any years of NIR would not be applicable.

Draft For Discussion Only

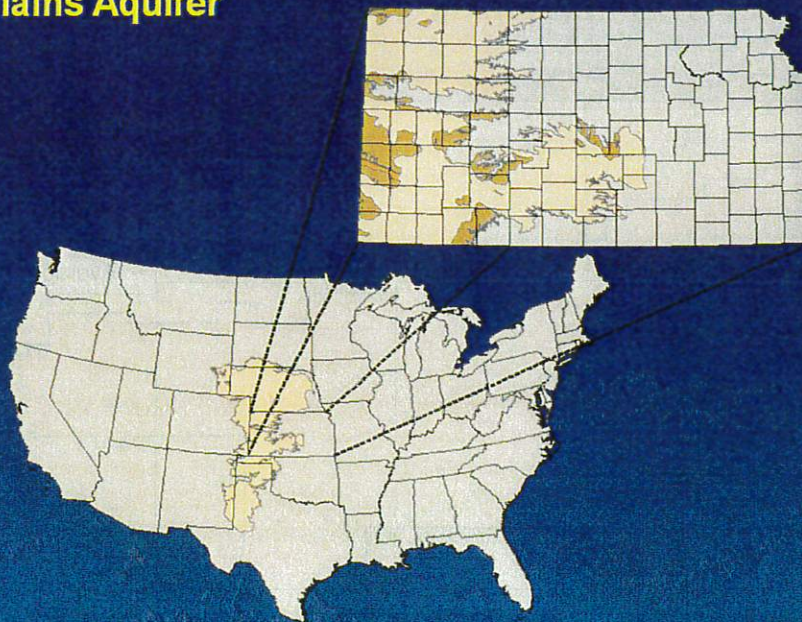
Groundwater Resource Conditions in Western Kansas GMD #1

GMD1 County LEMA Discussion Meeting
May, 2022



Kansas Geological Survey
University of Kansas

The High Plains Aquifer

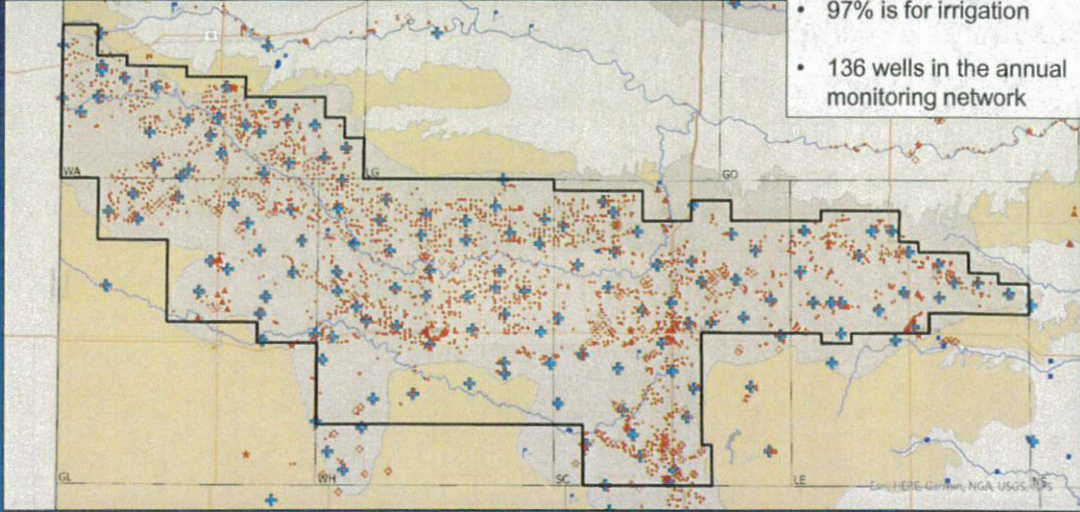


Western Kansas GMD #1

Groundwater Development

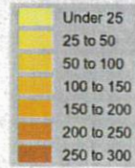
- 2,300 water rights
- 2,700 wells
- 97% is for irrigation

- 136 wells in the annual monitoring network

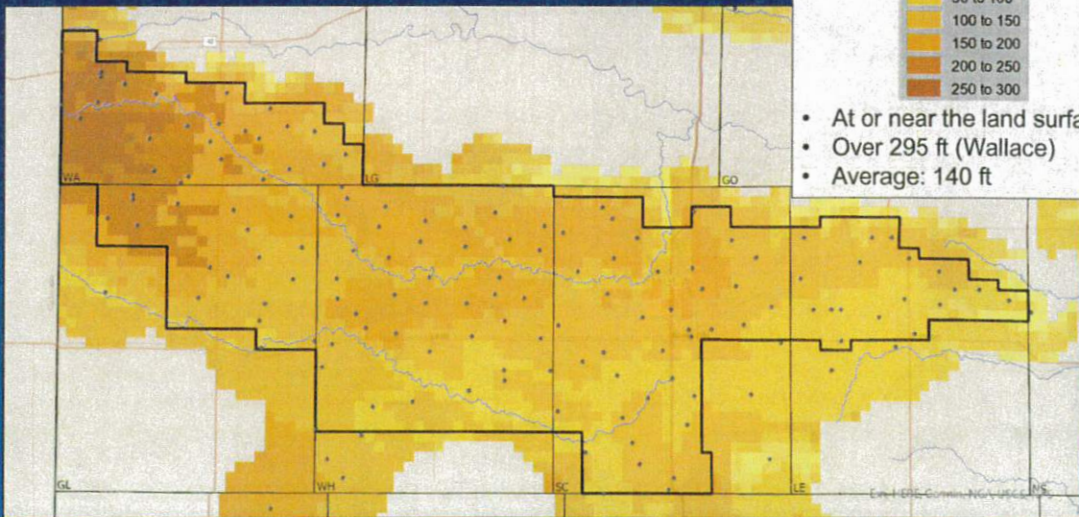


Average 2020-2022 Depth to Water

Depth in Feet

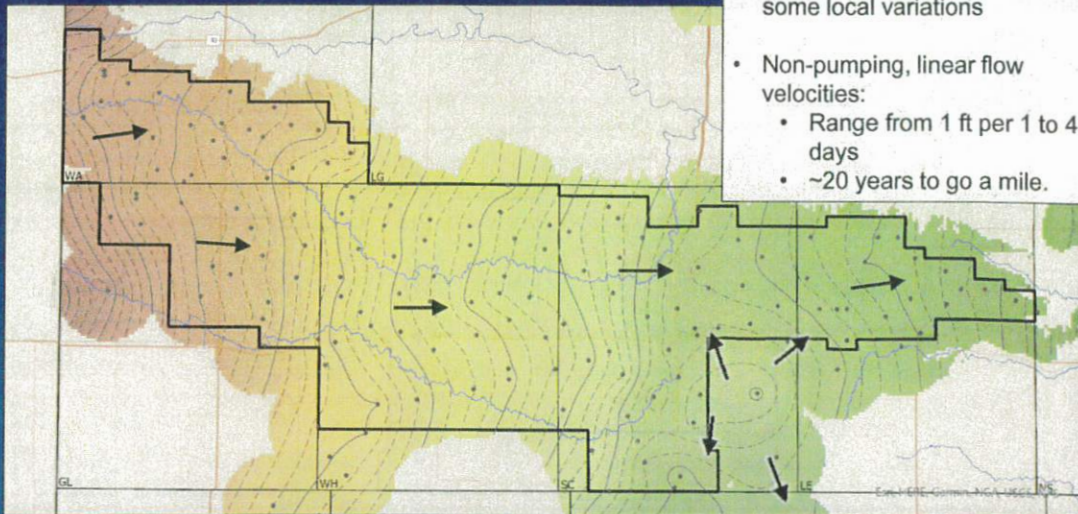


- At or near the land surface
- Over 295 ft (Wallace)
- Average: 140 ft



Average 2020-2022 Water Table Elevation

- Generally follows the land surface
- Flow paths are west to east with some local variations
- Non-pumping, linear flow velocities:
 - Range from 1 ft per 1 to 4 days
 - ~20 years to go a mile.

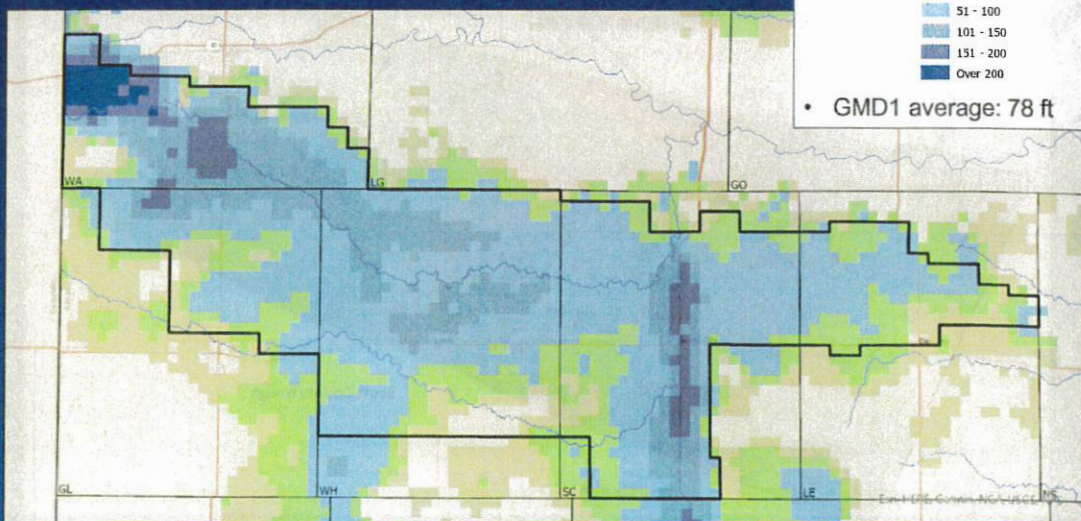


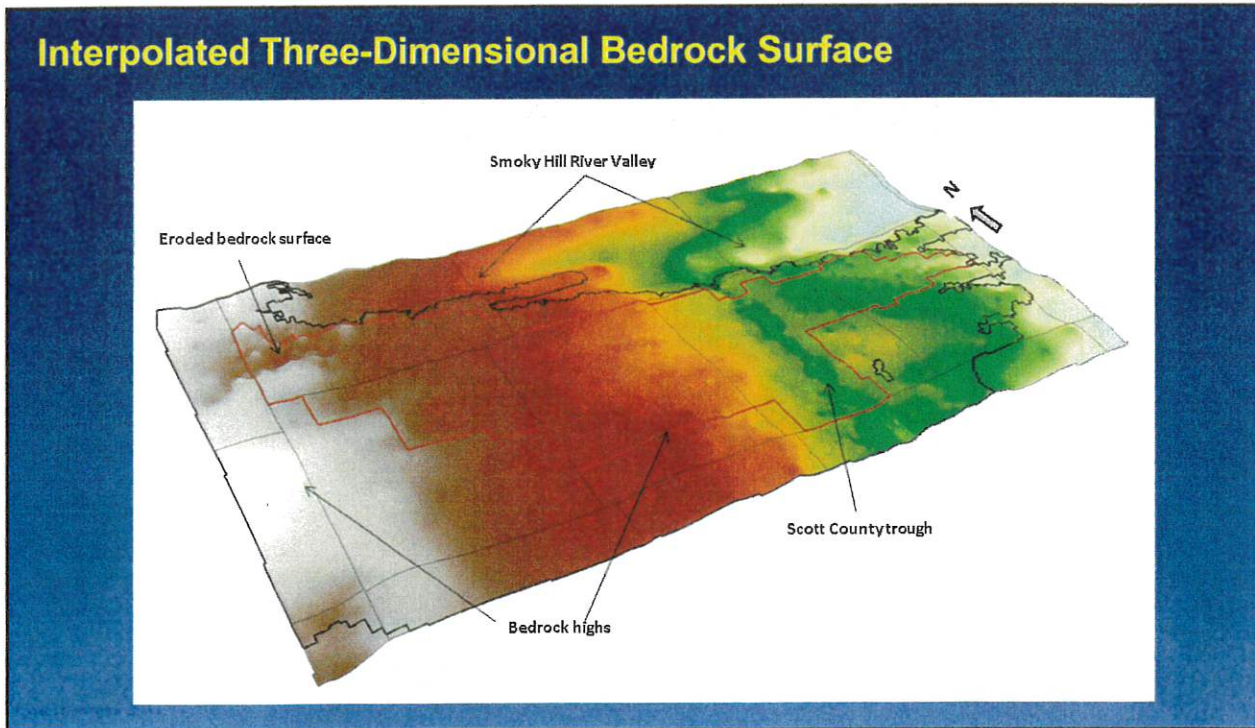
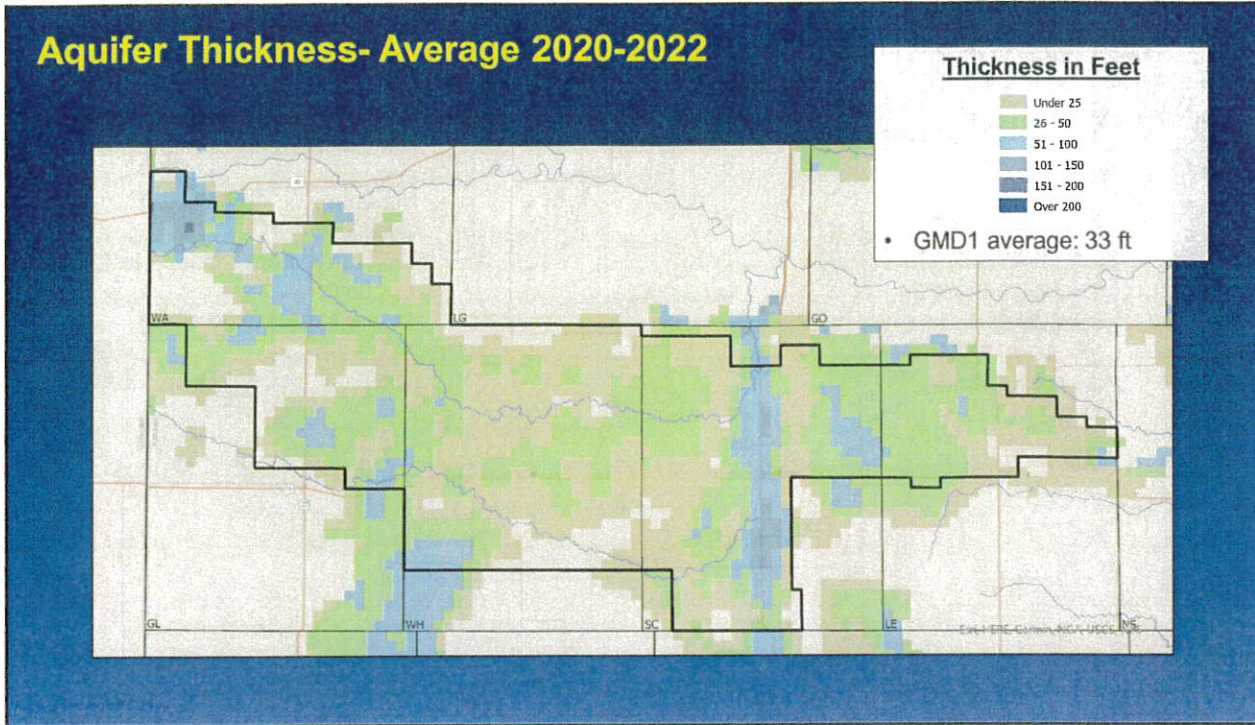
Aquifer Thickness- Predevelopment

Thickness in Feet

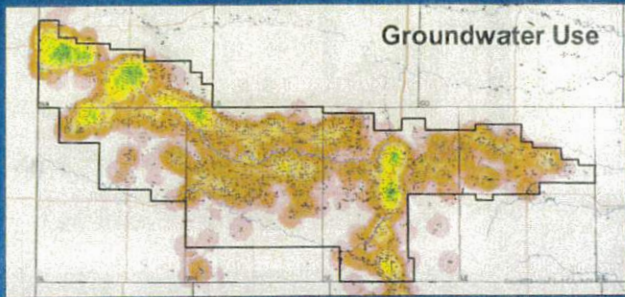
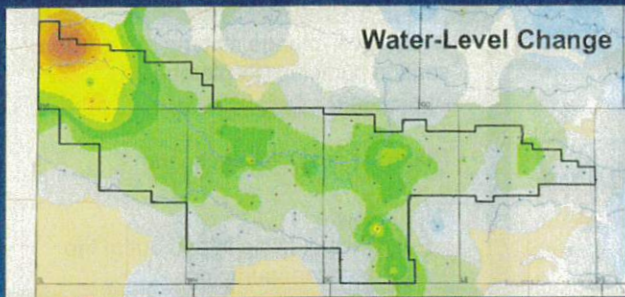
- Under 25
- 26 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- Over 200

- GMD1 average: 78 ft



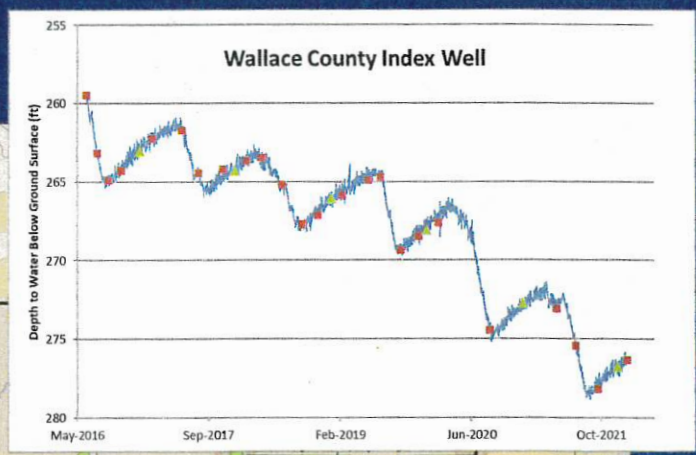
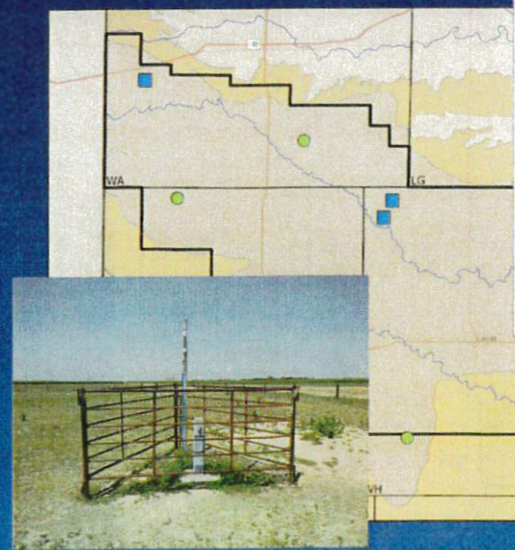


Water-Level Change vs Reported Water Use

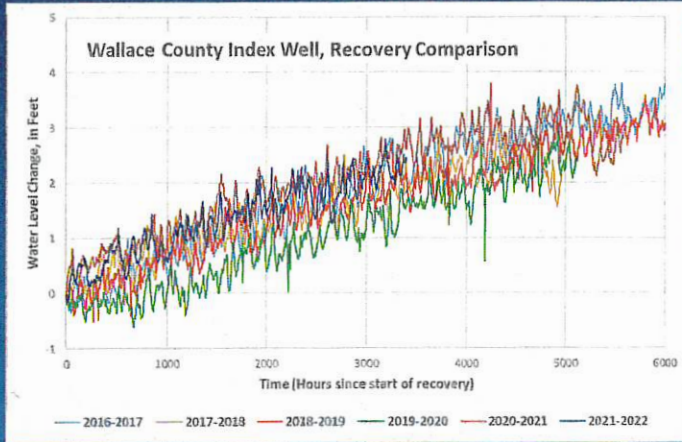


How far out of whack are we?

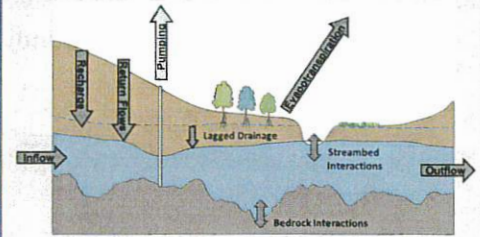
Index Wells



Index Wells Recovery Curves, Wallace County

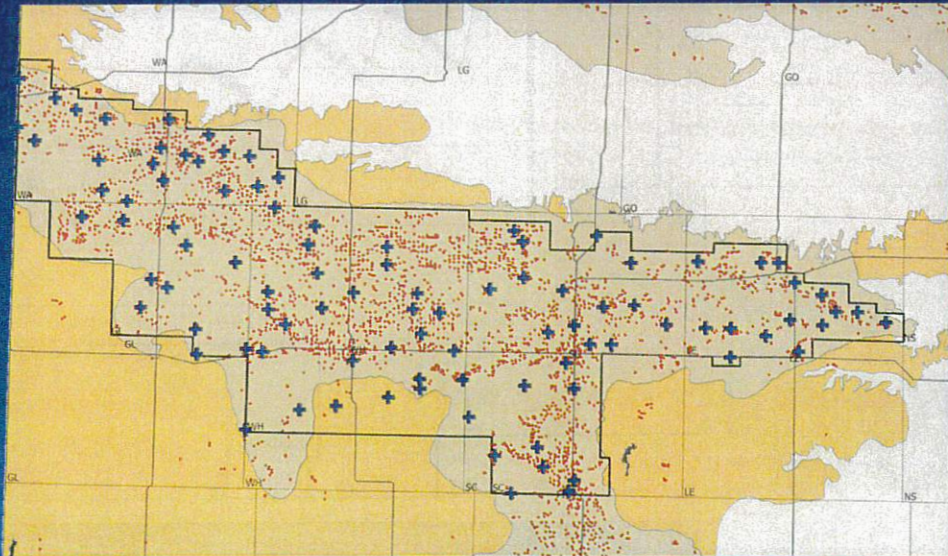


- Water level change starting at the end-of-season pumping (September to April~June)
- Recovery is similar each year
- "Net Inflow"
Everything flowing in and out of the aquifer except pumping



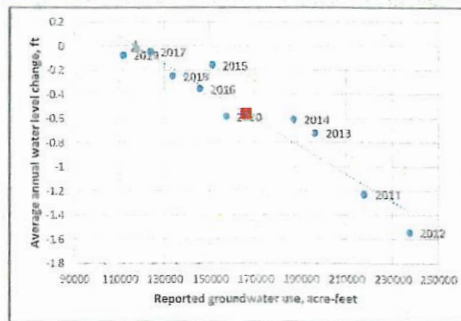
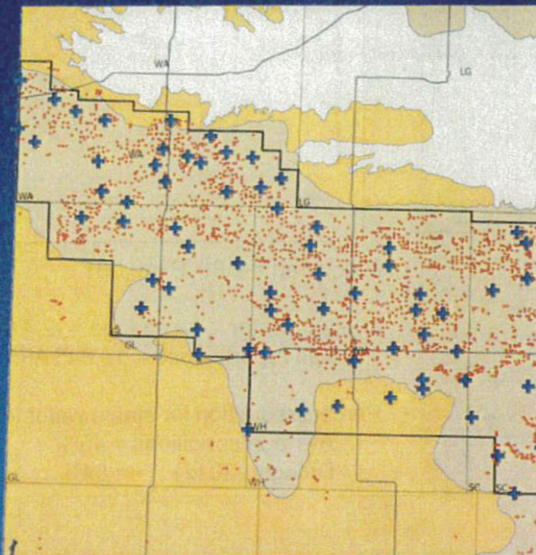
Groundwater Wells

Reported water use and continuously measured water levels, 2011 to 2021



Western Kansas GMD1

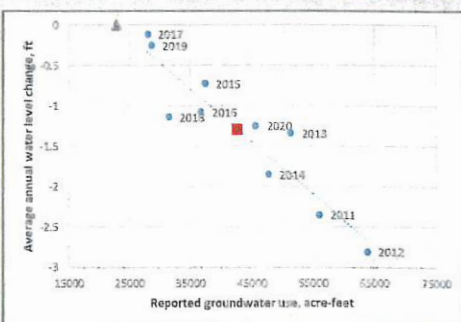
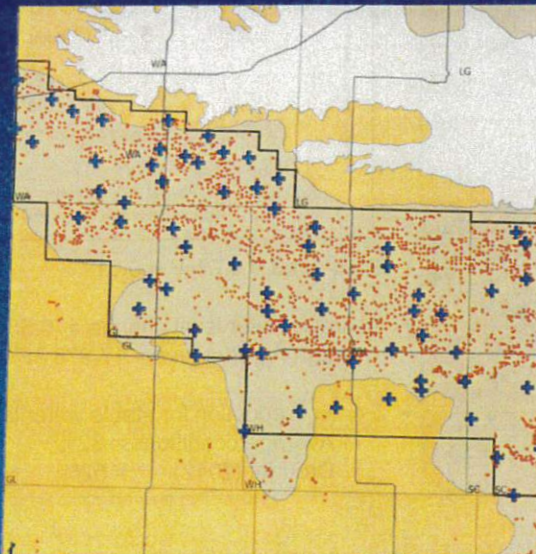
Reported water use and measured water levels, 2011 to 2021



- R-squared = 0.91, P < 0.0001
- Average water level change = -0.56 ft
- Average reported use = 166,121 AF
- Percent reduction for stable water levels:
 - Average conditions = 29%
 - Drought (2012) = 51%

Wallace County

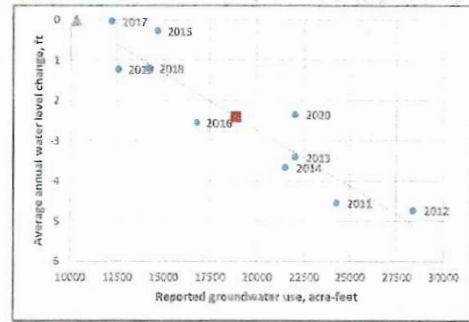
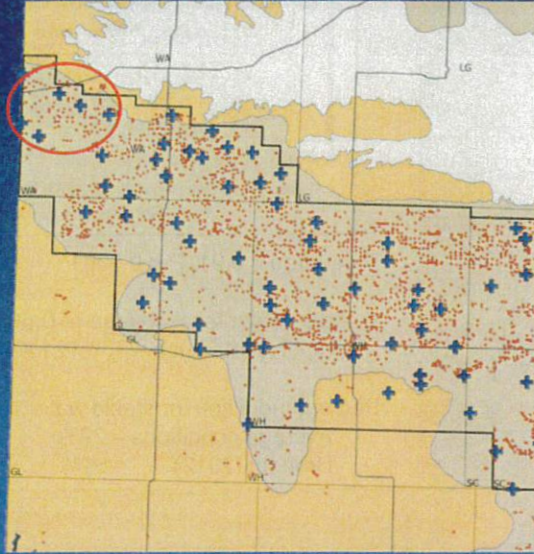
Reported water use and measured water levels, 2011 to 2021



- R-squared = 0.86, P < 0.001
- Average water level change = -1.29 ft
- Average reported use = 42,704 AF
- Percent reduction for stable water levels:
 - Average conditions = 46%
 - Drought (2012) = 64%

Wallace County- Weskan Area

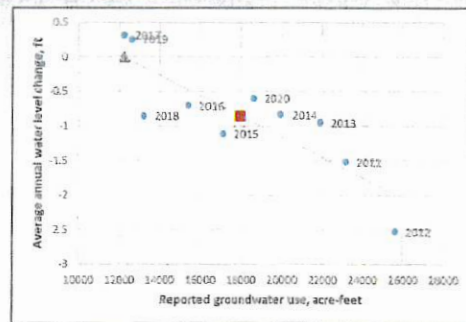
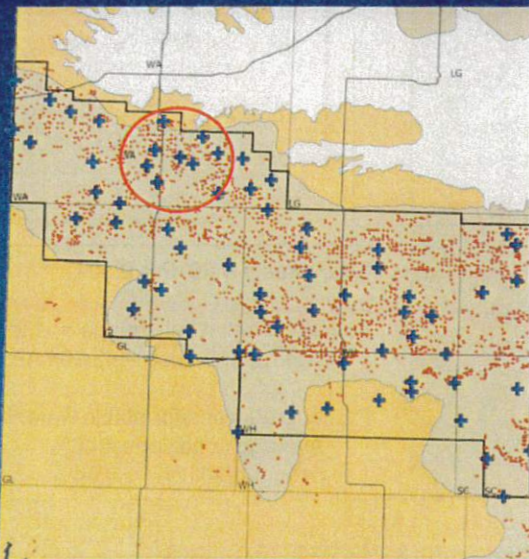
Reported water use and measured water levels, 2011 to 2021



- R-squared = 0.86, P < 0.001
- Average water level change = -2.4 ft
- Average reported use = 18,845 AF
- Percent reduction for stable water levels:
 - Average conditions = 45%
 - Drought (2012) = 64%

Wallace County- Southeast

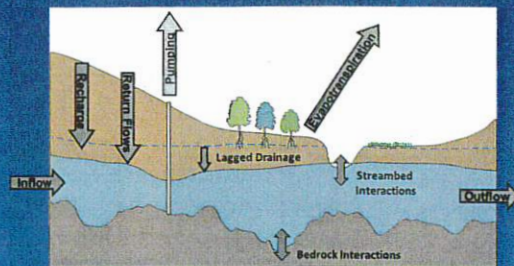
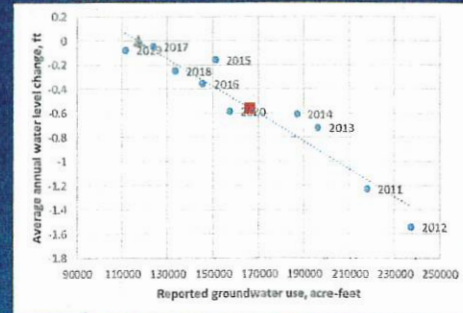
Reported water use and measured water levels, 2011 to 2021



- R-squared = 0.72, P < 0.01
- Average water level change = -0.85 ft
- Average reported use = 17,978 AF
- Percent reduction for stable water levels:
 - Average conditions = 32%
 - Drought (2012) = 52%

Conclusions

- Water-balance method allows for quick and accurate means to assess water-level changes in response to changes in pumping.
 - Data driven.
 - No conceptualization of aquifer parameters
 - Requires representative data- both quality and quantity
- Based on 2011 to 2020 conditions, average reductions in pumping to achieve stabilized water levels become less moving west to east.
 - Wallace County ~46%
 - Greeley/Wichita counties ~30%
 - Scott County ~18%
 - Lane County ~15%
- Conditions are likely to hold true for the next decade or two but will need to be revisited as components of the water budget adjust.



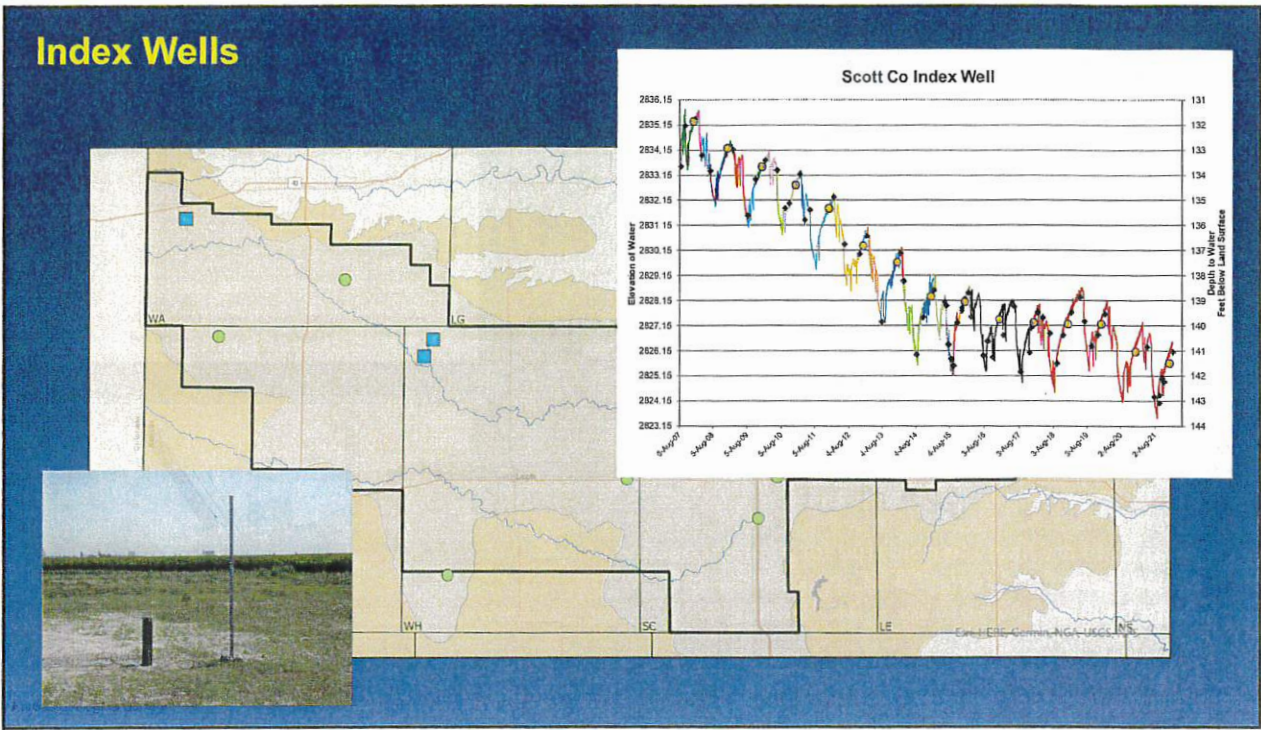
Questions????

Kansas Geological Survey
 1930 Constant Ave
 Lawrence, KS 66047
 785-864-2118

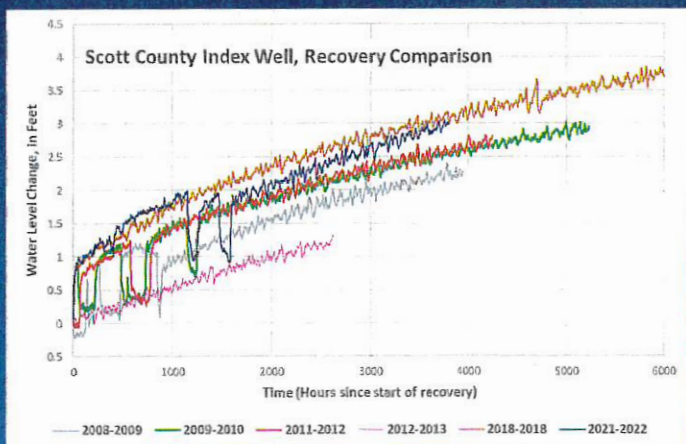


Visit our site at
<http://www.kgs.ku.edu>

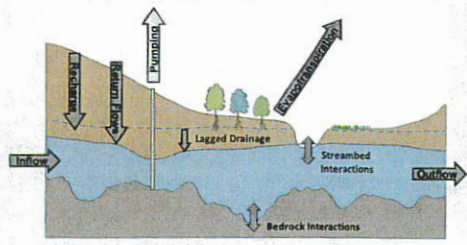
Index Wells



Index Wells Recovery Curves, Scott County

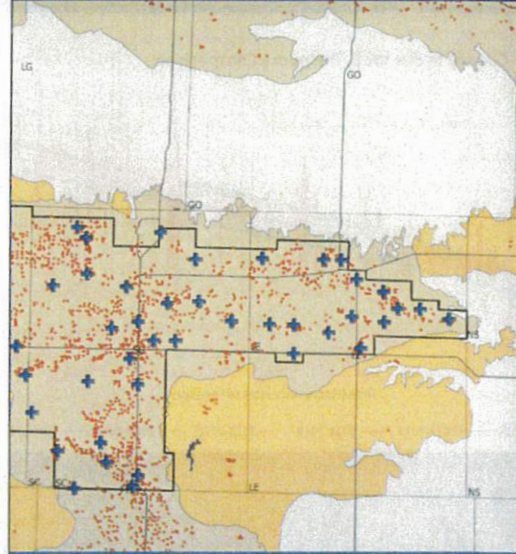
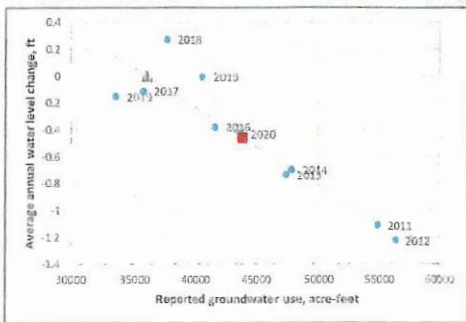


- Water level change starting at the end-of-season pumping (September to April~June)
- Recovery is similar each year
- "Net Inflow"
Everything flowing in and out of the aquifer except pumping



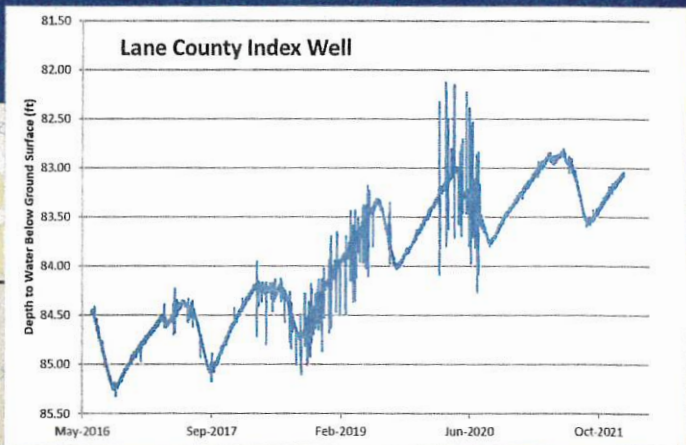
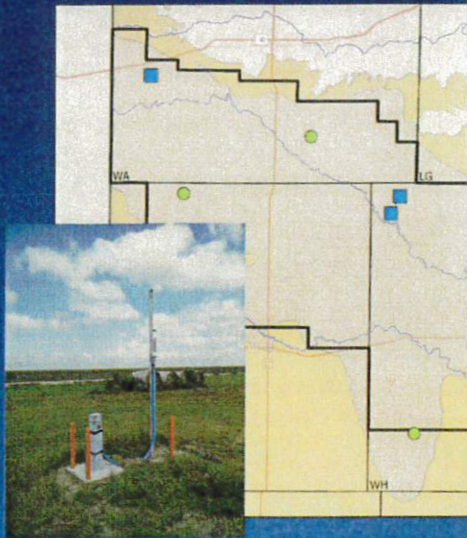
Scott County

Reported water use and measured water levels, 2011 to 2021

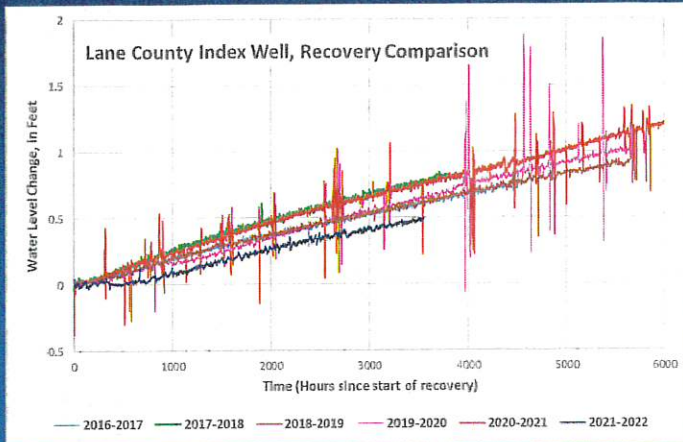


- R-squared = 0.85, P < 0.001
- Average water level change = -0.46 ft
- Average reported use = 43,851 AF
- Percent reduction for stable water levels:
 - Average conditions = 18%
 - Drought (2012) = 36%.

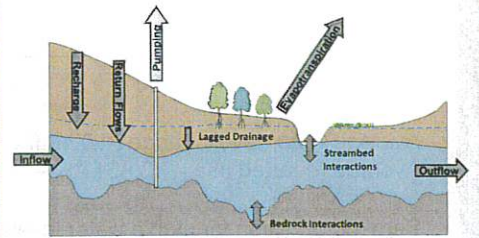
Index Wells



Index Wells Recovery Curves, Lane County

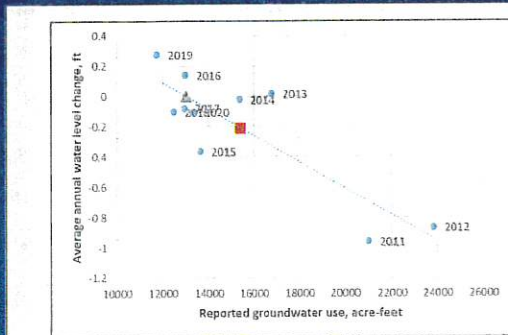


- Water level change starting at the end-of-season pumping (September to April-June)
- Recovery is similar each year
- “Net Inflow”
Everything flowing in and out of the aquifer except pumping

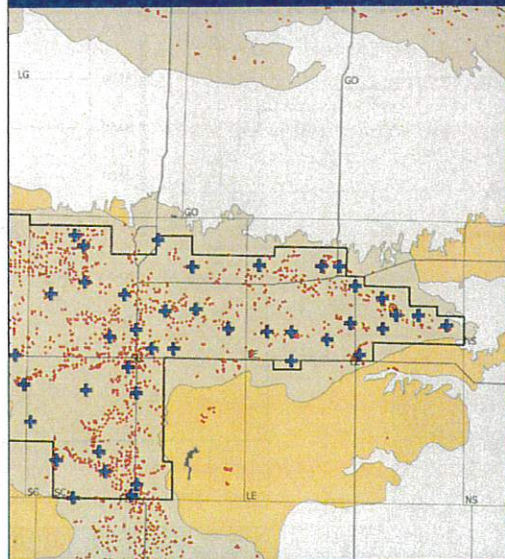


Lane County

Reported water use and measured water levels, 2011 to 2021

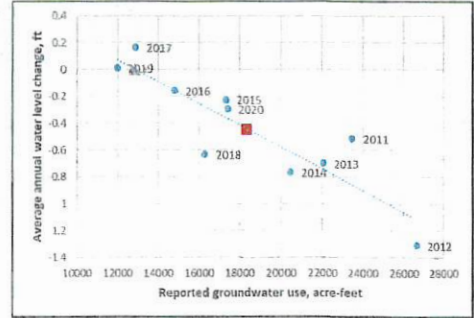
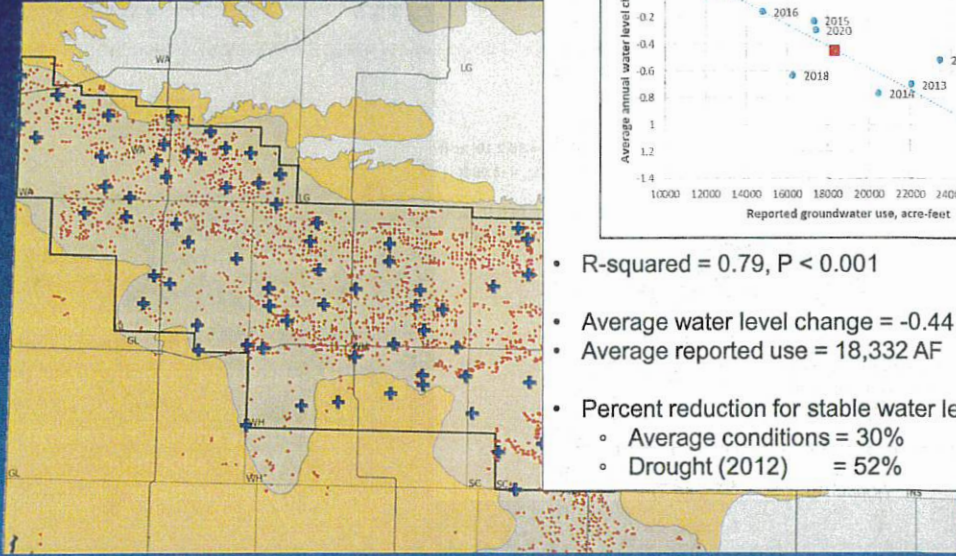


- R-squared = 0.73, $P < 0.01$
- Average water level change = -0.21 ft
- Average reported use = 15,402 AF
- Percent reduction for stable water levels:
 - Average conditions = 16%
 - Drought (2012) = 45%.



Greeley County

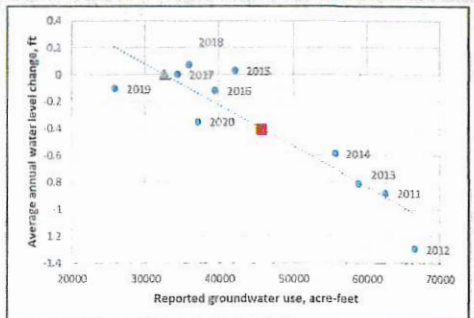
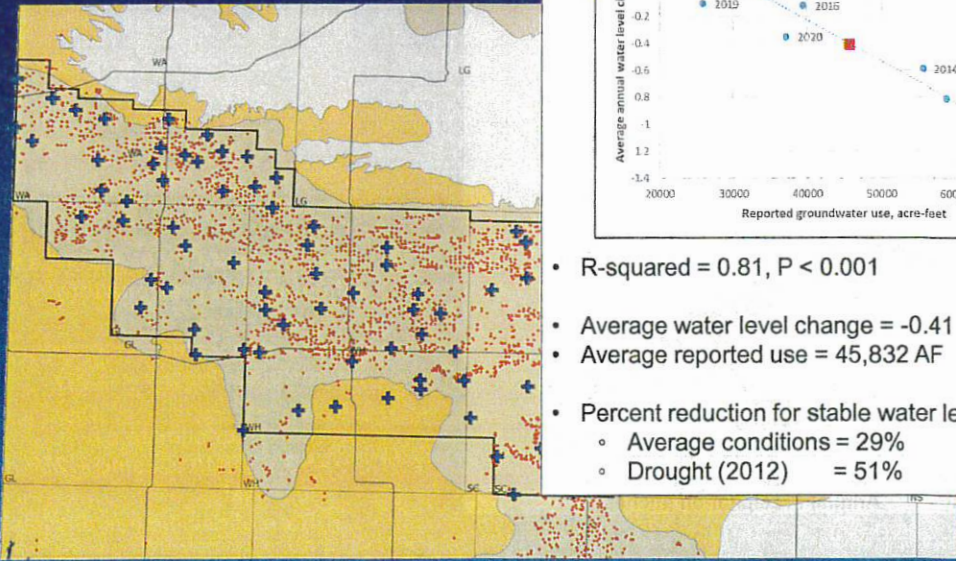
Reported water use and measured water levels, 2011 to 2021



- R-squared = 0.79, P < 0.001
- Average water level change = -0.44 ft
- Average reported use = 18,332 AF
- Percent reduction for stable water levels:
 - Average conditions = 30%
 - Drought (2012) = 52%

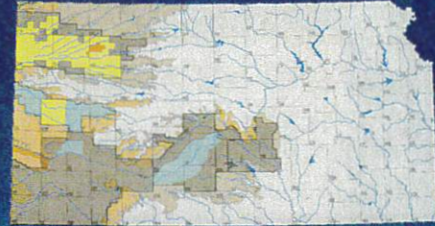
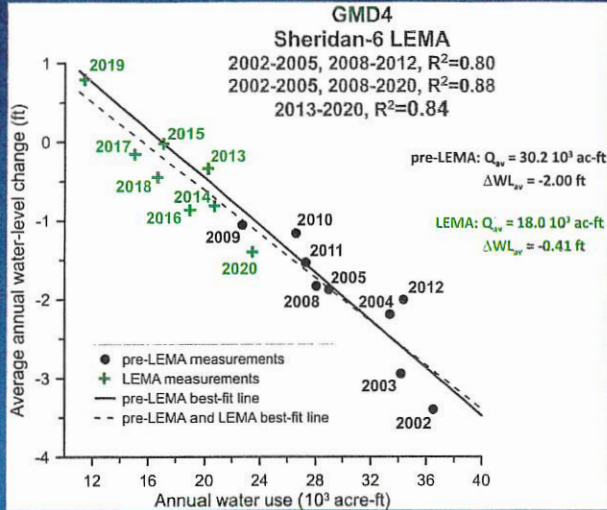
Wichita County

Reported water use and measured water levels, 2011 to 2021



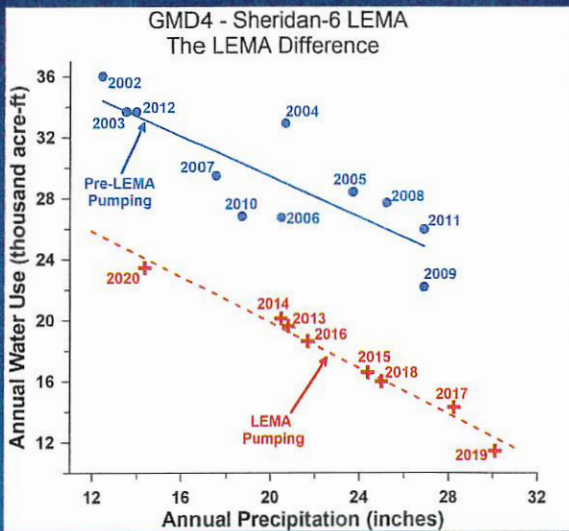
- R-squared = 0.81, P < 0.001
- Average water level change = -0.41 ft
- Average reported use = 45,832 AF
- Percent reduction for stable water levels:
 - Average conditions = 29%
 - Drought (2012) = 51%

Water Use vs Water-Level Change, Sheridan 6 LEMA



- 5 year plan
- 20% reduction in average use
- Re-allocated 11 inch allocations
- Flexibility within "Farm Unit"
 - 5-year allocation
 - Water transfer

Water Use vs Water-Level Change, Sheridan 6 LEMA



- Pre- and post-LEMA, water usage is influenced by precipitation.
- Post-LEMA water conservation is intentional.
- Corrected for climate:
 - SD 6 LEMA is using ~ 25% to 34% less water.
 - Rate of decline has diminished ~70%



WESTERN KANSAS GROUNDWATER MANAGEMENT DISTRICT NO. 1

Lane County Outreach Meeting

Proposed LEMA

Friday, May 20th 2022

2:00 p.m. CST

**The meeting will be made available in person at the Lane County 4-H Building at
745 N. 7th Dighton, KS**

1. Welcome – Board & GMD1 Staff Introductions
 - a. Program Review

2. Legislative Update
 - a. Representative Jim Minnix

3. Groundwater Resource Conditions in Western Kansas – GMD1
 - a. Kansas Geological Survey

4. Proposed LEMA Presentation and Q&A Discussion



WESTERN KANSAS GROUNDWATER MANAGEMENT DISTRICT NO. 1

Scott County Outreach Meeting

Proposed LEMA

Friday, May 20th 2022

9:00 a.m. CST

**The meeting will be made available in person at the William Carpenter 4-H Building at
608 N Fairground Rd, Scott City KS**

1. Welcome – Board & GMD1 Staff Introductions
 - a. Program Review

2. Legislative Update
 - a. Representative Jim Minnix

3. Groundwater Resource Conditions in Western Kansas – GMD1
 - a. Kansas Geological Survey

4. Proposed LEMA Presentation and Q&A Discussion



WESTERN KANSAS GROUNDWATER MANAGEMENT DISTRICT NO. 1

Wallace County Outreach Meeting

Proposed LEMA

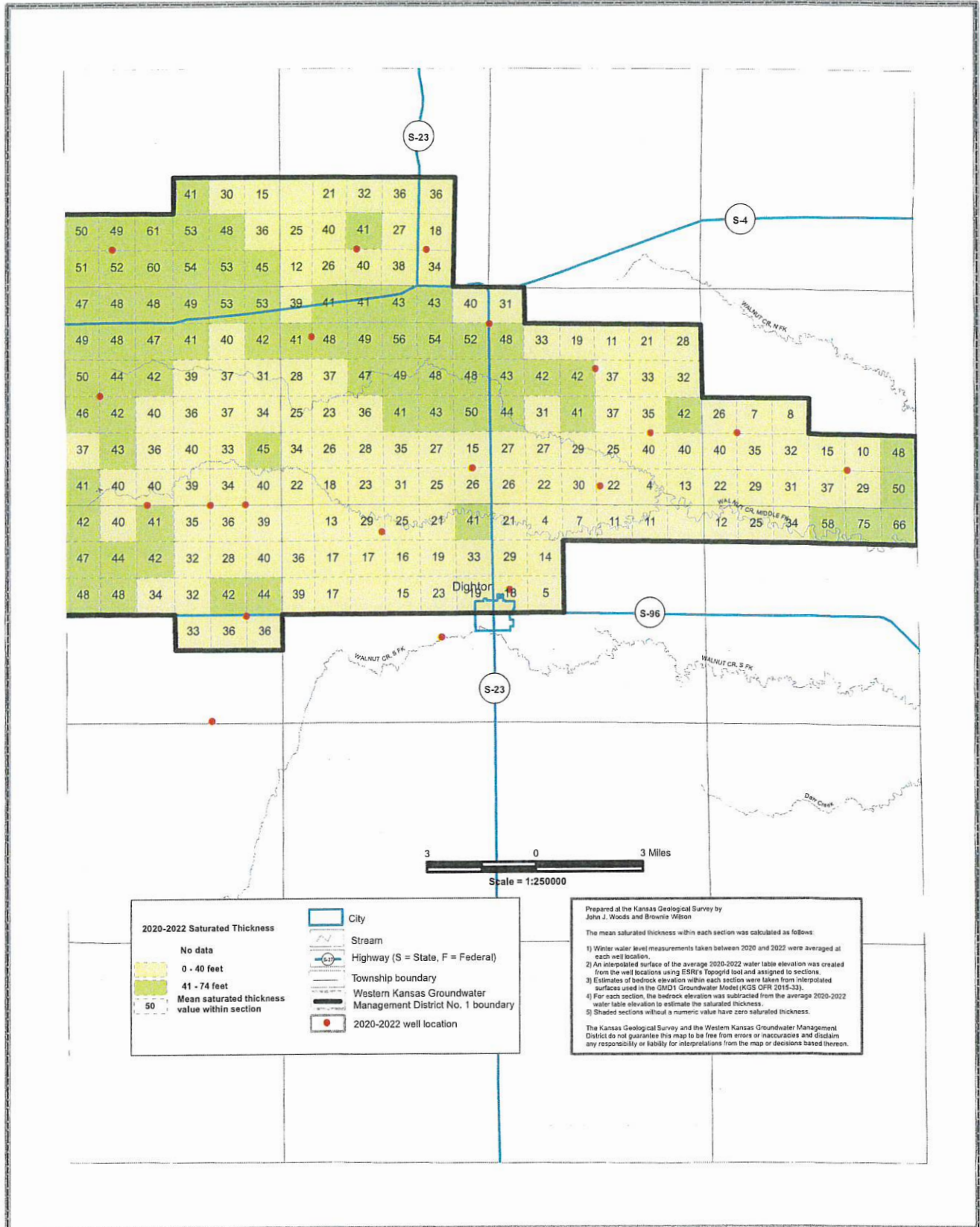
Thursday, May 19th 2022

9:00 a.m. MST

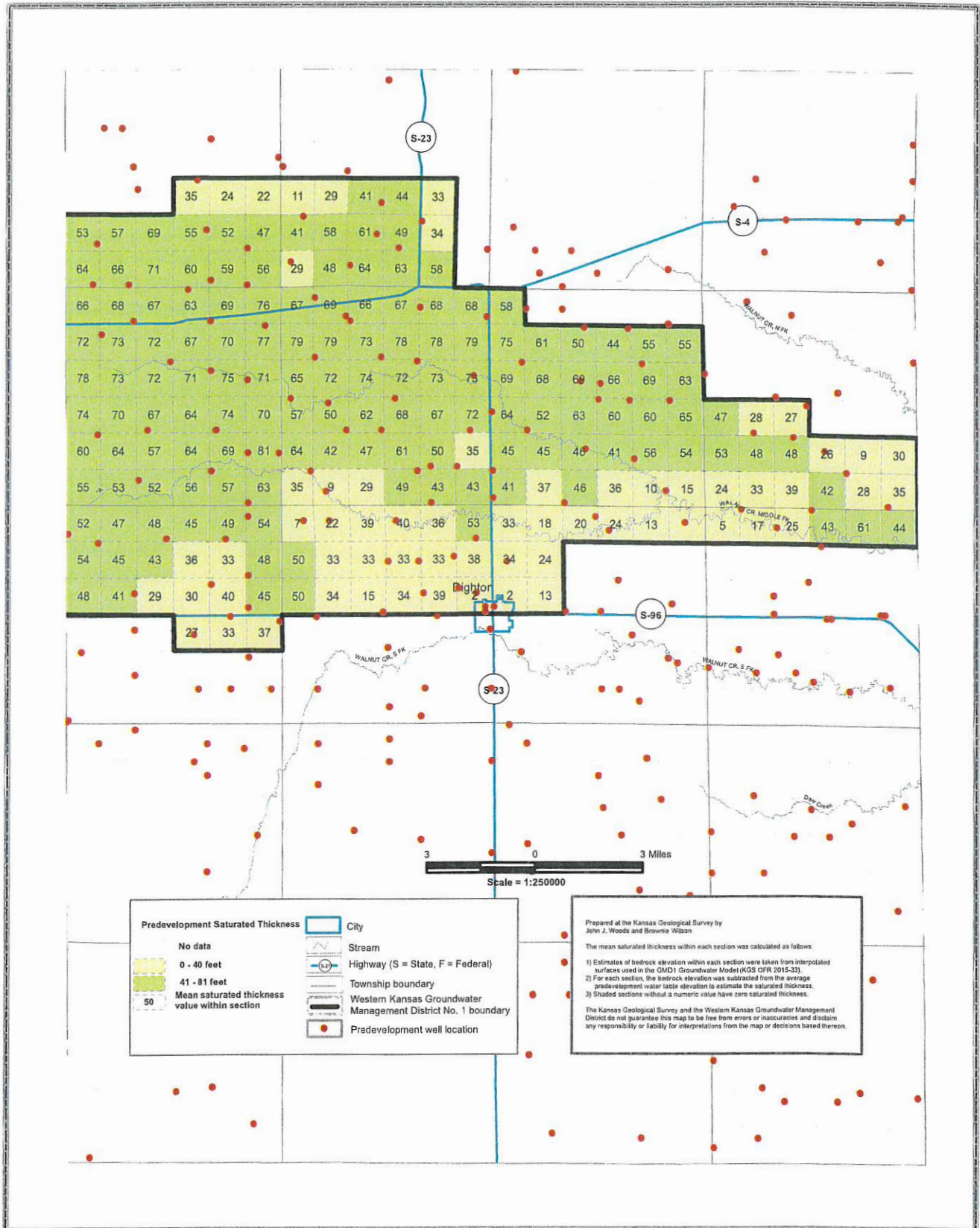
**The meeting will be made available in person at the Community Building located at 201
School Avenue, Weskan KS**

1. Welcome – Board & GMD1 Staff Introductions
 - a. Program Review
2. Legislative Update
3. Groundwater Resource Conditions in Western Kansas – GMD1
 - a. Kansas Geological Survey
4. Proposed LEMA Presentation and Q&A Discussion

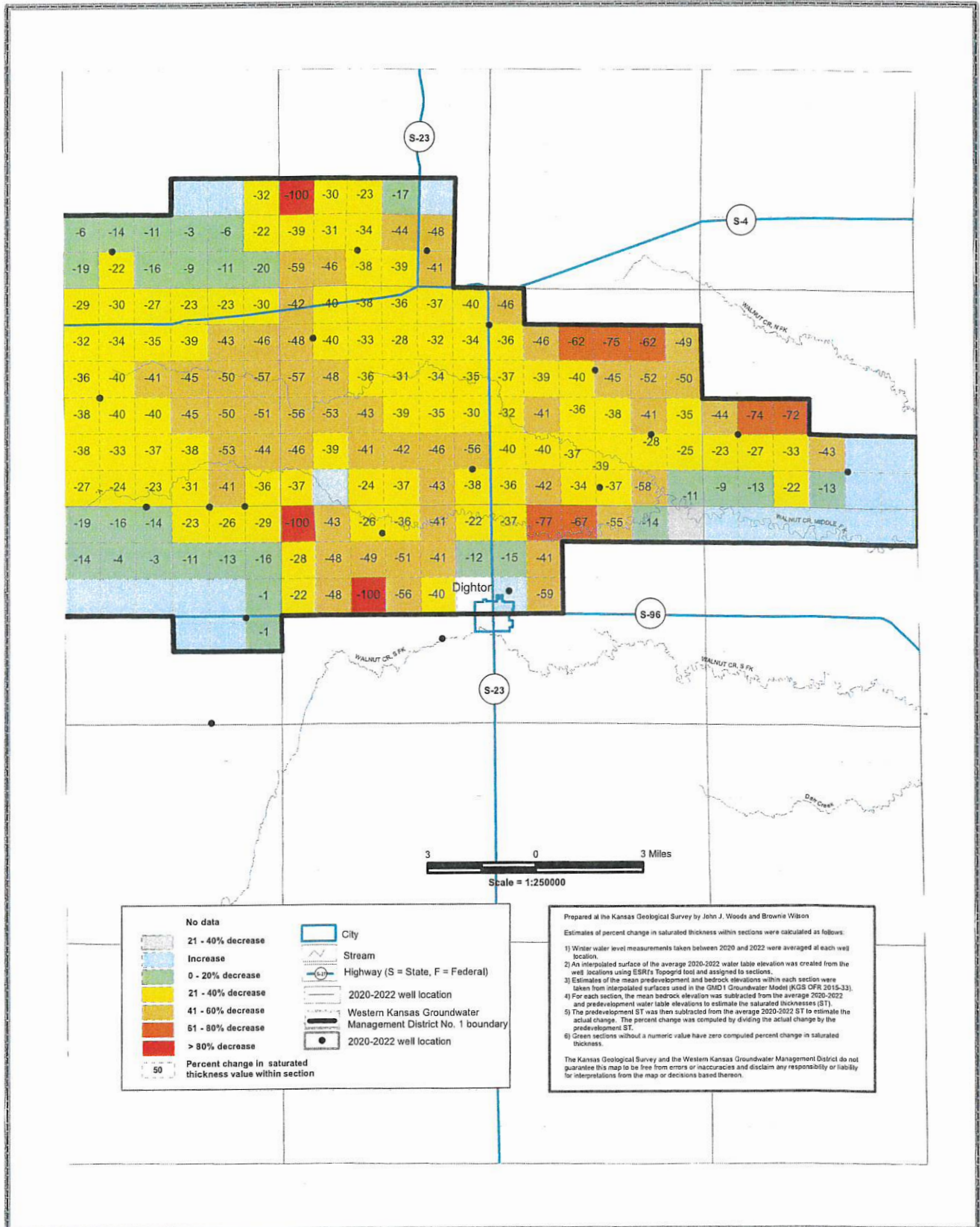
Estimated Average 2020-2022 Saturated Thickness of the High Plains Aquifer in Lane County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



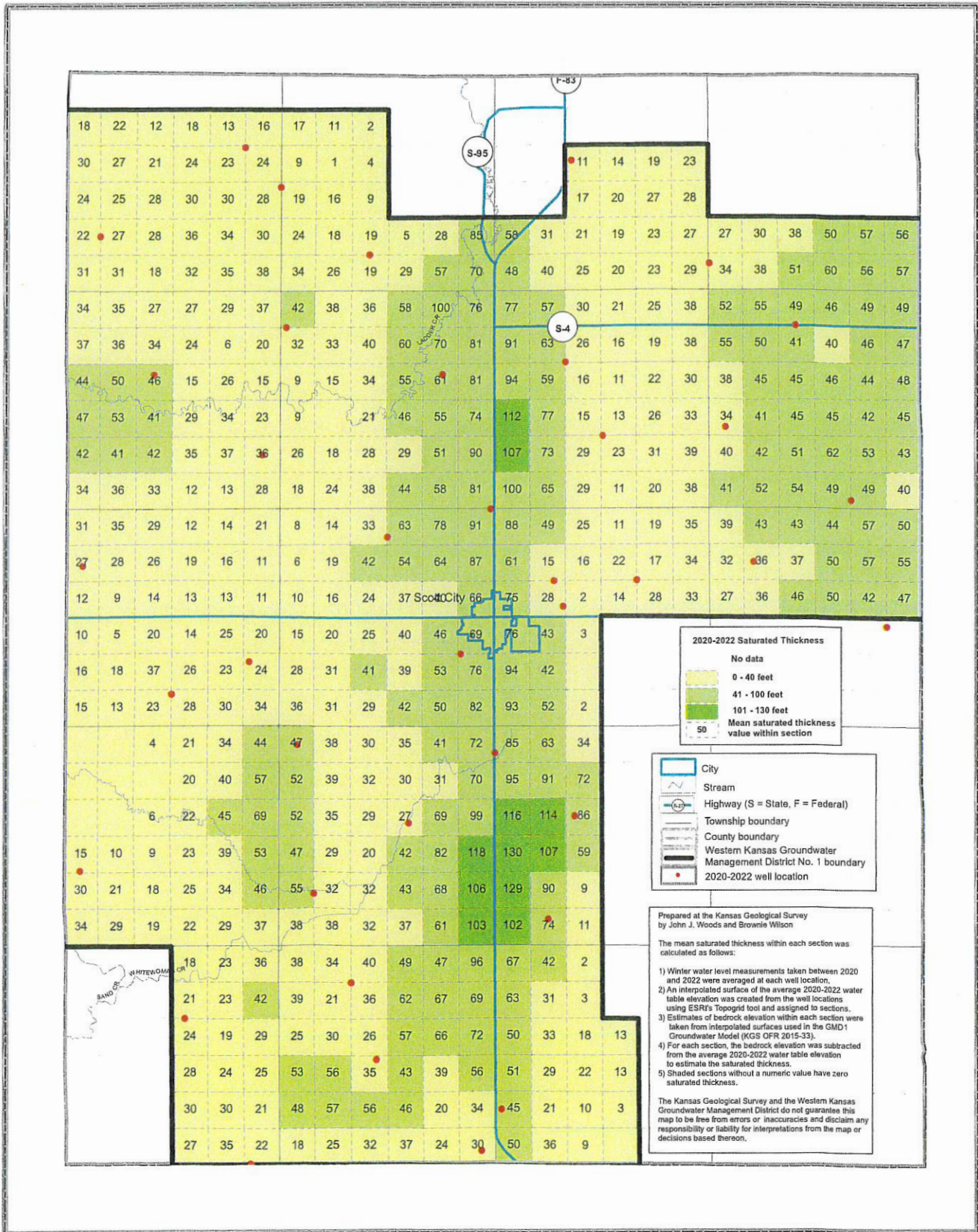
Estimated Average Predevelopment Saturated Thickness of the High Plains Aquifer in Lane County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



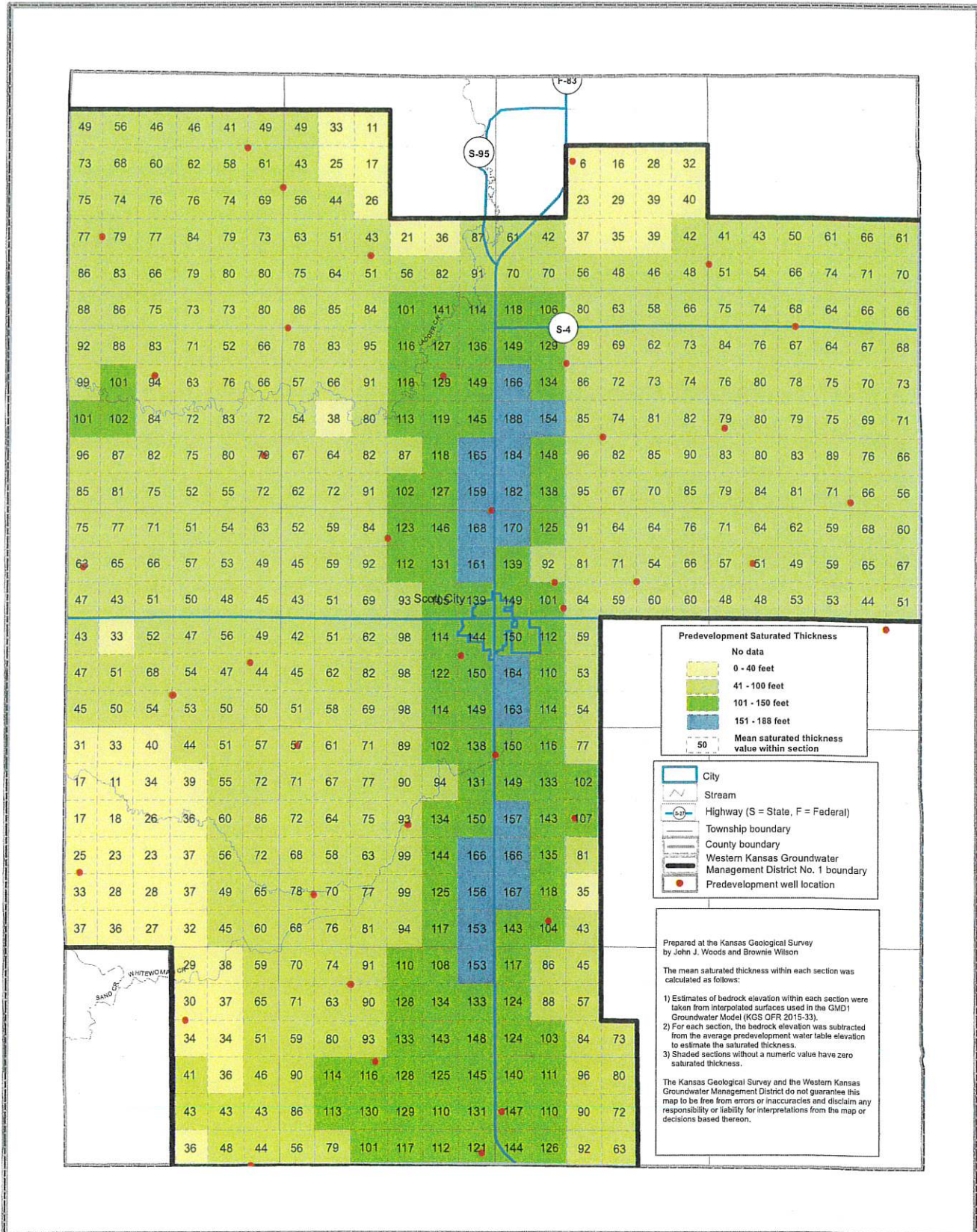
Estimated Average Percent Change in Saturated Thickness of the High Plains Aquifer from Predevelopment to Average 2020-2022 in Lane County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



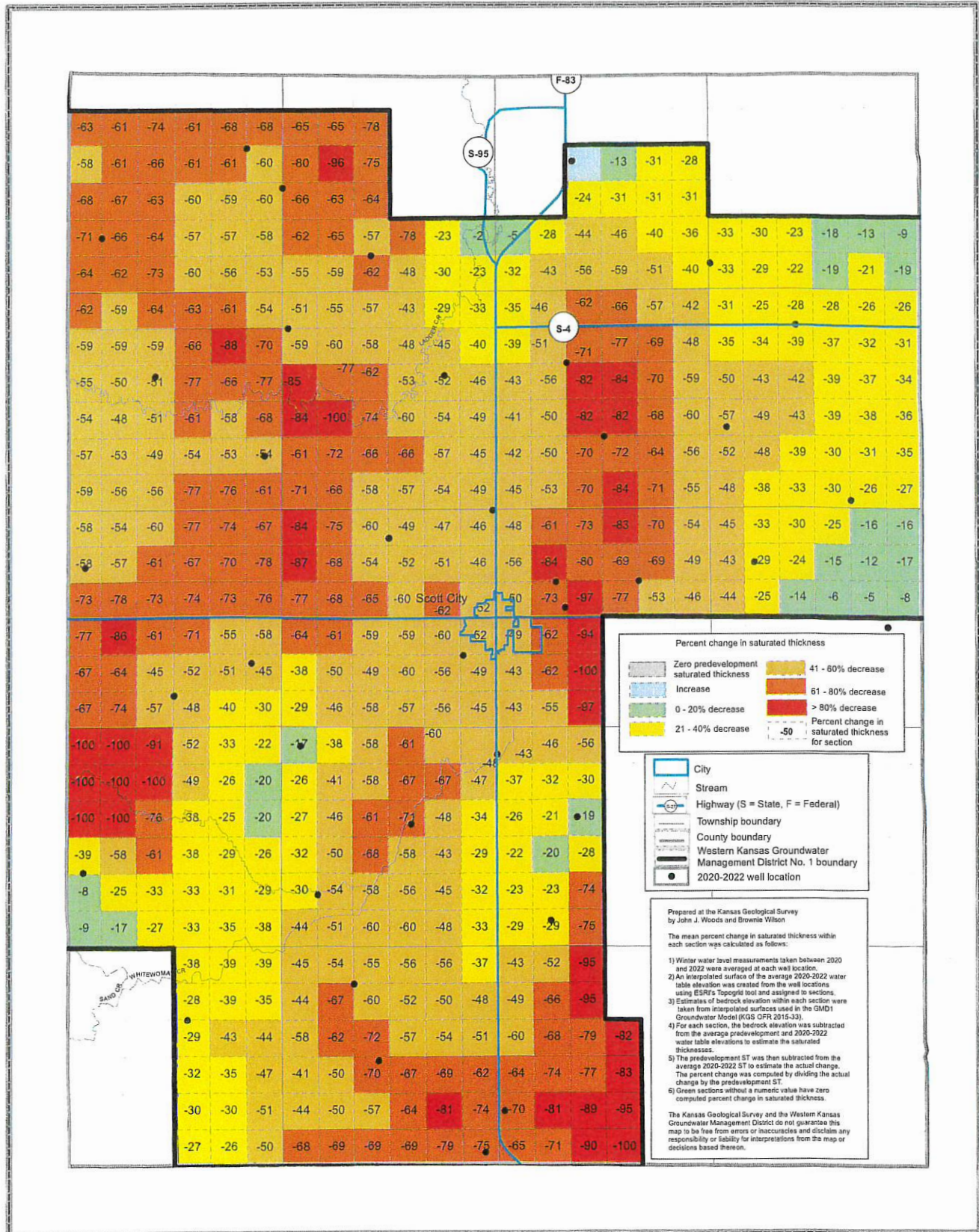
Estimated Average 2020-2022 Saturated Thickness of the High Plains Aquifer in Scott County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



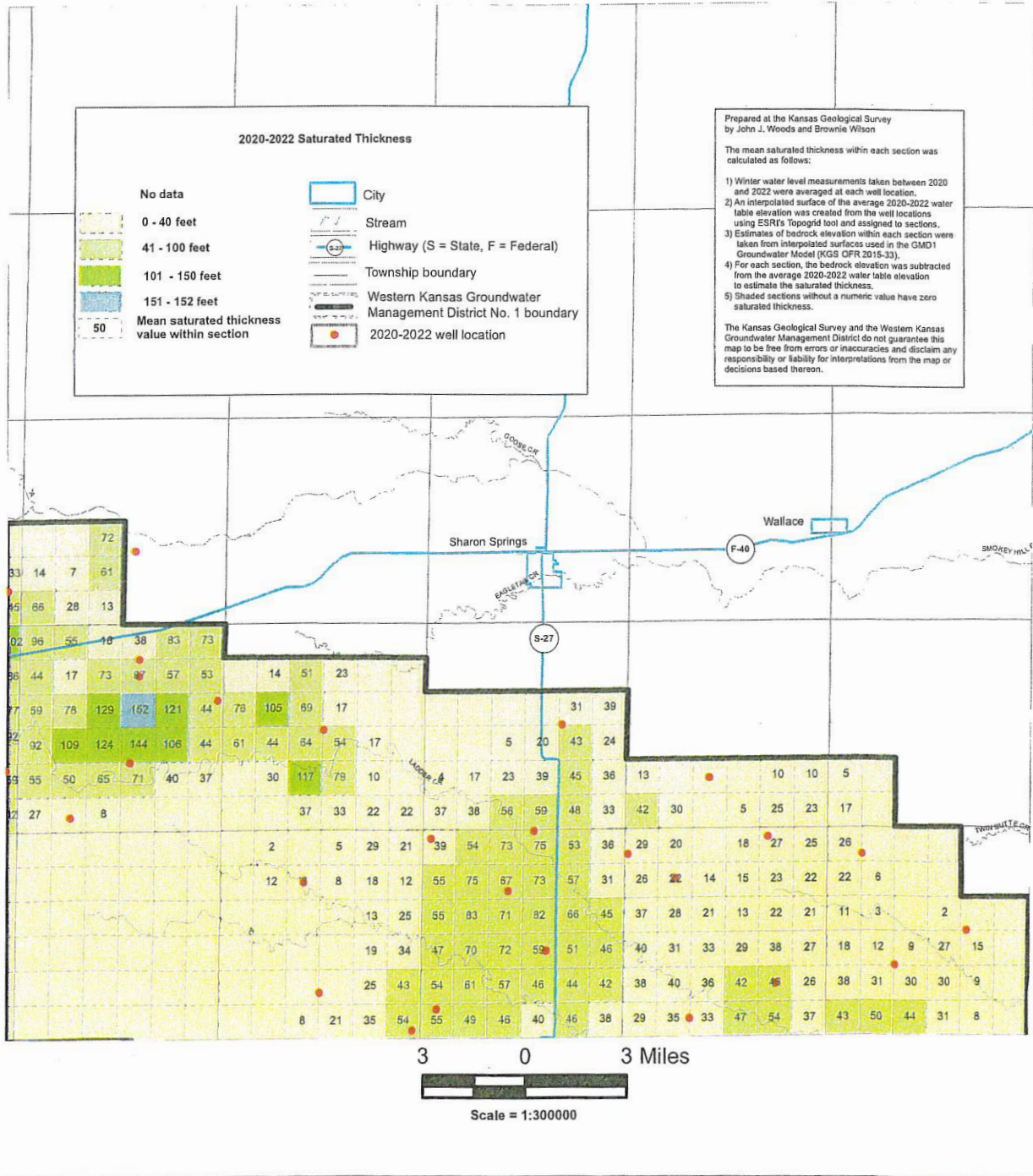
Estimated Average Predevelopment Saturated Thickness of the High Plains Aquifer in Scott County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



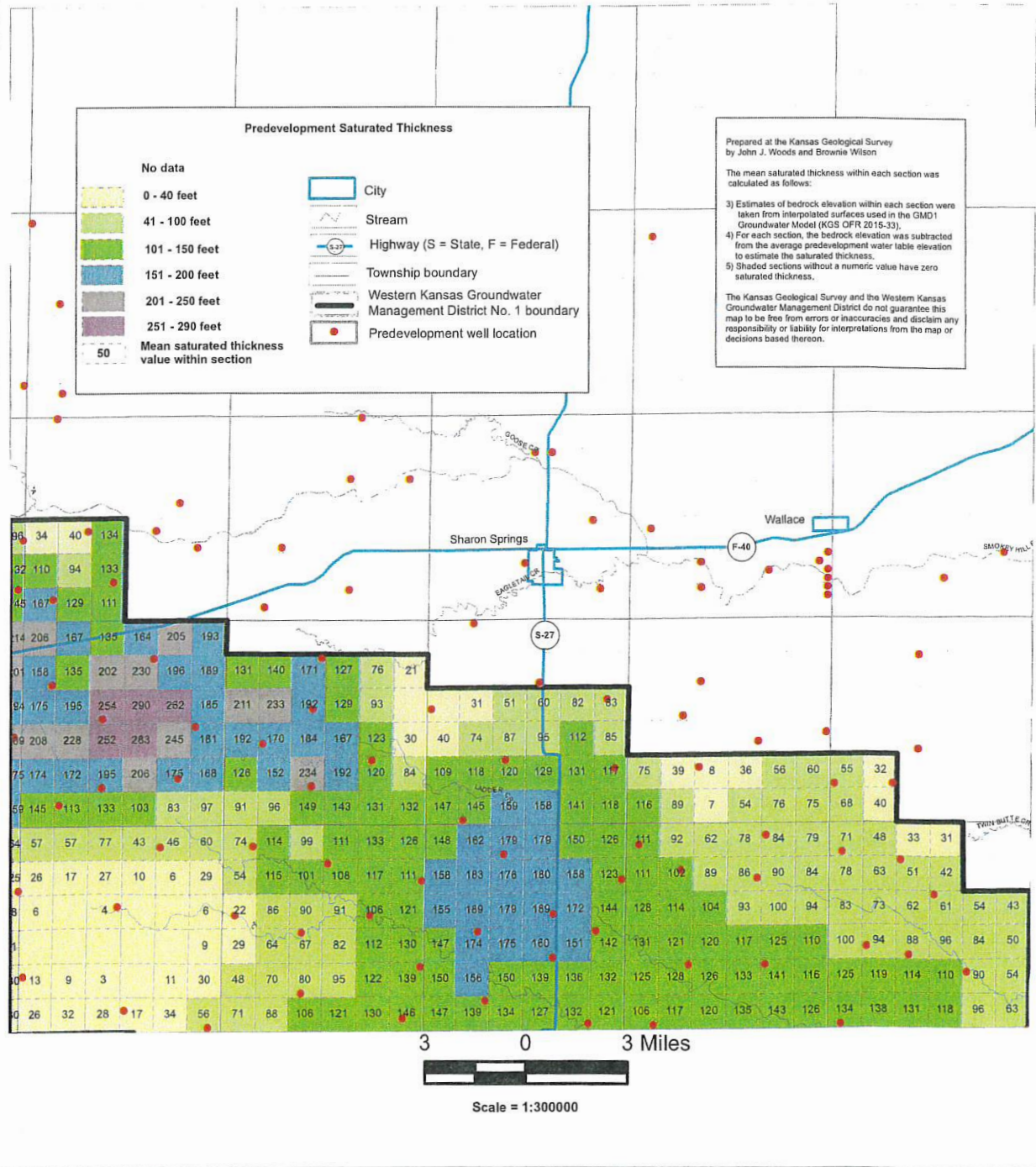
Estimated Average Percent Change in Saturated Thickness of the High Plains Aquifer from Predevelopment to Average 2020-2022 in Scott County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



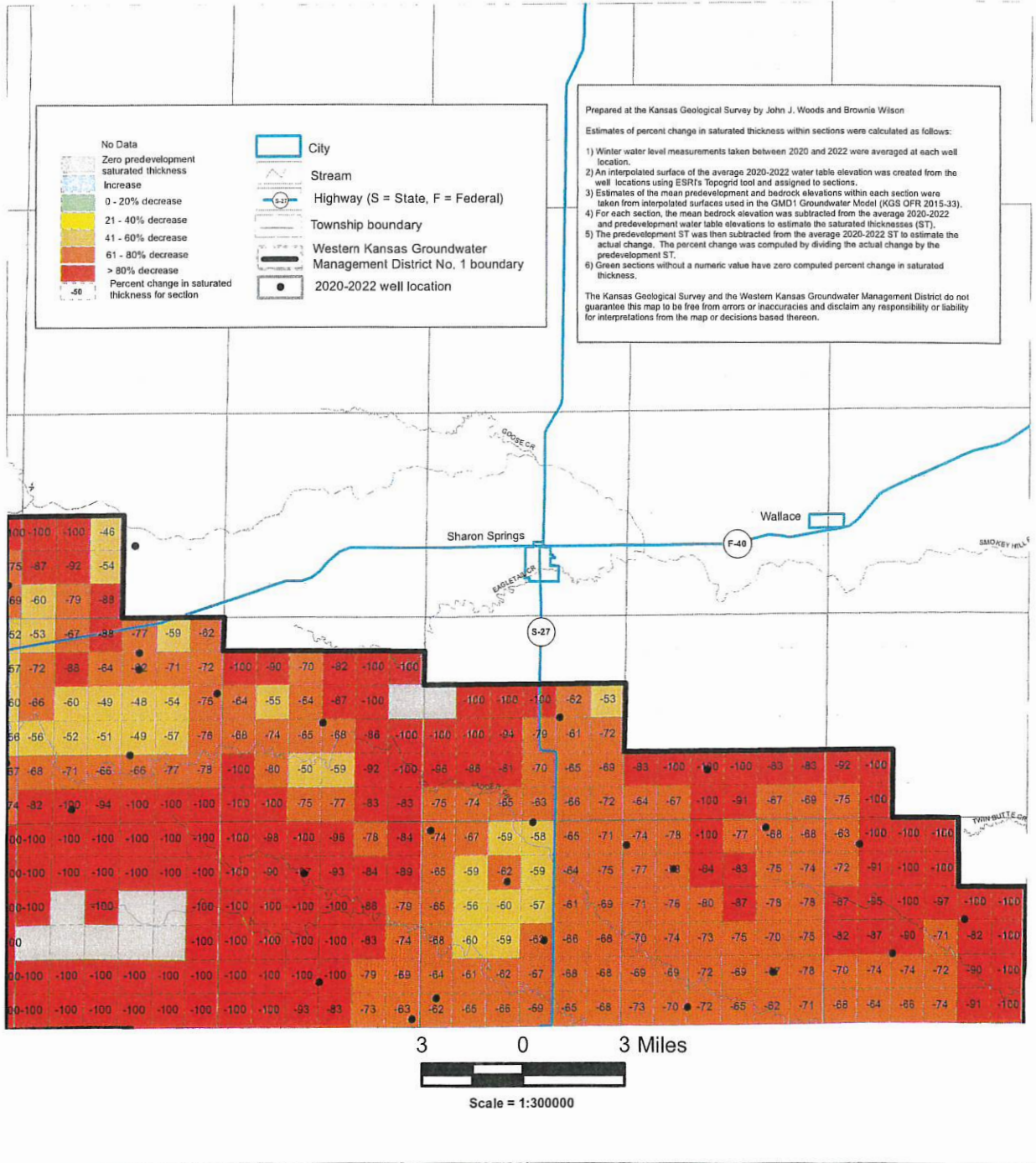
Estimated Average 2020-2022 Saturated Thickness of the High Plains Aquifer in Wallace County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



Estimated Average Predevelopment Saturated Thickness of the High Plains Aquifer in Wallace County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



Estimated Average Percent Change in Saturated Thickness of the High Plains Aquifer from Predevelopment to Average 2020-2022 in Wallace County Within Western Kansas GMD No. 1 (KGS Open-File Report 2022-X)



Western Kansas GMD No. 1 Considerations of Additional LEMAs



GMD 1 Public Outreach Meetings 2022
May 19th-20th, 2022

Presented By:

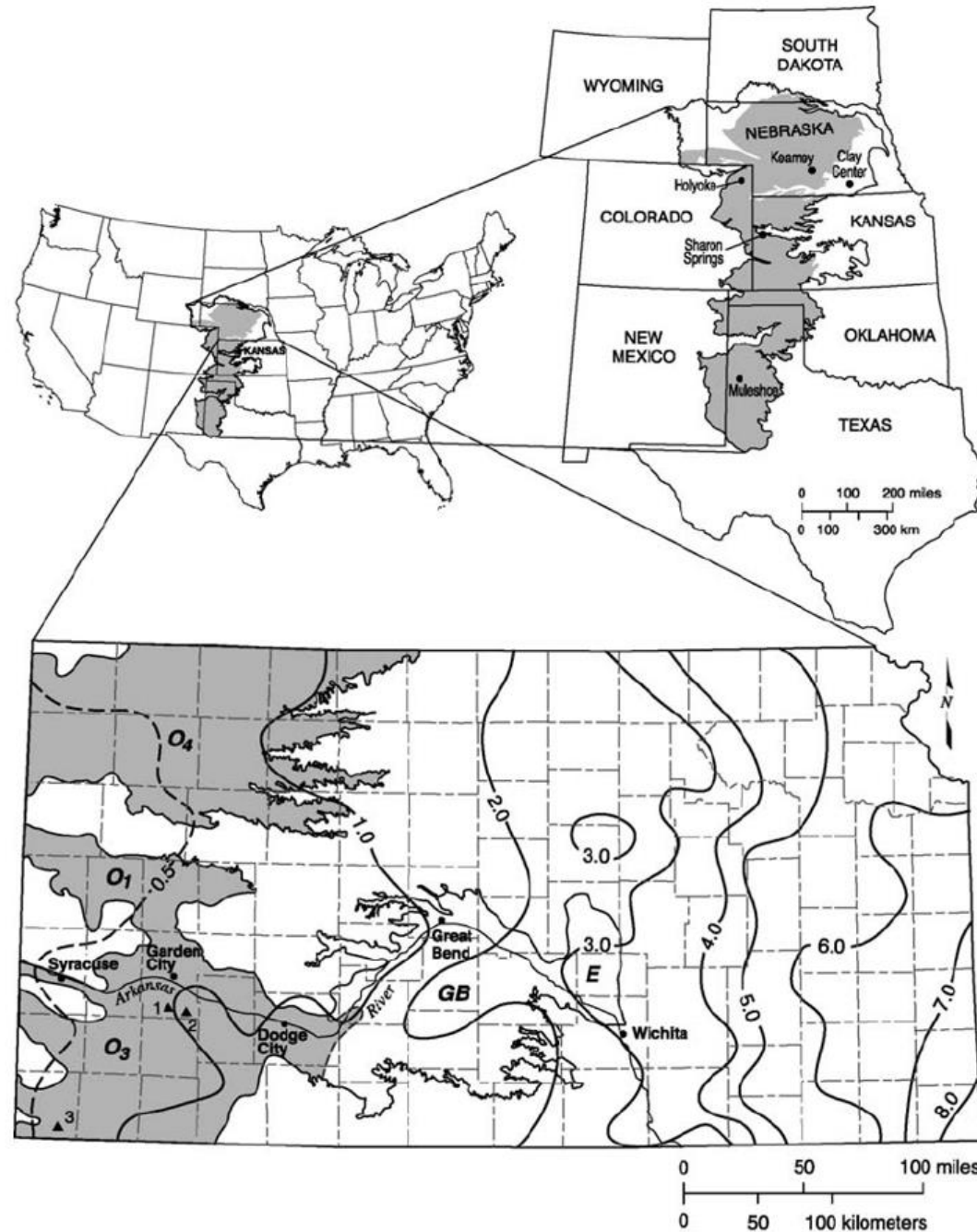
Katie Durham – District Manager

David Barfield – Consultant

GMD1 Board of Directors

Overview of the Ogallala Aquifer

- Covers Parts of 8 States Throughout the Country
- 174,000 square miles
- Approximately 30% of Irrigated Land in the USA is Supplied by the Ogallala



Western Kansas Groundwater Management District No. 1 Formation & History

- Groundwater Management in Kansas

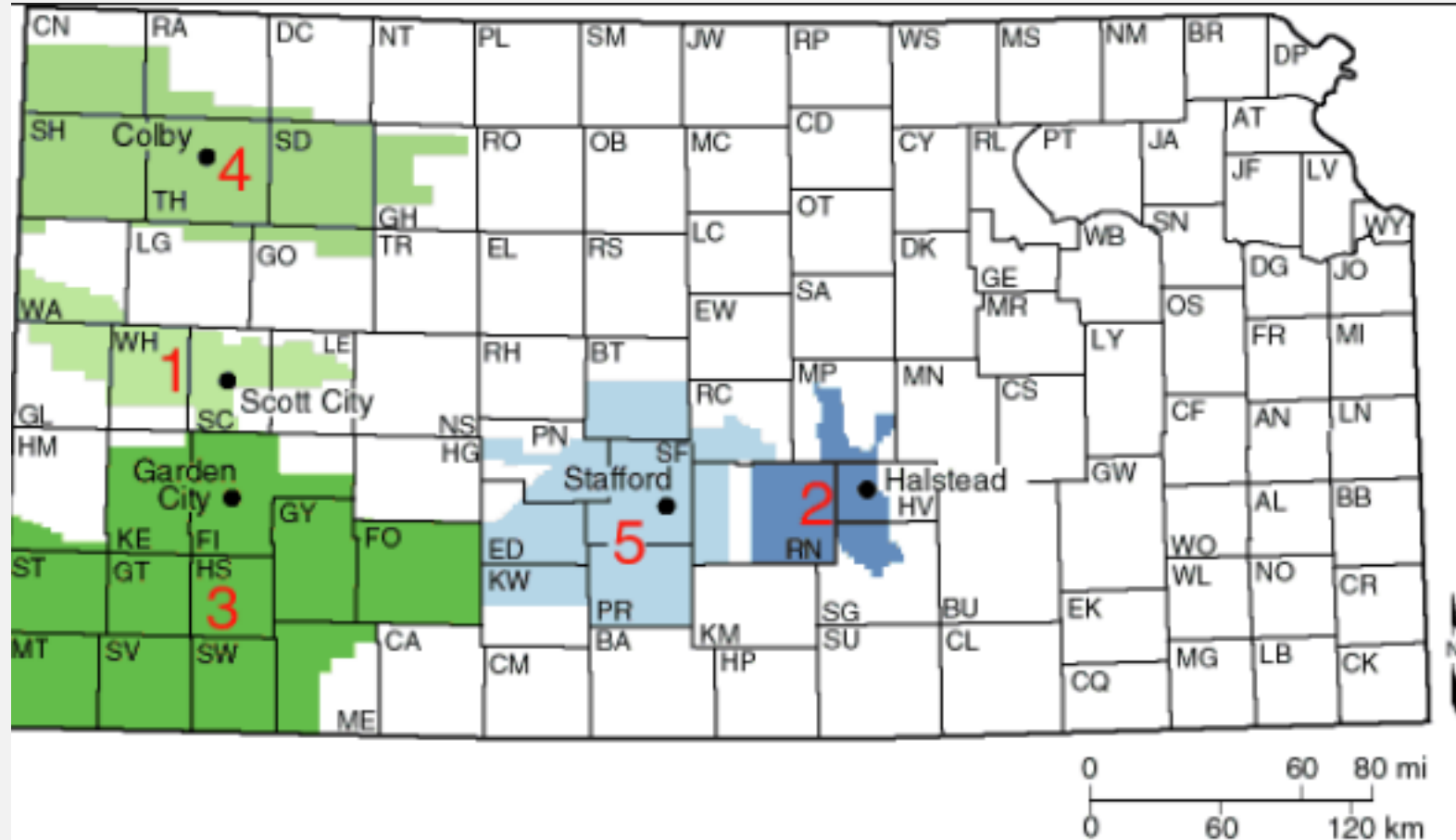
- Groundwater Management Act
 - 1972
- Five GMD's

- What is the Historic Role of the GMD's?

- GMD1 Programs
 - Weather Modification
 - Cost Share
 - LEMA Development

-GMD 1

- 1973
- Wallace, Greeley, Wichita, Scott & Lane
- 1.1 million acres



LEMA Statute – Process & Key Concepts

IGUCA – Limited to No Local Control

- Alternative a process to a LEMA where the Chief Engineer conducts hearing(s) to determine “corrective controls” to address ground water declines.

LEMA – Local Control

- In LEMAs, GMD develops a plan to address groundwater declines, including goals and proposed regulation to reduce use. The Chief Engineer conducts hearings to determine if the GMD’s plan should be adopted.

The heart of LEMAs is its “**corrective controls,**” typically water use **allocations** that works to achieve groundwater savings.

LEMA typically **provide flexibility** in use of allocations (multi-year, and at times, allowing allocations to be grouped or moved around)

Other elements: appeal process; enforcement

GMD 1 Efforts in Conservation & The History of the LEMA

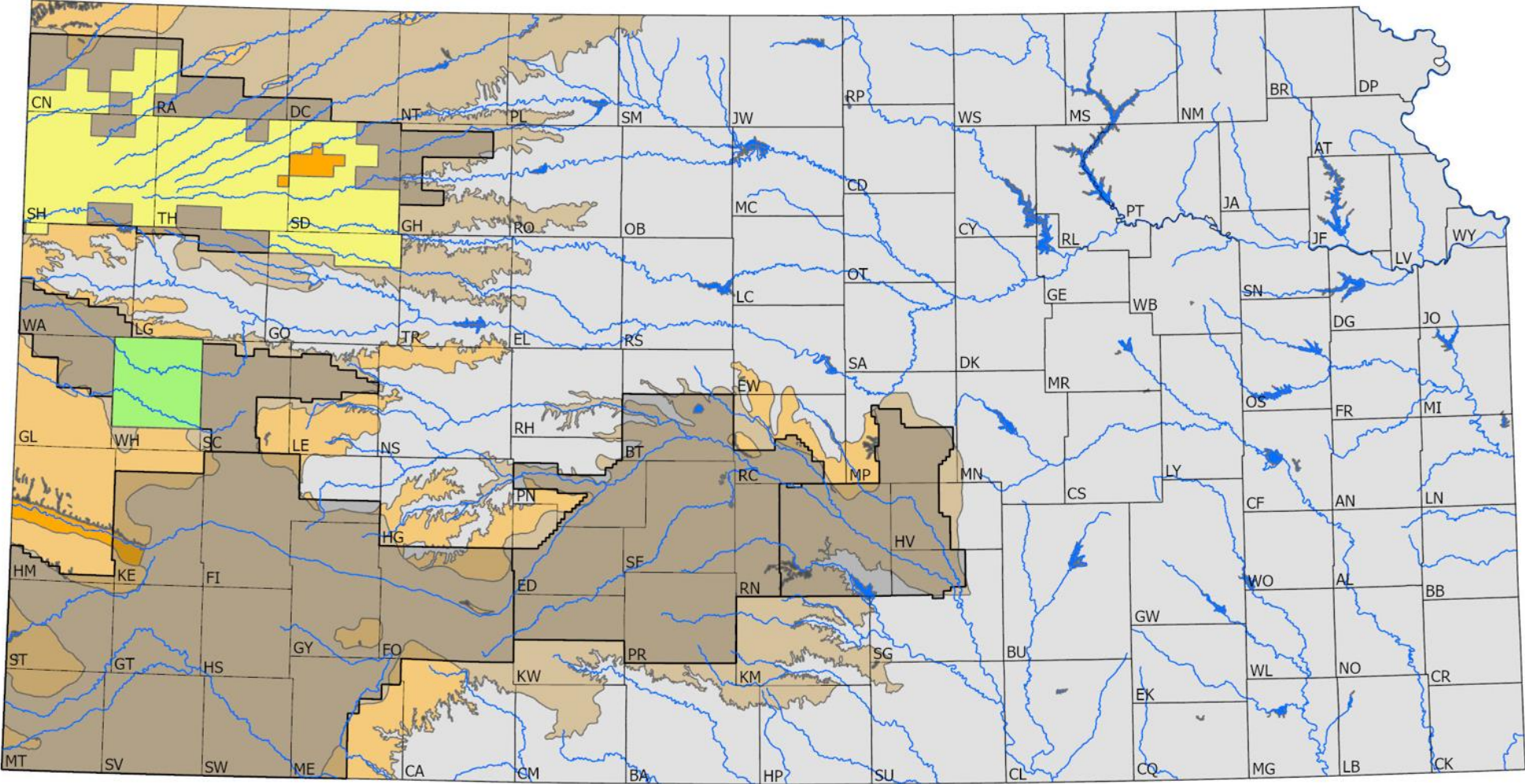
The GMD 1 Board Has Long Supported Water Conservation

- Cost-share programs, education and research
- Support Wichita County WCA development

2012 Amendments to the GMD Act to allow for the creation of Local Enhanced Management Area (LEMAs).

- GMD 4 LEMA efforts in Sheridan 6
- **2013-2014:** District-wide LEMA development; total vote count showed insufficient support for the proposed plan
- **2016-2017:** Wichita County Water Conservation Area (WCA) developed
- **2018-2020:** The Board again discusses LEMAs for the District; decided to move forward with Wichita County LEMA first as it had the greatest support, the most urgent need, and to gain experience in LEMA processes.
- **2021: Approval and implementation of Wichita County LEMA for 2021-2025**

Existing LEMAS in Kansas



Proposed GMD 1 Four County LEMA

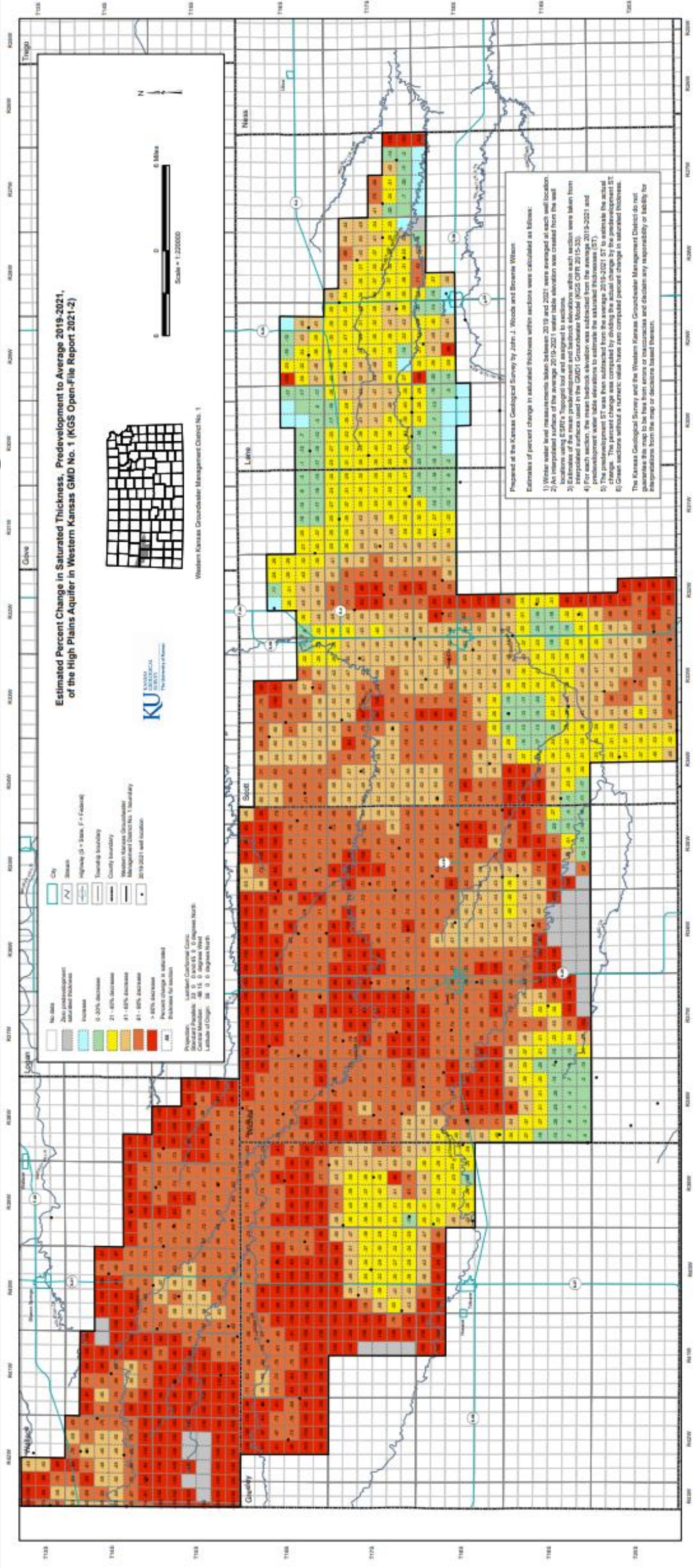
Wallace, Greeley, Scott, Lane Counties

Fall 2020: The GMD Board re-starts discussions on additional LEMA(s) to fulfill its mission to extend the useful life of the aquifer.

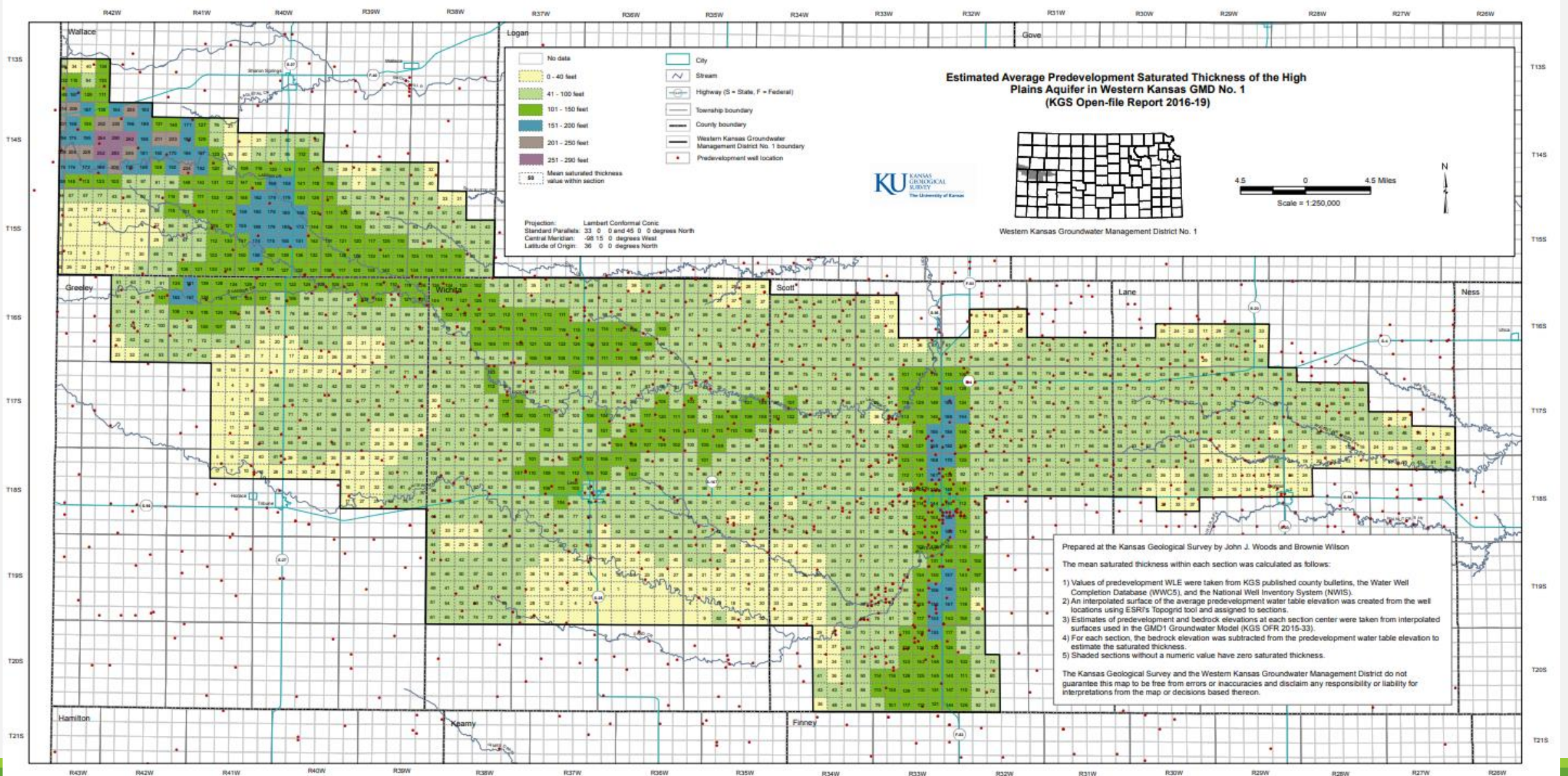
Current Methodology Behind Proposed LEMA:

- The goal is not sustainability, but a significant step to extend the life of the aquifer; encourage maximum economic benefit
- Overall goal savings of approximately 10%
- Maximum reduction of **25% from historic use** to individual waterusers; smaller reductions for those with limited water users
- Provide as much flexibility as possible: 5-year allocations, group allocations
 - “Group” Definition: Composed of all legally overlapping water rights by point of diversion, place of use or both.
- Robust allocation appeal process will be included in the LEMA plan

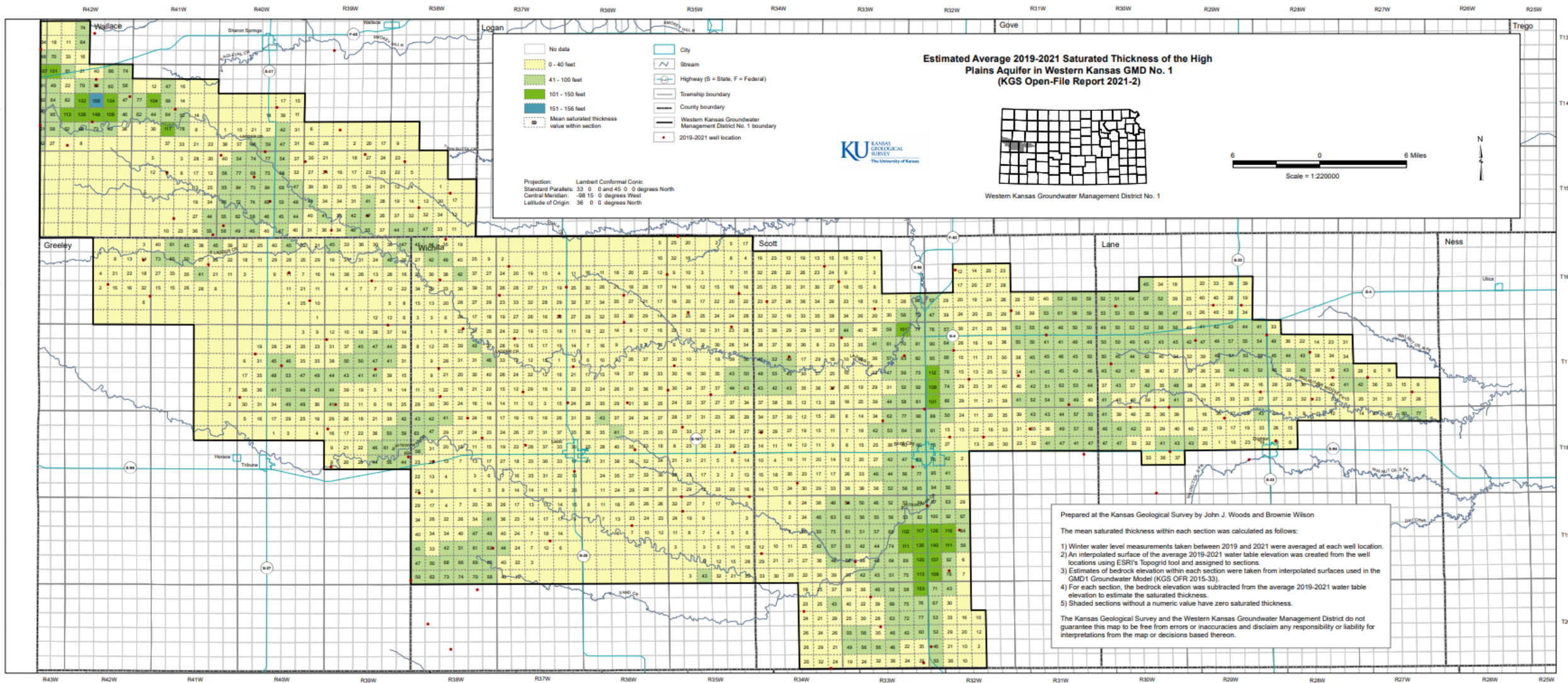
% Water Decline in GMD1 – Through 2021



Predevelopment Saturated Thickness



2021 Remaining Saturated Thickness



Past LEMA Methodologies Explored

1. Allocations based on **fixed** percent of authorized quantity (ex. 25% District wide)
2. Allocations based inches per authorized acre
3. Allocations based inches per maximum acres of a recent period
4. Allocations based inches per average acres of a recent period

None of these were found suitable or fair as each method gives allocations greater than historic use to some; thus necessitating greater reductions of others to accomplish the overall reduction goal.

Subsequently, the Board reviewed **three Hybrid methods**, with allocations based on recent historic use, but varying reductions based on a “sliding scale” measure of historic use vs authorization. With an appeal process.

GMD 1 Board's Allocation Method – Proposed LEMA

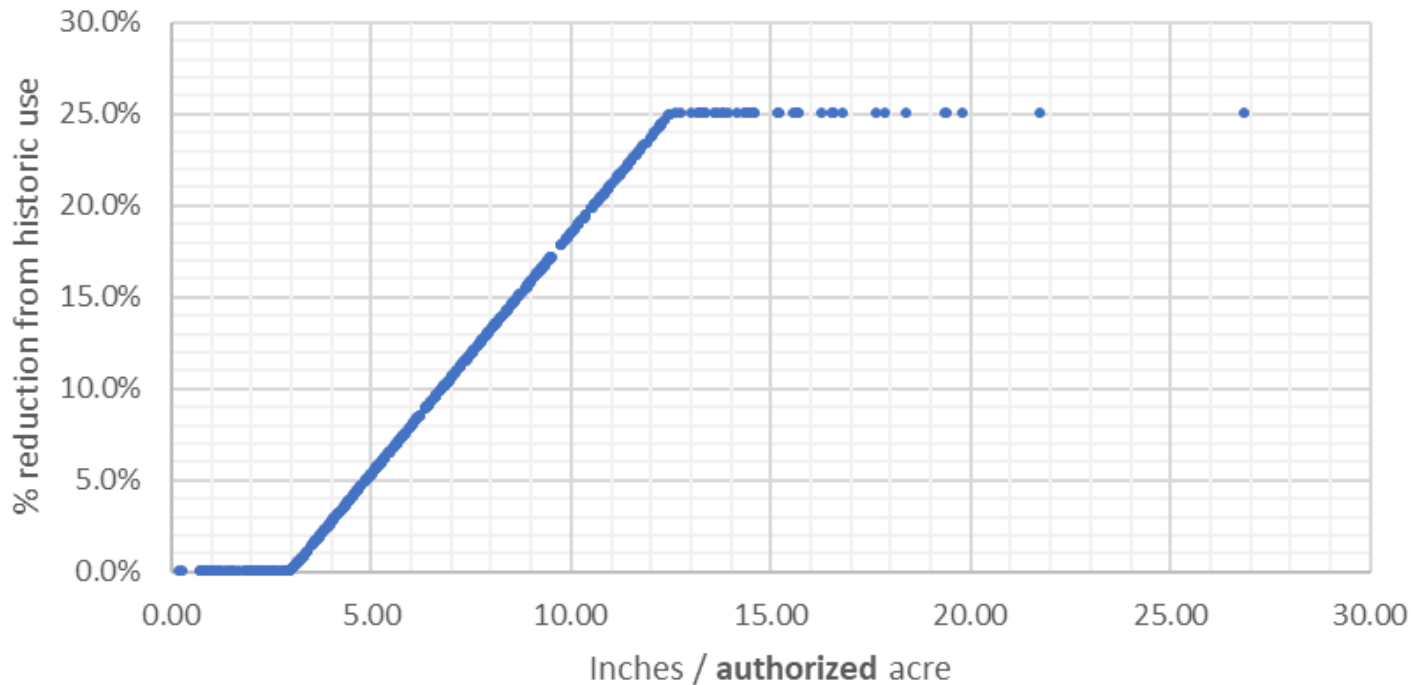
After carefully examining the three hybrid, the GMD 1 Board decided on the allocation method which reduces historic use (using years 2011-2020) based on use as **Inches/authorized acres**, as it more evenly and fairly distributes pumping reductions.

- Draft Allocation Sheets

Again, for **flexibility**, water users will be provided allocations as a **single, shared, 5-year, allocation among water right groups**. A water right group is composed of all legally overlapped water rights.

Allocation method selected: Reduction % based on Inches used per Authorized Acre

Preferred allocation method:
Sliding scale, 3-12 inches



- Average Non-0 use per authorized acres computed

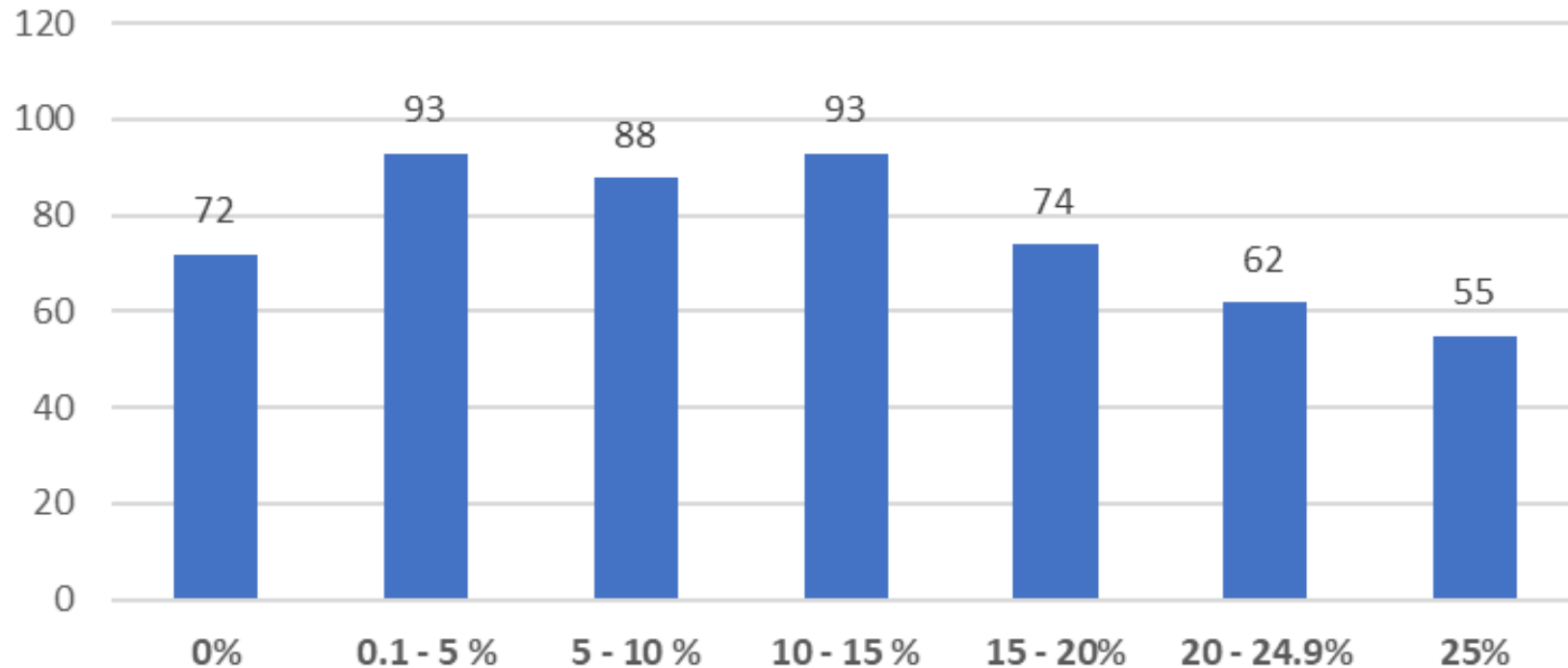
- When use is less than 3 inches/authorized acre, a 0% reduction

- When use is more than 12 inches/authorized acre, a 25% reduction

- In between, a sliding scale reduction creating a range

Effect of the Preferred Allocation Method

Preferred allocation method, inches/AA (3-12)
Percent reduction from historic use
Number of groups per reduction class



- Average total reduction of water use over the 4 counties (before appeal): **10.5 %**
- **13 %** of water rights have **NO** reduction
- **10 %** of water rights are reduced by 25%
- **76 %** in between on sliding scale

Explanation of Allocation Reports

1543 1

GMD No. 1 Proposed Four-County LEMA
Draft Group Allocation Report, May 16, 2022

Notes:

1. Allocations are draft and subject to change due to potential adjustments to the allocation methods by the Board, or an appeal, if filed.
2. Water Right Group definition - A Water Right Group is composed of all legally overlapped water rights (by place of use, point of diversion, or both)
3. Vested Water Rights (a Water Right which was put to beneficial use prior to June 28, 1945) are not restricted as part of this proposed LEMA.
4. LEMA allocations pertain only to irrigation water rights.
5. The average water use calculations below are for years 2011-2020, excluding years of no Group use.
6. Contact the GMD No. 1 office to request detailed water use at 620-872-5563, gmd1@wbsnet.org

Table 1A: Water Rights in Group 137

File Number	Water Right Type	Point of Diversion	Correspondent Type	Average Water Use, Acre-Feet
	Appropriation			90.93
	Appropriation			72.52
	Appropriation			0.00

Table 1B: Water Rights Group 137, 5-Year Allocation Computation

Line	Description	Value	Units
1	Group Authorized Quantity (for reference only)	1000.00	Acre-Feet
2	Group Authorized Acres	476.00	Acres
3	Historic Average Water Use of Vested Rights, if applicable	n/a	Acre-Feet
4	Historic Average Water Use of Appropriation Rights	163.45	Acre-Feet
5	Total Historic Average Water Use: [Line 3] + [Line 4]	163.45	Acre-Feet
6	Historic Inches on Authorized Acres: [Line 5] / [Line 2] * 12	4.12	Inches
7	Group % Reduction from sliding scale	3.11%	%
8	Group 5-Year Allocation for Appropriation Rights: [Line 4 in AF] * (1 - [Line 7 in %]) * 5 years = Group Total Allocation Water Use in AF * % Reduction * 5 years = Group Total Allocation	791.81	Acre-Feet

Water Rights & The LEMA

Vested Water Rights: A water right which was put to beneficial use prior to June 28th 1945

- **Not** restricted under the Proposed LEMA.
- Water Right Numbers start with a two-letter county abbreviation.

Appropriation Water Rights: Developed after 1945 and have a priority number.

Water Right Type	In the Proposed LEMA
Irrigation	Yes
Stock	No
Municipal	No
Vested	No

Base Appeal Approach	New Owner/Operator Control With 3 or More Years of Record**	New Owner/Operator Control or Irrigation System Change With Less Than 3 Years of Record**	No Historic Use Appeal Approach*
<ul style="list-style-type: none"> • Appropriate for circumstances where there has <u>not</u> been a control/ownership change. • New owners/operators may utilize the Base Appeal Approach should they agree with and choose to use historical data provided by previous owner. • A minimum of three representative years of use data is required. • Years of demonstrated conservation will be excluded from averaging. • For example, if 2015 and 2016 had demonstrated conservation, then years 2011-2014 and 2017-2020 will be summed and divided by 8 to get the average water use to determine the required reduction. 	<ul style="list-style-type: none"> • Appropriate for circumstances where recent change of control/ownership <u>has</u> taken place with <u>3 or more</u> representative years of history This Appeal process requires written documentation proving such changes and must be deemed acceptable by the Board. (DWR/FSA Records) • Years of demonstrated conservation may be excluded from averaging. • Under new control, the new water use record may be used. • For example, the new ownership ownership/control was for the period 2017-2020, the water use in 2017-2020 will be summed and divided by 4 to determine the average for purposes of determining the required reduction and allocation. 	<ul style="list-style-type: none"> • Appropriate for circumstances where recent change of control/ownership <u>has</u> taken place with <u>less than 3</u> representative years of history. This Appeal process requires written documentation proving such changes and must be deemed acceptable by the Board. If a deficit in annual data is present NIR may be used to supplement data. Additional reductions will apply to years of historic data, and not to NIR. • A current owner who exceeds three years of data, but can provide proof that a new irrigation system change directly resulted in less than three years of reflective operational water use data shall qualify. • Years of demonstrated conservation may be excluded from averaging. • Under new control, the new water use record may be used. • For example, if a new owner only has 2 years of data they may supplement NIR data for the 3rd year. 	<ul style="list-style-type: none"> • Appropriate for circumstances of non-use for 2011-2020 or for a new owner/operator Jan 1st 2021 through Feb. 22nd 2022. NIR would be used for new owner/operator only. • Where the appeal is for Jan 1st 2021 through Feb. 22nd 2022, an allocation of NIR will be given where clear boundaries of irrigation can be demonstrated such as an irrigated circle or buried drip tape or consistent flood acres. Other cases will be reviewed if the boundary is not clear or clean, then the next option would be a pump test multiplied by 150 days.*** • Where a Group that has had use, but also has an individual point of diversion with non-use and is appealed, a pump test to demonstrate the ability to pump is required to provide an allocation of the pump test times 150 days.

Note: For all methods the Board reserves the authority to re-evaluate these methods in a future or current LEMA Appeals process within their discretion, and may address a special scenario in the current LEMA on a case by case basis.

*Where a non-use irrigation right is to be converted to a non-irrigation use, it will be processed according to DWR applicable regulations, which are not based on historic use.

1. Defining Voluntary Conservation

2. Appeals Process

Proposed Elements of the LEMA Plan

Vested Rights will be exempt from the LEMA. Other water rights in the group will be provided an allocation based on the same principle as non-vested groups.

Draft combined five-year allocation has been provided for each Water Right **Group**, composed of all legally overlapped water rights.

- While water rights would share the group allocation, each water right is limited each year to its annual authorized quantity, just as they are today.

Allocations based on a **sliding scale percent reduction** of historical use based on **inches applied** to a Water Right **Group's Authorized Acres** where:

- Historical Use Period: 2011 – 2020
- Non-use years will be excluded from the averaging
- Average use of less than 3" per authorized acre = No reduction
- Maximum reduction of 25% for average use greater than 12" per authorized acre
- A sliding scale between these values
- **Draft allocations were made available to the public**

KGS Stability Numbers for GMD 1

	Stability Numbers (%)	To Cut by Half (%)	% Reduction from LEMA
GMD 1 – District Wide	29	14.5	10.5
Wallace County	46	23	12.2
Greeley County	30	15	11.0
Wichita County	27	13.5	
Scott County	18	9	8.7
Lane County	16	8	9.7

Process Ahead & Implementation

- Continuous public outreach & correspondence
- Tentative schedule is to finalize the proposed LEMA plan and submit it to the Chief Engineer by July 1st, 2022
- When the LEMA plan is submitted, the Chief Engineer will hold two public hearings this fall on the LEMA Plan.
 - o These hearings will be noticed and made publically available

Upon approval, the LEMA Plan would take effect January 1, 2023.

What if a LEMA is not successfully completed & Implemented for GMD1?

Questions?

**Proposed GMD 1 Four County
LEMA
Frequently Asked Questions
May 19th & 20th, 2022**

Q: What is a LEMA?

A: A LEMA is an acronym for Local Enhanced Management Area. For a LEMA to be created, the board of a Groundwater Management District (GMD) must make a specific proposal to the Chief Engineer of the Division of Water Resources, State Board of Agriculture (DWR) for such an area. For the LEMA to become effective the Chief Engineer must approve the language after a process consisting of public hearings and DWR evaluations. If adopted, it becomes an order of the DWR. The ultimate goal of a LEMA is to address water level declines by reducing the amount of water used without causing significant economic effects. In 2012, the state's Groundwater Management District Act was amended to allow GMD's to allow LEMAs for adoption. Through the LEMA process, a GMD develops specific goals and "corrective controls" to accomplish the goal, of encouraging water conservation for the current and future benefits of the area. LEMAs typically include elements of flexibility in the use of allocations to reduce the impact of water use reductions, and is a 5-year program.

Q: How long has the GMD Board been developing this LEMA Plan?

A: Due to the significant, on-going groundwater level declines within the entire District, the GMD Board first began exploring a District-wide LEMA in 2013. GMD1 is currently the most de-watered District in the State. The Board also discussed a District-wide LEMA in 2018-19. In 2019, the Board decided to move forward first with the Wichita County LEMA to gain some experience with the LEMA process.

The Board's current work of developing this proposed LEMA Plan for the remaining four counties of the District began in November 2020. The LEMA work has been discussed at most of the Board's monthly meetings since that time, as well as multiple special meetings. Details of the Board's LEMA development have been shared at the 2021 and 2022 annual meetings.

Q: What is the Board seeking to accomplish with this LEMA? How did the Board get to its reduction goal?

A: After careful study, the Board decided to develop a LEMA reduction goal that would balance meeting today's needs, while taking a serious step to extend the water resources of the District. The Board reviewed current estimates of the Kansas Geological Survey (KGS) of the required reductions to stabilize groundwater levels, which range from 16% in Lane County to 46% in Wallace County, averaging 29% for the District. Ultimately the Board decided the LEMA's goal should reduce use by 10% from the 2011-2020 average.

Q: Why one LEMA rather than separate LEMAs in each of the counties?

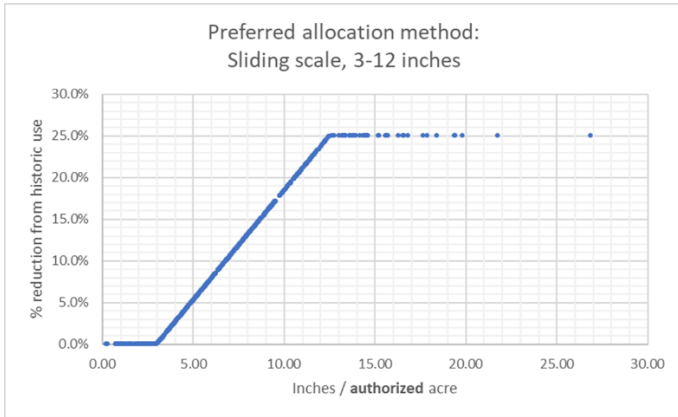
A: Early in its LEMA consideration, the Board reviewed hydrological information, principally from the KGS, that showed the diversity of hydrologic conditions in the district, with significant variability even within counties. The Board considered both LEMA plans for each individual county and the possibility of variations in LEMA provisions based on variations in hydrologic conditions.

Ultimately, the Board decided one LEMA for the remaining four counties as the best way to get started on a level of action needed throughout the District. The adoption of this proposed LEMA plan does not preclude future modifications to the LEMA plan to refine its requirements or even additional LEMA plans for specific areas.

Q: How are the allocations determined under the proposed LEMA?

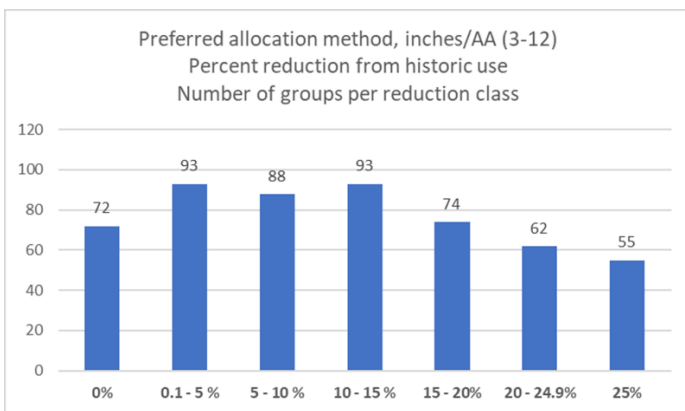
A: After exploring a host of options (see separate question below), the Board decided on an allocation method that makes reductions based on 2011-20 average use, with larger reductions for larger water-users and lesser reductions for smaller users. The required reductions are determined based on the average inches applied during 2011-20 on **authorized** acres. Years of no group use are excluded from averaging. When less than 3 inches per authorized acre was applied in 2011-2020, no reduction is required; where more than 12 inches per authorized acre was applied, a 25% reduction is required from historic use; in between 3 and 12 inches, the required reduction is based on a sliding scale between these values.

The Board desired to require almost all water-users to be part of the solution and to fairly distribute the required reductions. The specific sliding scale (seen below) selected by the Board requires 87% of waterusers to make reductions and limits the number of groups with the maximum required reductions of 25% to just 10% of those groups.



[footnote: The Board also looked at using the percent of authorized quantity used in 2011-20 as a basis to determine the percent reduction, which has similar results, but this method was not preferred as it created greater reductions to crippled or short water rights.]

The selected sliding scale also varies the required reductions much more than the Wichita County LEMA. The graph below shows the number of water right groups in various required reduction class (no reduction, 0.1-5% reduction, 5-10% reduction, etc.).



Q: Why aren't allocations based on a simpler method like inches / acre?

A: From the beginning, the Board desired to base allocations on a method different than the Wichita County LEMA (with its flat 25% reduction from historic use, except for those pumping less than 20% of their authorized quantity).

In March 2021, the Board reviewed a number of alternatives not dependent on historic water use as a basis of LEMA allocations including a percent of authorized quantity; inches on authorized acres; inches on the maximum acres of a recent period; and inches on the average acres of a recent period. After review of the results, the Board found all of these allocation methods to be unworkable.

As an example, the Board found to accomplish a wateruse reduction goal of 10% when creating allocations based on a percent of authorized quantity, it would require allocations to be based on approx. 35% of a water right group's authorized quantity. Similarly, for allocations based on inches per authorized acres, the allocations would be based on approximately 7 inches/authorized acre. Finally, for allocations based on inches per average reported acres, the allocations would be based on approximately 10 inches/average acre.

In each case, these allocation methods provided allocations beyond recent water-use to many (generally 40-50% of water right groups) requiring greater reductions from the rest to get to the desired overall reduction goal.

[Similarly, during the summer 2021, the Board looked at allocating water based on a maximum number of inches per recent average irrigated acre. To get to a 10% overall reduction, while constraining the analysis to ensure no water user's reduction was greater than 25%, we found that the maximum inches had to be limited to 11 inches/acre. Once again, this required those who irrigated at depth of greater than 11 inches/acre, to take a reduction and those who pumped at a lesser depth to take no reduction.]

This led the Board to examine multiple hybrid approaches, which bases allocations on historic use but varies the reduction based on a measure of the water rights use as a function of authorized quantity or acres.

Q: How are vested rights treated by the proposed LEMA?

A: A Vested Right is a Water Right which was put to beneficial use prior to June 28, 1945. Under Kansas law, they are afforded additional protection from regulation by the Chief Engineer. Thus, they will not be regulated by the proposed LEMA. Water users with vested rights are only required to operate according to the terms of their existing orders.

Where a Water Right Group has **both vested rights and appropriation rights**, the appropriation rights of the group will be provided an allocation based on reduction computed for the Group and the vested rights of the group will be able to operate without additional restrictions.

Q: What flexibilities does the LEMA propose?

A: Allocations are provided as blocks of **5-year allocations to Water Right Groups**. Water right groups are composed of all legally overlapped water rights (by point of diversion, place of use, or both). Thus, as long as individual water right annual authorized quantities and other conditions are met, water-users are free to use these 5-year allocations to their best advantage.

Q: Why aren't all water-users required to make a reduction? How are required reductions distributed among water right groups.

A: In the Wichita County LEMA, water-users who used less than 20% of their authorized quantity, 28% of water rights, were not required to reduce their use. In the proposed LEMA, the Board has sought to broaden the involvement of water-users but continues to have a floor for when reductions are required, in this case, when historic use is less than 3 inches per authorized acre. This is 13% of water right groups.

Q: What is the length of the LEMA? What will happen after that?

A: At this time, the Board is proposing at the LEMA period running from January 1, 2023 to December 31, 2027. If the Board takes no additional action, the LEMA and its restrictions will expire at the end of 2027. The LEMA Plan will include annual reviews and a process toward the end of the LEMA period to determine whether the LEMA should be renewed on the same or different terms. To continue past 2027, the GMD Board must go through another set of LEMA hearings.

Q: Does the LEMA make a permanent change in my water right?

A: No. While the LEMA will provide allocations that will reduce use for its 5-year period (2023-2027), it will not make any permanent changes to the underlying water right.

Q: How would the proposed LEMA affect non-irrigation water rights?

A: Like other LEMAs, non-irrigation uses, which make up a small percentage of the District's use, will not be regulated by the LEMA. The Plan will encourage these users to conserve water with specific suggestions by use made of water and the Board will annually review non-irrigation use.

Q: How will the LEMA treat fairly those whose historic use record includes water conservation?

A: State law requires that LEMAs whole allocations are based on historic water use must "give due consideration to past voluntary conservation" that has resulted in reduced use. After careful consideration, the Board has developed a tentative definition of conservation to guide this required consideration, as well as special provisions for the proposed appeals process. The Board has drafted robust, specific and yet flexible, guidance and methods in 4 broad classes. In the Base Method, that will be applicable to most situations, water-users will provide evidence of years of conservation, which will be removed from the water use averages used as a basis of determining allocations. For new owners/tenants/operators, there are two methods that generally use the new owner/tenants/operators records as the allocation basis and that make provisions when there are insufficient years. Finally the Board has outlined provisions for situations where the 2011-2020 has no water use for the water right group (see below). The LEMA appeal process will also allow the Board the ability to consider unique situations on a case-by-case basis.

Q: What about water rights who have not used water during the 2011-2020 period, but want to either re-start use or make the water right available to a new, small use?

A: The appeal process will have specific provision for water users who have made no use of water during the 2011-2020 and wish to reinstate their irrigation use or convert to a new, non-irrigation use.

Conversions to non-irrigation uses will not require an appeal, but will be handled through KDA-DWR's change application process. Reinstating irrigation from wells not used during the 2011-2020 period will generally require a pump test.

Q: How does the proposed LEMA compare with the existing Wichita County LEMA?

A: Like the Wichita County LEMA, the proposed LEMA envisions a 5-year length; would provide for 5-year allocations based on reductions to historic reported use; would provide allocations only to irrigation use; would exclude years of non-use from averaging to determine allocations; exempts vested rights; and includes a robust appeals process.

Significant differences include using a different water-use period as the basis of allocation (2011-2020); having more variability in required reductions via a sliding scale based on inches applied on authorized acres (rather than a flat reduction of 25%); providing allocations by water right group; and using a different (more generous) allocation to appropriative rights in groups with vested rights.

Q: How can I get more information to better understand and review the proposed allocation?

A: Contact the GMD 1 office at 620-872-5563 or at gmd1@wbsnet.org.

Q: What happens from here?

A: The Board plans to finalize its proposed LEMA plan based on additional public input by about July 1, 2022 and submit it to the Chief Engineer for the two required public hearings this summer and fall. If approved by the Chief Engineer, the LEMA Plan would be effective starting January 1, 2023.

MAY 19, 2022 COUNTY MEETING

LEGAL LANDOWNER NAME	MAILING ADDRESS	EMAIL	DO YOU WANT NEW ALLOCATION PRINTED Y/N
Candy Cox			N
Cameron Funk	Sharon Spgs		Y
John Welsh	Weskan		Y
Abriel Cox	Weskan		Y
Mark Reddick	Arapahoe CO.		Y
Don Lewis	Arapahoe Co		Y
Krista Young	Weskan -ks		Y
Paul Welsh	Weskan ks		
Tracy Cox	Weskan		N
Leonard Funk	Sharon Springs		
William Mai	Sharon Springs		Y
Ben Co	Weskan		N
Ab Smith	Sharon		
David Myers	Weskan		N
Mike Cox	Weskan		N

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MAY 19, 2022 COUNTY MEETING

LEGAL LANDOWNER NAME	MAILING ADDRESS	EMAIL	DO YOU WANT NEW ALLOCATION PRINTED Y/N	
✓ AKERS Family Tr.	525 Rd 2 - Weskan		Yes	
DONALD E PLETCHER	Box 303 SHARON SPRINGS		NO	
✓ Darren Van Allen	PO Box 545 Sharon Springs		Yes	
✓ Larry Van Allen	P.O. Box 392 Sharon Spgs.		Yes	
✓ TRIBUNE GRAIN DAN HILL	Box 284 TRIBUNE, Ks.		✓	
✓ Wayne McKinney	1750 Rd 6 Weskan Ks.		✓	
✓ Gary Allen	1770 Hickory Rd Sharon Springs		✓	
✓ Corey Smith	P.O. Box 101 Weskan KS			
✓ Bill Cox	265 Coyote Blvd Weskan Ks		Yes	
Kerina Granger	6497 Rd 16, Goodland KS		✓	
David Sawell	PO Box 340 SS 67758		✓	51930 (3 per)
Robert DeDong Hermann Trust	PO Box 340 ^{540 RD 20} Tribune KS 67879		Yes ✓	51930 (3 per)
Muante Tracie	PO box 35 Sharon Spgs, KS 67758		yes ✓	5587 (3 per)
Bryan McKinney	855 rd 6 Weskan Ks 67762		yes ✓	63999
Val Reiss	Box 194, Weskan, 67762		Yes	(Formerly 40544 Reiss)

MAY 19, 2022 COUNTY MEETING

LEGAL LANDOWNER NAME	MAILING ADDRESS	EMAIL	DO YOU WANT NEW ALLOCATION PRINTED Y/N
Mark Cavenee	Tribune		X
Eric Paris	Weskan		
David Sexson	Weskan		
DANNY WELSH	" "		

MAY 20, 2022 COUNTY MEETING

LEGAL LANDOWNER NAME	MAILING ADDRESS	EMAIL	DO YOU WANT NEW ALLOCATION PRINTED Y/N
<i>Shelby J. Jones</i>	<i>144 S. Osceola Rd</i>	<i>shelby@st-tel.net</i>	<i>N</i>
<i>NEIL WILSON</i>	<i>252 N BISON RD</i>	<i>nw@fishbase.com</i>	<i>N</i>
<i>Edward J. Lough</i>	<i>15 W Rd 200</i>	<i>e@rough@st-tel.com</i>	<i>Y</i>
<i>Watson One LLC</i>	<i>3333 Crestridge Rd.</i>	<i>akandim@shawglobal.net</i>	<i>Y</i>
<i>Elmer G. Watson Trust</i>	<i>Lincoln, NE 68505</i>	<i>"</i>	<i>"</i>
<i>Louise Ehrke</i>	<i>Nealy 74 W Rd 130 67850</i>	<i>vlehmkue@st-tel.net</i>	<i>Y</i>
<i>SHARP SEED FARMS LLC</i>	<i>1005 S. Spycamore HEALY, KS 67850</i>	<i>tony.watson@ sharpseed.com</i>	<i>Y</i>
<i>Jasper Farms</i>	<i>251 N HWY 27 Dick</i>	<i>jasper@st-tel.net</i>	<i>Y</i>
<i>Lane County Feeders</i>	<i>16 West Rd 230</i>	<i>jeff@feedback.com</i>	<i>Y</i>
<i>Daniel Shaffer</i>	<i>P.O. Box 287 Dighton</i>	<i>dan57ks@Yahoo.com</i>	<i>Y</i>
<i>3 Mike York</i>	<i>217 N Cheyenne</i>	<i>myorkul@st-tel.net</i>	<i>Y</i>
<i>Jerry Riemann</i>	<i>Box 666 Dighton ks</i>	<i>Jriemann@st-tel.net</i>	<i>Y</i>
<i>3 Corey Stephens</i>	<i>Box 187 Dighton</i>	<i>coreystephens53@yahoo.com</i>	<i>Y</i>
<i>Chris Shaffer</i>	<i>Box 451 Dighton</i>	<i>clintonshaffer@chevy.com</i>	<i>Y</i>
<i>Victor E. Benke Trust</i>	<i>Box 1012 Dighton</i>	<i>salsa@st-tel.net</i>	<i>Y</i>

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MAY 20, 2022 COUNTY MEETING

LEGAL LANDOWNER NAME	MAILING ADDRESS	EMAIL	DO YOU WANT NEW ALLOCATION PRINTED Y/N
✓ William Simpson	2501 N Kansas	simpsonlaw@twbsnet.org	Yes
✓ Larry Paikowitsh	1212 Hillside Dr.		yes
✓ Don Krebs	1005 Wyoming Ave. Hutchinson, KS. 67502	donkrebbs@gmail.com	Yes
✓ Kelly Paikowitsh	511 Heri Ln SC		yes
✓ Jim Minnix	8101 W. Rd 40, Scott City		NO SEEN IT
✓ Oran Tankersley	5461 W. Rd 90 S.C		yes
✓ MICHAEL DAVIS	1316 S. CHURCH		yes
✓ Brookover Land Enterprises	50 Grandview Drive G.C.	markb@brookover.com	yes
✓ Angus Land + Livestock	940 S Hereford Rd		Yes
(Brookover) ✓ Robby Strobe	4000 E Rd 200	robby@brookover.com	Yes
✓ TERRY FAUROT	1207 Hillside Drive	tjfauroteatl.net	Yes
✓ CHRIS HOLOVACH	2730 S. Road 240	vach1106esbrglobal.net	YES
✓ Richard Randall			yes
✓ Jeff Wilkinson	706 OAK ST. Scott City KS		yes
✓ Jeff Buehler	804 Oak St	jj.buehler@gmail.com	Yes

MAY 20, 2022 COUNTY MEETING

LEGAL LANDOWNER NAME	MAILING ADDRESS	EMAIL	DO YOU WANT NEW ALLOCATION PRINTED Y/N
B4US LLC Jon Buehler	1410 Elizabeth St	jon@buehlerfarms.us	Yes
Don Smith	1009 Elizabeth St	don@farms.us@gmail.com	No
Ron Estrom	1014 Ruess St	-no	Y
Jason Decker	9991 W Rd 215	jclangus19@gmail	✓
Angie & Jack Schmitt	1205 Court Street SC	spray boss@gmail.com	-
Malen Decker	8971 W. Road 270 SC		Y
Steven & Troy Krehbiel	5515 W Garo Rd Holcomb KS		Yes
Charles Stutzinger	12261 N. Beaver Rd Scott City, KS		Yes
Blenda Randall	4141 N. Juniper Rd S.O. KS		NO

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