

Resolving Two Long-Term Water Challenges: Ogallala Declines and the Quivira Impairment

Kansas Hydrology Seminar
November 22, 2019

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Division of Water Resources
Kansas Department of Agriculture



KDA Division of Water Resources (DWR) major responsibilities:

- Allocate and regulate the State's water resources
- Protect public safety and private property (dam/levee safety; regulation of stream and floodplain projects)
- Insure Kansas obtains its share of interstate supplies
- Other services: water right and water use data, flood mapping and insurance, much more

Kansas Water Appropriation Act (KWAA), 1945

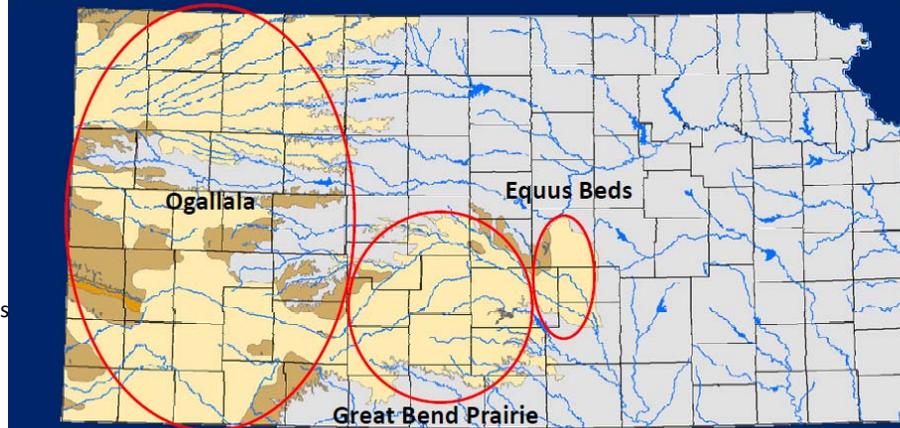
- **“All water within the state of Kansas is hereby dedicated to the use of the people of the state, subject to the control and regulation of the state in the manner herein prescribed.”**
- Based on prior appropriation (first in time, first in right)
- Groundwater and surface water in single priority system
- Charges chief engineer to oversee:
 - **Allocation** of the State’s water supply, allowing for orderly development of the state’s water resources
 - **Regulation** of in times of shortage.
- K.S.A. 82a-706: *The Chief Engineer shall enforce and administer the laws of this state pertaining to the beneficial use of water and shall control, conserve, regulate, allot and aid in the distribution of the water resources of the state for the benefits and beneficial uses of all its inhabitants in accordance with the rights of priority of appropriation.*

The Kansas High Plains Aquifer

GMD 4 LEMAs
 * Sheridan County
 * District-wide

GMD 1 -Wichita
 County
 * WCA
 * LEMA? IGUCA?

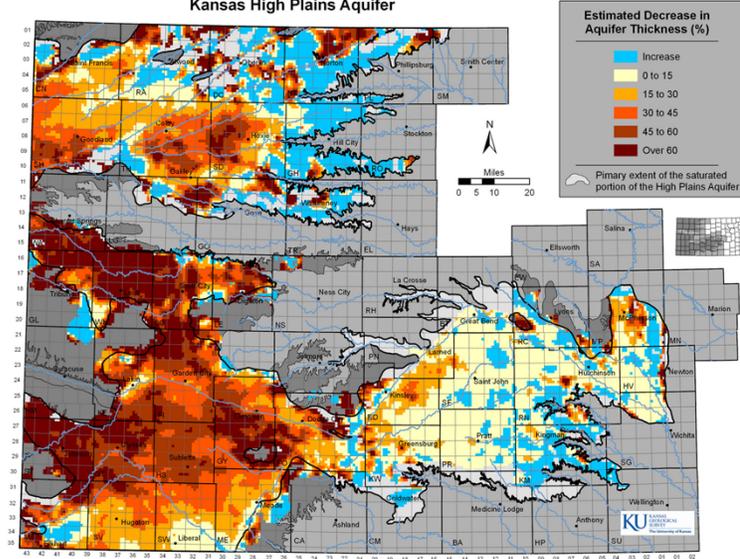
Kearney-Finney
 * LEMA discussions
 * WCA



Quivira impairment
 remedy

The Ogallala challenge: Percent Change in Saturated Thickness of O-HP Aquifer

Percent Change in Aquifer Thickness, Predevelopment to Average 2016-2018,
Kansas High Plains Aquifer



Notes:

- Despite significant declines, significant use continues and the water resource is critical to today and tomorrow's economy.
- While south-central Kansas is experiencing less declines in groundwater levels, ground use is reducing streamflows.

Additional tools to address
water supply shortages and
groundwater declines

Legislative acts to encourage groundwater conservation

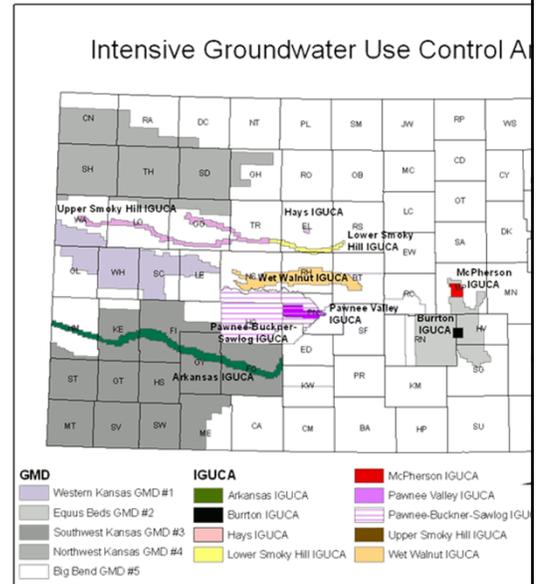
- Historic tools:
 - 1972: Groundwater Management District (GMD) Act allows for the creation of **GMDs** to lead in local water conservation efforts
 - 1978: GMD Act amended to allow for Intensive Groundwater Use Control Areas (**IGUCAs**).
- New tools:
 - 2012: Local Enhanced Management Areas (**LEMA's**) allowed
 - 2015: Water Conservation Areas (**WCA's**) allowed
 - Getting rid of use it or loss it:
 - 2012: Eliminating abandonment of groundwater rights in closed areas
 - 2015: Requirement for chief engineer to give due consideration of past voluntary conservation in all conservation programs

Intensive Groundwater Use Control Areas (IGUCAs), 1978

- Part of the Groundwater Management District (GMD) Act, but can be used outside GMDs
- Water management tool that works in conjunction with the Kansas Water Appropriation Act
- Allows for more flexible solutions than strict priority administration of groundwater rights, called “corrective controls” to address the problem.
- Formal public hearings are held to provide due process
- Decision by chief engineer based on hearing record

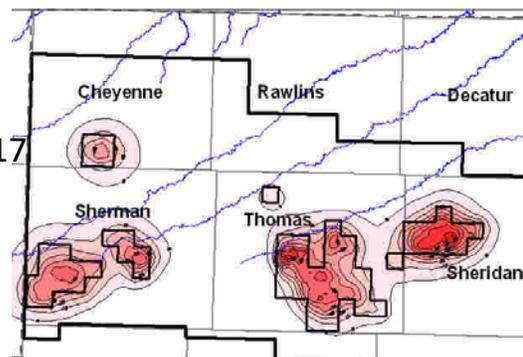
Intensive Groundwater Use Control Areas

- **McPherson County**, 1979, closed area, required meters
- **Pawnee Valley**, 1980, set safe yield criteria
- **Burrtton**, 1982, water quality concern; criteria for review
- **Lower Smoky Hill River**, 1983, closed area, 15 inch allocation
- **Upper Smoky Hill River**, 1984, closed area
- **Arkansas River Valley**, 1984, closed area, restrict moves
- **Hays and Immediate Area**, 1985, restrict lawn watering by domestic wells
- **Walnut Creek**, 1990, 5-year allocations: senior set at 12-14 inches; junior set at 5.25-6.25 inches, flexibility to move allocations.
- **None in Ogallala**



Northwest Kansas GMD 4 seeks Enhanced Management

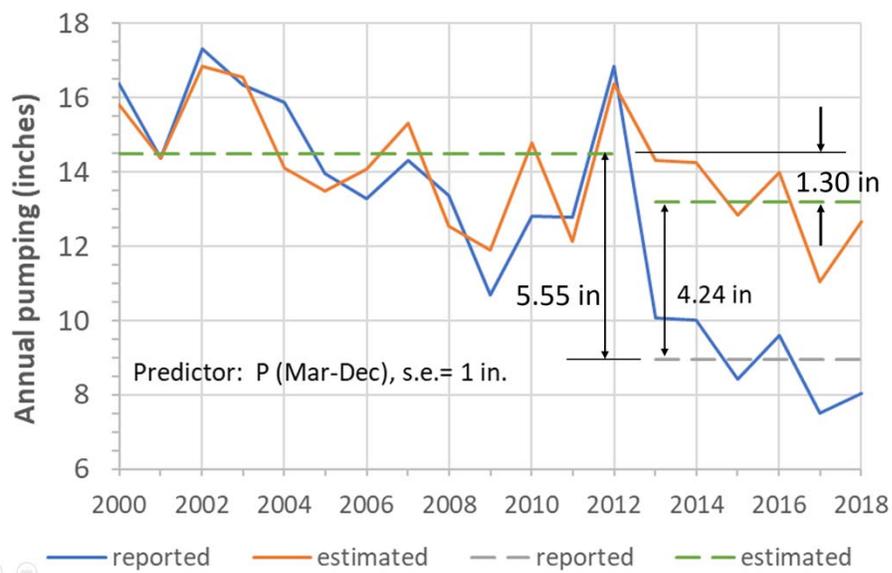
- “Sheridan 6” High Priority Area wanted to cut use by 20%, but not via priority administration, (2010-11)
- NW Kansas GMD No. 4 Board discusses and rejects IGUCA option
- Manager outlines new approach requiring new legislation
- Results in LEMA statute, 2012
- Sheridan 6 LEMA designated for 2013-17 and 2018-22, with the **goal of 20% reduction in use**
- Approx. 100 sq. mi.; 200 water rights



Local Enhanced Management Areas (LEMA), 2012

- Like IGUCAs:
 - Requires demonstrated groundwater problem
 - Similar tools “corrective controls”
 - Due process required via public hearings, decision based on the record
- Unlike IGUCA’s:
 - LEMA Plan developed by a GMD with a specific goal and defined “corrective controls” to address the problem.
 - After hearings, decision by the Chief Engineer to adopt, reject or return plan to the GMD
- Wayne Bossert: “you are not guaranteed to get what you want, but you are guaranteed to not get what you don’t want.”

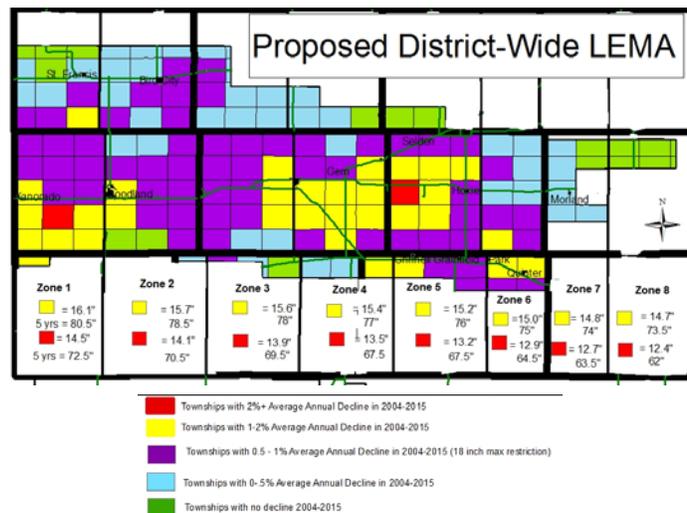
Sheridan 6 LEMA : Significantly reduced groundwater use



- Blue = reported use
- Orange = estimated use based on climate factors (2000-12)
- Average actual use for 2013-18 was 38% less than 2000-12, and 32% less than climate predicted values.

GMD#4 District Wide LEMA

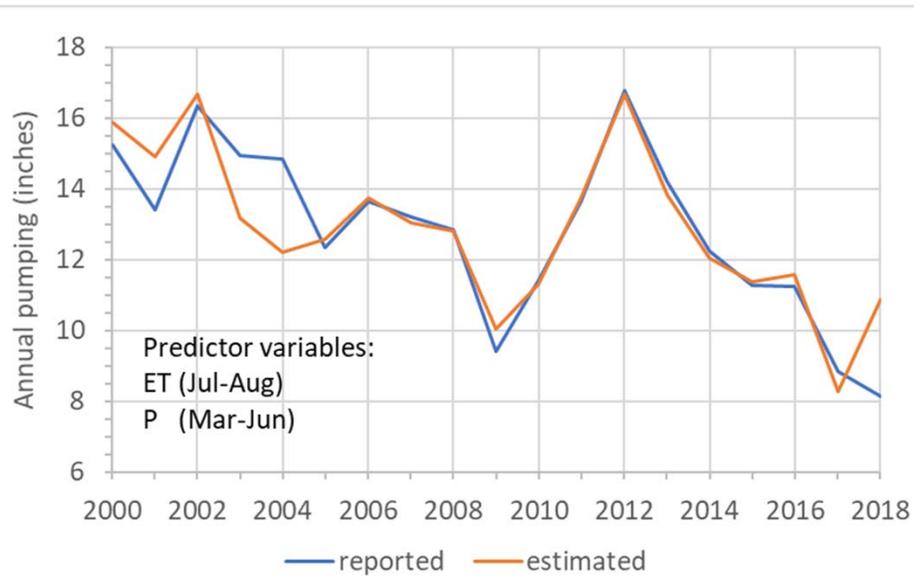
- GMD 4 determined rate of decline by township
- Sets 5-year allocations in inches/acre based principally on NIR for corn
 - Highest decline areas (red): 13-14 inches
 - Second highest decline (yellow): 15-16 inches
 - Purple township, 18 inches
 - Blue/Green: no restrictions
- No additional flexibilities, encourages WCAs



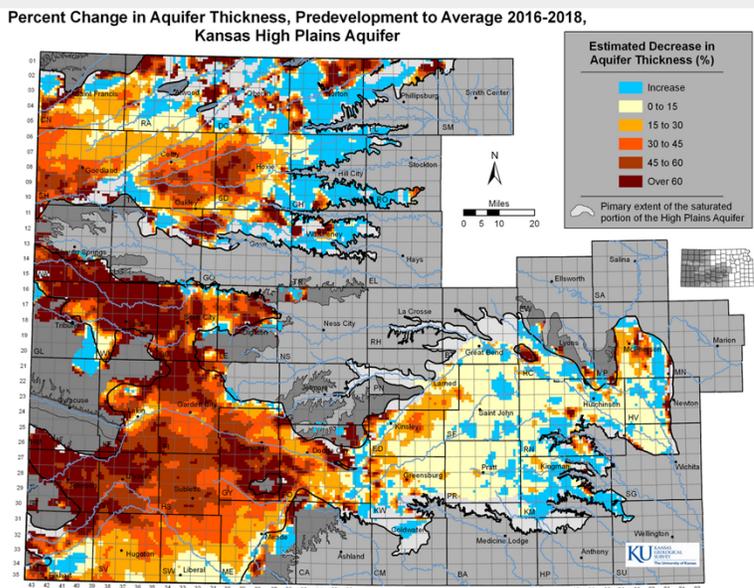
GMD 4 District-wide LEMA, Process and status

- Initial hearing held August 23, 2017; positive decision, LEMA needed
- Second hearing held November 14, 2017
 - a **group of intervenors** granted expanded "due process"
 - significant public comment received
- On February 23, 2018, order of decision issued, returning it to District with recommended changes to improve plans administration. GMD 4 accepted.
- On April 13, 2018, the **Order of Designation issued**.
- Petitioners filed for **judicial review** in Gove County
- On October 15, the **District Court found** that the "...GMD 4 District Wide **LEMA should be upheld**. The LEMA Plan restrictions do not appear to be unconstitutional on their face or as applied. There is substantial evidence backing the agency's decision and therefore it is not arbitrary or capricious."

GMD 4 LEMA, reported use and estimated use 2018 first year of LEMA



The Ogallala challenge: Percent Change in Saturated Thickness of O-HP Aquifer



Notes:

- Despite significant declines, significant use continues and the water resource is critical to today and tomorrow's economy.
- While south-central Kansas is experiencing less declines in groundwater levels, ground use is reducing streamflows.

2015 Legislation: Water Conservation Areas (WCAs)

K.S.A. 82a-745. Water conservation areas; establishment procedures; duties of chief engineer; notice; orders; consent agreement; review.

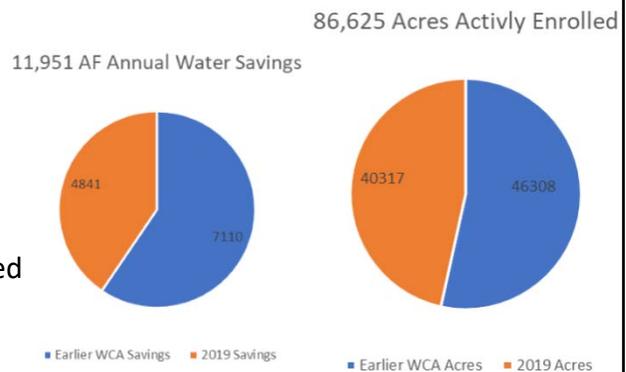
(a) Any water right owner or a group of water right owners in a designated area may enter into a consent agreement and order with the chief engineer to establish a water conservation area. The water right owner or group of water right owners shall submit a management plan to the chief engineer.

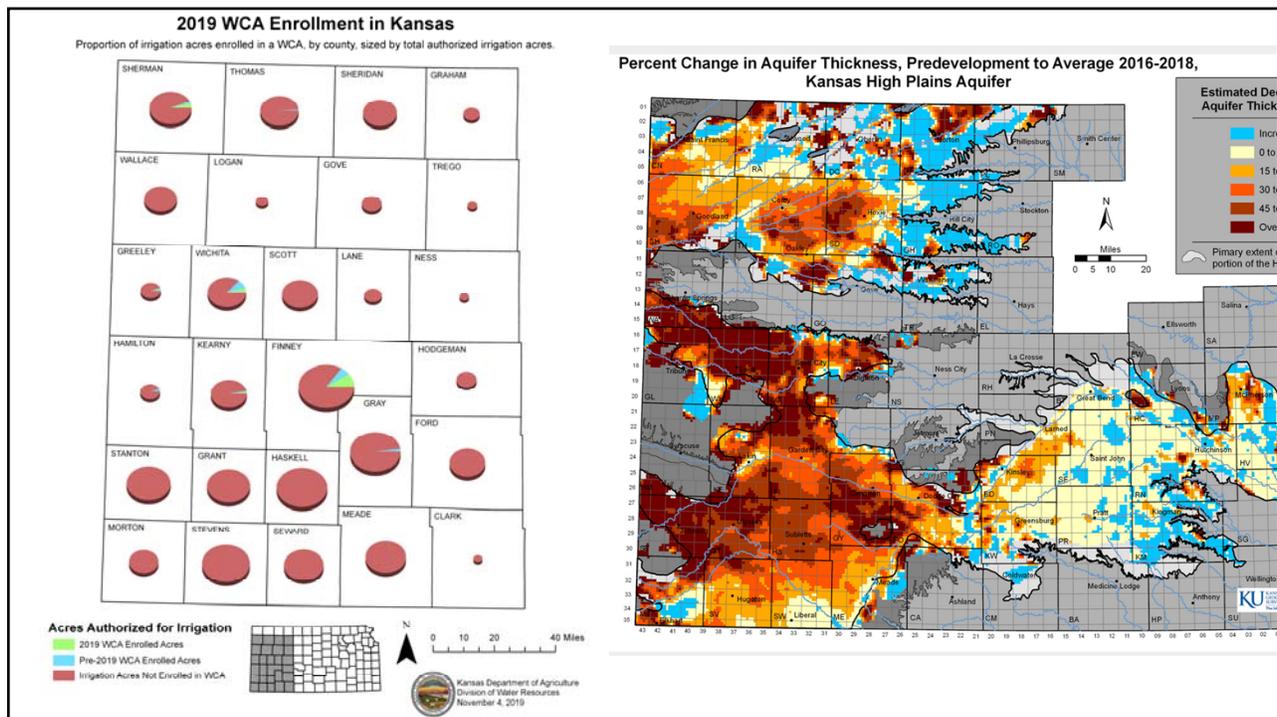
- A Water Conservation Area (WCA) is a designated area with an approved management plan developed by a water right owner(s) with the consent of the chief engineer to reduce water withdrawals while maintaining economic value via water right flexibility.
- **Flexibilities** can include multi-year allocations, exceeding annual authorized quantities, allowing for new uses of the water, when no impairment.
- **No hearings**; streamlined process
- WCAs do not make a permanent change in the water right

WCA's totals

- Current status:
 - 27 plans active as well as 26 Wichita County WCA consent agreements
 - 86,625 active acres enrolled
 - 11,951 acre-feet of annual water savings
- Several significant WCA plans have been approved this year:
 - Seven (7) plans approved in 2019
 - 40,317 acres enrolled in 2019
 - 4,841 acre-feet annual water savings
- Renewals, first round WCAs buying back in:
 - T&O LLC and Westside Dairy with increased annual savings

WCA Name	County	Plan	Agreement & Order	Period	Enrolled(Ac/Yr)	Savings (AF/Yr)	Approved
	SC/WH	WCA Plan	WCA CAO	2019-2025	5,959	812	10/04/2019
Wichita County (2018)	FI/KE	WCA Plan	WCA CAO	2018-2022	15,578.97	2,001	07/22/2019
& Cattle	FI	WCA Plan	WCA CAO	2018-2022	9,588.3	1,074	06/28/2019
(9)	FI	WCA Plan	WCA CAO	2019-2021	1,570	110	06/28/2019
	ST	WCA Plan	WCA CAO	2019-	720	212	06/11/2019



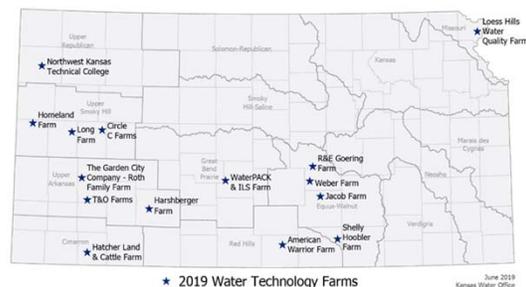


Other developments supporting change

Key findings from recent sociology research:

- Kansas producers overwhelmingly support groundwater conservation
- Primary motivation is supporting the local community & future generations
- **Most believe they are already doing all they can individually to conserve**
- **Producers in LEMA's and WCA's are finding additional ways to conserve**
- With support, voluntary group efforts have opportunity to grow
- 5 recommendations for voluntary group conservation efforts

Water Technology Farms demonstrate water saving methods

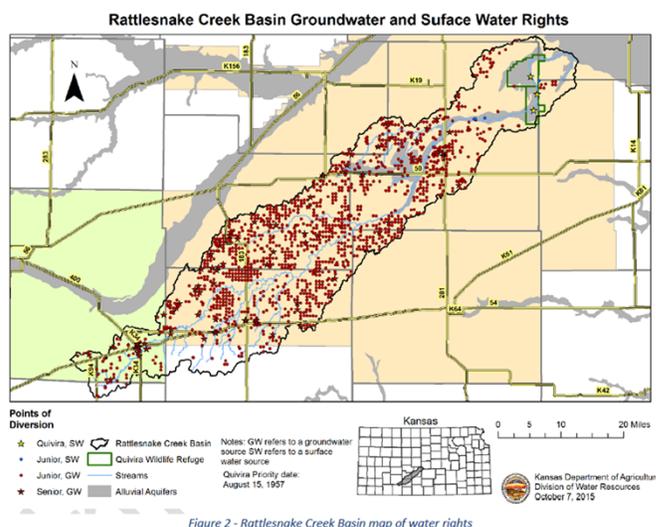


From: <https://kwo.ks.gov/projects/water-technology-farms>

Ogallala – next steps

- While these developments and new tools (LEMA, WCAs) represent progress, esp. in areas like the Sheridan LEMA, Wichita County WCA, and the Finney County areas, **the benefits on local.**
- Declines continue through much of the Ogallala, resulting in declining pumping rates, increasing conflicts, limited future. Much more is needed.
- **Individual waterusers can take action** to extend the life of their water supply use via individual voluntary action, WCAs, etc.
- But **expanded joint action offers the best hope for extending the regional economies** depending on the declining Ogallala.
- Change is difficult but possible and needed for the long-term good of the Region.

Quivira National Wildlife Refuge impairment

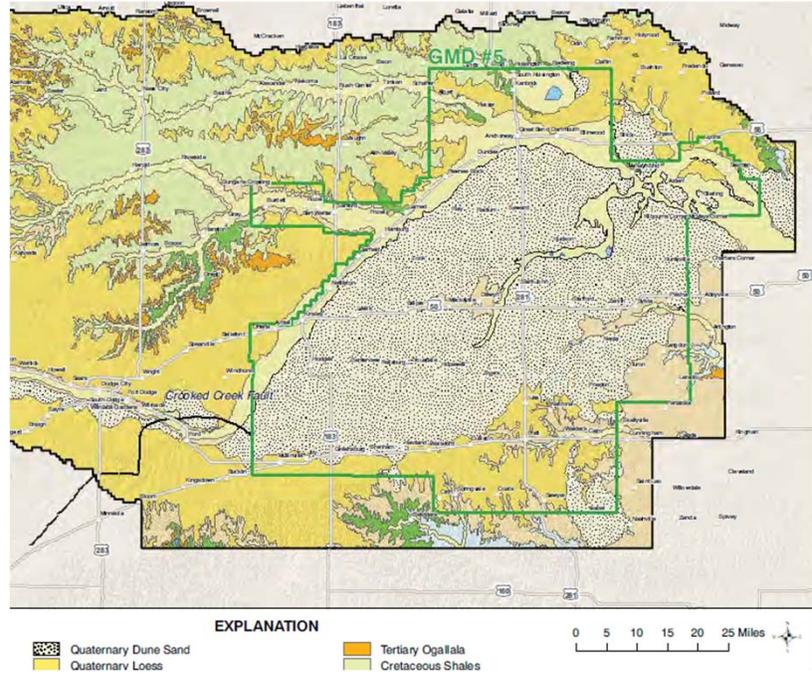


- Senior Water Right: held by the U.S. Fish and Wildlife Service
- Service has said for decades that their water right is being impaired
- Rattlesnake Partnership, 1993-2012:
 - Service, GMD 5, DWR, WaterPACK
 - Decades of voluntary efforts unsuccessful
- April 2013: Service filed an impairment complaint;
- July 2016 Final Impairment Report confirms impairment

GMD 5:
Extensive area of sandy
soils, shallow water tables

Pre-development condition:
recharge destined to streams

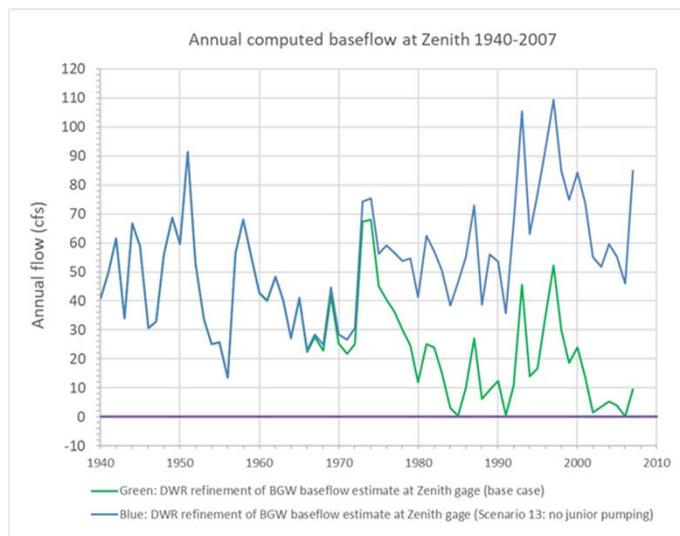
Groundwater pumping
intercepts water, deduces
(depletes) streamflows



Quivira: Junior groundwater pumping has significantly
reduced streamflow, reducing Quivira's usable supply

GMD 5's model shows the
dramatic and growing reductions
in streamflow started in the 1970s.

These reductions have led to the
regular and significant impairment
of Quivira's water right.

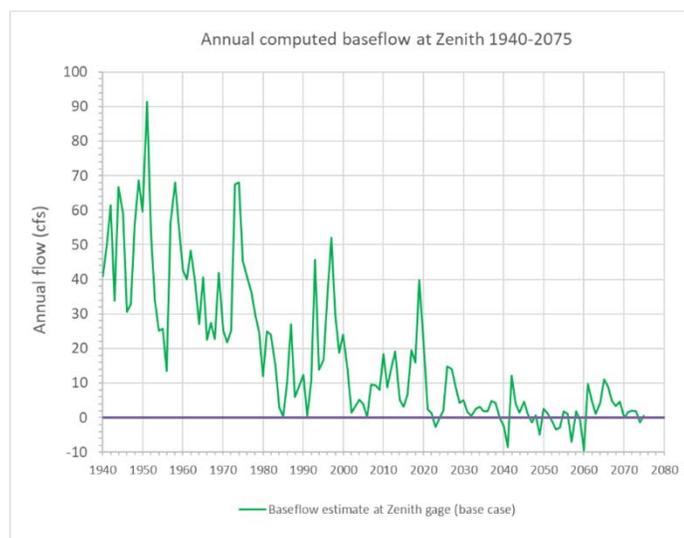


Proposed Augmentation Project

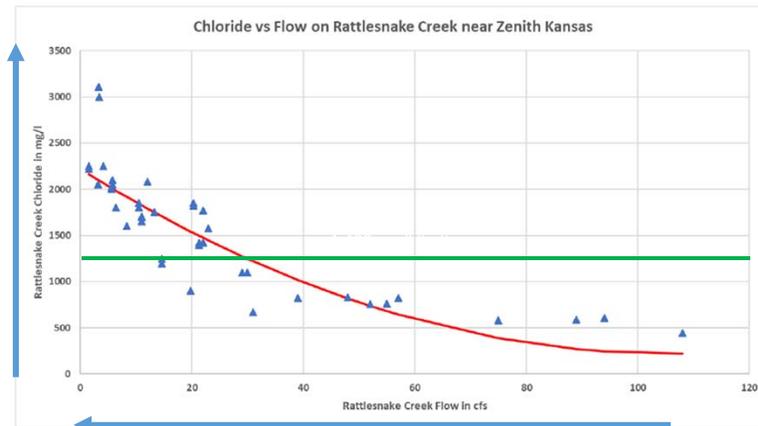
- In 2016, GMD 5 proposed an augmentation project as the cornerstone of the impairment remedy.
- KDA strongly supports augmentation as a crucial part of the remedy and continues to urge its development.
- Concerns:
 - long-term yield is unclear
 - will need to be carefully monitored to ensure it will not create a water quality problem

The groundwater model shows streamflows will continue to decline into the future

So the impairment is growing in frequency and magnitude



As streamflows decline, the stream water quality degrades



What level of reductions are needed beyond the augmentation project?

- A 30% reduction in pumping is required to stabilize streamflows.
- KDA-DWR maintains that a minimum reduction of 15% in pumping is required to support the augmentation project and protect water quality.

GMD 5 LEMA Proposal / Why rejected

- In August 2017, GMD 5 told DWR it wished to use a Local Enhanced Management Area (LEMA) to remedy the impairment.
- GMD 5's LEMA proposal included:
 - Augmentation project
 - Removal of end guns, other voluntary actions to reduce pumping
 - 4400 acre-feet of focused reductions
- LEMA rejected July 2019 as it did not meet statutory requirement for a LEMA or meet the basic threshold for consideration.
 - No specific schedule to complete the actions
 - No required reductions in water use
 - No enforceable commitment to reduce water use

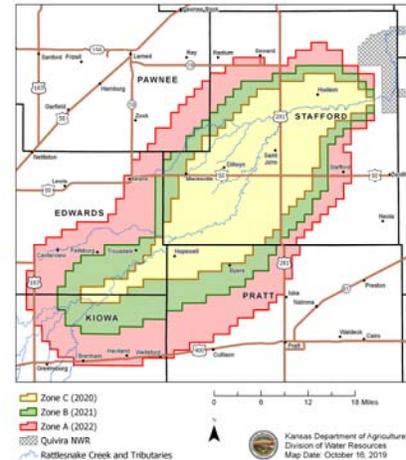
Why was KDA-DWR planning to take water administration action?

- During July 2019 KDA-DWR announced its plan to issue administrative orders as:
 - It has been **3 years** since the final impairment report.
 - Service filed Request to Secure Water for 2018 and 2019, but DWR did not yet act due to negotiations toward a solution. RSW expected for 2020.
 - Progress toward a locally developed solution has halted.
 - Augmentation is not available and not in sight.
 - Further delay in action to address the impairment is **inconsistent with state law**.
 - Further delay exposes the basin to much more significant and inflexible reductions being ordered by a Court.

Proposed administrative orders

- Notices were sent to waterusers on Sept. 30, 2019 to provide time to prepare, anticipating the US FWS would file a "Request to Secure Water" for 2020.
- The overall reduction order averaged approx. 14%, although impacts vary by individuals according to the priority of water rights and historic use pattern
- Plan included phasing in over 3-years based on a Zone map.
- WCA planned to provide multi-year allocations and allocations to be moved around
- Public meeting set for Oct. 21, 2019

Quivira National Wildlife Refuge (NWR)
Impairment Administration Zones



What is the current situation?

- Just before the public meeting, Senator Moran obtained agreement from the Dept. of Interior to delay filing a Request to Secure Water through Sept. 30, 2020 to allow more time for finding a solution.
- No orders will be sent. If a solution isn't found and Service files Request to Secure Water, KDA-DWR will again respond with appropriate action.
- We encourage all water users to be actively involved moving forward.
- Augmentation needs to be developed aggressively regardless of the path forward.

JERRY MORAN

FOR IMMEDIATE RELEASE – October 16, 2019
Contact: Trenton.Kennedy@ks.gov | 202-228-6519

PHOTO

Sen. Moran Discusses Quivira National Wildlife Refuge Water Rights with FWS Nominee Aurelia Skipwith

"I am pleased that Ms. Skipwith committed to working with local stakeholders to find a voluntary solution to satisfy the Quivira water impairment. . ."



Sen. Moran with Aurelia Skipwith, nominee to be the Director of the U.S. Fish and Wildlife Service

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Division of Water Resources

<http://www.agriculture.ks.gov/dwr>

The Division of Water Resources administers 30 laws and responsibilities including the Kansas Water Appropriation Act which governs how water is allocated and used; statutes regulating the construction of dams, levees and other changes to streams; the state's four interstate river compacts; as well as coordinating the national flood insurance program in Kansas.

COMMON SEARCHES

- **Quivira:** Information about the investigation of the impairment complaint filed by the U.S. Fish and Wildlife Service on behalf of the Quivira National Wildlife Refuge.
- **Hays R9:** Information about the City of Hays' applications to KDA-DWR for water right changes and water transfer of the R9 Ranch.
- **Water Conservation Area (WCA):** Information about WCAs and active or pending WCA plans.
- **Local Enhanced Management Area (LEMA):** Information about LEMAs including the GMD No. 4 District-wide LEMA, the Sheridan County 6 LEMA and the proposed GMD No. 5 Rattlesnake/Quivira LEMA.
- **Wichita ASR:** Information about the City's request for changes to the conditions associated with the Phase II Aquifer Storage and Recovery Project.
- **Kickapoo Water Right:** Information on the Kickapoo Indian Reservation Water Right Settlement Agreement.
- **Republican River Compact:** Information on the latest resolutions and annual meetings between Kansas, Colorado and Nebraska on this compact.
- **Multi-Year Flex Accounts (MYFAs)**

For more information

To subscribe to updates:
[agriculture.ks.gov/dwr-updates](http://www.agriculture.ks.gov/dwr-updates)

Questions