



Virtual workshop series:
**Water Resource Management and
Irrigation in Kansas**

Natural Resources PFT

Kansas Center for Agricultural Resources and the
Environment (KCARE)

Theme 3: Water Resource Management and Irrigation in Kansas

- Offered as a Professional Development Event in PEARS for county extension agents
- 5 sessions in March and April, 8:30 am to 9:30 am
 - The next session is *March 25, 2021*
- **Zoom Meeting ID: 952 6066 1935, passcode: water**

Today's format

- If you haven't already, **please mute** your microphones.
- Speakers will present for 30-40 minutes
- Panelists will join the discussion at the end
- Please ask questions through the **chat** function (located at the lower part of your screen).
- Although our “end time” is posted for 9:30 a.m., participants are welcome to remain longer if they want to discuss the topic further.



Water Resource Management and Irrigation in Kansas

Sustainable management of water resources in Kansas

Wednesday, March 24, 2021



KCARE

Kansas Center for Agricultural
Resources and the Environment

K-STATE
Research and Extension

Speakers



Shannon Kenyon
Manager, Northwest
GMD4



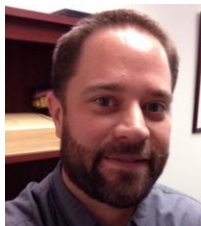
Michael Meyer
Water Commissioner,
Garden City Field
Office, Division of
Water Resources, KDA



**Brownie
Wilson**
GIS/Support
Services Manager,
Geohydrology
Section, KGS



Lane Letourneau
Program Manager,
Division of Water
Resources, KDA



Matt Unruh
Chief of Policy and
Communications,
Kansas Water Office

Kyle Spencer
District Manager,
Western GMD1

Moderator

Susan Metzger, Associate Director, KCARE and Senior Executive
Administrator to the Director, KSRE



Department of Agriculture
Division of Water Resources

WATER RIGHTS IN KANSAS

LANE P LETOURNEAU, P.G.

Water Appropriation Program Manager

Overview

- Kansas Water Appropriation Act
- Beneficial Uses of Water
- Protections
- Water Use Reporting

Kansas Water Appropriation Act (KWAA)

- Since 1945 – Right to use water based on prior appropriation or "First in time – First in right"
- **All** water is dedicated to the use of the people of Kansas
- Limits rights to reasonable needs
- Allows a limited resource to be allocated for beneficial use and to protect minimum desirable streamflows
- Protects investments, property rights and the resource
 - A water right does not grant ownership of water. It is a real property right to divert and use water for beneficial purposes with reasonable limitations

Why do I need a Water Right?



- Water is protected for the use and benefit of the citizens of the state in order of priority
- KDA-DWR issues permits to appropriate water, regulate usage & keeps records of all water rights
- It is illegal to use water without holding a vested right, or applying for & receiving a permit to appropriate water from DWR
- Exception is domestic use – household, 2 acres of lawn & garden use, livestock on pasture & secondary uses

Beneficial Uses of Water



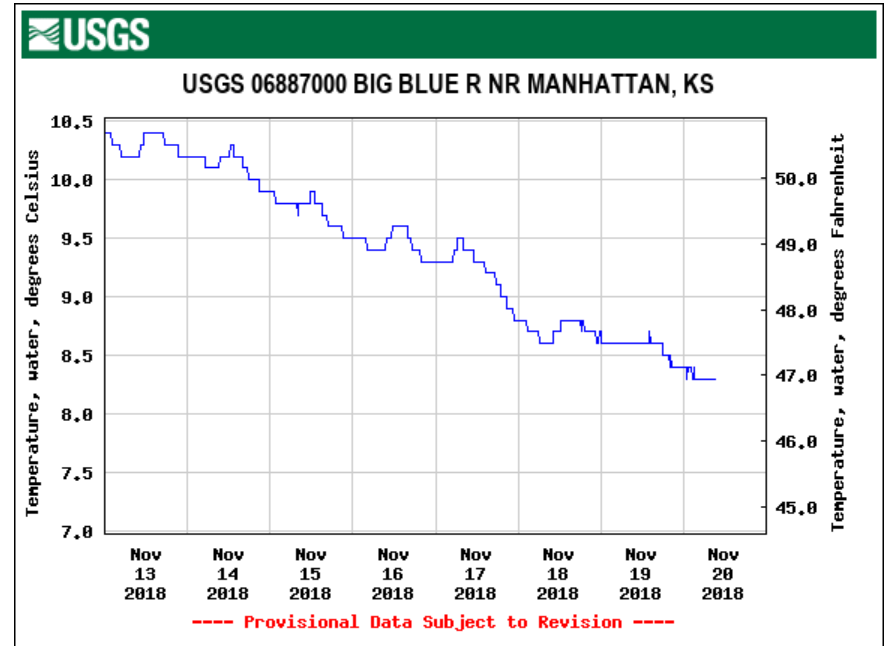
A **Beneficial Use of Water** is described as water that is used for financial purposes or aesthetic value and classified under one of the fourteen uses listed in KAR 5-1-1.

Others:

- Municipal
- Domestic
- Dewatering
- Hydraulic Dredging
- Thermal Exchange

Protections

- During periods of shortage, junior water rights may be curtailed to satisfy senior water rights and minimum desirable streamflows
- Releases from storage are protected
- Strict first in time, first in right can be harsh
- Statutes provide additional comprehensive tools such as LEMAs and IGUCAs to deal with water problems



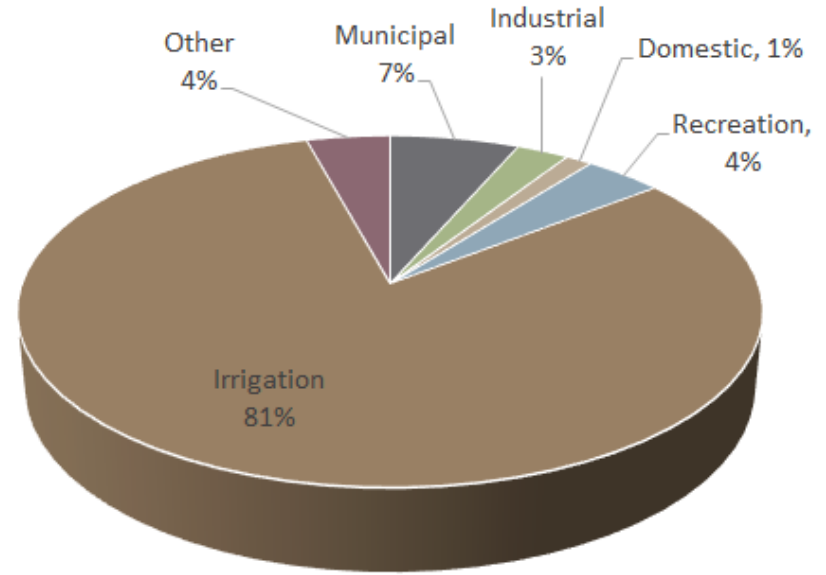
Water Use Reporting

Water Use details are used:

- To certify water rights
- In interstate compact administration
- Water banking
- Non-Use Review
- Resource Management

Who uses our data:

- Kansas Water Office
- KGS/USGS
- KRWA
- K-State Extension
- KS Dept. Of Revenue

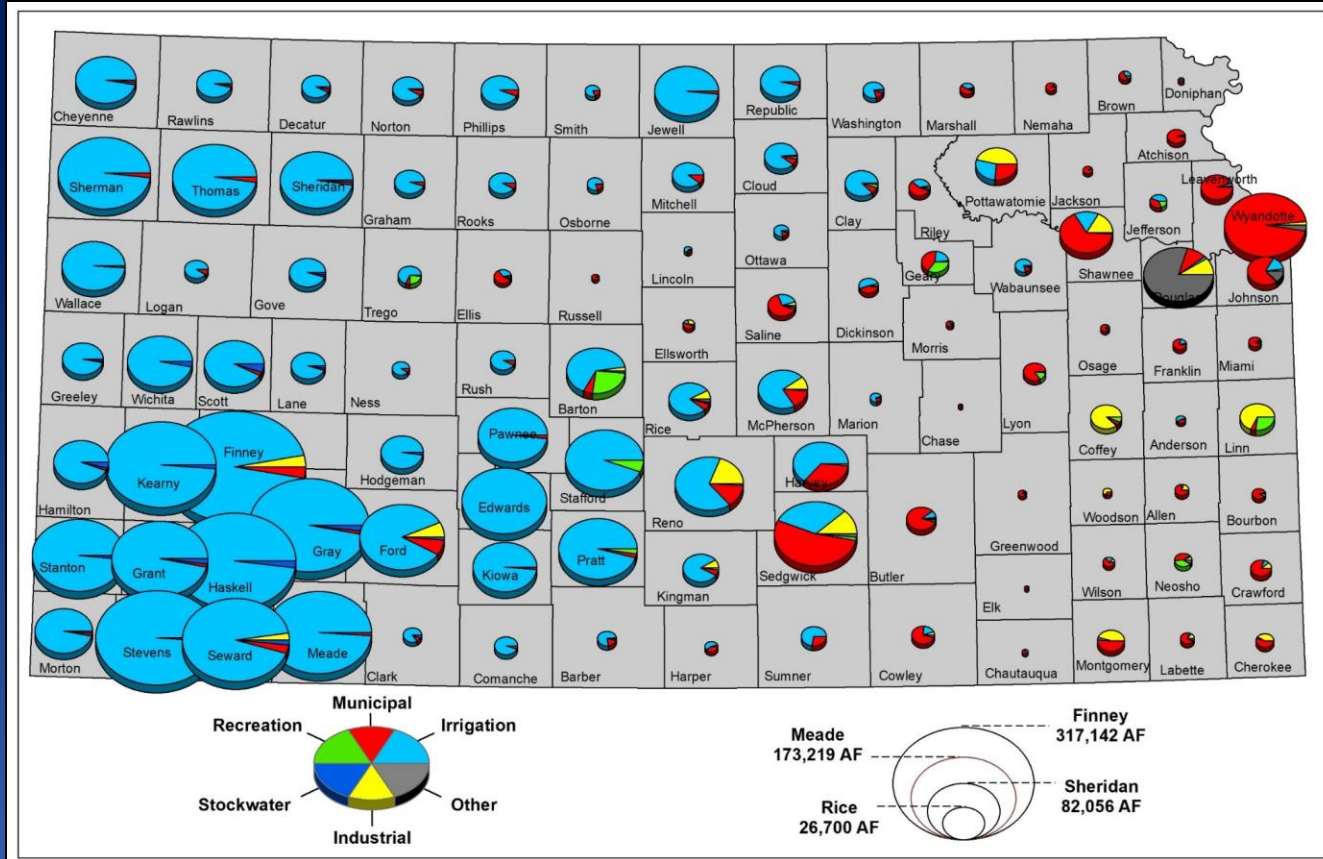


Each year approx. 16,000 water use report forms are mailed for 32,500 active water rights.

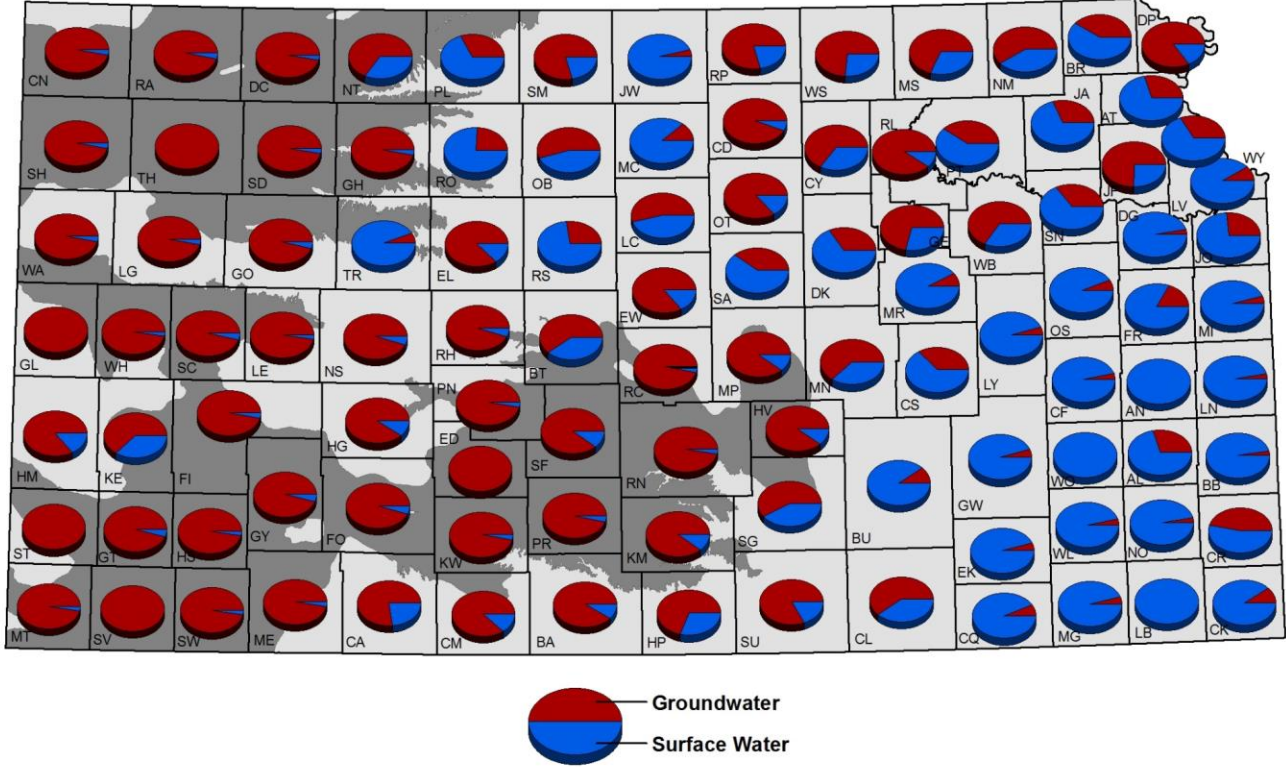
Largest beneficial use in KS is irrigation.

Visit our website: <http://Agriculture.KS.gov/Divisions-Programs/DWR>

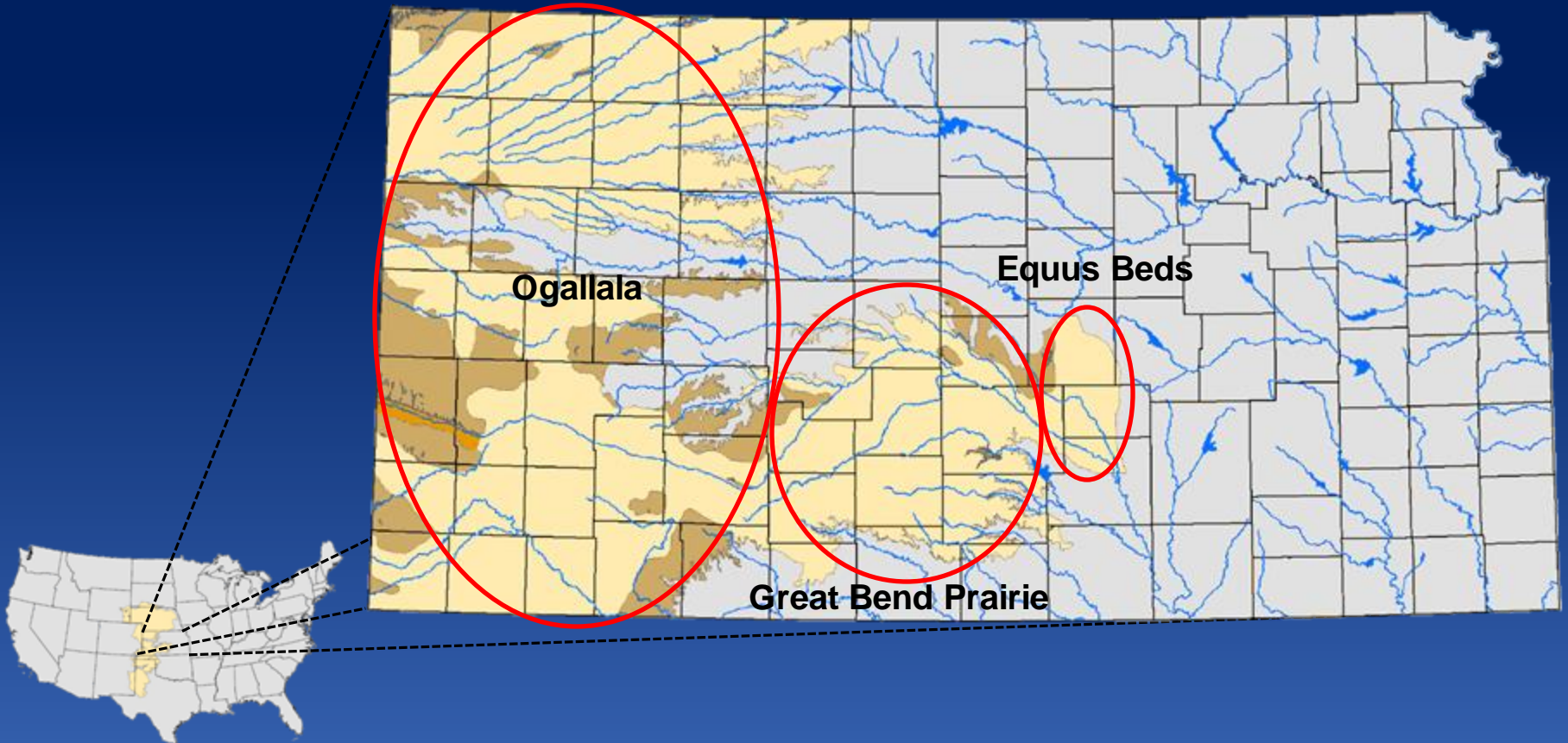
Average Reported Use Made of Water



Source of Water Supply

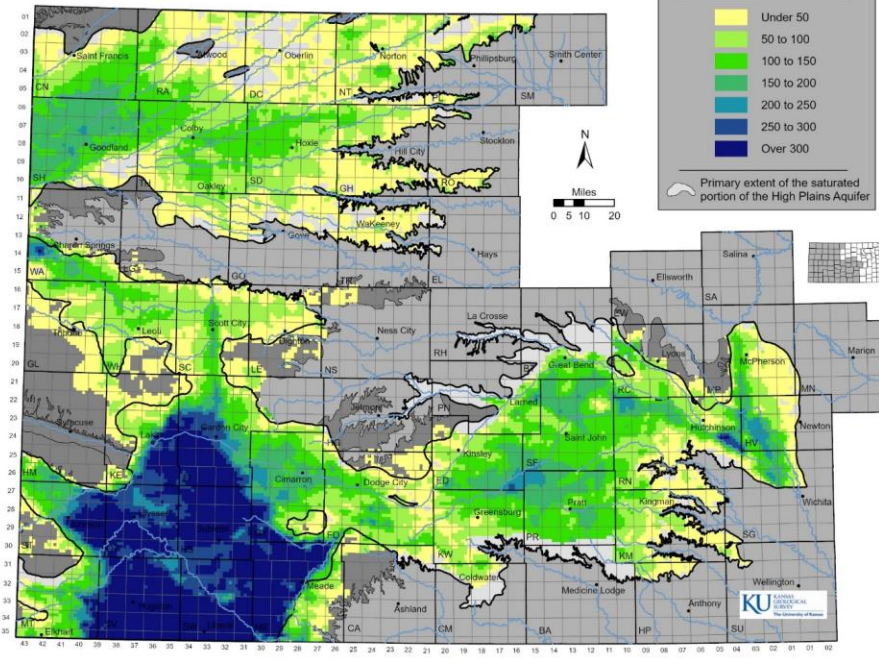


The High Plains Aquifer in Kansas

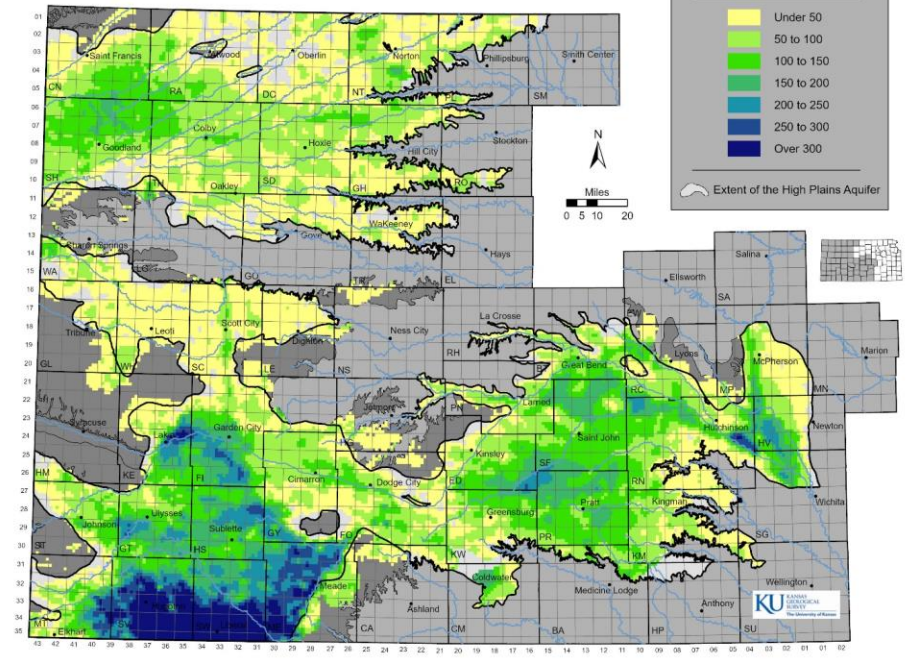


Change in Aquifer Thickness, Kansas High Plains Aquifer

Estimated Predevelopment Saturated Thickness, Kansas High Plains Aquifer

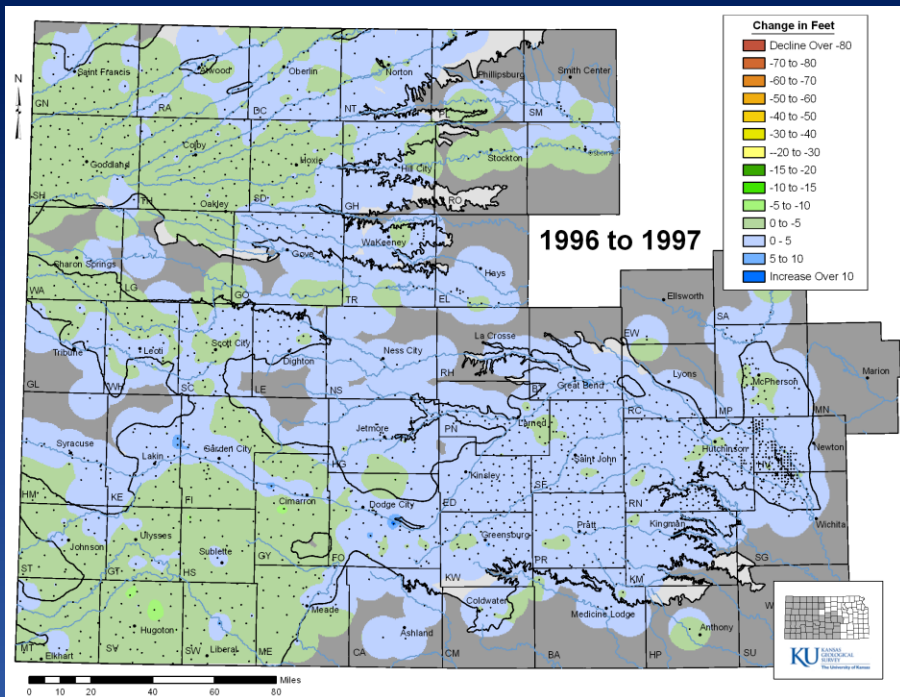


Average 2018-2020 Saturated Thickness, Kansas High Plains Aquifer

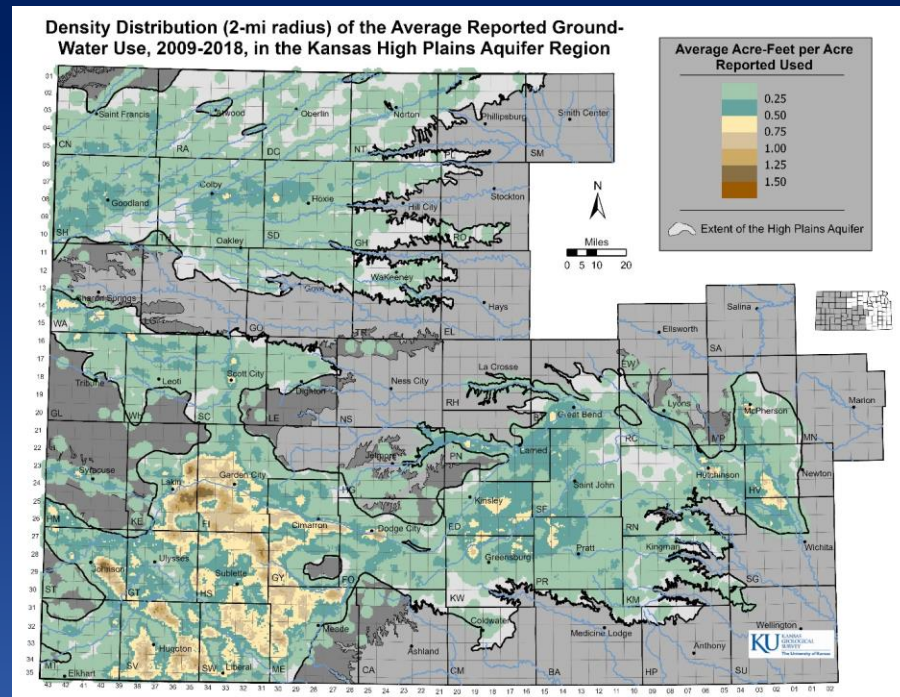


Water-Level Change vs Reported Water Use

Water Level Change

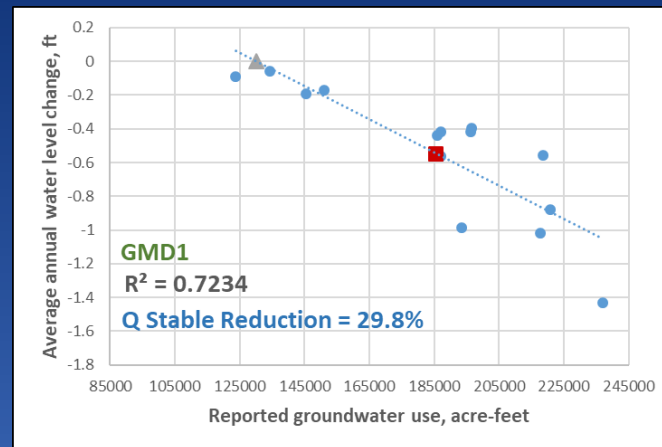
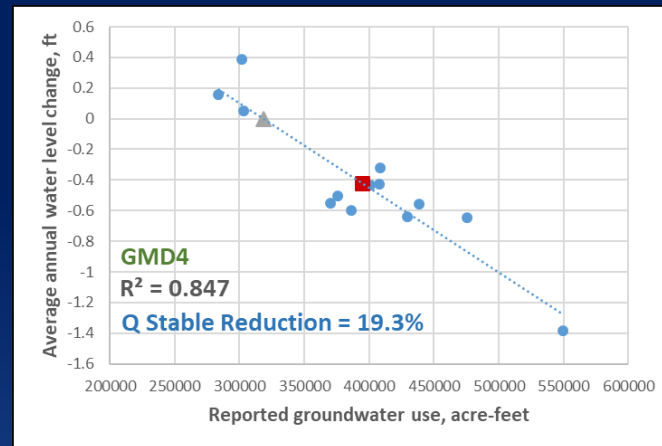
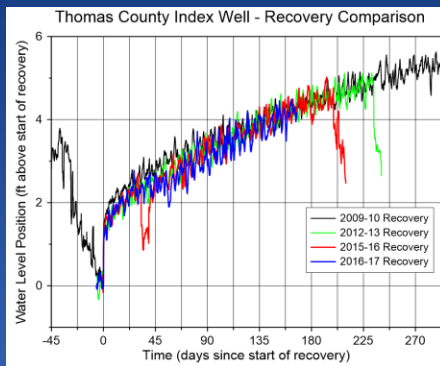
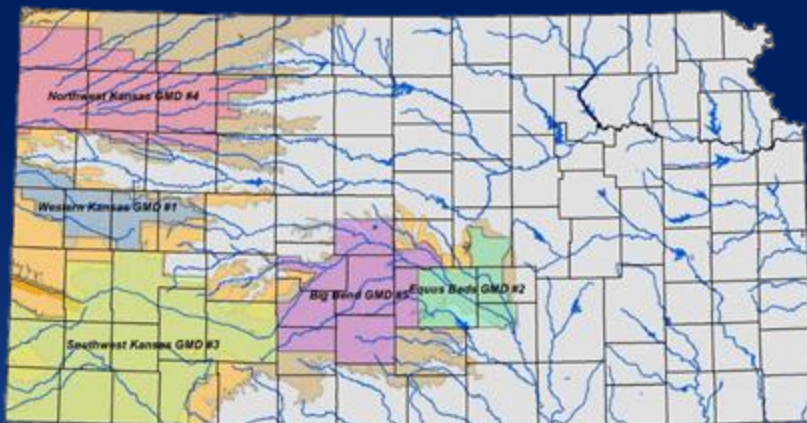


Groundwater Usage



How far out of whack are we?

Reductions in Average 2005 to 2018 Reported Water Use, by GMD, Needed to Stabilize Water Levels





Department of Agriculture
Division of Water Resources

WATER RIGHTS ADMINISTRATION AND CONSERVATION TOOLS

MICHAELA. MEYER, P.G.

Water Commissioner

Garden City Field Office

Local Control



Water Conservation Areas (WCAs)

Local Enhanced Management Areas (LEMAs)

Intensive Groundwater Use Control Areas (IGUCAs)

Intensive Groundwater Use Control Areas (IGUCAs)

Local Enhanced Management Areas (LEMAs)

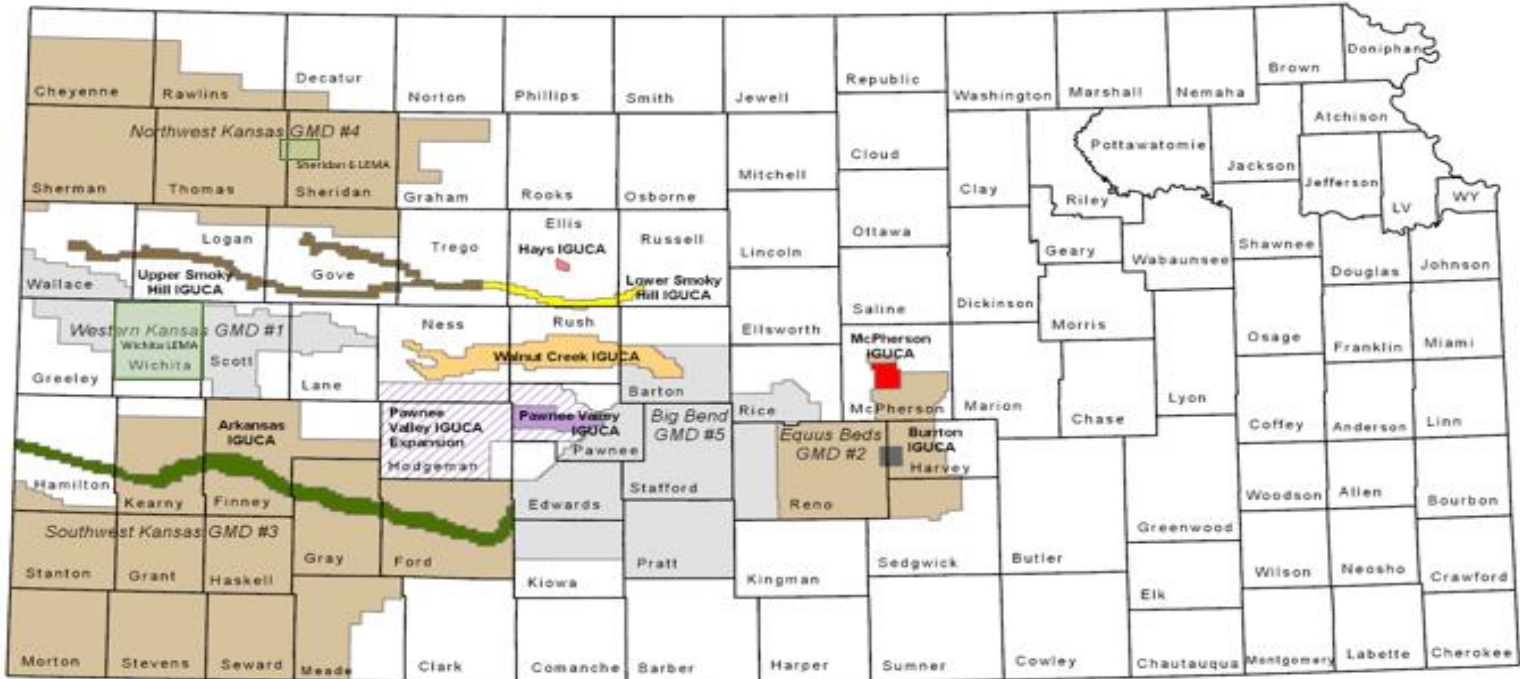
Water Conservation Areas (WCAs)



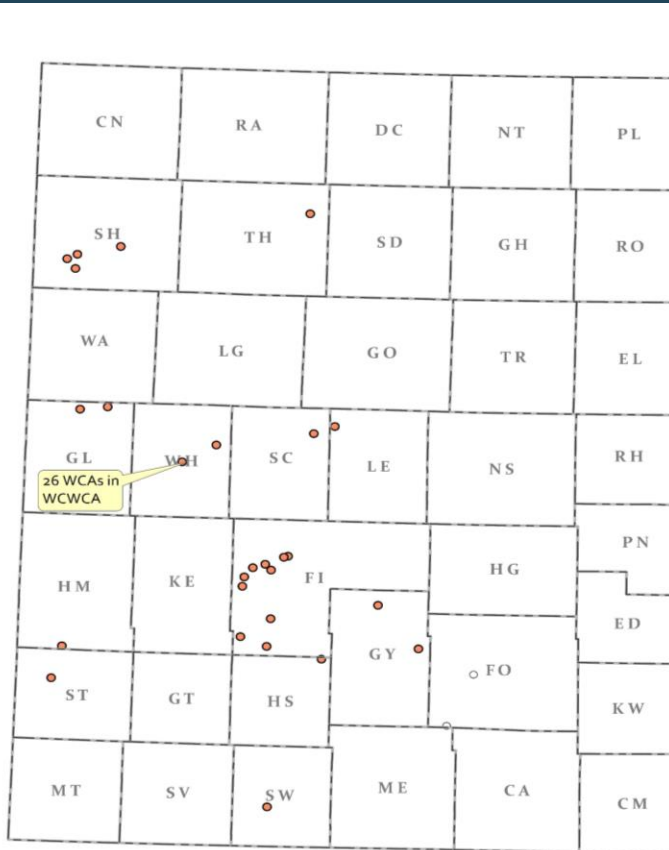
Red Tape

IGUCAS and LEMAs

- 9 IGUCAs
- 3 LEMAs (GMD4 district, Sheridan County (SD-6), GMD1-Wichita County)



Water Conservation Area (WCA) totals:



Current status:

28 plans active as well as 26 Wichita County WCA consent agreements
90,079 active acres enrolled
12,159 acre-feet of annual water savings

While most plans are relatively small, several significant WCA plans have been approved for example, Wichita County:
12,632 acres, 2,665 AF/year of savings

For more information on WCAs:

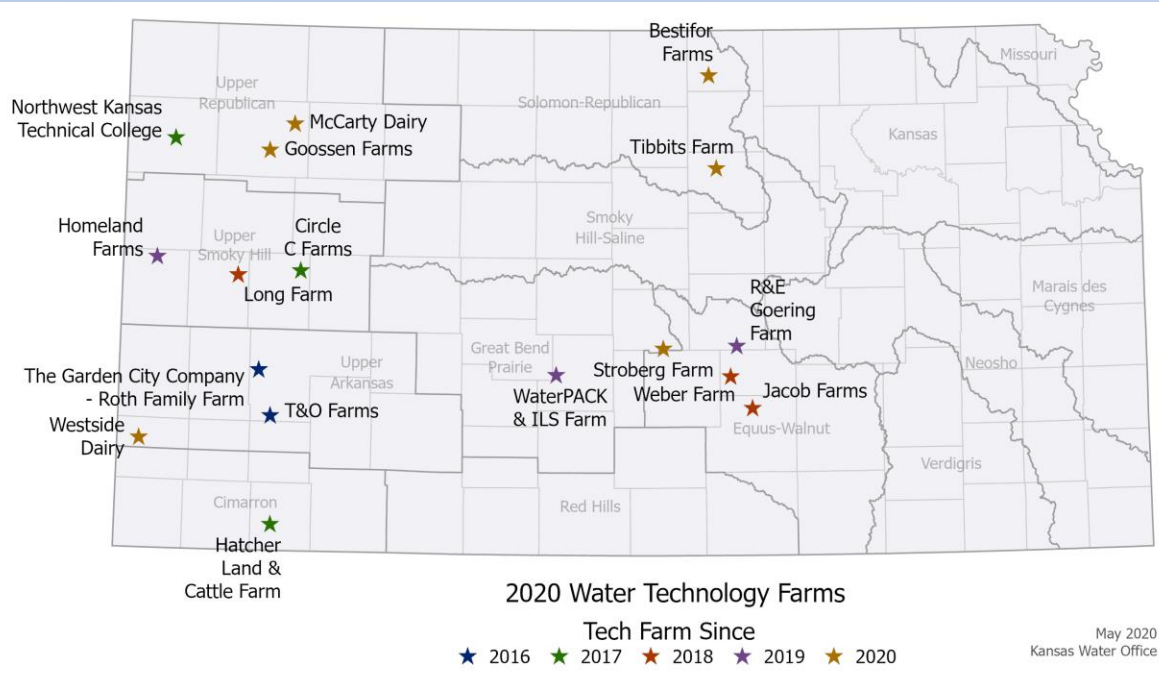
<https://agriculture.ks.gov/divisions-programs/dwr/managing-kansas-water-resources/wca>

Value of Conservation Tools (such as WCAs)

- Water savings (may be underestimated as water users reluctant to commit to more savings than they are comfortable with)
- Flexibilities such as multi year allocations, allows water users to maintain profitability
- Demonstration to others of what can be achieved
- Incentives for cost share on new technologies to help conserve water
- Seen from past and current WCAs:
 - more water savings is achieved than planned.
- Extend the life the useable life of the aquifer.



Additional State Water Conservation Efforts



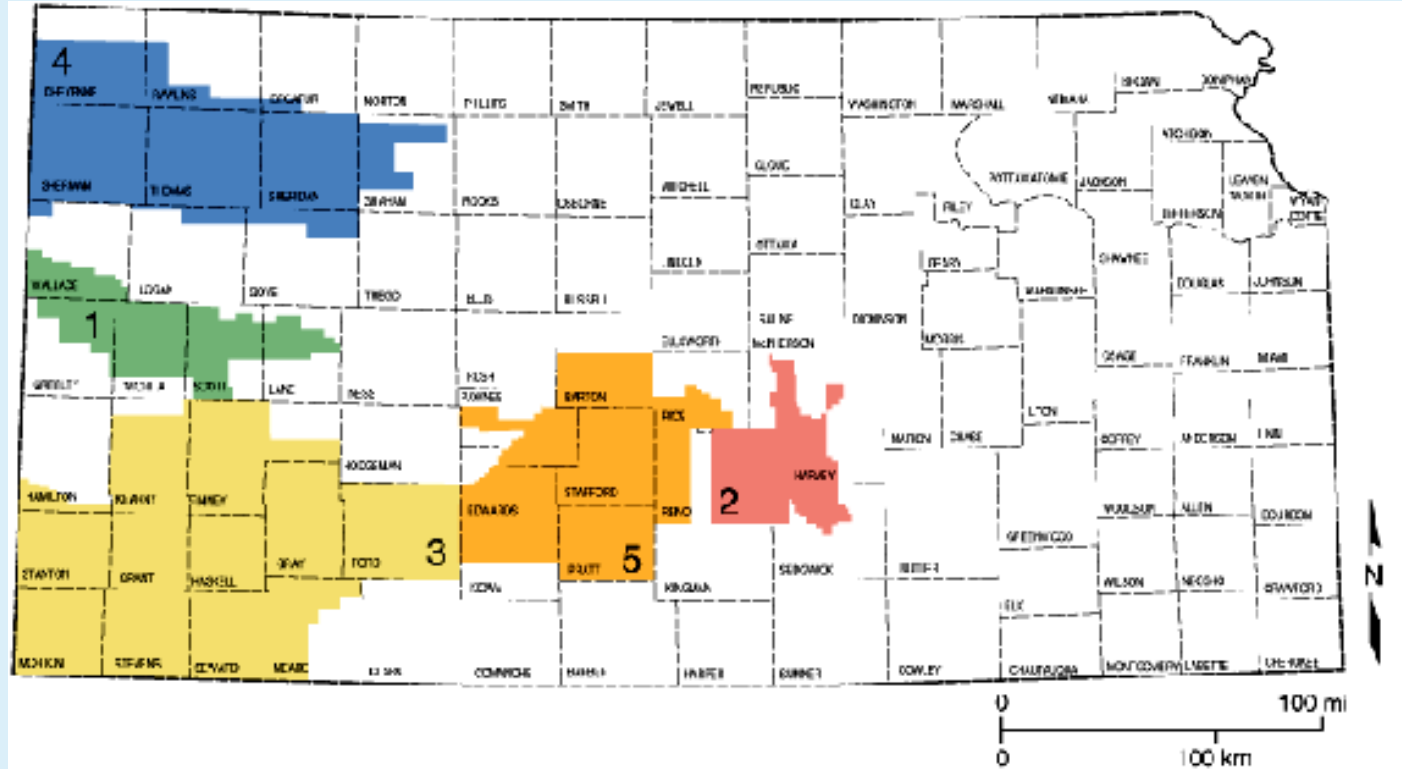
- **Irrigation Technology Demonstration:**
 - **Water Technology Farms (Map to Left)**
- **Financial Assistance:**
 - **Irrigation Technology**
 - **Water Transition Assistance Program (WTAP)**
 - **Conservation Reserve Enhancement Program (CREP)**

Additional information on these efforts included within Kansas Water Authority Annual Report as well as resource links for today's webinar.

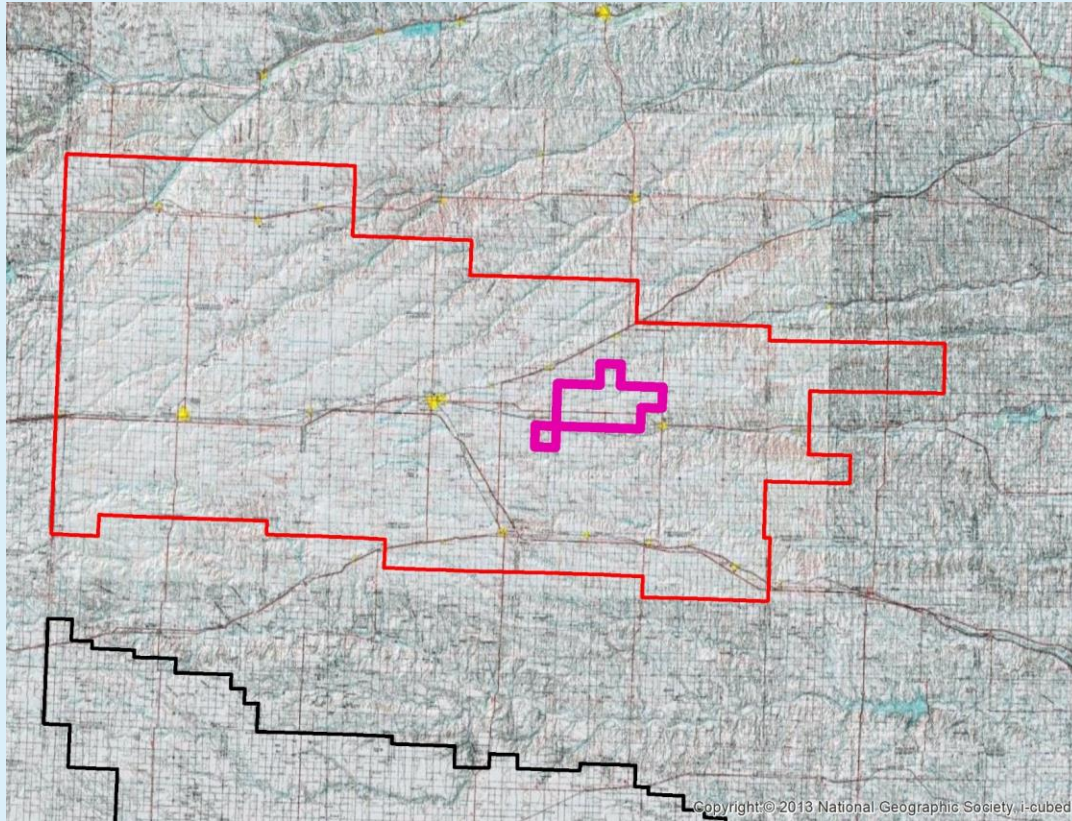
K.S.A. 82a-1020 through 1042 Groundwater Management District Act

- Legislative Declaration
- Need for local groundwater management
- Permits the establishment of groundwater districts
- Proper management of groundwater resources
- Prevent economic deterioration
- Stabilize Agriculture
- Secure Kansas the benefit in national and world markets
- Local control

Kansas Groundwater Management Districts



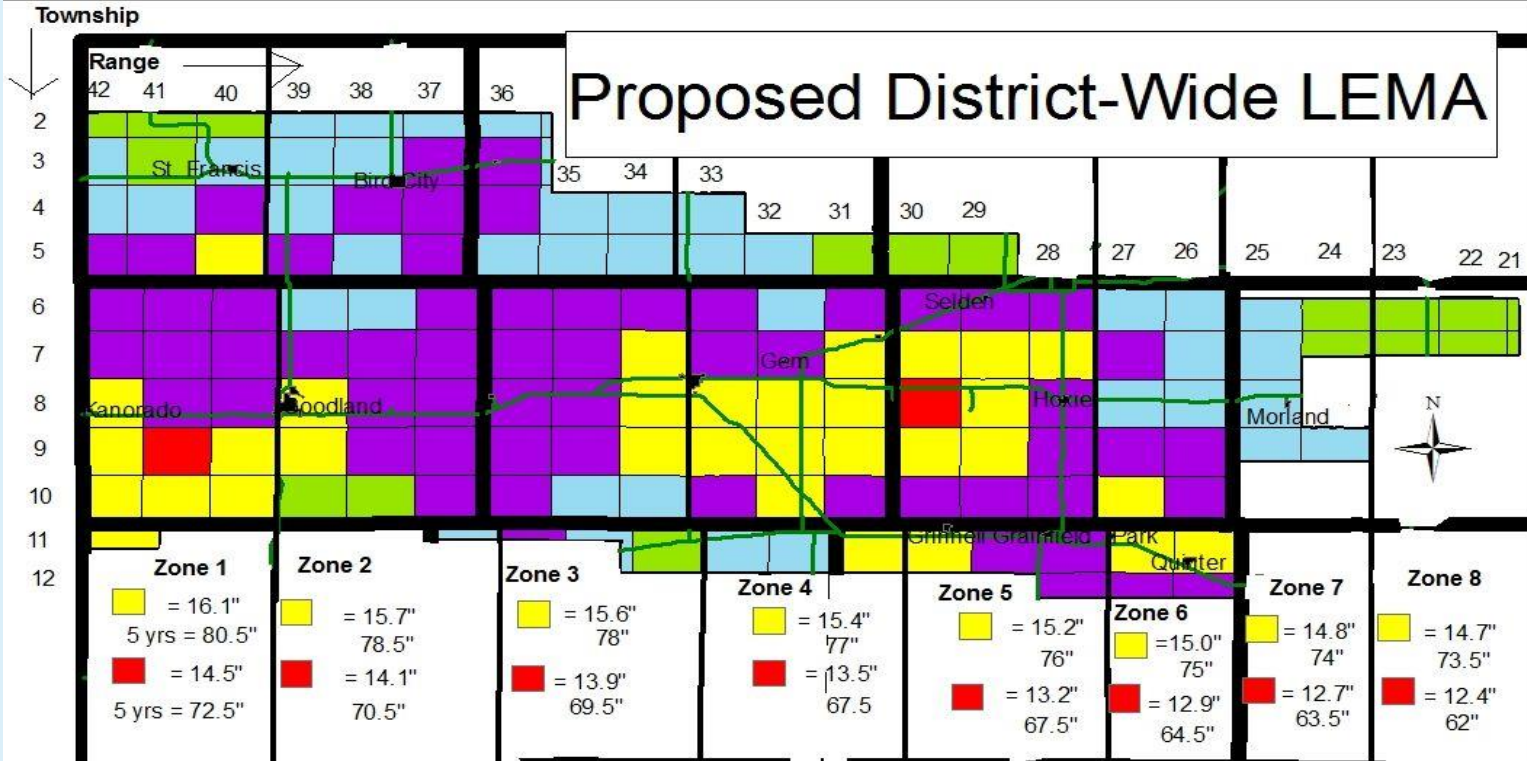
Sheridan 6 LEMA



SD6 LEMA Components

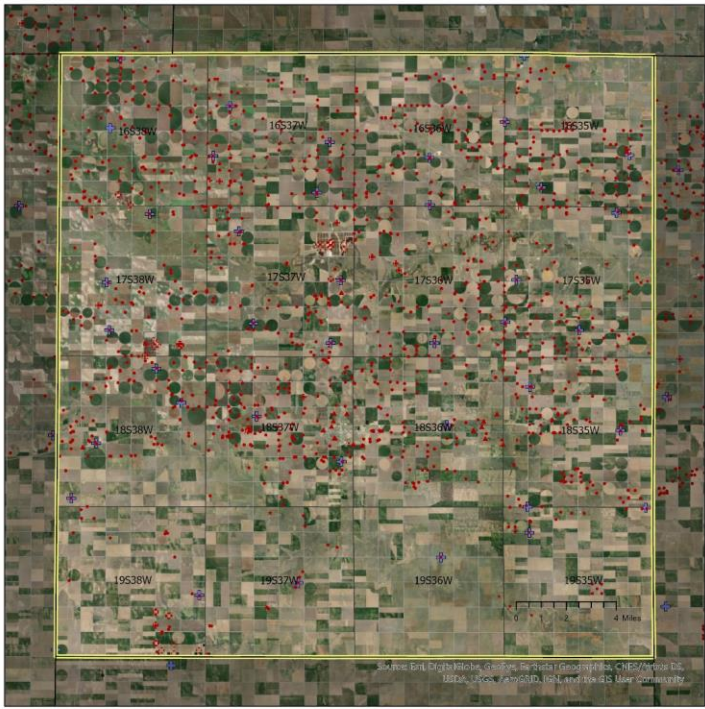
- Numerous public meetings held with stakeholders to determine components
- 55" over 5 years per eligible acre for IRR
- 12 gallons/head/day for STK
- 90% of current allocation for REC
- Cannot exceed annual authorized quantity
- 0 – 35% individual water right reduction
- Goal of approximate 20% regional reduction compared to previous 5 years
- Goal of 114,000 AF 2013 – 2017
- Approximately 89,200 AF pumped
- Umbrella accounts
- Transfers

Proposed District-Wide LEMA



- Townships with 2%+ Average Annual Decline in 2004-2015
- Townships with 1-2% Average Annual Decline in 2004-2015
- Townships with 0.5 - 1% Average Annual Decline in 2004-2015 (18 inch max restriction)
- Townships with 0- .5% Average Annual Decline in 2004-2015
- Townships with no decline 2004-2015

GMD 1 Wichita County LEMA



- | | |
|-----------------------------------|-----------------------|
| Water Rights (groundwater) | Other Features |
| • Domestic | □ County Boundary |
| • Hydraulic Dredging | □ LEMA Boundary |
| • Industrial | • Annual Network Well |
| • Irrigation | Index Map |
| • Municipal | |
| • Recreation | |
| • Stockwater | |

Wichita County LEMA Components

- 25% reduction from 2009-2015 average water use
- 5-year allocation
- Cannot exceed water right quantity any year
- Potential carry-over quantity to the next LEMA
- Vested water rights are exempt; can volunteer to enroll
- Due consideration for past voluntary conservation with a rate test on the well

Legislative Update

- HB 2172
- Modification to the Multi Year Flex Account statute
- 1600 new water rights were not eligible for a MYFA due to not having a base use period during 2000-2009
- Established a method of calculating a 5-year allocation using the net irrigation requirement in KAR 5-5-12 for the files without use in 2000-2009
- Removed an unintended compliance problem
- And we modify this statute every session. 😊



Questions & Discussion

Sustainable management of water resources in Kansas

Wednesday, March 24, 2021



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Water resource management and irrigation in Kansas

Upcoming session: Thursday, March 25, 8:30am

Topic: Understanding Irrigation Systems and New Technologies

Presenters: Matt Sanderson, K-State Department of Sociology; Jonathan Aguilar, K-State Department of Biological and Agricultural Engineering; Bill Golden, K-State Department of Agricultural Economics

Hosted by: Natural Resources PFT and KCARE

