

KANSAS GEOLOGICAL SURVEY



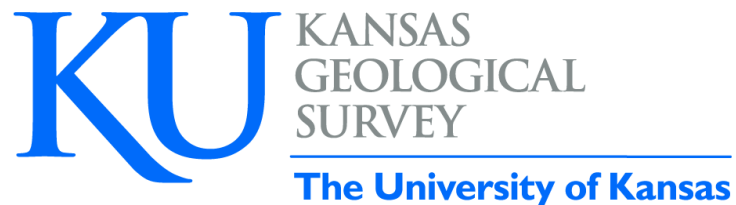
Presentation to the Kansas
Water Committee on
February 24, 2021.

*Dr. Rolfe Mandel, Director of the Kansas
Geological Survey, State Geologist, and
University Distinguished Professor*

KGS MISSION STATEMENT

The mission of the Kansas Geological Survey is to conduct geological studies and research and ... collect, correlate, preserve, and disseminate information leading to a better understanding of the geology of Kansas, with special emphasis on natural resources of economic value, water quality and quantity, and geologic hazards.

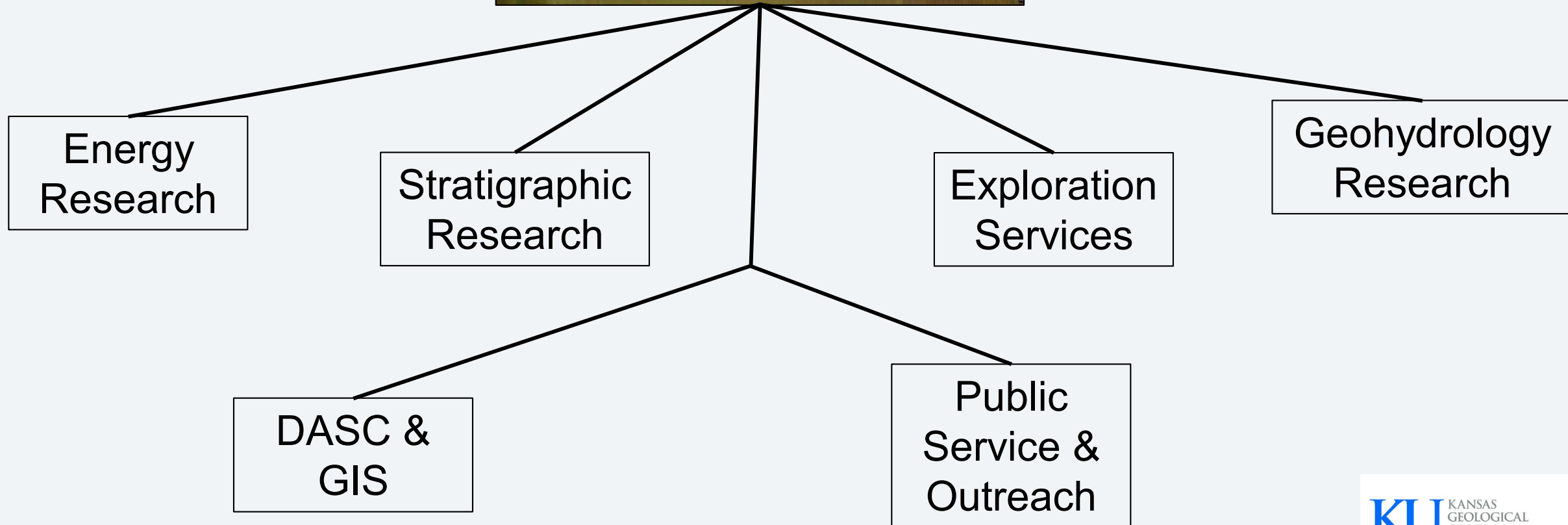
The Kansas Geological Survey does not have any regulatory responsibility and we do not take position on policy. Our agency is a neutral party that provides scientifically sound information and opinions that can inform your policy decisions.



KGS STRUCTURE



KGS is located in the west district of the University of Kansas.

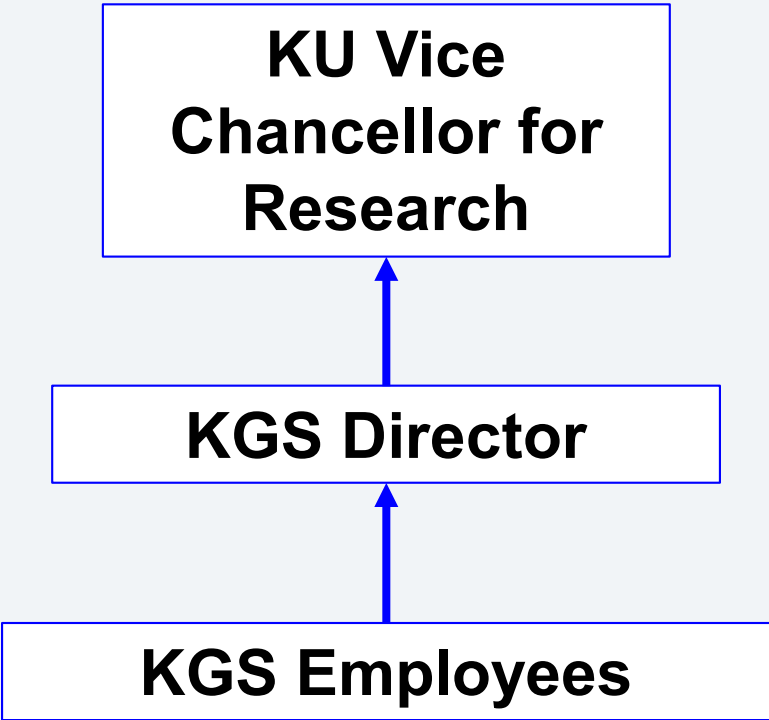


REPORTING STRUCTURE

All KGS employees report to the KGS Director.

The KGS Director reports to the Vice Chancellor for Research at the University of Kansas and

Role	Number
Scientists	20
Researchers	13
Research Support Staff	29
Support Staff	21
Students	23
TOTAL	106



ADVISORY COUNCIL

The KGS also has a 12-member advisory council to provide review and guidance.

KGS Advisory Council Members

Tim Boese

David Heinemann

Beth Isern

Jason Probst

Dan Kerschen

Julie Westhoff

Tom Christy

Paul Simpson

Mike Ramsey

Patrick Parke

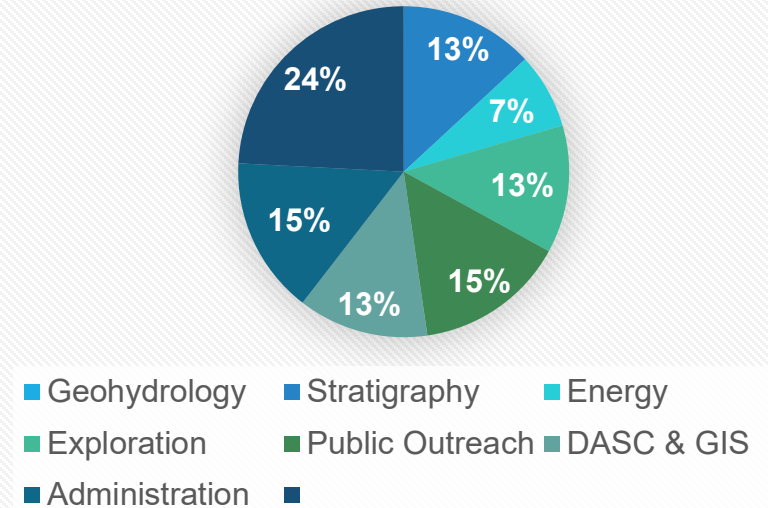
Tom Sloan

A. Scott Ritchie

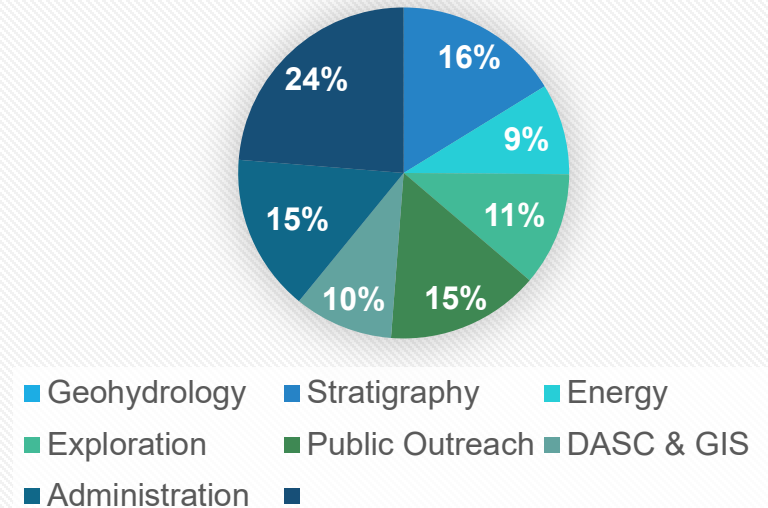
BUDGET SUMMARY

CATEGORY	Fiscal Year	
	2020	2021
Salaries	4,934,153	5,094,500
Other Operating Expenses	1,310,395	1,142,299
TOTAL	6,244,548	6,236,799

FY20 State Funding

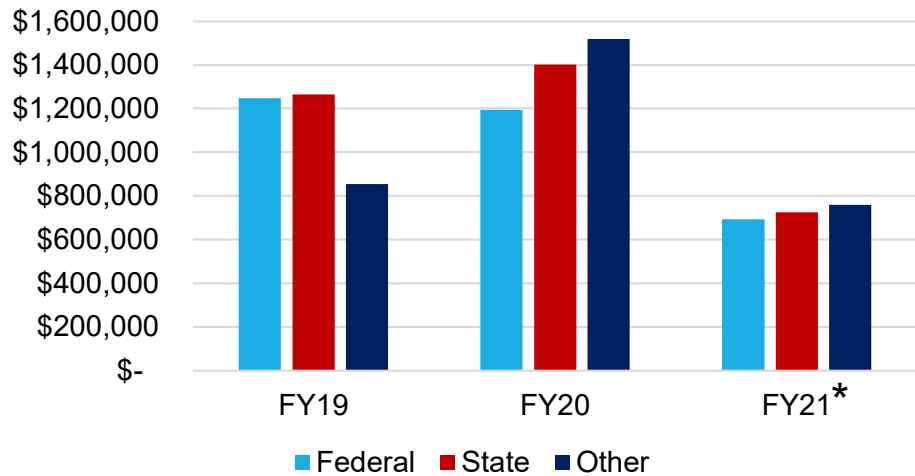


FY21 State Funding



GRANTS AND CONTRACTS

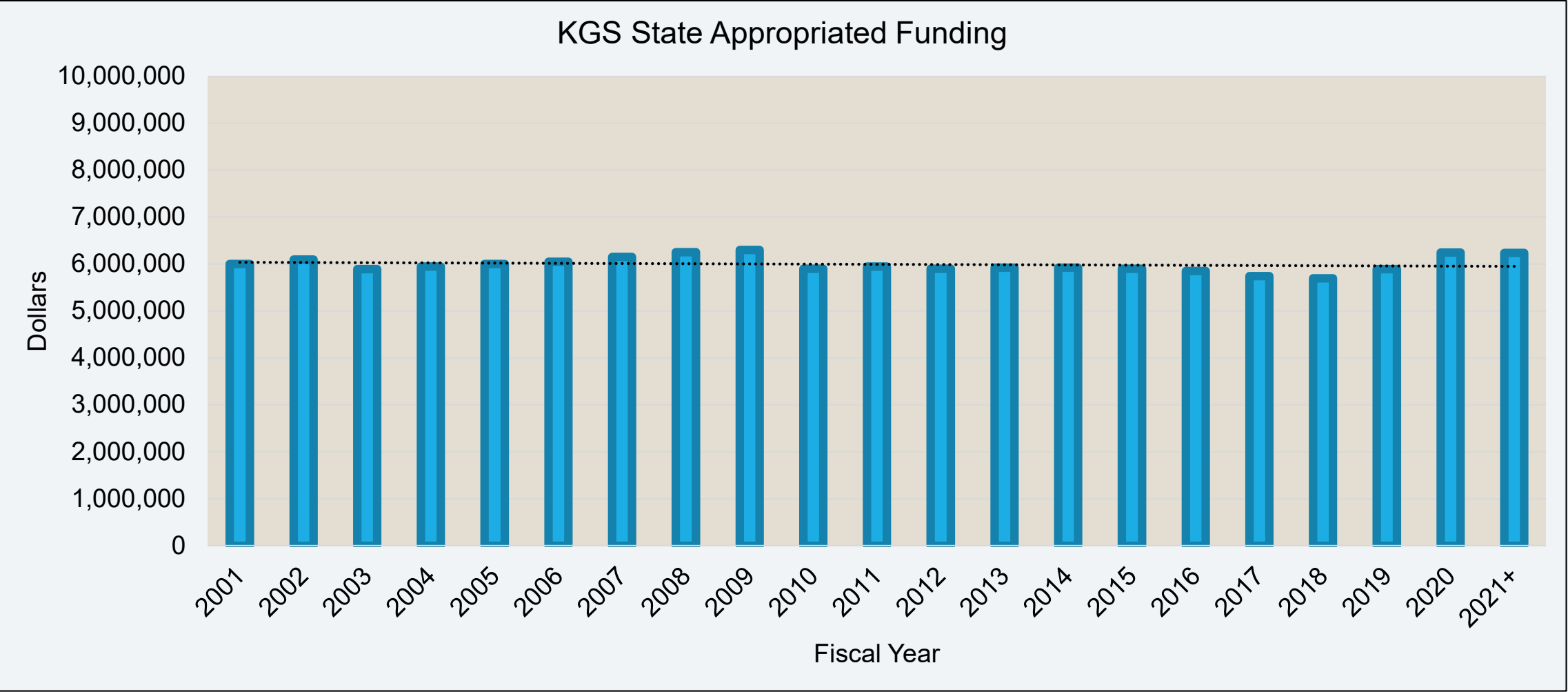
Grants and Contracts



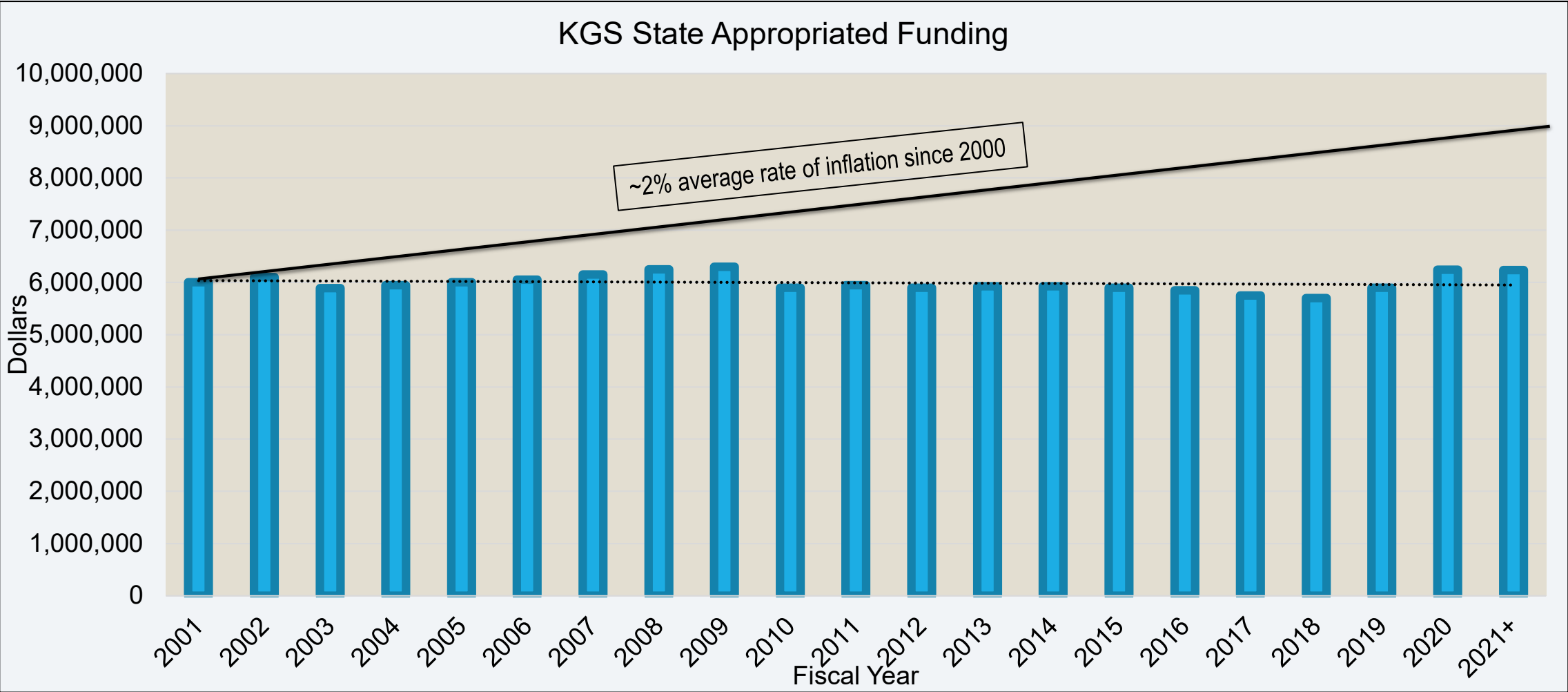
*FY21 values are to date

FUNDING SOURCE	2019	2020	2021
FEDERAL:			
National Science Foundation	27,030	54,935	38,266
US Army Corp Of Engineers	467,374	823,186	412,792
US Department Of Energy	523,554	67,509	
US Geological Survey	230,145	247,564	242,036
FEDERAL TOTAL	1,248,103	1,193,194	693,093
STATE:			
Equus Beds Groundwater Management District #2	29,376	21,879	
Groundwater Management District 4	540	4,337	54,797
Kansas Corporation Commission	169,304	172,685	40,679
Kansas Department Of Agriculture	41,057	63,222	45,775
Kansas Department Of Health & Environmt	8,259	40,955	48,348
Kansas Department Of Revenue	219,309	206,385	150,736
Kansas Department Of Transportation	329,986	255,082	71,807
Kansas Division Of Emergency Managment		3,807	4,618
Kansas Information Technology Office	195,554	386,744	130,894
Kansas Water Office	224,899	230,139	164,763
Kansas Water Resources Institute	37,890	15,153	12,278
Southwest Kansas Groundwater Management, District #3	9,005		
STATE TOTAL	1,265,178	1,400,388	724,696
OTHER:			
Foundation	54,605	51,160	42,833
Industry	345,335	458,264	94,706
Institution	1,826	3,239	1,350
Non-For-Profit	367,246	745,128	440,025
State Agencies (non Kansas)		40,467	42,215
Universities	85,762	196,054	138,383
Foreign		24,244	0
OTHER TOTAL	854,774	1,518,556	759,513
TOTAL	3,368,054	4,112,138	2,177,302

KGS 20 YEAR APPROPRIATED FUNDING HISTORY



KGS 20 YEAR APPROPRIATED FUNDING HISTORY



GEOPHYSICS AND EXPLORATION SERVICES

- Develops and uses near-surface imaging and characterization to locate underground anomalies, such as voids, tunnels, and abandoned mines;
- Image rock layers to study groundwater flow and map geologic structures;
- Appraise subsurface hazards;
- Monitor earthquake activity across the state.



SEISMIC RESEARCH AND APPLICATIONS

Reflection Program

- World's leaders since 1980 in shallow high resolution seismic reflection method development and application
- Hazard evaluations, examples
 - I-70 sinkhole
 - US-50 bypass around Hutchinson
 - Abandoned coal mines Scammon BNSF railroad
 - Abandoned saltwater disposal wells (Macksville, Punkin Center, Leesburg, etc)
 - Lyon's salt mine collapse
 - Hutchinson gas explosion

Surface Wave Program

- Developed method in 1999 that has been Globally accepted as standard for estimating shallow rock properties (shear velocity, rock stiffness) for engineering and groundwater applications
- Risk reduction and mitigation or hazard evaluations, examples
 - Olathe groundwater contamination
 - Galena lead/zinc mine collapse and town stability
 - Treece and US 69 Highway stability risk
 - Hutchinson legacy salt jugs roof stability and collapse

Outside (non-State) funding to support development and application over last 20 years exceeds \$20M.



ANNUAL WATER LEVEL MEASUREMENT PROGRAM

KGS took over for the USGS in 1997. Prior to 1997, USGS measurement crews spent 2 to 3 months measuring 559 wells using paper maps and counting miles.

The program in 1997:

KGS responsible for 559 wells in 16 counties

DWR responsible for 823 wells in 33 counties

KGS started using digital maps and handheld GPS for guidance and supported DWR efforts

13 days, 6 people to complete KGS portion

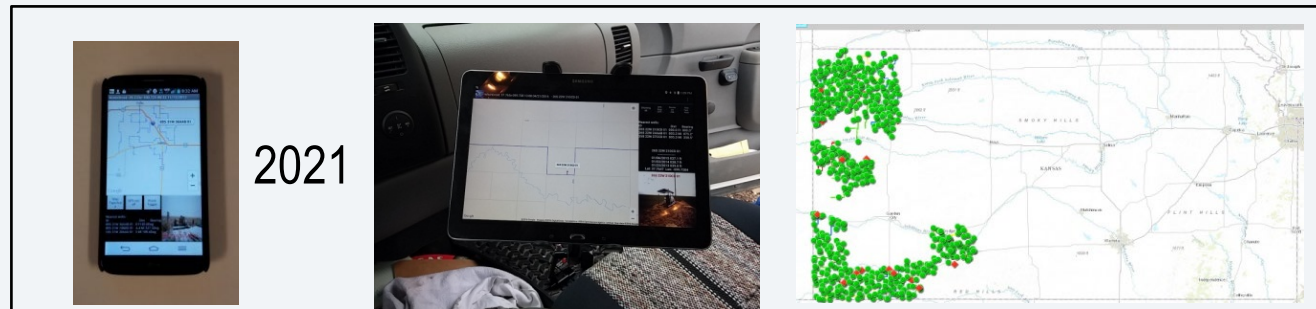
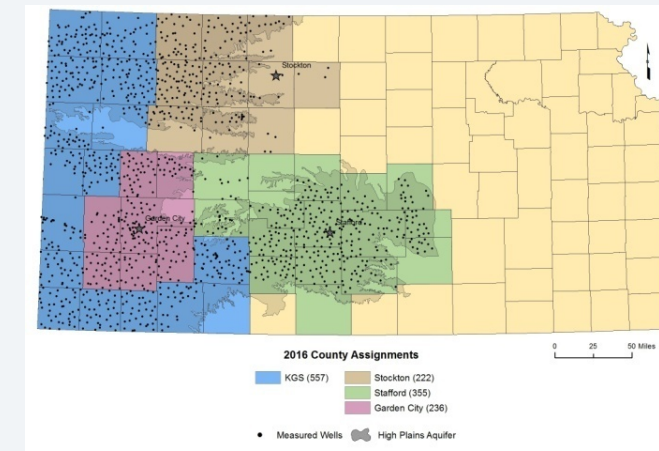
The program today:

KGS responsible for 581 wells in 17 counties

DWR responsible for 838 wells in 32 counties

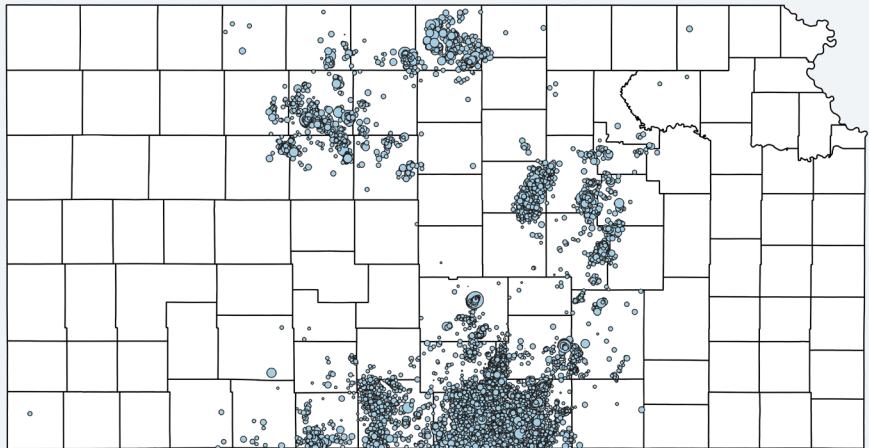
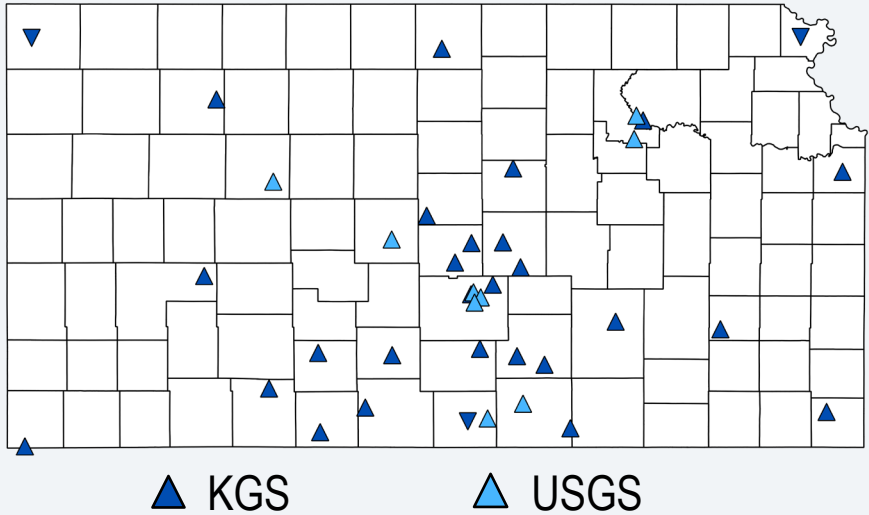
KGS developed paperless, digital acquisition system w/ real time navigation, well histories, and data uploads to KGS server w/ time and location stamps and saved on mobile phones

3 days, 8 people to complete KGS portion



KANSAS EARTHQUAKE NETWORK

- Development of modern network began in 2014.
- Current network includes 30 stations focused on State priority areas and regional surveillance



16,967
earthquakes
located by
KGS since
beginning of
2015



FORENSIC/ARCHAEOLOGY GEOPHYSICS

Crime scene investigations

KBI investigation in Shawnee County

KCK police investigation of cold case

Council Grove police investigation of cold case

Grave delineation

pre-1900 cemeteries

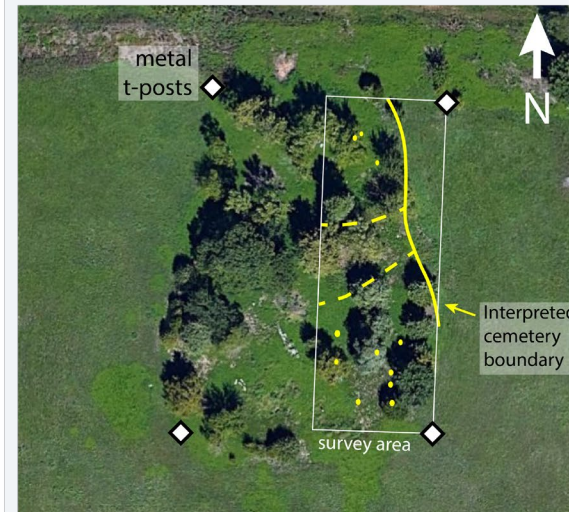
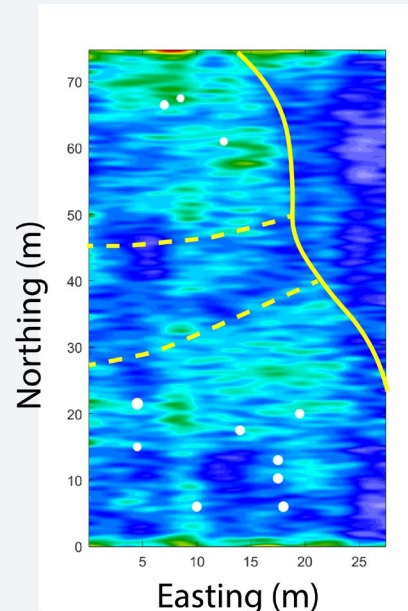
Douglas County

Leavenworth County

Historically significant sites

Civil War

Native Kansan dwellings



MINERAL INVESTIGATIONS

Volcanic intrusive mineral deposits (magnesium-mica)

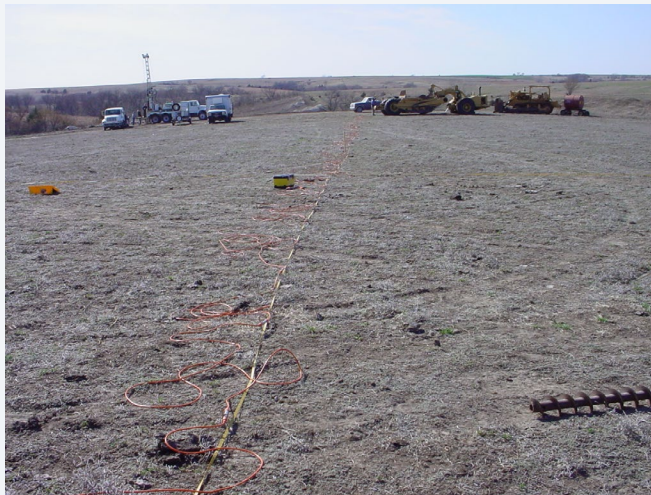
Developed methods to delineate highly variable ore bodies

Limestone/Aggregate deposits

Improving resource management and classification, Bonner Springs, Independence

Volcanic Ash

Develop geophysical method for volumetric evaluations, Jewell County



STRATIGRAPHY

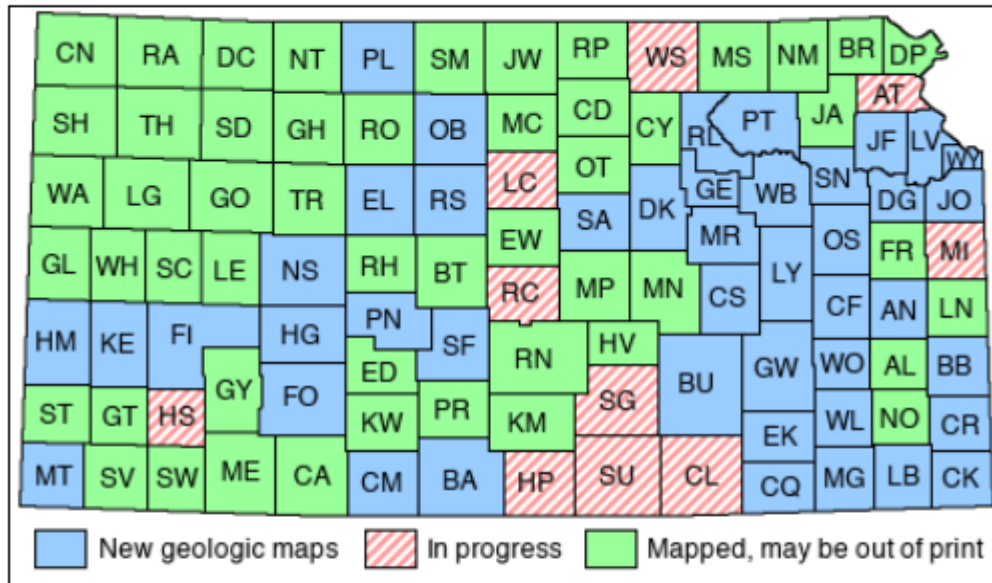
Stratigraphic research projects are focused on geologic mapping, as well as quantitative characterization and dating of sedimentary deposits.

- Geologic Mapping
- Streambank Erosion Study



KGS PARTICIPATION IN THE USGS STATEMAP PROGRAM

County Geologic Maps



This page shows available geologic maps for the counties of Kansas. Click on the map to view information for a county, or scroll down and select from a list of counties.

In addition to these county maps, explore the geology of Kansas with our [Interactive Geologic Map](#).

The KGS Library should have copies for examination of those reports listed as out of print. In-print **KGS** publications can be acquired from the KGS, but reports from the U.S. Geological Survey, Kansas Department of Transportation, or other organizations are generally **NOT** available from the Kansas Geological Survey. You may also wish

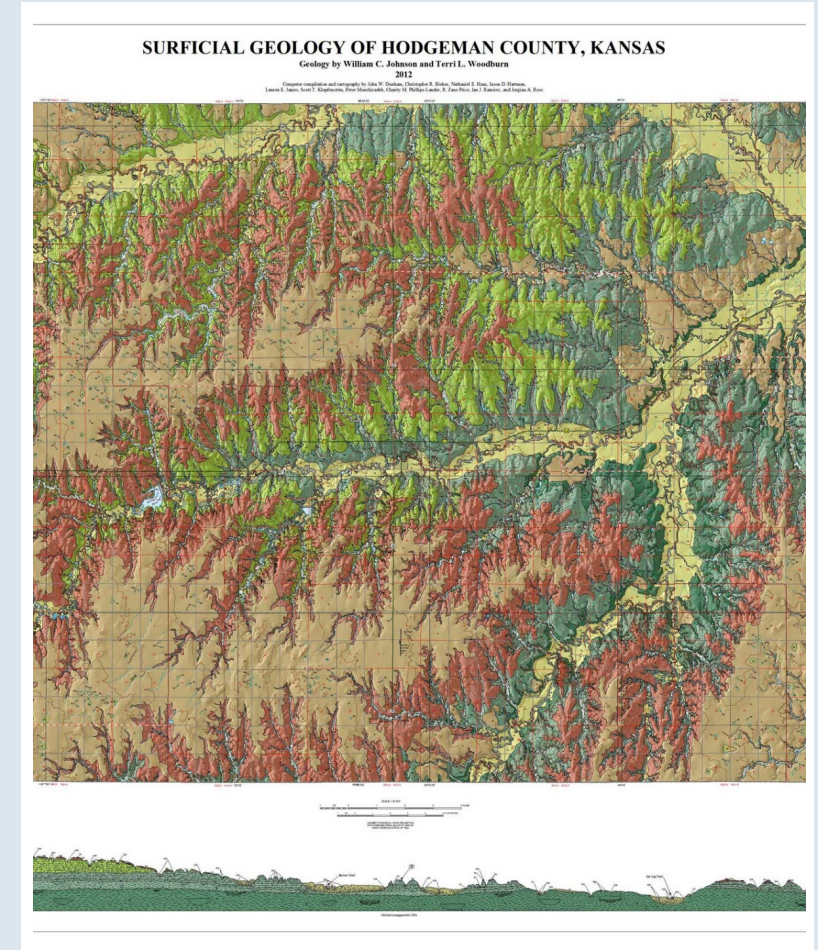
Many county maps are from the 1960's or earlier, are out of print or not in an easily accessible digital formats.

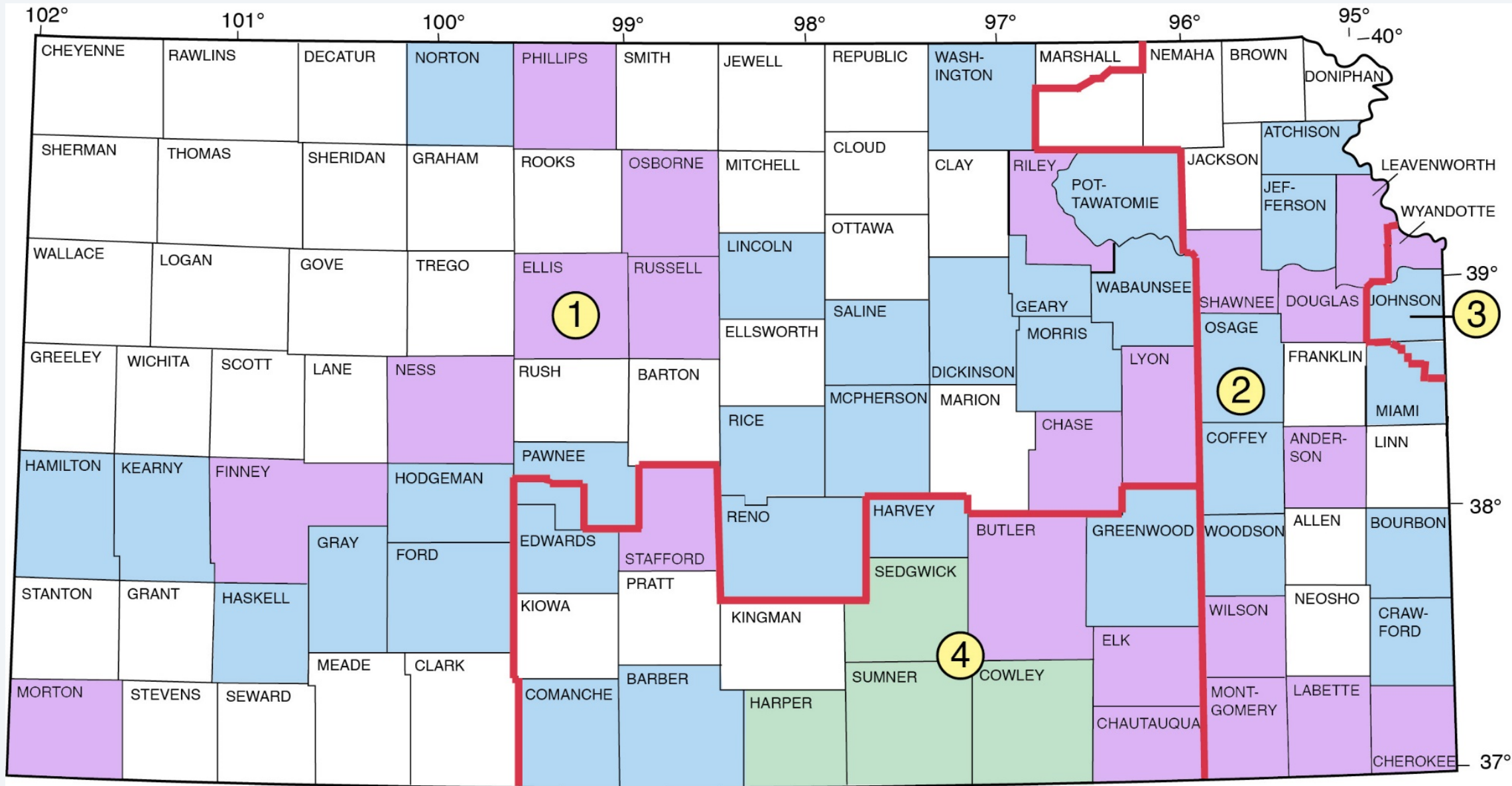
While the rocks don't change significantly in human timespans, our scientific tools and ability to investigate and understand the geology of Kansas does improve.

Geologic maps convey this new and more accurate information to stakeholder agencies and industries, scientific colleagues, and the general public.

NATIONAL COOPERATIVE GEOLOGIC MAPPING PROGRAM (NCGMP)

- STATEMAP is a competitive matching-funds grant program available to State surveys to support geologic mapping.
- Primary objective is to establish the geologic framework of areas determined to be vital to the economic, social, or scientific welfare of individual States.
- Kansas mapping priorities are guided by the KGS Advisory Committee.
- **Criteria for county selection in Kansas vary, though priority issues have focused on water resources, the ever-increasing demand for construction aggregate throughout the state; and recent public concern over induced seismicity related to petroleum production in south-central Kansas and Oklahoma.**



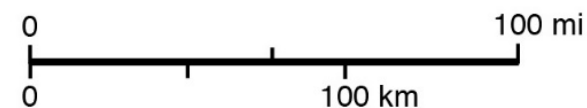


1 Congressional Districts

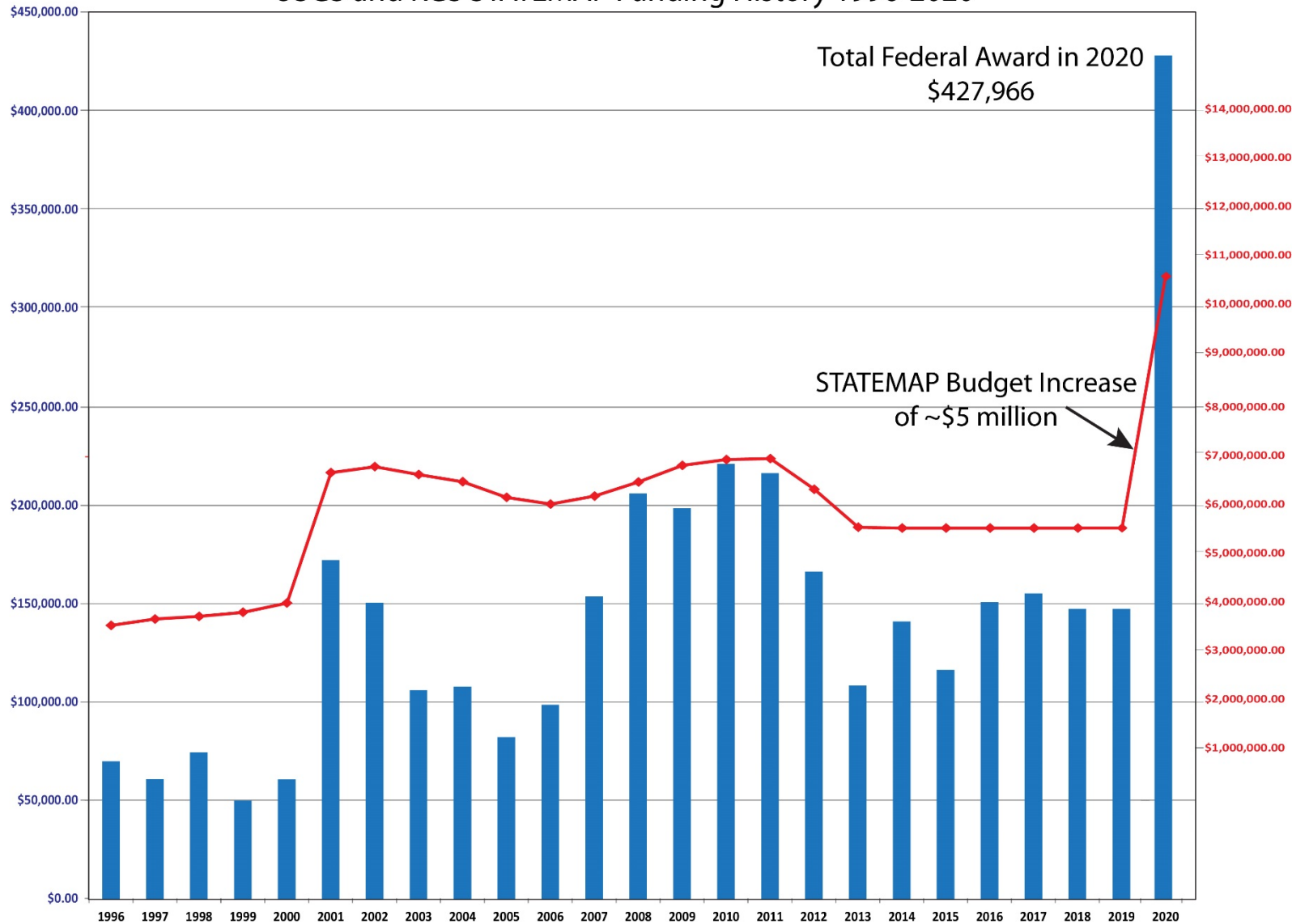
Map scale: 1:24,000

 New geologic mapping proposed for FY2019

 Completed geologic mapping



USGS and KGS STATEMAP Funding History 1996-2020



2020 budget increase is to support new digital mapping activities, such as converting older maps and adoption of new mapping standards not already covered in the STATEMAP program.

- Budget increase of \$5 million is expected to continue

Assessing the Effectiveness of Streambank Stabilization Projects

Streambank erosion is a significant cause of reservoir sedimentation in Kansas. To combat this problem over 250 streambank stabilization (SBS) projects have been completed along rivers draining into major federal reservoirs.

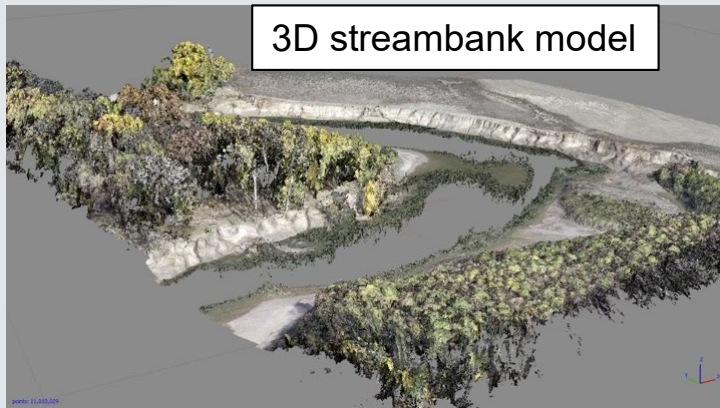
The effectiveness of SBS needs to be studied to determine (1) whether it resolves the underlying causes of streambank erosion, a stream out of equilibrium, and does not shift erosion upstream or downstream of the SBS site, and (2) whether SBS accomplishes the goal of reducing total sediment loads entering Kansas reservoirs.



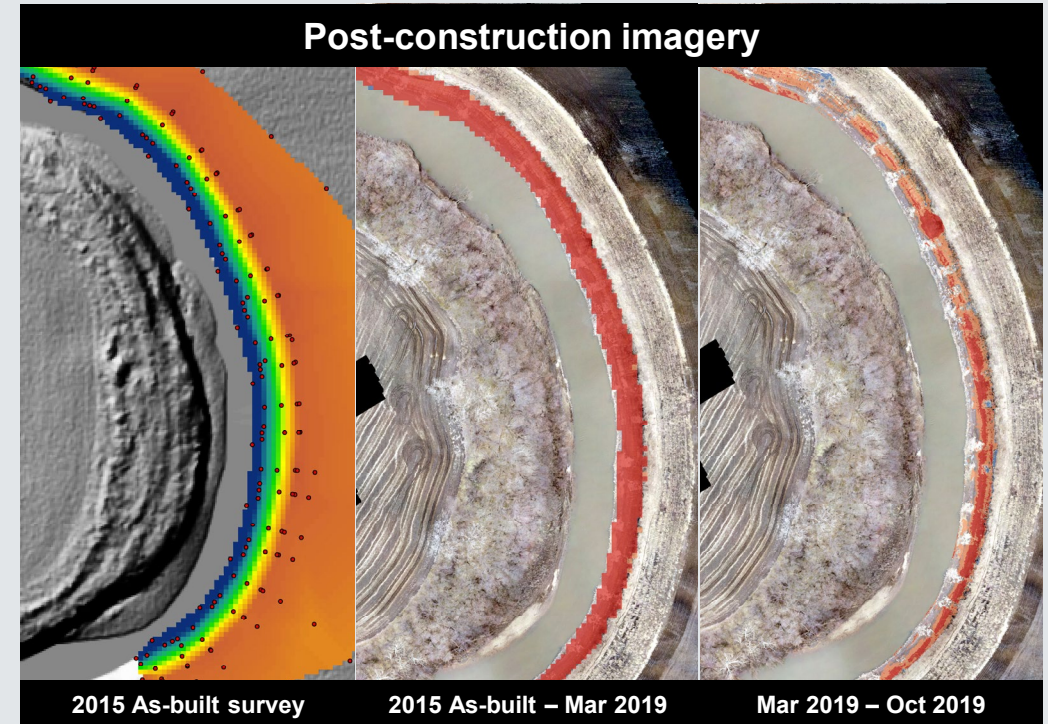
Drone survey



Eroding streambank



3D streambank model



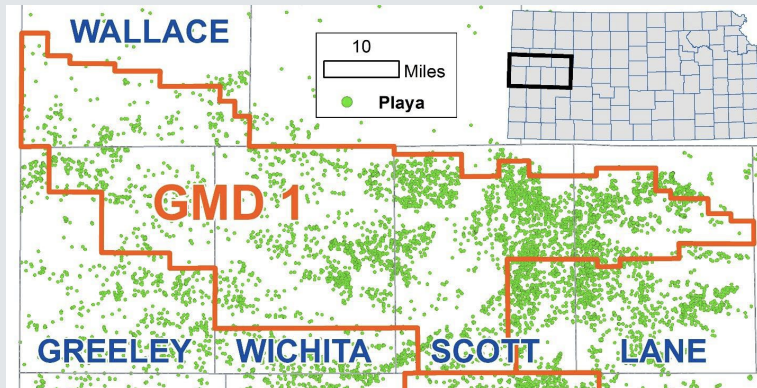
Funding:
State of Kansas/Kansas Water Office (\$300,000)
USGS/KWRI (Federal \$30,000; cost share \$60,387)

Playas in Western KS: Recharge to the High Plains aquifer and Economics of Cropping

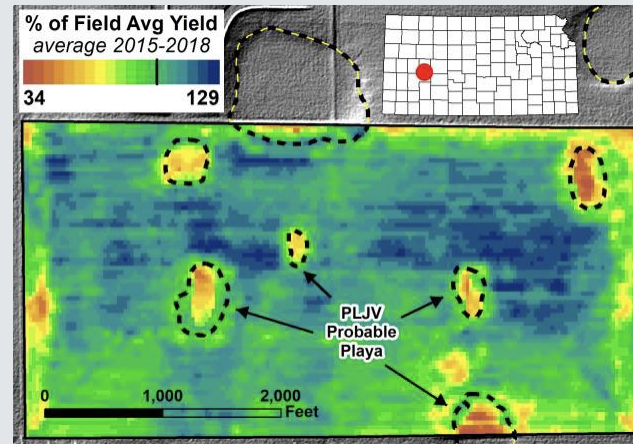
Playas of the High Plains provide critical ecosystem services (e.g., wildlife habitat, supporting regional biodiversity, and contributing recharge to the High Plains aquifer). Yet, more than 80% of the over 22,000 playas in Western Kansas are completely farmed over and have lost substantial ecological functionality with unquantified effects on recharge.

This project seeks to explore the interactions between agriculture and playas by determining the degree to which different physical factors control recharge rates through playas, and how playas influence producer economic outcomes.

Demonstrating that degraded playas reduce recharge and/or that farmed playas have reduced economic value compared to non-playa farmland could enhance landowner buy-in for playa preservation and existing programs for playa restoration and protection.



Field investigation of infiltration, recharge, and sedimentation will be conducted in playas (~10-15) across Kansas Groundwater Management District #1 (GMD1)



Preliminary data suggest correspondence between potential playas and areas of sub-average crop yield

Funding:
Environmental
Protection Agency
(Federal \$269,879
Cost share \$90,156)

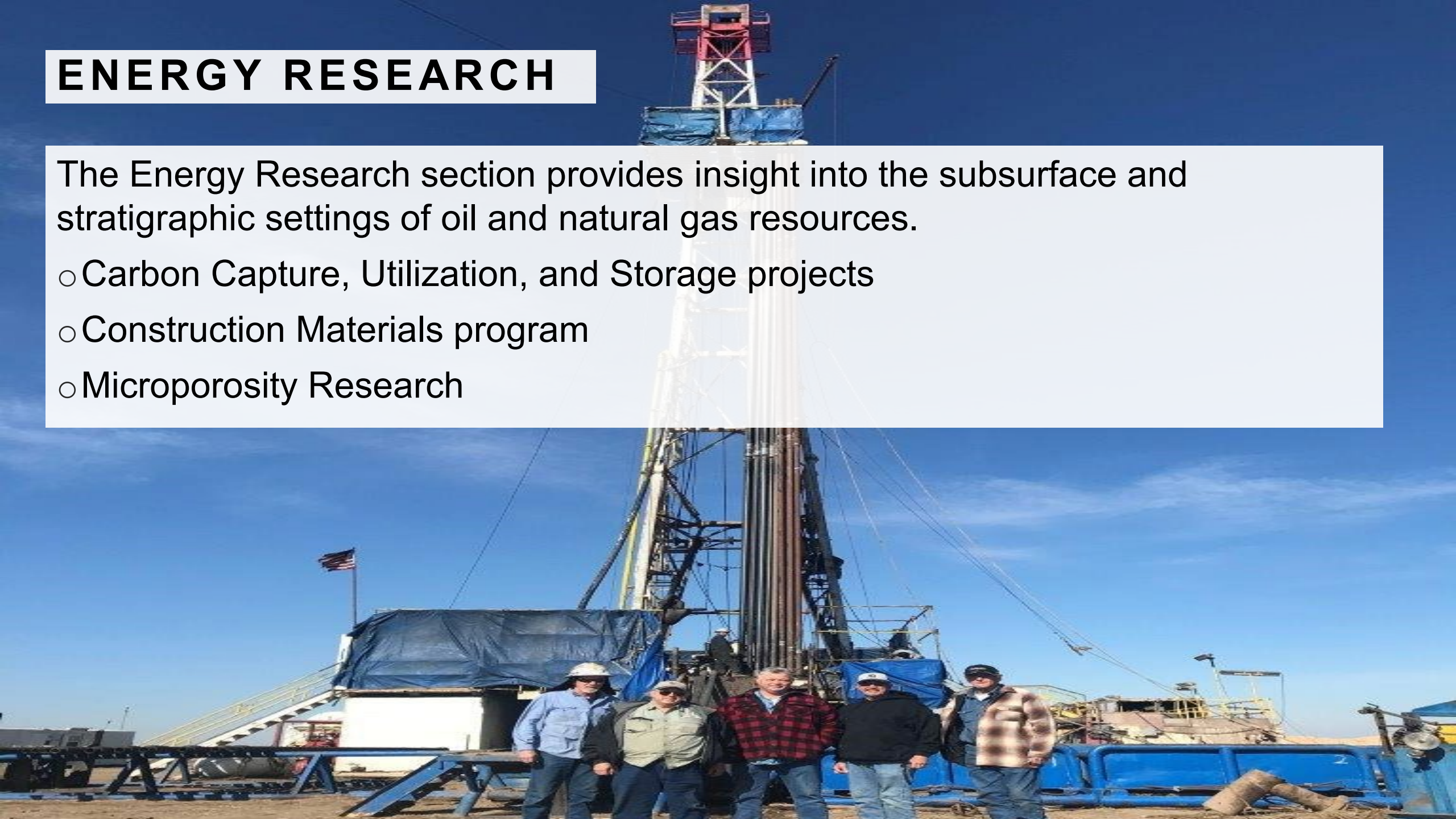
Project started
October 2020

Collaborators:
Kansas Biological
Survey

ENERGY RESEARCH

The Energy Research section provides insight into the subsurface and stratigraphic settings of oil and natural gas resources.

- Carbon Capture, Utilization, and Storage projects
- Construction Materials program
- Microporosity Research



CARBON CAPTURE, UTILIZATION, AND STORAGE (CCUS) PROJECTS



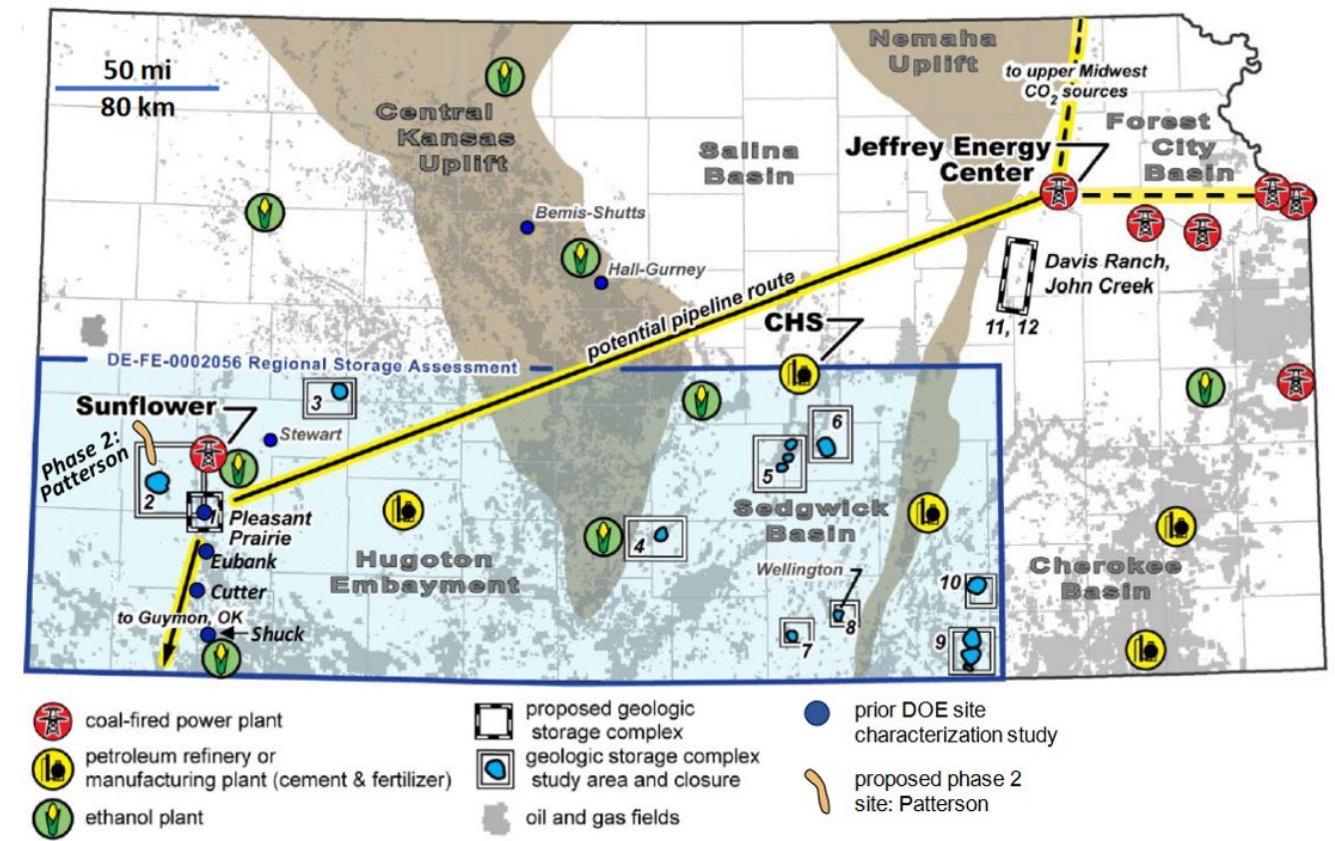
Patterson KGS 5-25 Rig

- The KGS is helping to create a coalition of industry and regulatory agencies to assess the economic and environmental playing field for commercial carbon capture, utilization, and storage (CCUS) implementation in Kansas.
- Since 2009, the KGS has received nearly \$25 million from DOE to study CO₂ sequestration in southern and central Kansas.
- The CCUS projects are largely funded by the U.S. Department of Energy and carried out with industry and academic partners, including Berexco, LLC, Linde, Battelle, Energy and Environmental Center, Occidental Petroleum, and many others.

ECONOMICS OF CCUS

Interest in capturing and storing carbon emissions was regenerated in 2018 when the Internal Revenue Service updated a tax incentive, known as 45Q, for companies willing to capture and store CO₂. Oil and gas production, ethanol, electrical-power generation, pipeline, agriculture, and other industries are eligible.

- 45Q tax credits make CCUS projects economically feasible.
- Kansas operators are well-positioned because KS oil fields have already been delineated and it is within the pathway of a possible large-scale CO₂ pipeline system.

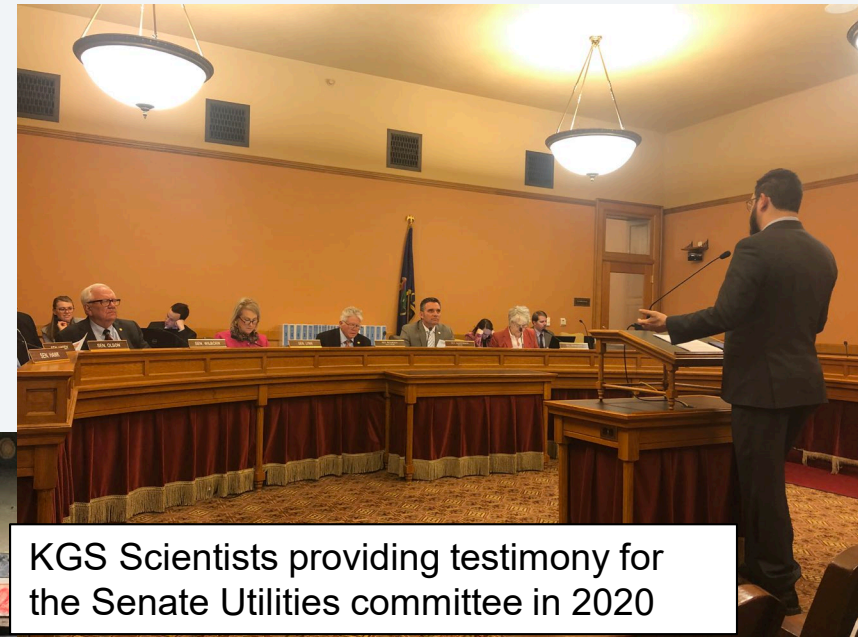


ECONOMICS OF CCUS

The Osage, Viola, and Arbuckle Groups are the key targets for CO₂ storage in western Kansas.

To support this initiative, the KGS has:

- Successfully injected CO₂ for Enhanced Oil Recovery in two fields.
- Amassed large quantities of seismic data, drilling data and rock cuttings, and drill cores.
- Created the CCUS Task Force, which is a coalition of industry and regulatory agencies to assess the economic and environmental playing field for commercial carbon capture, utilization, and storage (CCUS) implementation in Kansas, as well as drafting legislation to reform CCUS regulations in Kansas.



KGS Scientists providing testimony for the Senate Utilities committee in 2020

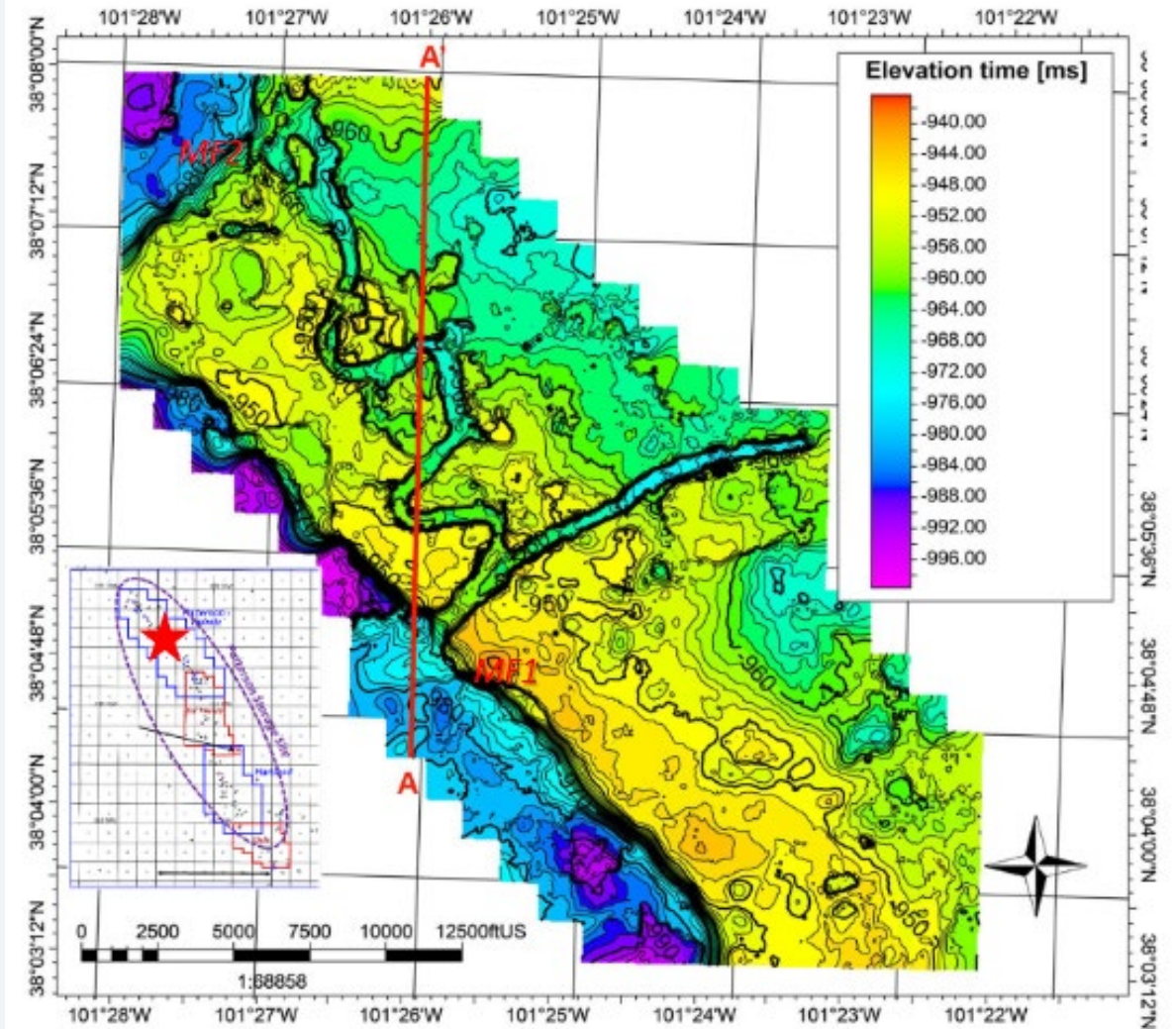


Drill cores from the KGS 5-25 Rig

CARBONSAFE PROGRAM

Energy Research is finalizing multi-year projects to develop the science behind and investigate the use of anthropogenic CO₂ for both enhanced oil recovery in favorable oilfields and safe storage of CO₂ in closed geologic structures.

The CarbonSAFE project is targeting potential geologic CO₂ storage sites in southwest Kansas and Nebraska.



Seismic data collected in the CarbonSAFE project

KGS AND CUSP



The Carbon Utilization and Storage Partnership, or CUSP, is led by the Petroleum Recovery Research Center (PRRC) at the New Mexico Institute of Mining and Technology, which was awarded \$6.24 million by the U.S. Department of Energy (DOE) for the project.

This project's initiative is to share data and advance research on the process of carbon capture and storage

The KGS will receive about \$310,000 of that and could get additional funding for database development and other purposes as the project progresses through 2024.

CONSTRUCTION MATERIALS RESEARCH

Research Driver

- Sand, gravel and crushed rock are used in significant quantities in construction of roads, bridges, and buildings in urban and rural areas
- Some materials are better than others
- Kansas **imports** crushed rock due to low availability of local sources

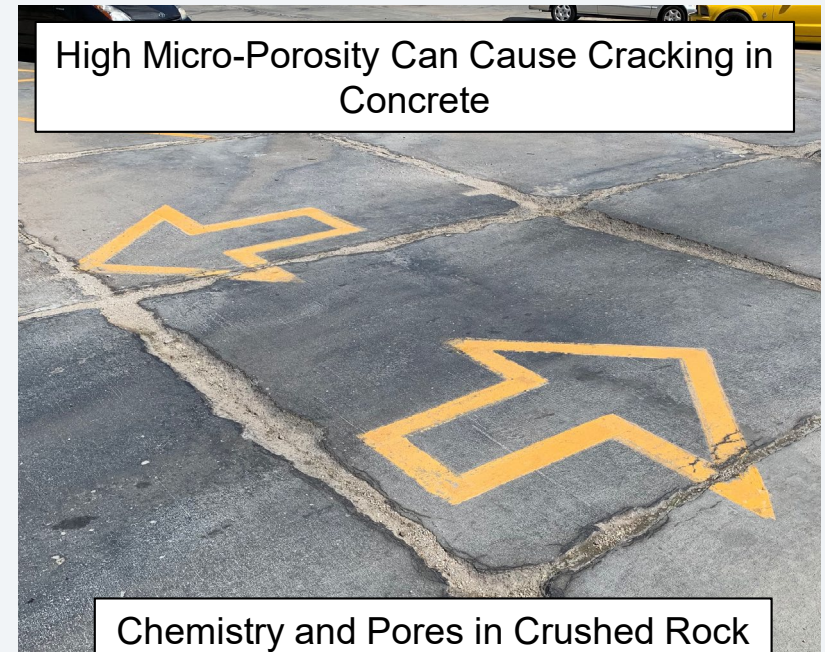
Activities

- Adding quarry and mine locations to KGS online maps
- Adding chemistry and engineering properties of Kansas materials to KGS online maps
- Studying micro-porosity in limestone with 2-year, \$200k US National Science Foundation grant
- Studying what sizes and shapes of sand make the best concrete (2 year, \$350k project with Iowa DOT) using advanced technology
- Studying how chemistry of rocks affects quality of construction materials with new technology with KDOT

Impact on Kansas Economy

- Will help roads last longer
- Possibly will enable roads to need less salt, which will mean less salt into surface water
- Support Kansas quarries/mines by reducing need to import crushed rock

High Micro-Porosity Can Cause Cracking in Concrete



Chemistry and Pores in Crushed Rock Affect Quality



CRITICAL MINERALS RESEARCH

Research Driver



- Critical minerals are used in 21st century technology (electronics, batteries, cell phones, wind turbines, solar panels)
- US relies on foreign sources for most critical minerals, notable China and Russia
- Helium is a critical mineral that Kansas leads production for in US, but it is dwindling
- Critical mineral mine being developed just across border in Nebraska (Elk Creek Niobium Deposit)

Activities at KGS

- Producing report on helium sources in Kansas
- Inventorying KGS reports on Critical Minerals with USGS grant (\$30k, 1 year)
- Applied for \$1 million in funding from US Department of Energy to study Critical Minerals in coal (including formulating economic development plans)
- Applied for \$1.5 million from US National Science Foundation for chemical analysis equipment to assay rock samples for critical minerals

Impact on Kansas Economy

- New helium sources would contribute to Kansas Oil & Gas Industry
- New mining operations would contribute to Kansas Mining Industry

**FEDERAL REGISTER**
The Daily Journal of the United States Government

Notice

Final List of Critical Minerals 2018

A Notice by the Interior Department on 05/18/2018

SUMMARY:

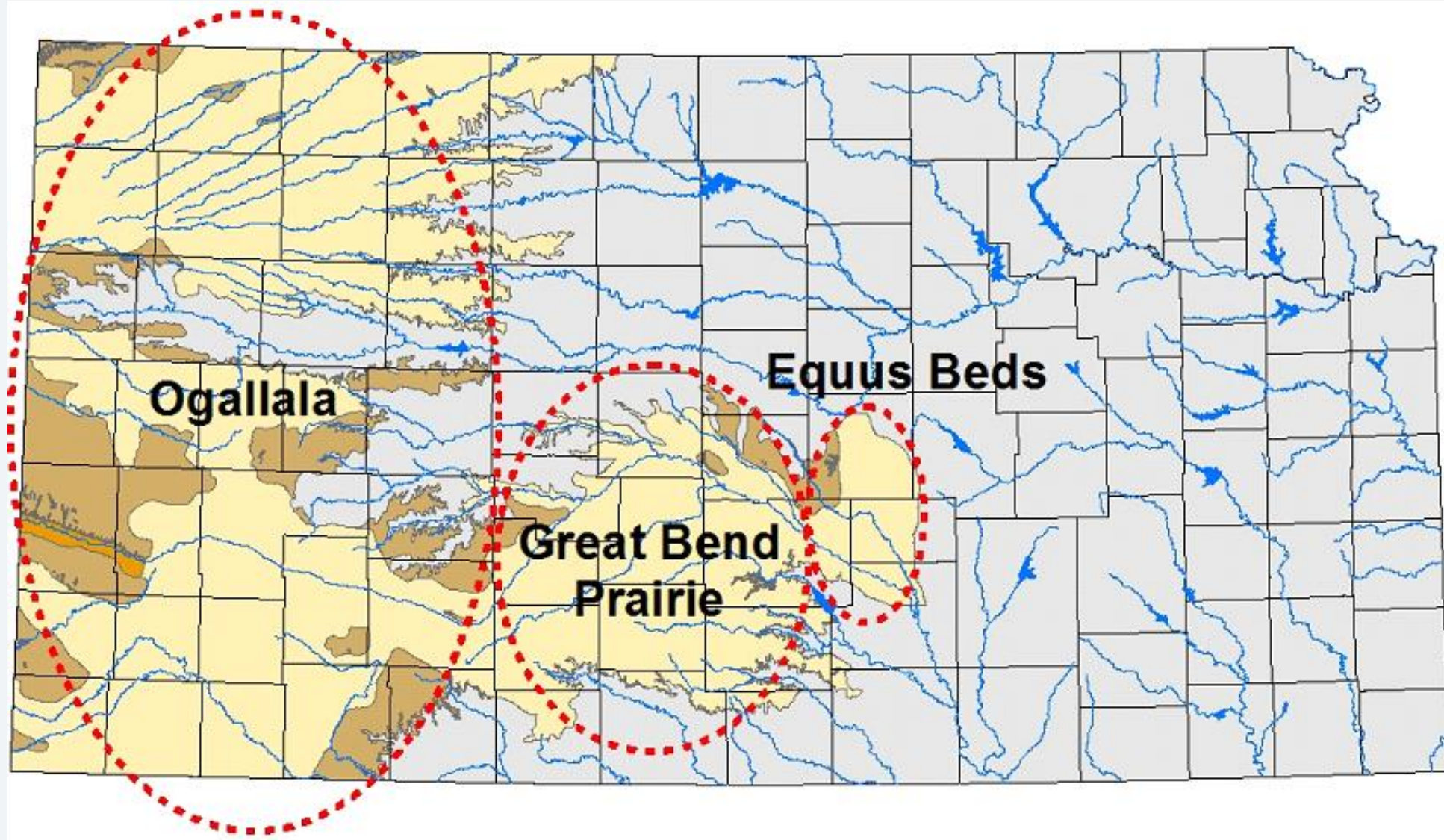
The United States is heavily reliant on imports of certain mineral commodities that are vital to the Nation's security and economic prosperity. This dependency of the United States on foreign sources creates a strategic vulnerability for both its economy and military to adverse foreign government action, natural disaster, and other events that can disrupt supply of these key minerals. Pursuant to [Executive Order 13817](#) of December 20, 2017, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals," the Secretary of the Interior on February 16, 2018, presented a draft list of 35 mineral commodities deemed critical under the definition provided in the Executive Order. After considering the 453 public comments received, the Department of the Interior believes that the methodology used to draft the list remains valid and hereby finalizes the draft list of 35 critical minerals. The final list includes: Aluminum (bauxite), antimony, arsenic, barite, beryllium, bismuth, cesium, chromium, cobalt, fluor spar, gallium, germanium, graphite (natural), hafnium, helium, indium, lithium, magnesium, manganese, niobium, platinum group metals, potash, the rare earth elements group, rhenium, rubidium, scandium, strontium, tantalum, tellurium, tin, titanium, tungsten, uranium, vanadium, and zirconium. This list of critical minerals, while "final," is not a permanent list, but will be dynamic and updated periodically to reflect current data on supply, demand, and concentration of production, as well as current policy priorities. This final list will serve as the Department of Commerce's initial focus as it develops its report to comply with Section 4 of [Executive Order 13817](#).

GEOHYDROLOGY RESEARCH



- The KGS Geohydrology section investigates groundwater quantity and quality issues of significance to the State of Kansas, with an emphasis on the High Plains aquifer. The KGS has three major activities related to the High Plains aquifer and a major activity related to the Kansas River alluvial aquifer.

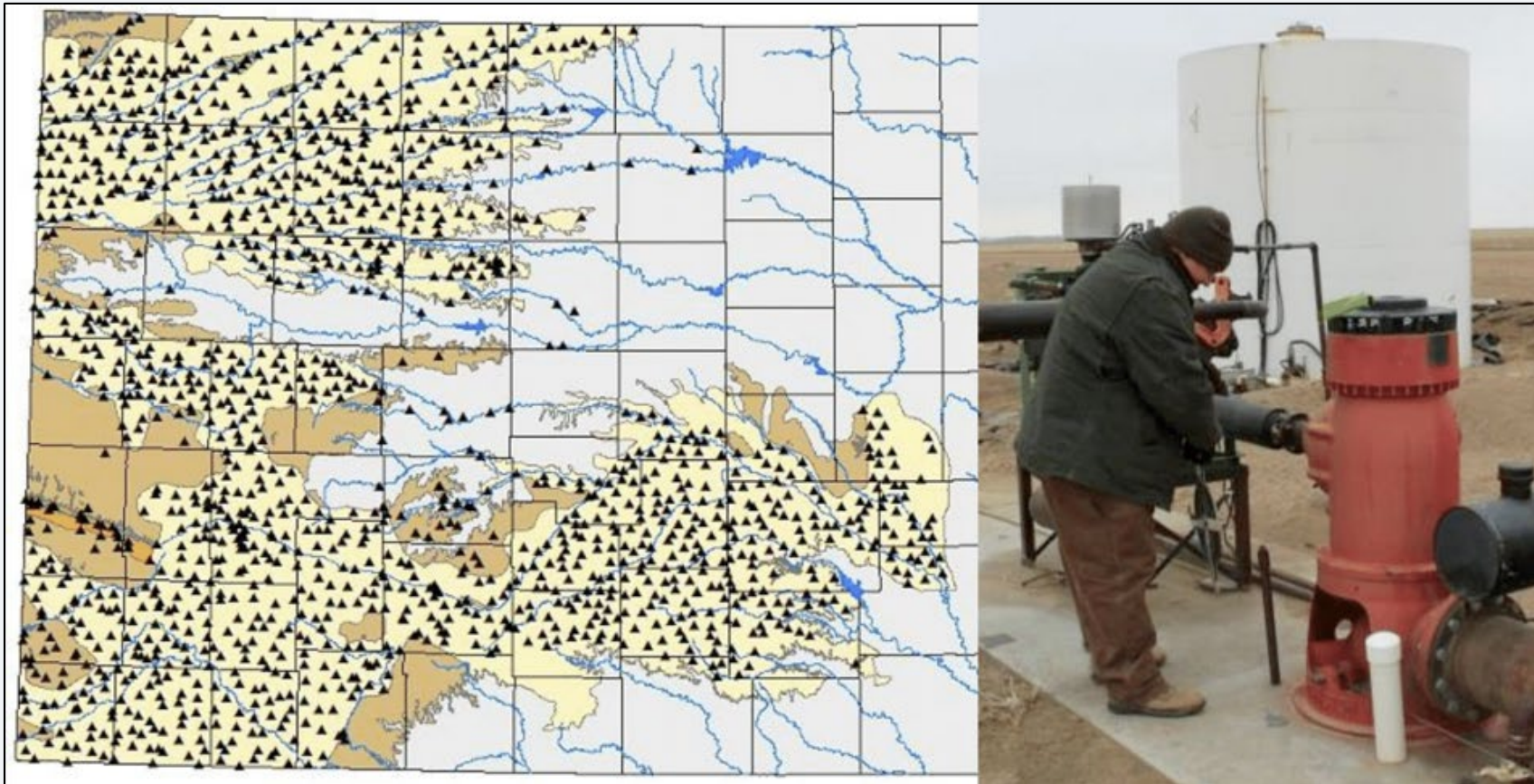
THE HIGH PLAINS AQUIFER



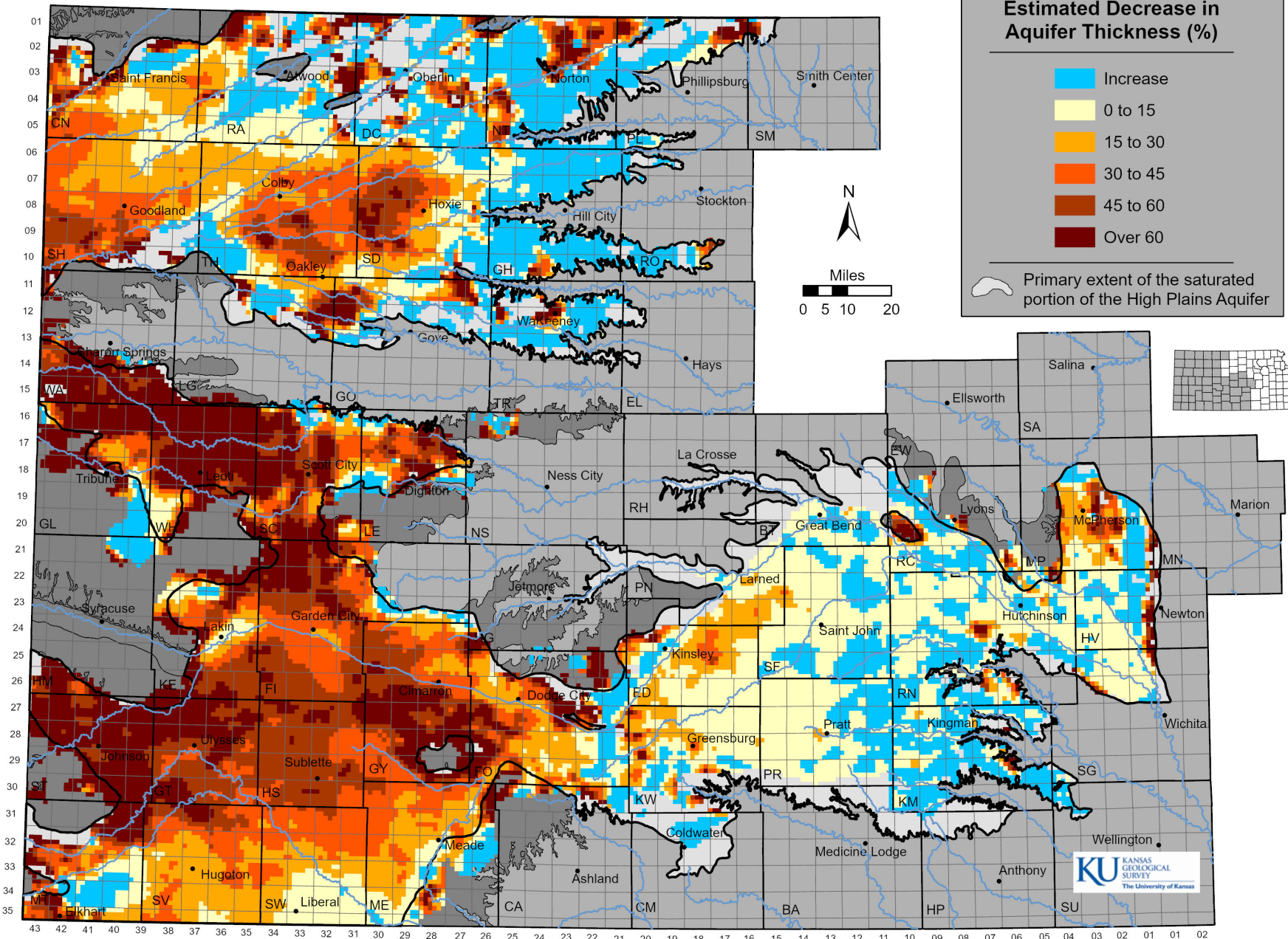
ANNUAL WATER LEVEL MEASUREMENT PROGRAM

~1400 wells measured in High Plains Aquifer in 2021

http://www.kgs.ku.edu/HighPlains/HPA_Atlas/index.html

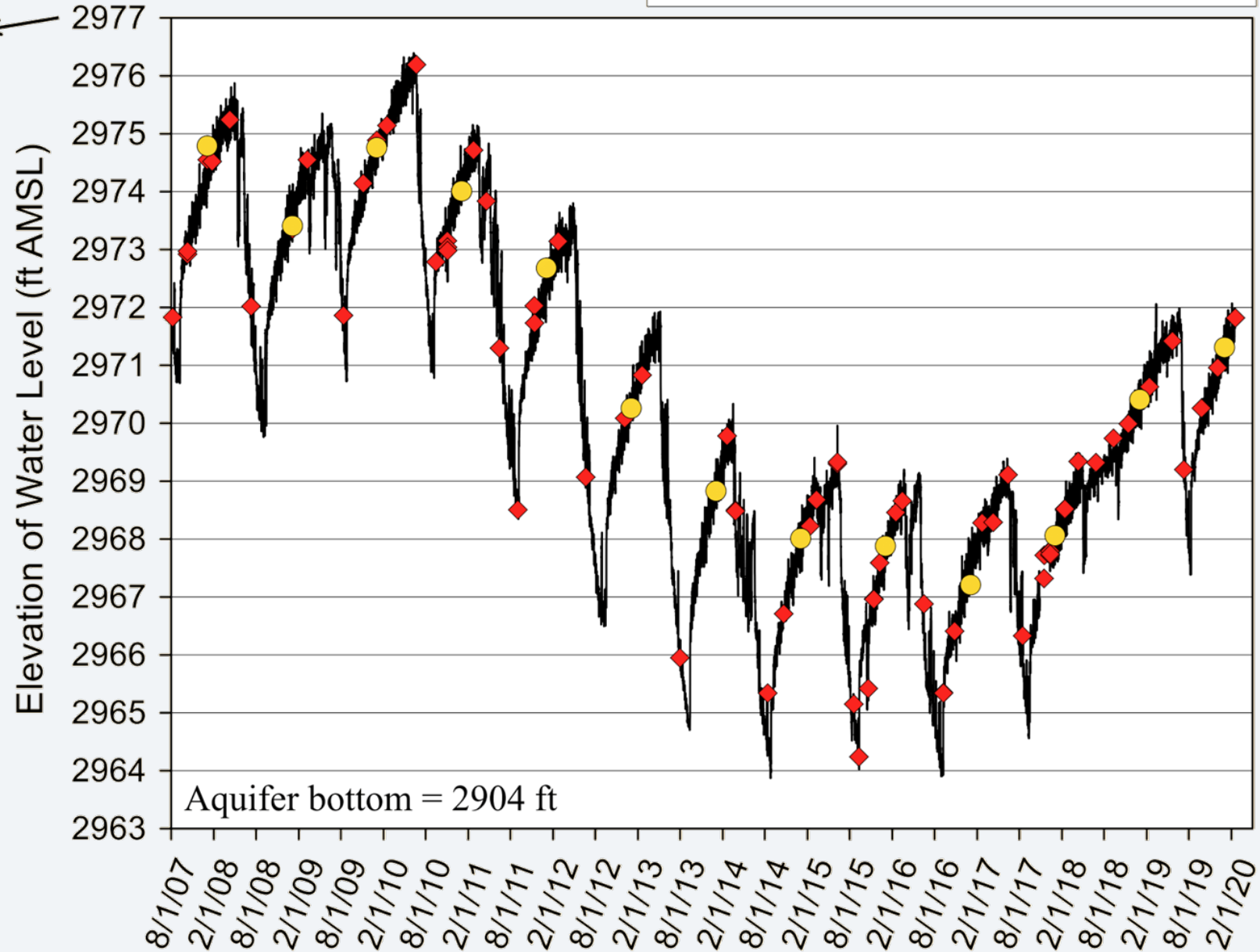


**Percent Change in Saturated Thickness, Predevelopment to Average 2018-2020,
Kansas High Plains Aquifer**



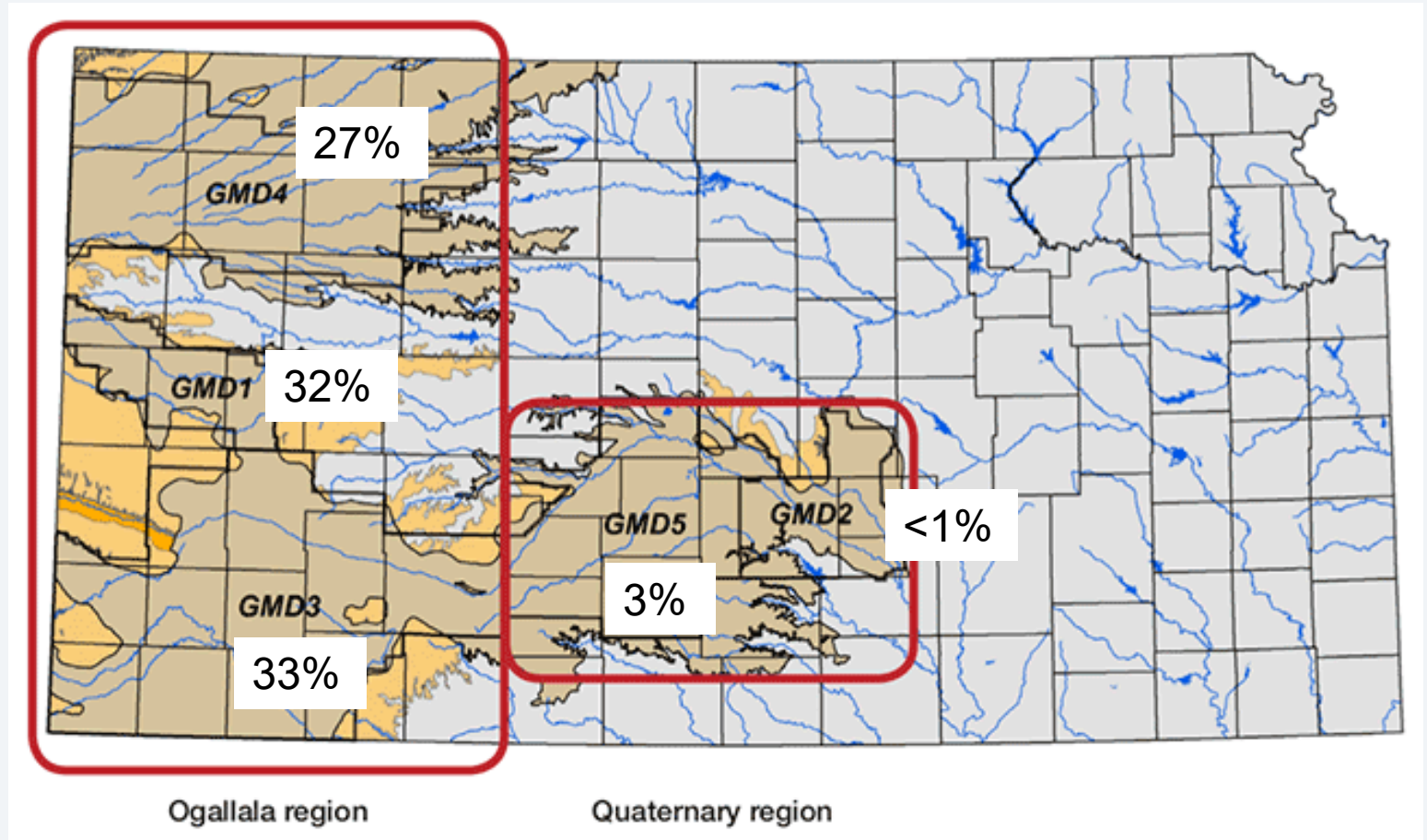
Thomas Co Index Well 09S 33W 33BBB

211 ft
below
surface

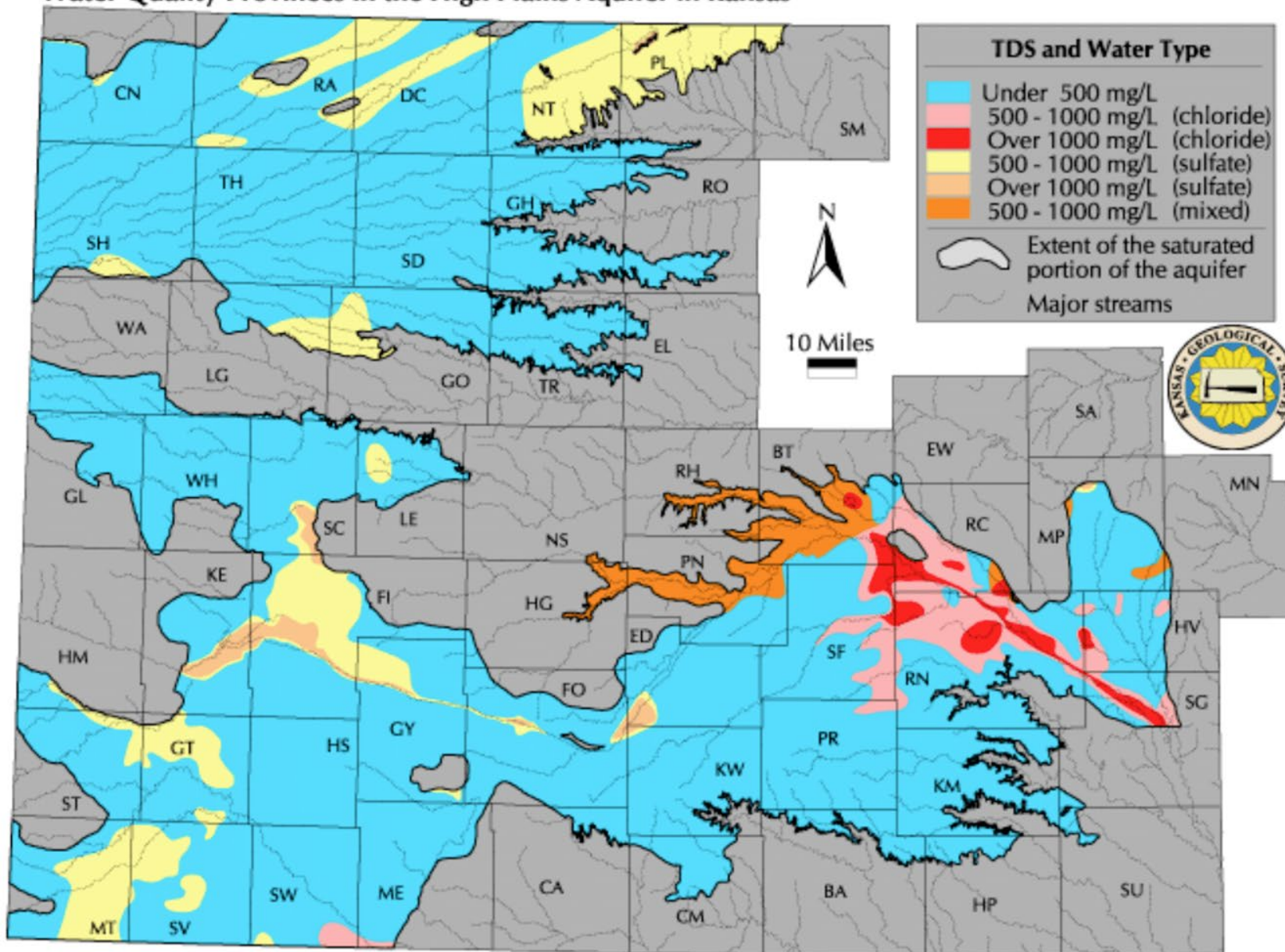


PUMPING REDUCTIONS REQUIRED TO STABILIZE WATER LEVELS

*Reductions calculated with KGS Water Balance Method using annual pumping and water level data



Water Quality Provinces in the High Plains Aquifer in Kansas



Kansas High Plains Aquifer Atlas

This atlas has been created to serve as the primary gateway to the most recent graphical data available for the High Plains aquifer in Kansas. As newer/updated data become available, this atlas will be updated.



Introduction and Navigation

Click here to view instructions for navigating this atlas.

3 images



Aquifer Basics

Basic information about the geology and hydrology of the High Plains aquifer.

18 images



Water Levels

View water levels from predevelopment to current.

9 images



Water Rights and Water Use

12 images



Climate and Climate Trends

18 images



Land Cover and Irrigation

5 images



Index Well Program

The Kansas Geological Survey has installed index wells, one in each of the three western Kansas Groundwater Management Districts, to continuously monitor water levels in the Ogallala-High Plains aquifer.

4 images



Interactive Atlas

Use our interactive atlas to view water levels, saturated thickness, and more.

http://www.kgs.ku.edu/HighPlains/HPA_Atlas/index.html

KANSAS GROUNDWATER INVENTORIES

WWC5

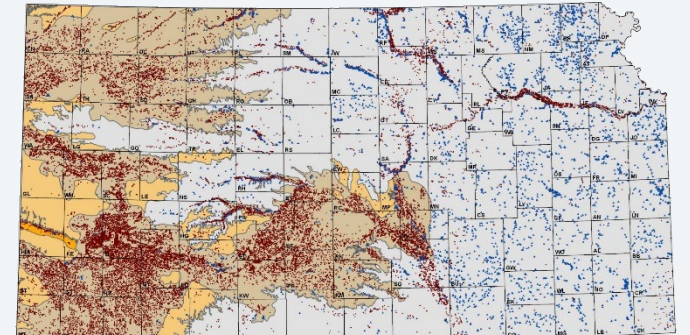
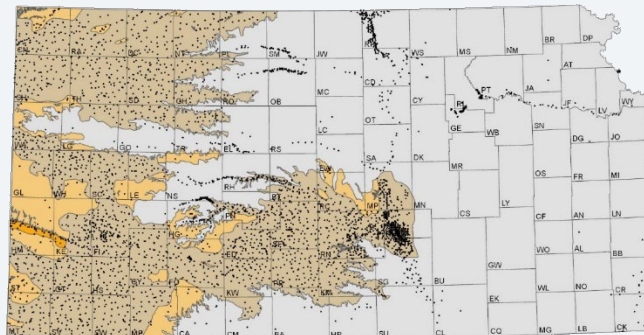
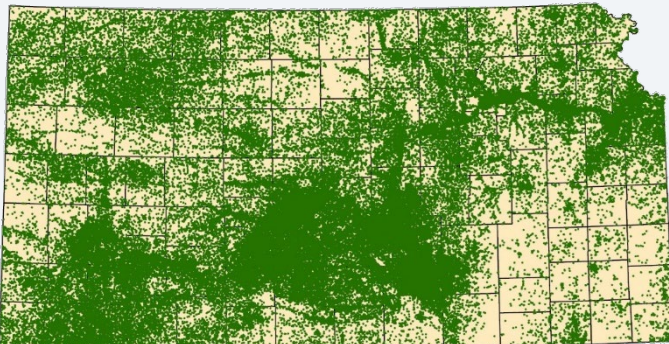
- Water Well Completion Records
- Kansas Department of Health and Environment
- WWC5 forms are required for any constructed, reconstructed, or plugged well in Kansas since 1975
- Well construction and lithology for all wells (monitoring, private, permitted, etc...)

WIZARD

- Water Information Storage and Retrieval Database
- Kansas Geological Survey
- State's largest repository of depth-to-water measurements
- Annual Cooperative Water-Level Network, GMDs 2 and 5, KDA-DWR, KGS, and USGS

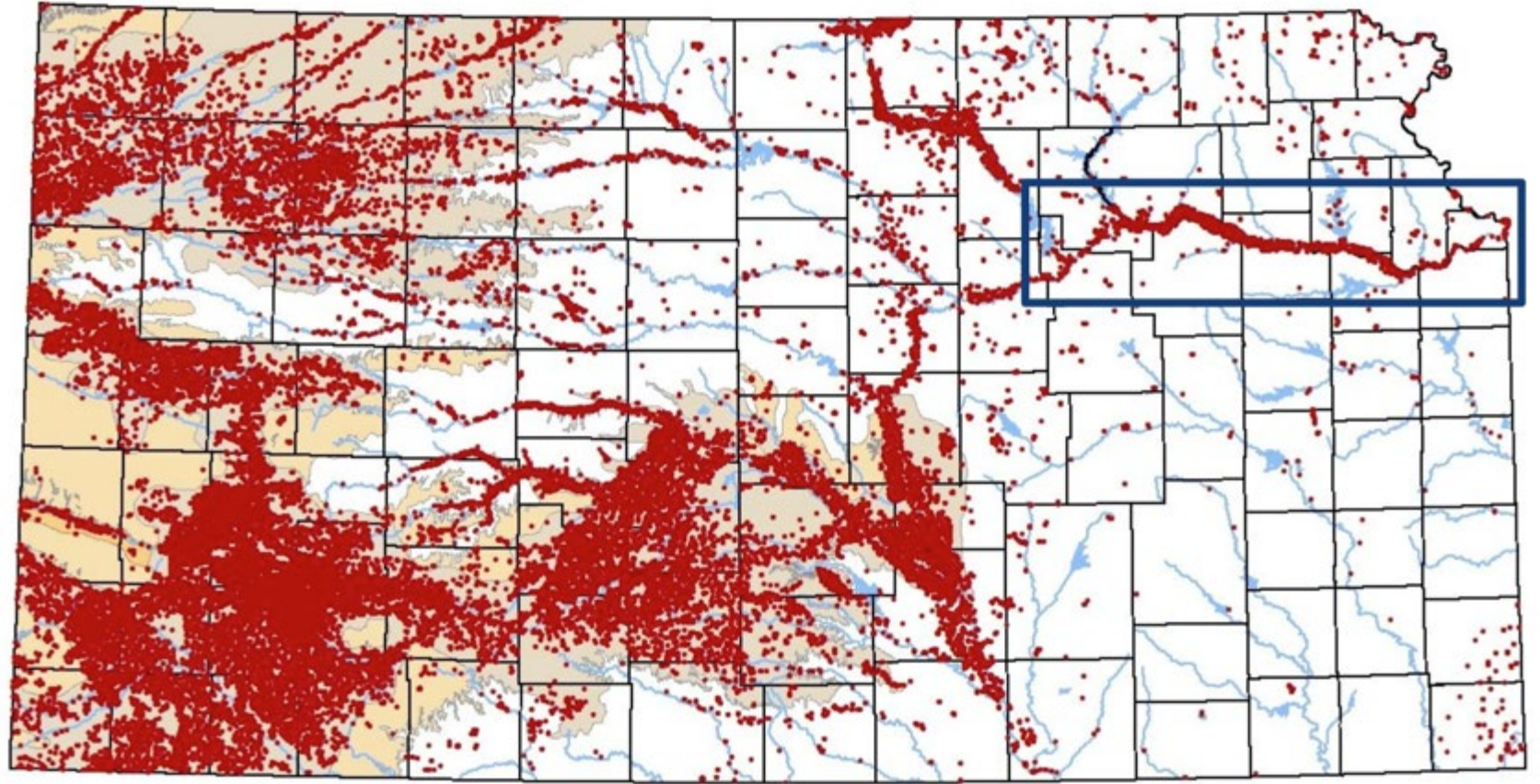
WIMAS

- Water Information Management and Analysis System
- Kansas Department of Agriculture, Division of Water Resources
- Water Rights
 - Permits/Certificates to use water
 - Typically large uses
 - Diversions include both ground and surface water
 - Can be very complex



KANSAS RIVER ALLUVIAL AQUIFER

How do the Kansas River Alluvial Aquifer and Kansas River Interact?



CURRENT STATUS

Network from west of Manhattan to the Kansas City metropolitan area (Lake Quivira).

- 11 wells with transducers recording water-level position every hour.
- Real-time data and interactive map on KGS website (www.kgs.ku.edu/Hydro/KansasRiver/index.html)

Shawnee County
Index Well 1 (SN01)



FUTURE PLANS

Installation of 5 more wells

- St. Marys, Lecompton, and transects
- Direct-push electrical conductivity transects
- Hydrostratigraphic analysis
- Hydrograph analysis



Kansas Geological Survey

Kansas River Alluvial Aquifer Index Well Program: 2019 Annual Report

J. J. Butler, Jr., E. C. Reboulet, S. Knobbe, D. O. Whittemore,
B. B. Wilson, and G. C. Bohling
Kansas Geological Survey
University of Kansas



Kansas River Index Well Network – August 2020



Shawnee County Index Well 1
(SN01)

Kansas Geological Survey Open-File Report No. 2020-14
October 2020

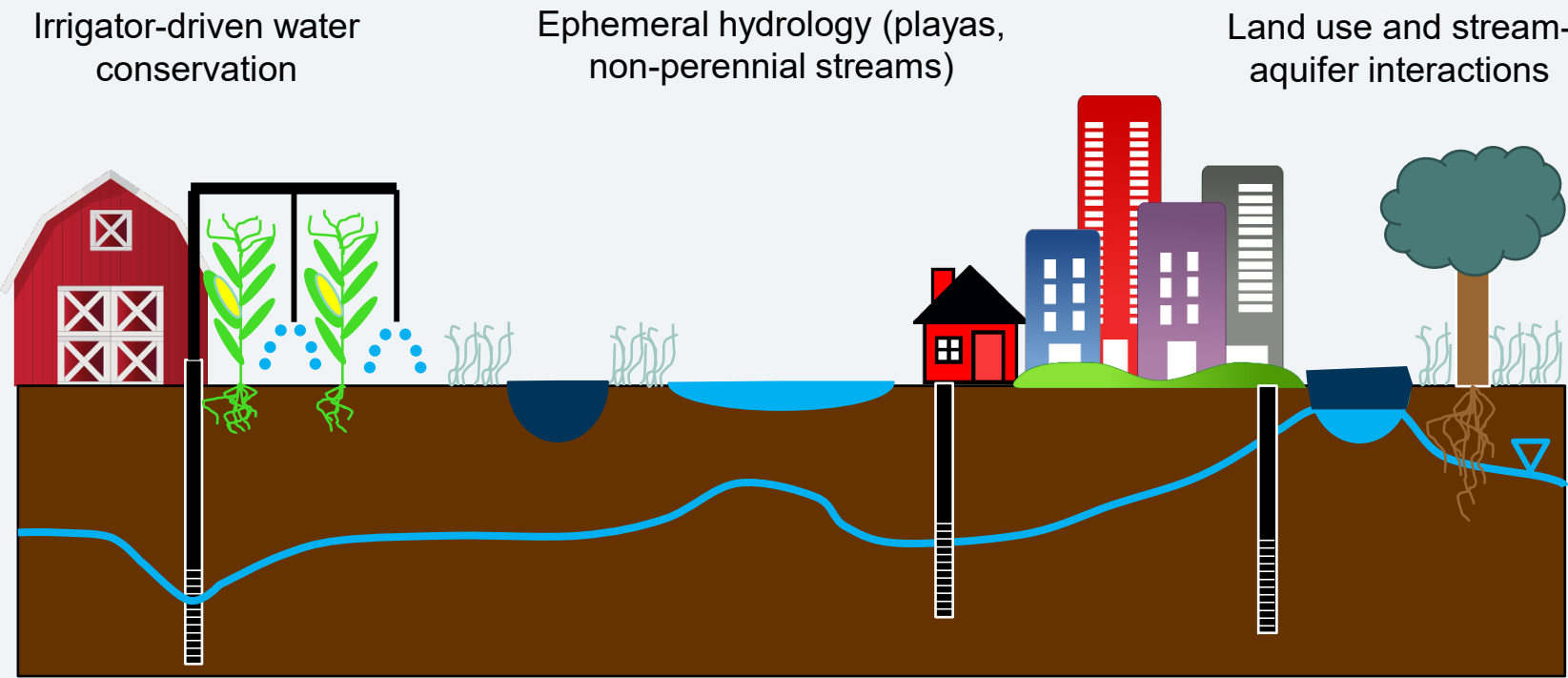
GEOHYDROLOGY

KU KANSAS
GEOLOGICAL
SURVEY
Where the earth meets the sky

<http://www.kgs.ku.edu/Publications/OFR/2020/OFR2020-14.pdf>

WATER RESOURCES IN THE FUTURE

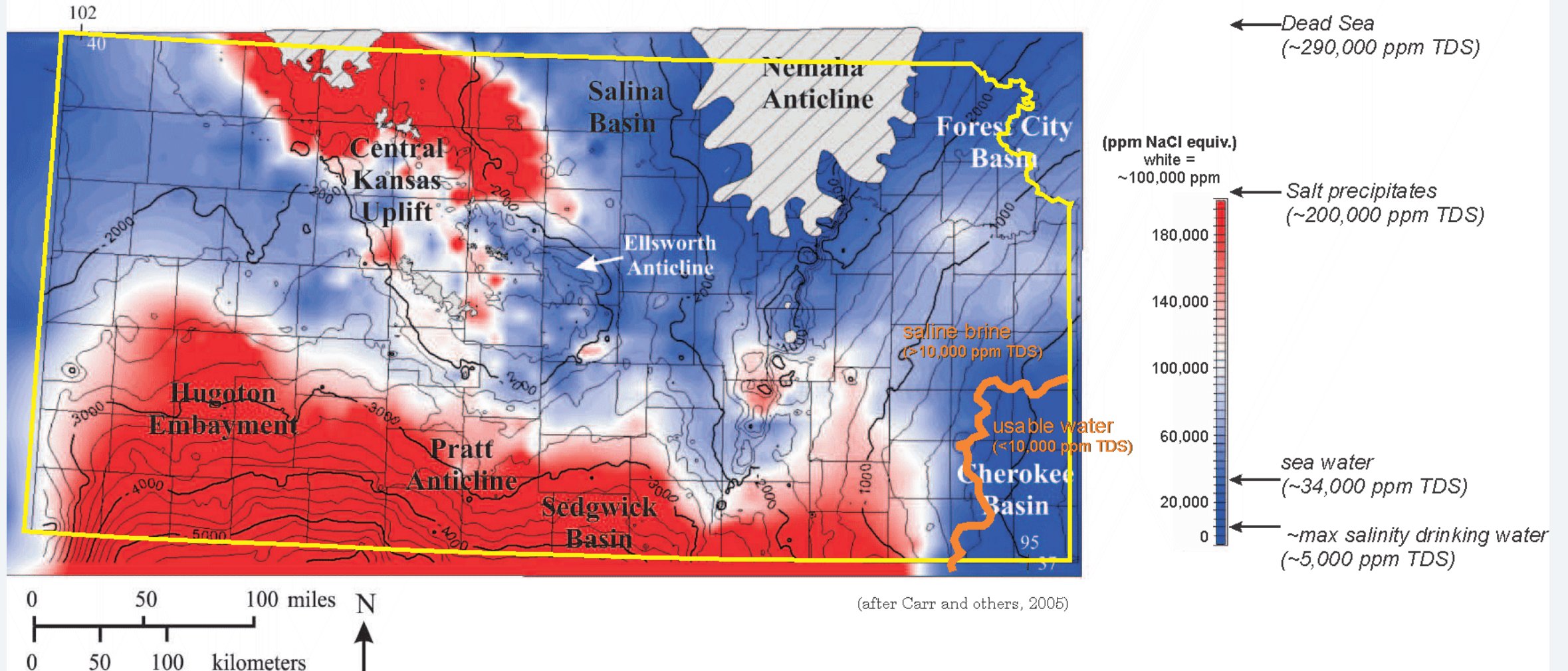
Other projects are working to understand how local, regional, and global change can and will affect the water resources of Kansas and the Great Plains region now and in the future.



Funding Agency	Amount	Project Focus (region)
Kansas Water Resources Institute	\$40,000	Groundwater recharge from intermittent streams (GMD5)
Kansas Water Office	\$77,000	Groundwater quality (Arkansas River Corridor)
U.S. Geological Survey	\$163,530	Pumping impacts on streamflow (High Plains Aquifer)
Environmental Protection Agency	\$277,715	Groundwater recharge from playas (GMD1)
National Science Foundation	\$5,998,875	Intermittent streams and water quality (Flint Hills)

SALINITY AND STRUCTURE OF THE ARBUCKLE

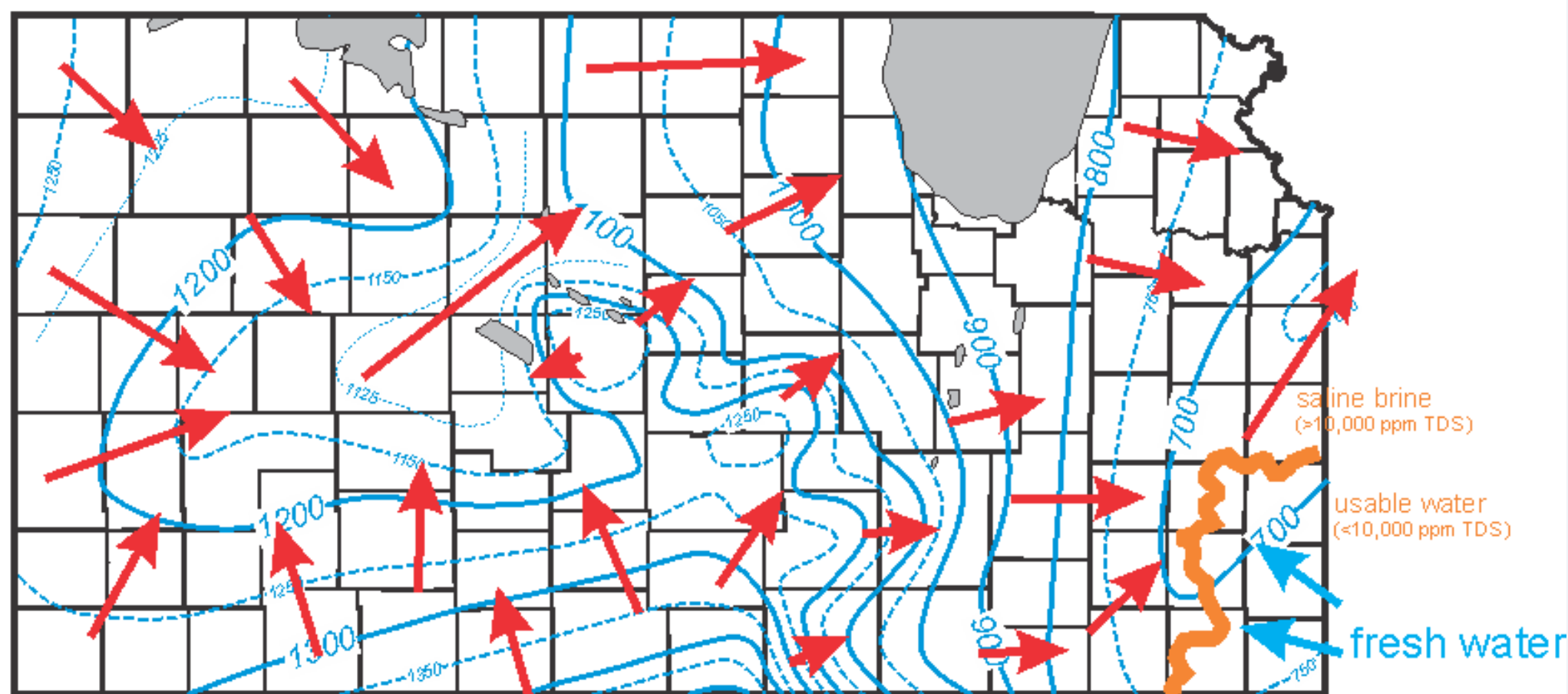
SALINITY of ARBUCKLE FORMATION WATER



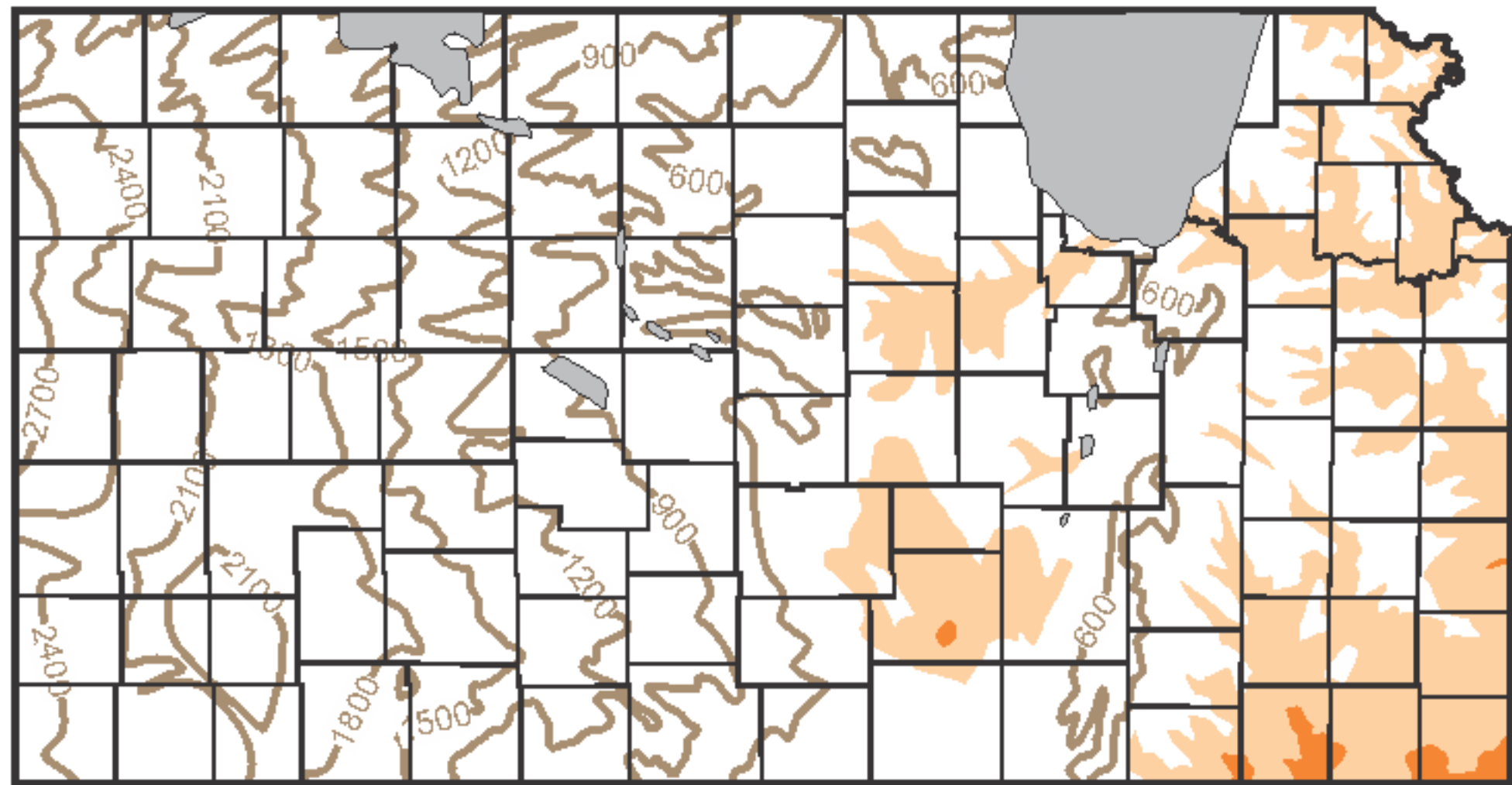
ELEVATION of FLUID LEVELS in ARBUCKLE WELLS

(adjusted to fresh-water density)

defines direction of subterranean water flow



DEPTH to WATER in ARBUCKLE WELLS



- 2400— depth to water in Arbuckle wells (no normalization for salinity)
contour interval 300 ft
- ◻ <300 ft depth to water in Arbuckle wells (no normalization for salinity)
- ◻ <100 ft depth to water in Arbuckle wells (no normalization for salinity)



DATA ACCESS SUPPORT CENTER (DASC)

DASC was established by the GIS Policy Board in 1991. It maintains a central repository of GIS databases of statewide & regional importance. DASC operates under contract with the Kansas Department of Administration's Office of Information Technology Services (OITS).

- \$280,000/year for clearinghouse operations and Geographic Information Officer (GIO) services
- Fee-for-services provided to state agencies based on need and strategic performance

DASC SERVICES

- Database archival and distribution
- Database development & integration
- GIS web application development and hosting
- Coordination & outreach to local, state, & federal government, and the private sector
- Coordinate & manage the state government Esri software Enterprise Agreement
- Geospatial metadata development assistance
- Cartographic development
- Promotion of the Kansas GIS Initiative
- Development and maintenance of the DASC web site – <https://www.kansasgis.org>



DASC PROJECTS & INITIATIVES

Kansas Department of Agriculture

- Kansas Online Water Use Report application development & hosting
- Base Flood Elevation Portal application development & hosting

Kansas 911 Coordinating Council

- Next Generation 911 GIS data QA, data aggregation, map service publication, portal development & maintenance, outreach & coordination, policy development

Kansas Department of Revenue

- Open Records for Kansas Appraisers application development & hosting
- Statewide Tax Unit Database application development & hosting
- Streamlined Sales Tax Database & Web Service application development & hosting

KDOT/Traffic Records Coordinating Council

- Crash location mapping
- 1Integrate Server hosting

Kansas State Historical Society

- Historical Property Inventory application development & hosting
- Archeological Sites Inventory application development & hosting

Kansas Department of Wildlife, Parks, & Tourism

- Fish & Wildlife Contracts and Reporting application hosting

Kansas State Department of Education

- School Travel Audit Web Service development, maintenance & hosting

Kansas Water Office

- Public Water Supply Mapping Portal application development & hosting

Kansas Department of Health & Environment

- Data & map service hosting for public datasets

Kansas Division of Emergency Management

- ArcGIS Server hosting
- Portal development

KDA PROJECTS

Welcome to the Kansas Water Use Reporting System

Annual water use can be reported online **for free** to comply with the water use reporting requirements of the Kansas Water Appropriation Act. Owners of water rights in Kansas must report the previous years' use for all beneficial uses, except domestic use, by **March 1** of each year. Filing a complete and accurate report will help protect your water right.

Failure to file a water use report by **March 1**, or filing an incomplete report, subjects the owner(s) to a civil penalty of \$250 per file number. Failure to file a water use report by **June 1** subjects the owner(s) to a civil penalty of \$1,000 per file number and could result in a suspension of all water use until the report has been submitted. See [K.S.A. 82a-732](#).

Please note it is not recommended to use this reporting system on a smartphone or tablet.

PIN: Person ID: [Log In](#) [Login Help](#)
[Is my report late?](#)

If you have a problem using the system, or you are a new owner and you don't have your ending meter reading from last year, please call the Division of Water Resources at **785-564-6638** or call your local field office at the numbers below.

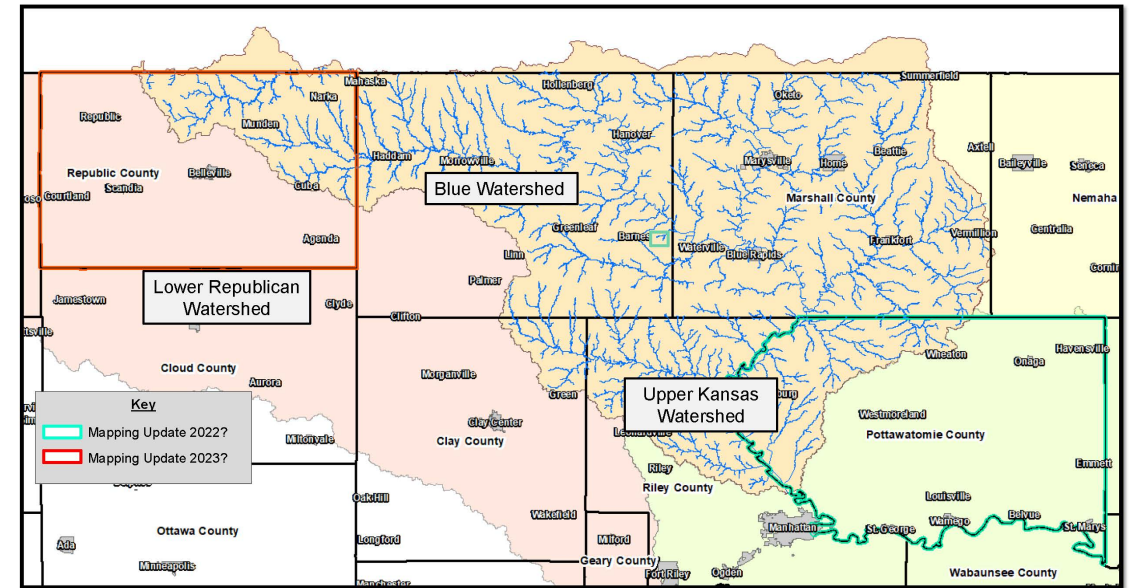
To report a change in water use correspondent, ownership, or mailing address, please login with the PIN and Person ID sent to you and follow the onscreen instructions.

For general questions, contact your [local field office](#):
Topeka: **785-296-5733** Garden City: **620-276-2901** Stockton: **785-425-6787** Stafford: **620-234-5311**



Contact us: 785-564-6638 KDA.WaterUse@ks.gov

Blue Custom Watershed

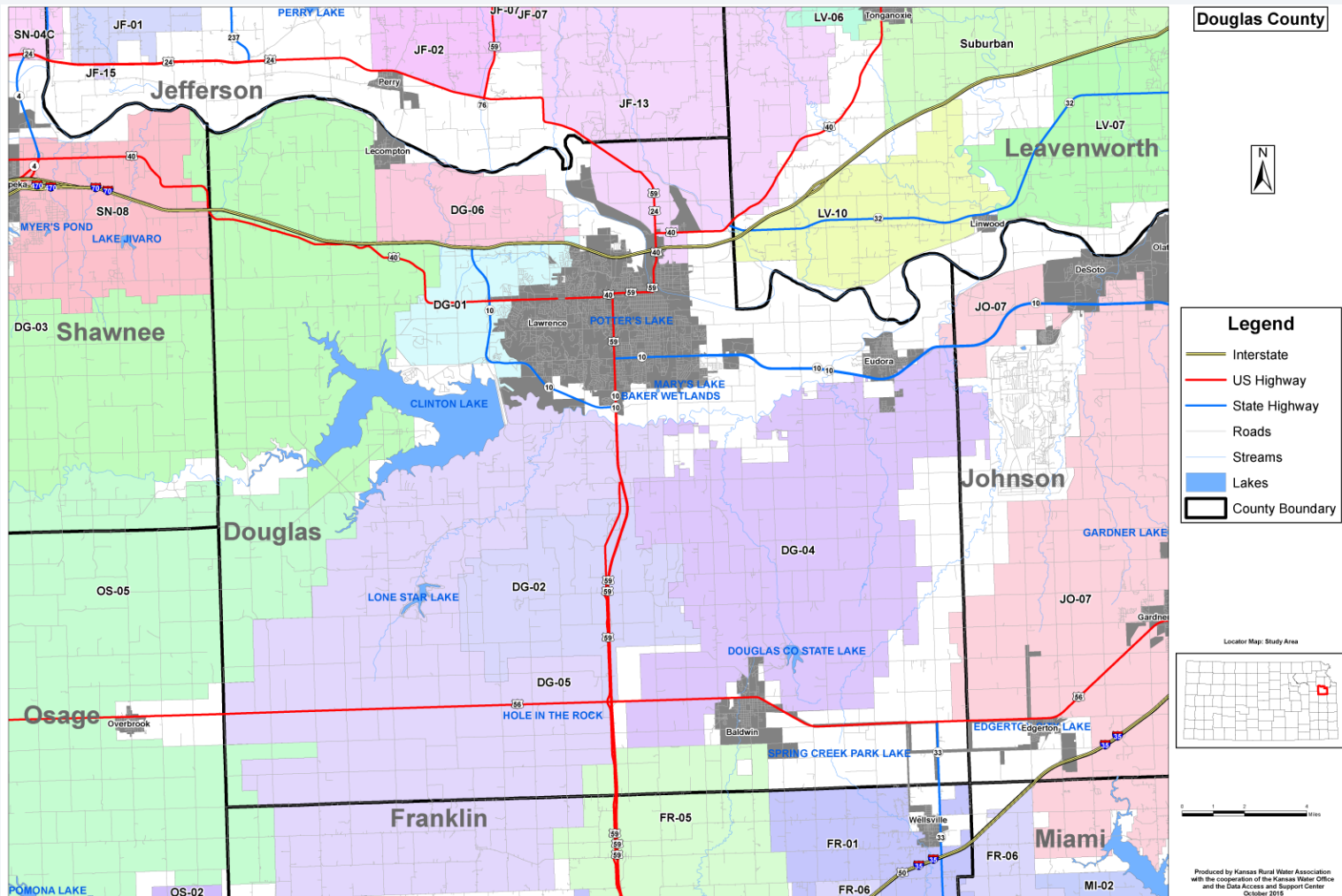


Base Flood Elevation Portal application development & hosting

Kansas Online Water Use Report

During the 2019 reporting year, over 90% of all water use reports were filed online.

KANSAS WATER OFFICE PROJECTS



Public Water Supply Mapping Portal application development & hosting

- Officially launched in March 2019, the Portal provides a centralized place to maintain Rural Water District (RWD) contact information, communication tools, and conduct RWD boundary reviews.
- It also provides a standardized workflow for processing database updates. DASC continues to work with the KWO to promote the usage of the PWS Portal throughout the rural water districts community.

Kansas On-Line Automated Reporting

Allows for the sharing of data between researchers and regulatory agencies. Also accelerates and simplifies the reporting process.

For use by:

- Oil & Gas Operators and Purchasers
- County Appraisers
- Water Well Contractors
- Injection Well Operators
- The Kansas Corporation Commission
- The Kansas Department of Revenue
- The Kansas Department of Health and Environment

Recent Milestones

As of October 1st, 2020:

- ✓ 13,336 WWC-5 forms submitted;
- ✓ 208 licensed water well contractors current in system;
- ✓ 1,612 Underground Injection Control (UIC) Class 1 facilities monthly monitoring reports into system;
- ✓ 109 plans, reports, and variance requests submitted for the Underground Hydrocarbon Storage (UHS) program.

A group of approximately 15 people are gathered under a large, open-sided wooden shelter in a grassy field. They are looking at a large map or display on the left. The shelter has a dark roof and wooden posts. The background shows a clear blue sky and distant trees.

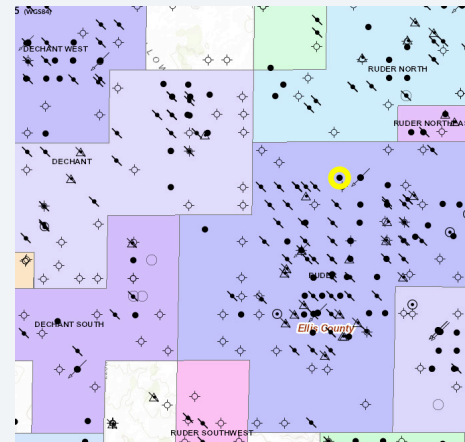
OUTREACH AND PUBLIC SERVICES

- Data Resources Library
- Kansas Geologic Sample Repository in Wichita
- Drill Core Library
- KGS Library and Archives
- Educational outreach such as field trips and community activities
- Editing, design, and publication production
- Publication sales

DATA RESOURCES LIBRARY (DRL)

The DRL serves as the State of Kansas repository for historical aerial photographs and oil, gas, and water-well records. It houses geologic and production records for more than 450,000 oil and gas wells and 273,000 water wells.

- Receives financial support of \$120,000 from the USGS's National Geological and Geophysical Data Preservation Program (NGGDPP). The support, which has been received since 2012, was increased by about 68% this year.
- The award will be used, for the first time, to inventory the state's critical minerals.



WELL - Ruder Unit 1 15-051-25675

API: 15-051-25675
Lease: Ruder Unit
Well: 1
Well Type: OIL
Status: Producing
Original Operator: Charter Energy, Inc.
Current Operator: Charter Energy, Inc.
Field Name: Ruder
Location: T15S R18W Sec 8, W2 NE
Footages: 1320 South, 2090 West from NE corner
Latitude, Longitude (NAD27): 38.765872, -99.344625
Lat-Lon Source: FOOTAGES
County: Ellis
Permit Date: 08/23/2007
Spud Date: 09/04/2007
Completion Date: 09/24/2007
Plug Date:
Total Depth: 3616
Elevation: 2022 KB
Producing Formation: Arbuckle

WATER WELL RECORD Form WWC-5 KSA 62a-1212

1 LOCATION OF WATER WELL: County: DOUGLAS Section Number: Township Number: Range Number:
Distance and direction from nearest town or city street address of well if located within city?
1 mile south, 5 miles west of Baldwin

2 WATER WELL OWNER:
R/R#, St Address, Box # :
City, State, ZIP Code :
Board of Agriculture, Division of Water Resources
Application Number:

3 LOCATE WELL'S LOCATION WITH AN "X" IN SECTION BOX:
DEPTH OF COMPLETED WELL: 131' ft. ELEVATION:
Depth of Groundwater Encountered: 1' ft. 2' ft. 3' ft. 4' ft. 5' ft. 6' ft. 7' ft. 8' ft. 9' ft. 10' ft. 11' ft. 12' ft. 13' ft. 14' ft. 15' ft. 16' ft. 17' ft. 18' ft. 19' ft. 20' ft. 21' ft. 22' ft. 23' ft. 24' ft. 25' ft. 26' ft. 27' ft. 28' ft. 29' ft. 30' ft. 31' ft. 32' ft. 33' ft. 34' ft. 35' ft. 36' ft. 37' ft. 38' ft. 39' ft. 40' ft. 41' ft. 42' ft. 43' ft. 44' ft. 45' ft. 46' ft. 47' ft. 48' ft. 49' ft. 50' ft. 51' ft. 52' ft. 53' ft. 54' ft. 55' ft. 56' ft. 57' ft. 58' ft. 59' ft. 60' ft. 61' ft. 62' ft. 63' ft. 64' ft. 65' ft. 66' ft. 67' ft. 68' ft. 69' ft. 70' ft. 71' ft. 72' ft. 73' ft. 74' ft. 75' ft. 76' ft. 77' ft. 78' ft. 79' ft. 80' ft. 81' ft. 82' ft. 83' ft. 84' ft. 85' ft. 86' ft. 87' ft. 88' ft. 89' ft. 90' ft. 91' ft. 92' ft. 93' ft. 94' ft. 95' ft. 96' ft. 97' ft. 98' ft. 99' ft. 100' ft. 101' ft. 102' ft. 103' ft. 104' ft. 105' ft. 106' ft. 107' ft. 108' ft. 109' ft. 110' ft. 111' ft. 112' ft. 113' ft. 114' ft. 115' ft. 116' ft. 117' ft. 118' ft. 119' ft. 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KANSAS GEOLOGIC SAMPLE REPOSITORY

State repository for geologic samples of more than 149,000 oil, gas, and exploratory wells. Rock cuttings recovered from more than 145,000 wells and boreholes drilled up to 6,000 feet deep are preserved here.

Prior to 1938, there was no central repository for well cuttings.

In 1938, the first well sample repository was established in Wichita.

In the late 1950's, a series of fund drives provided for the construction of a larger facility in west Wichita.

The KGS took over operations and administration in the 1980's.



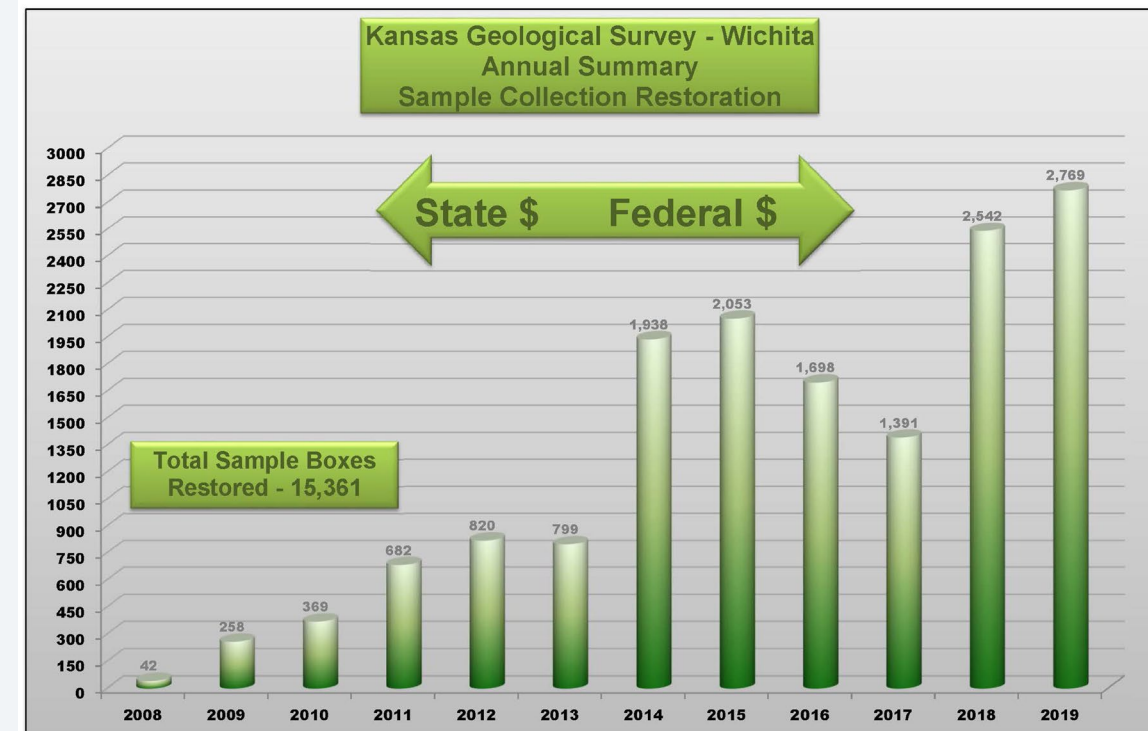
KANSAS GEOLOGICAL SAMPLE REPOSITORY



Before



After



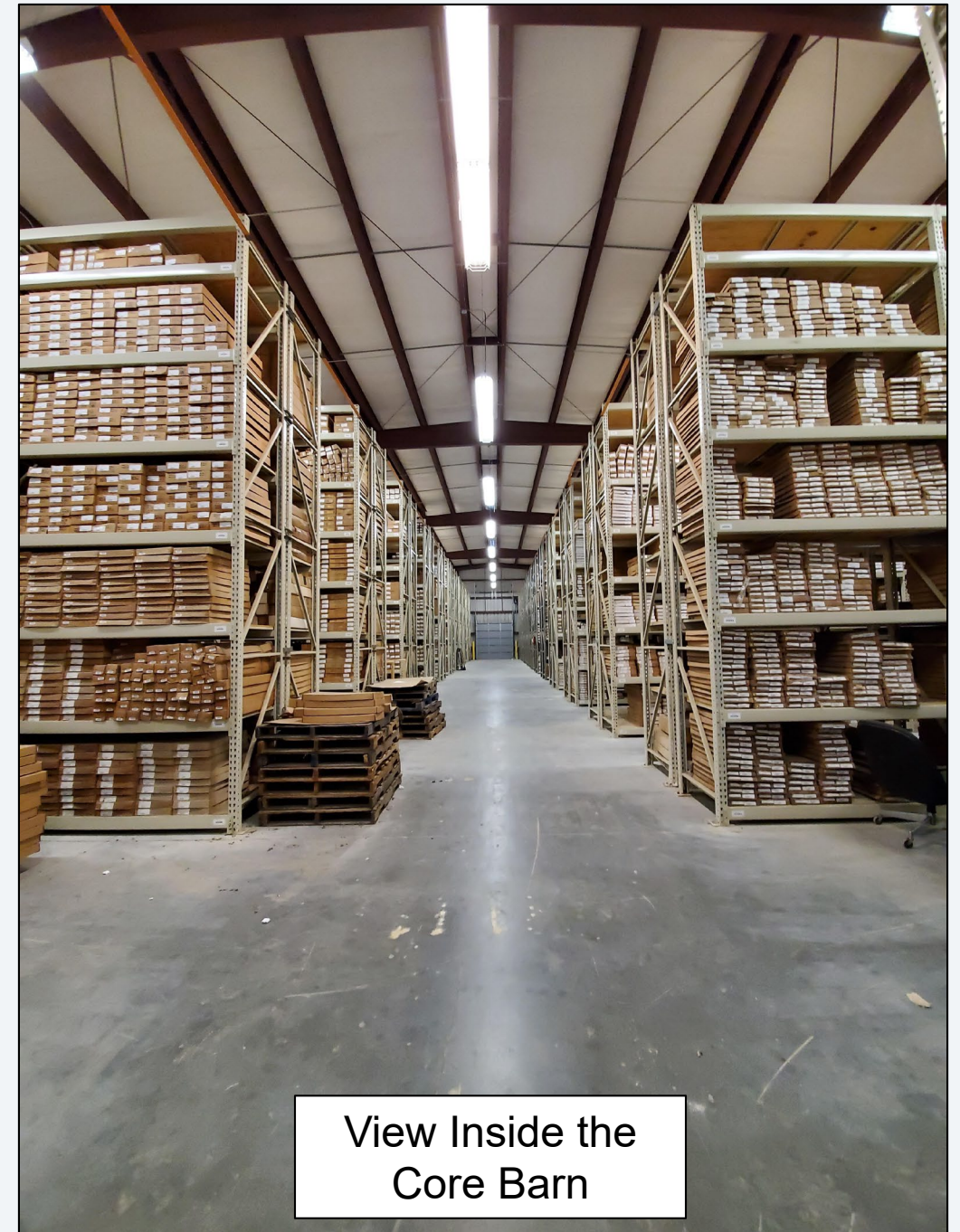
Restoration of rock sample boxes increased significantly after funding from the USGS NGDPP program became available.

KGS DRILL CORE LIBRARY - LAWRENCE

- The Lawrence Repository contains over 67,000 boxes
- Representing more than 5,500 drill holes



The Lynn Watney Kansas Core Analysis Laboratory



View Inside the
Core Barn

ANNUAL FIELD CONFERENCE

The field conference, initiated in 1995, educates policy makers about natural resource issues in Kansas. This trip provides an opportunity to present policy makers with balanced, unbiased information about Kansas's natural resources.



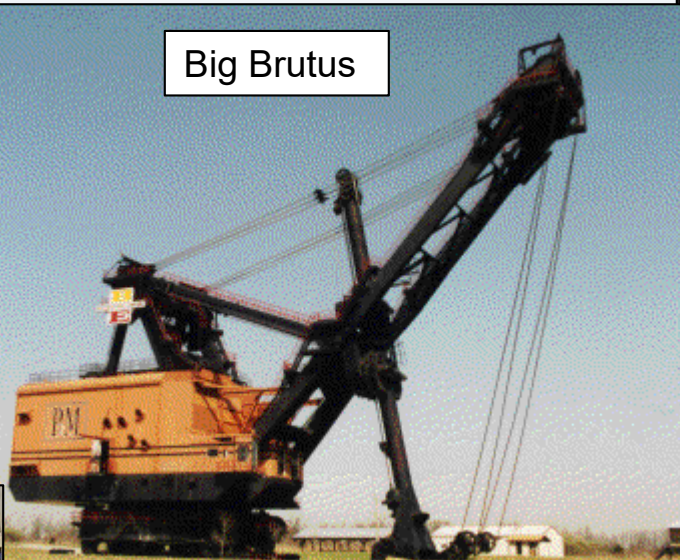
2021 FIELD CONFERENCE

The 2021 KGS Field Conference will be held October 13-15 in SE Kansas! We will be exploring sites that highlight efforts to transform the state's natural resources in this region.

Mine Creek Battlefield



Big Brutus



Mining Impacts



Foster Dairy Farms



Treece, Kansas



Mined Land Wildlife Area

