Kansas Geological Survey Water Programs

Information for Consideration of HB2279

February 8, 2023

KU KANSAS GEOLOGICAL SURVEY
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KANSAS GEOLOGICAL SURVEY UNIVERSITY OF KANSAS

6 Major Programs

KU KANSAS GEOLOGICAL SURVEY
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- **Home to some of the World's Top Scientists in their fields**
- **Recognized as one of the Nation's top research institutions**

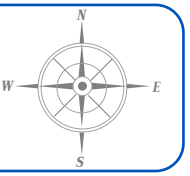
Energy

- Hydrocarbon Resources – characterization & geologic assessment
- **C**arbon **C**apture, **U**tilization, and **S**torage
- Hydrogen Economy Development
- Oil & Gas Mapper

Water Resources

- Groundwater level monitoring
- Water quality research
- Aquifer modeling
- Streambank stability & reservoir management

Digital Tech & GIS

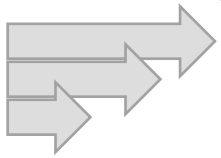


- State Geographic Info. Systems Hub
- Next-Generation 911
- KOLAR – State-wide Well Reporting & Abandoned wells
- Geomorphology

Archive, Data & Education

- Wichita Sample Library
- Core Library & Watney Laboratory
- Data Resources
- Publications, outreach, & Education

Geophysics & Hazards



- Seismic hazard monitoring
- Arbuckle water level monitoring
- Geophysical void detection & subsidence risk assessments

Geological Resources

- Critical Minerals
- Road Aggregates (KDOT)
- ODYSSEY Program, Geoarcheology
- STATE Map

KGS is Essential for Kansas' Future

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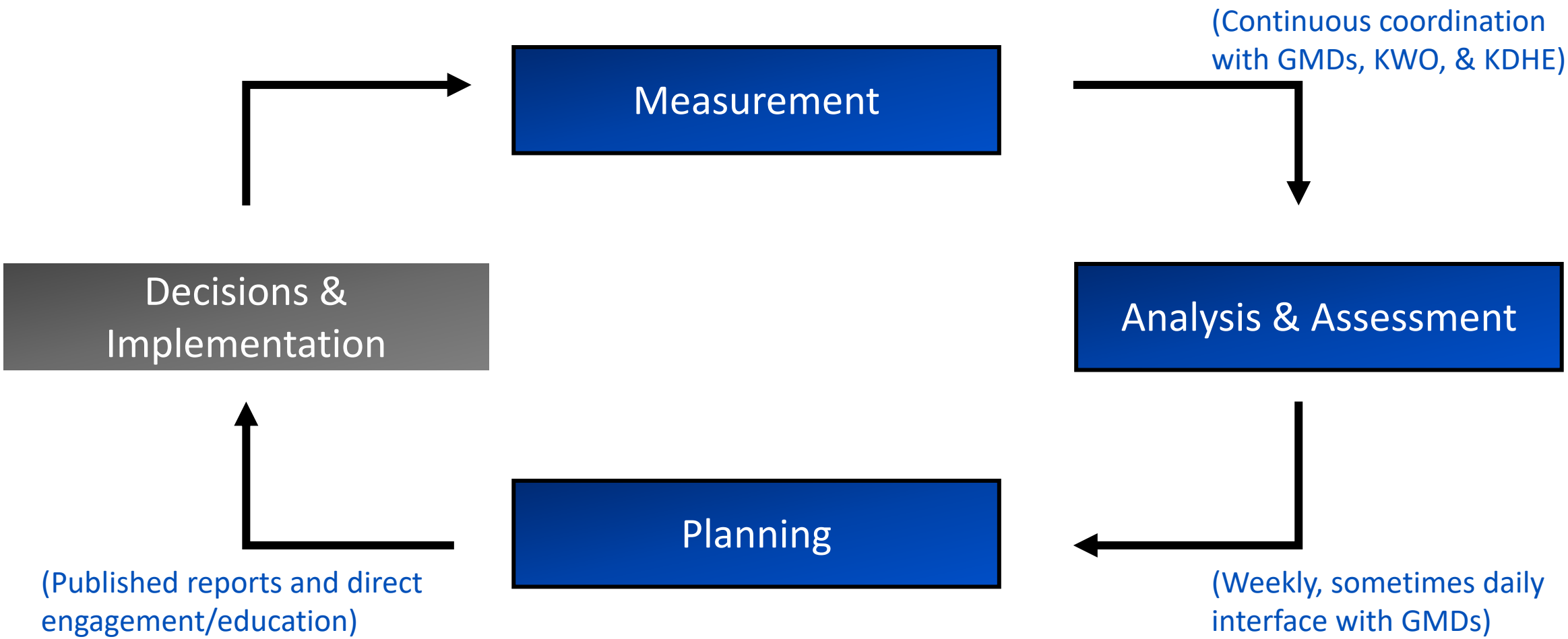
Kansas Geological Survey work is integral in 3 out of 4 resource management steps



3 Water Program Elements are Indispensable

KGS Water Resources

1. **Water Level Monitoring Program**:
   - The KGS is the principal organization responsible for collecting, analyzing, and reporting on the status of water levels throughout the High Plains aquifer (including the Ogallala aquifer)
   - This program requires hand measurement of ~1500 industrial/agricultural well sights annually
   - And measurement and maintenance of a series of continuously monitored index wells

2. **Groundwater Modeling Program**:
   - Computer (numerical) models are essential for delineating, understanding, and forecasting the complex interactions of water input and offtake, as well as contaminant migration at the regional and local scales.
   - Modeling work is underway for each of the Kansas GMDs
   - Models must be maintained and upgraded both at annual and multi-year timeframes to ensure accuracy

3. **Water Quality Monitoring Program**:
   - Ambient water quality must be measured and analyzed
   - The State's program was halted in 2000 due to budget cuts
   - The KGS and KDHE are partnered with the KWO to re-initiate monitoring
   - Phase-1 integrates four monitoring regions of specific concern

Groundwater Level Modeling Program

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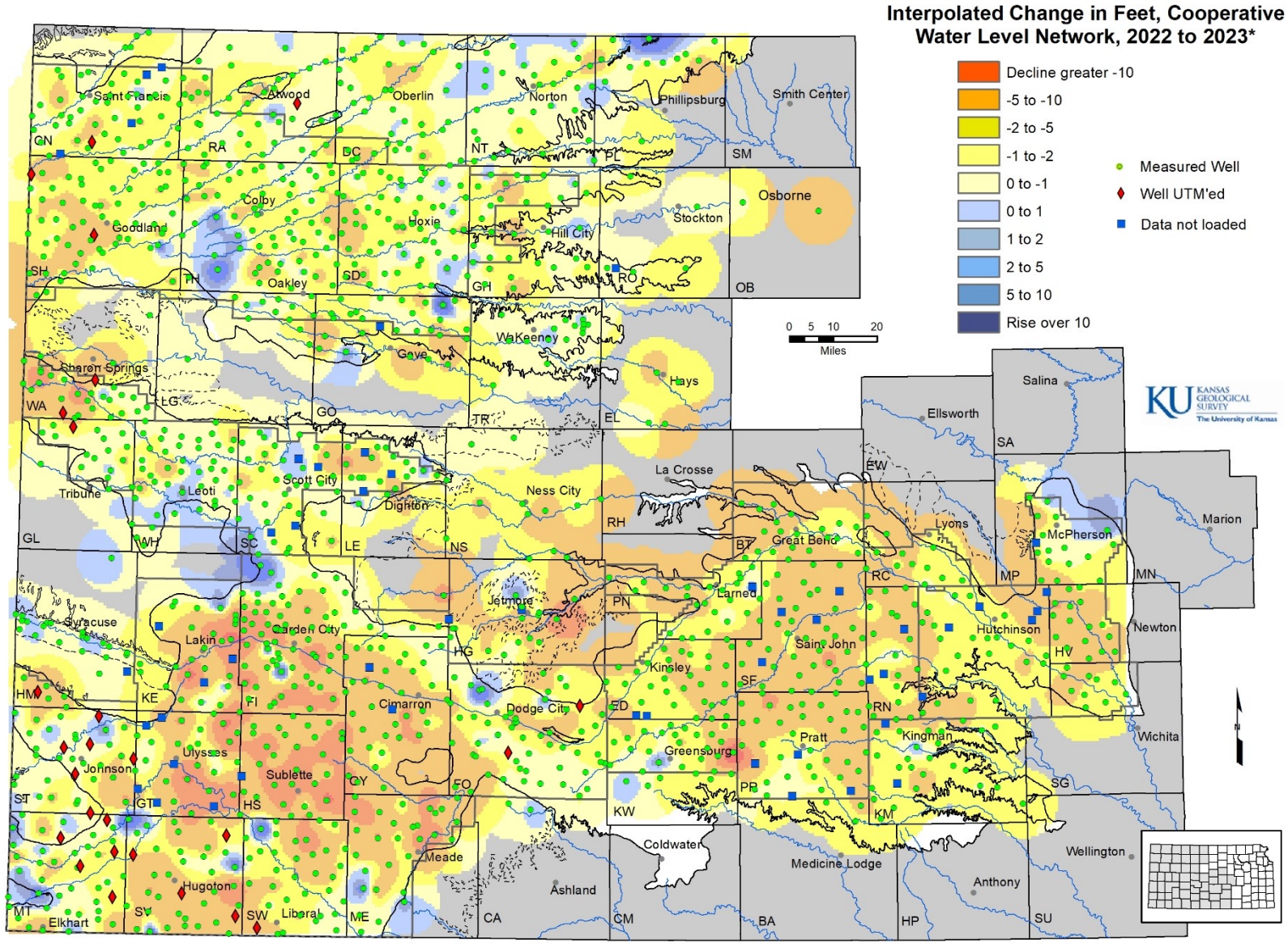

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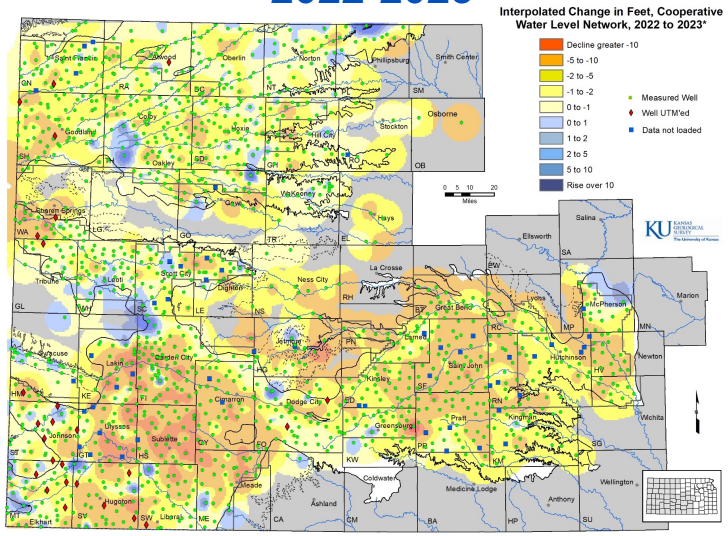
2022 – 2023 Program

Water Resources

2022-2023



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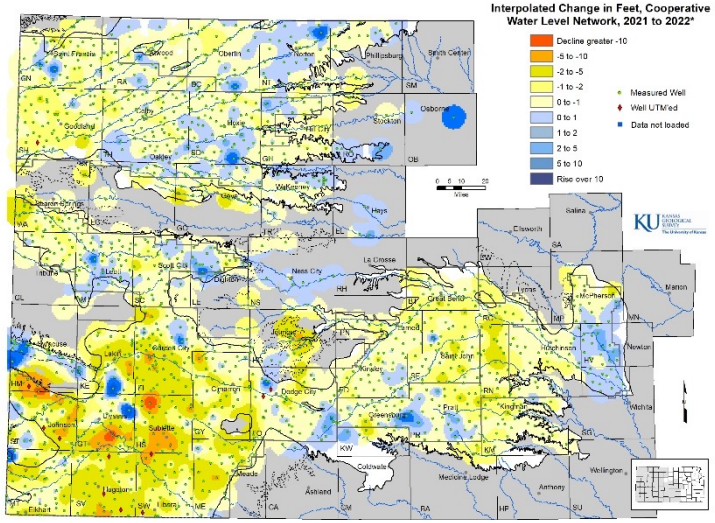
2021-2022



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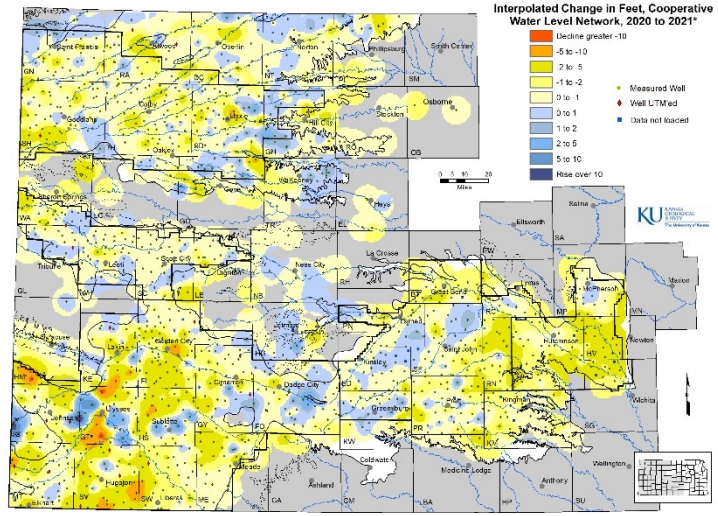
2020-2021



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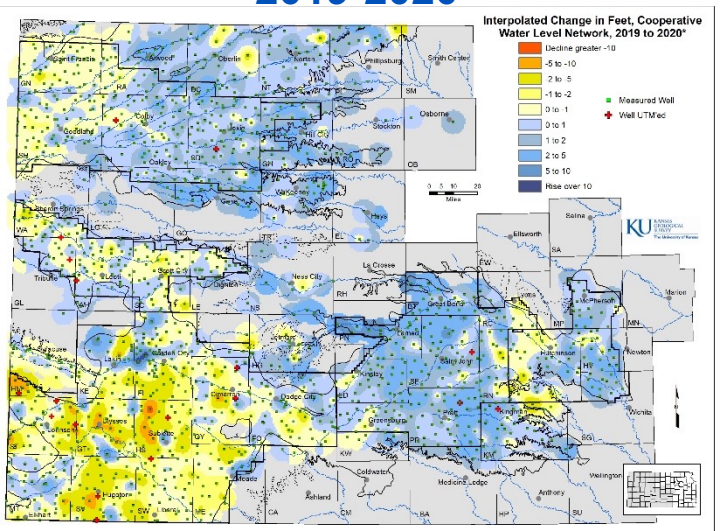
2019-2020



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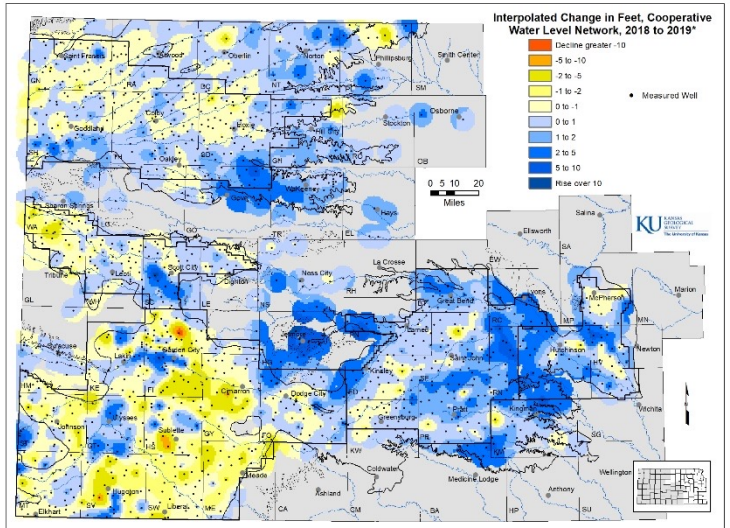
2018-2019



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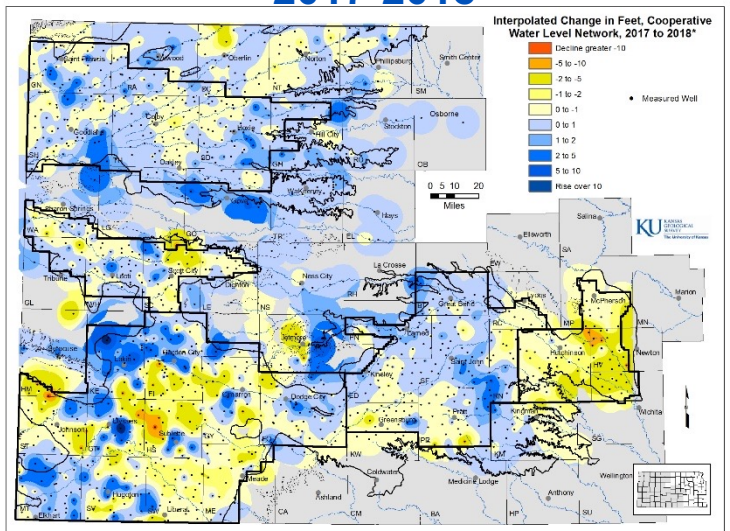
2017-2018



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Groundwater Level Modeling Program

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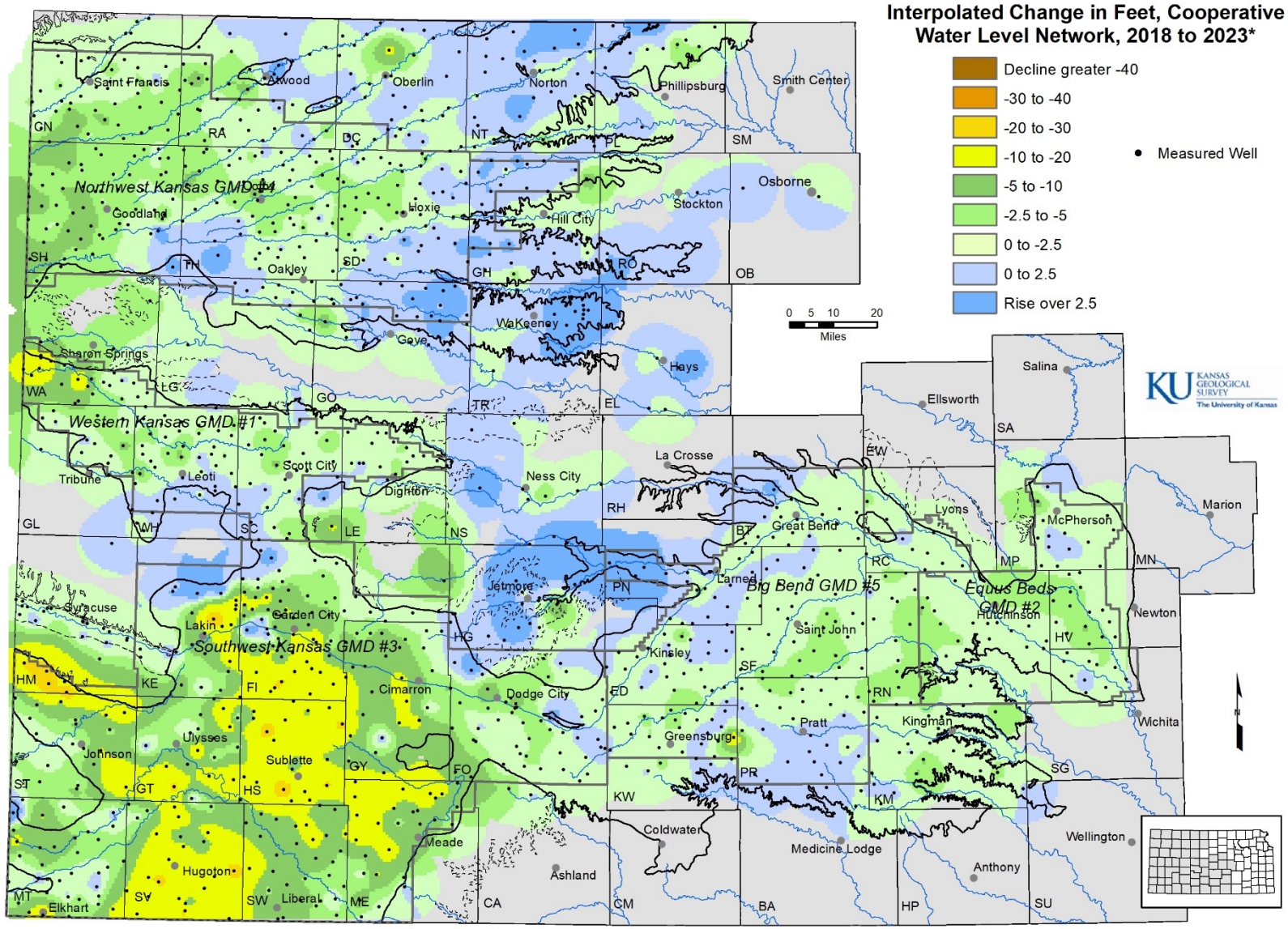

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Groundwater Aquifer Modeling Program

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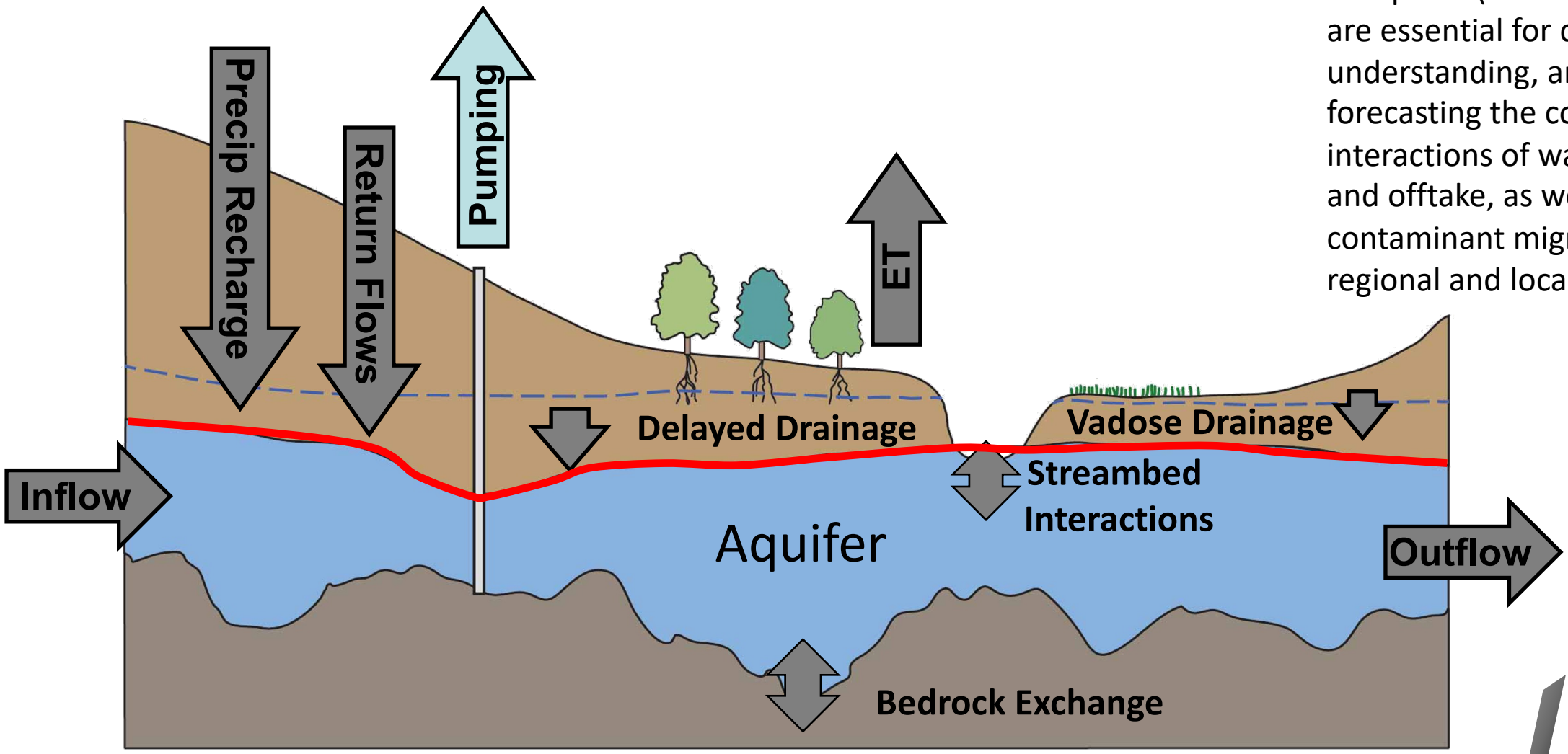

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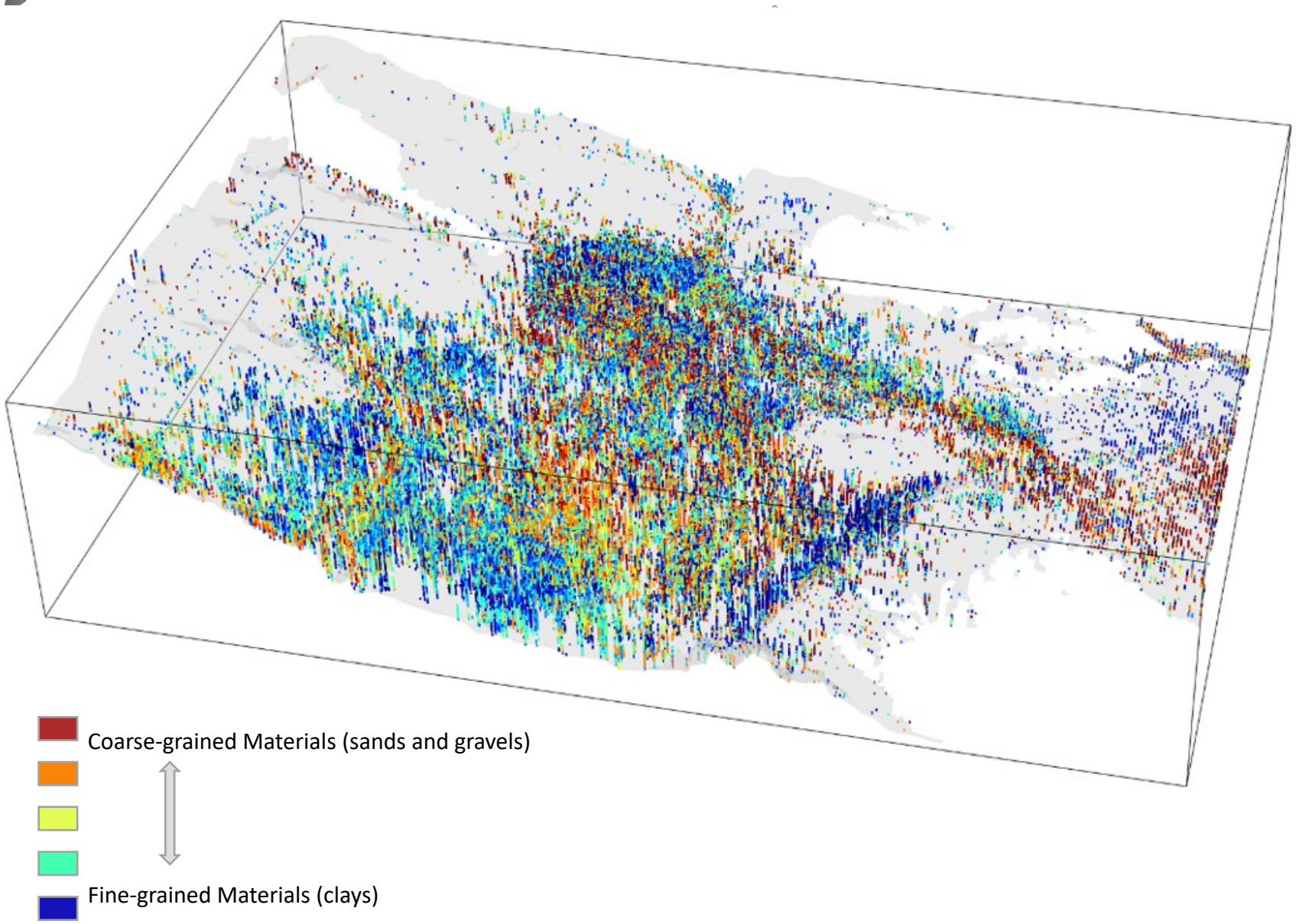

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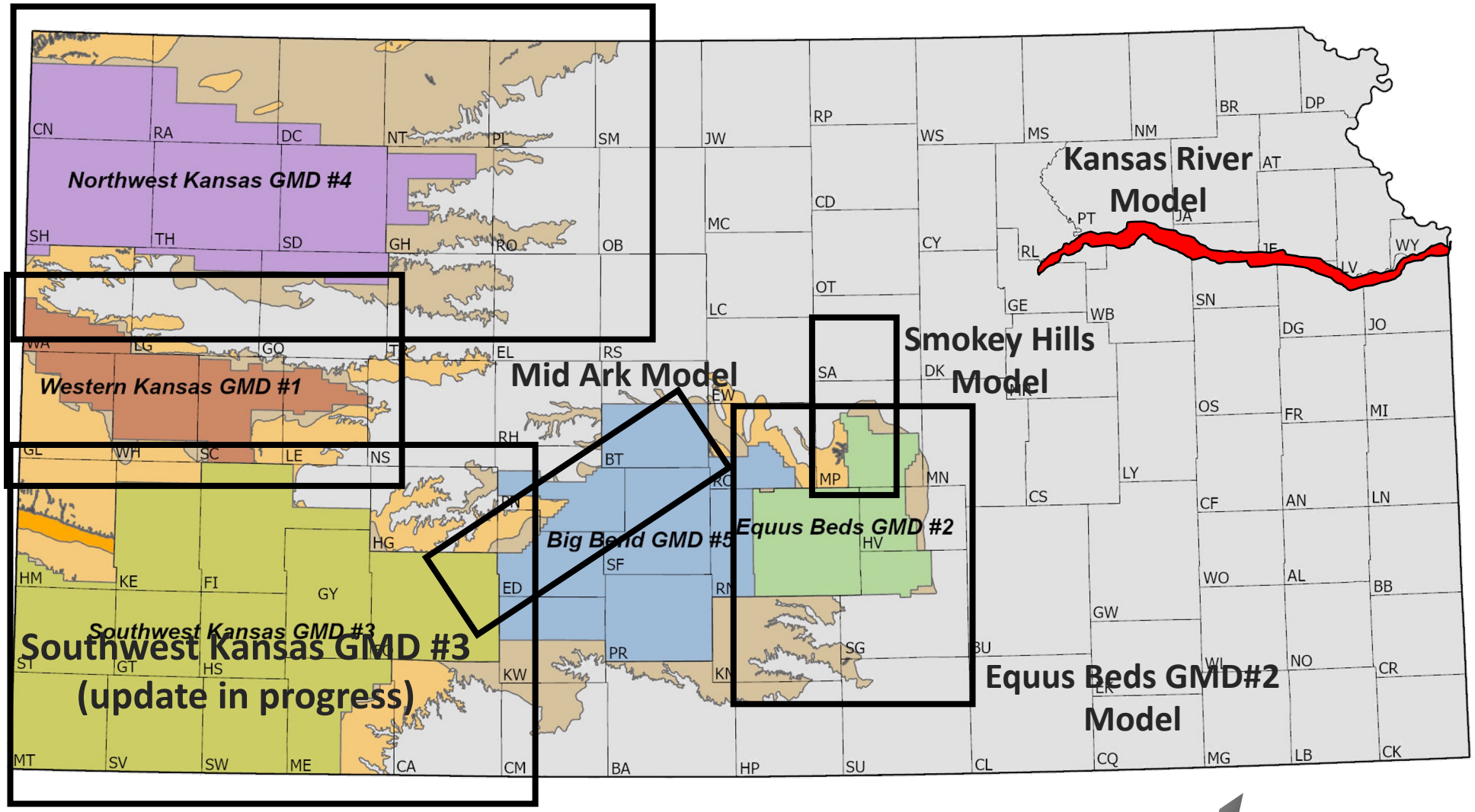
KGS aquifer modeling activities

GMD #4 Model

GMD #1 Model

GMD #3 Model



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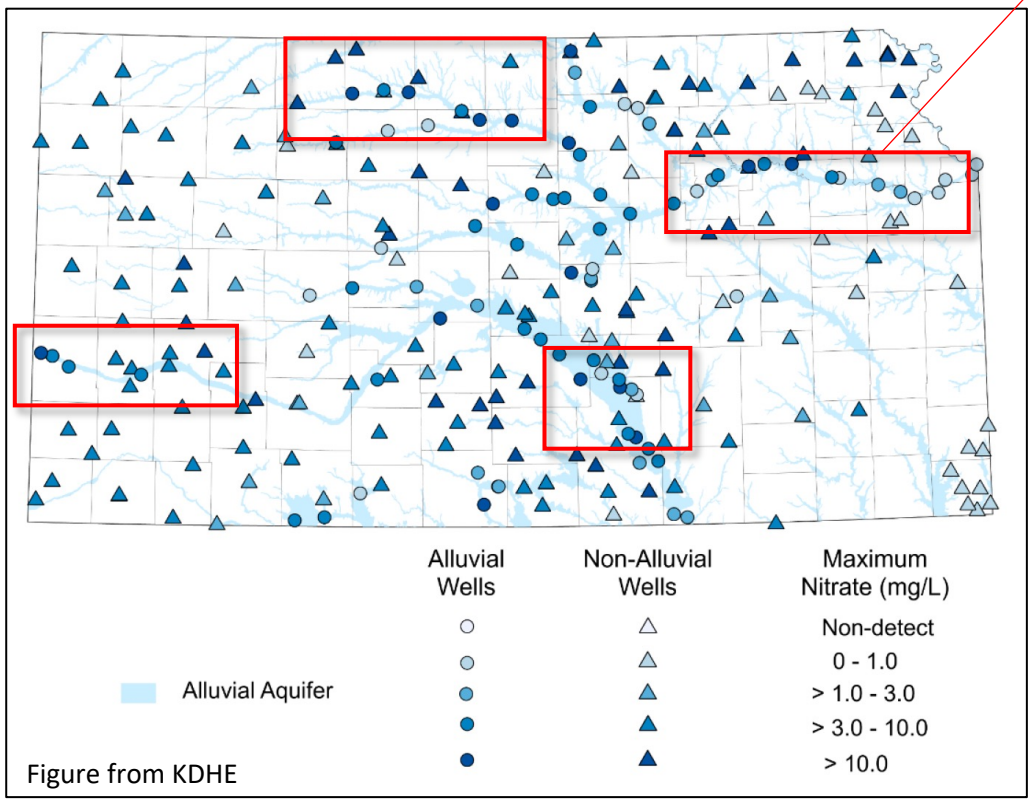
Groundwater Quality



Historical KDHE groundwater monitoring network (200 sites; 1985-2000)

Phased Approach

P-1 (FY24): re-establish monitoring at 4 regional hot spots

P-2 (FY25): scale up monitoring to state-wide coverage with (sister institutions)

Questions ?