AGRICULTURE AND WATER AVAILABILITY ISSUES IN KANSAS

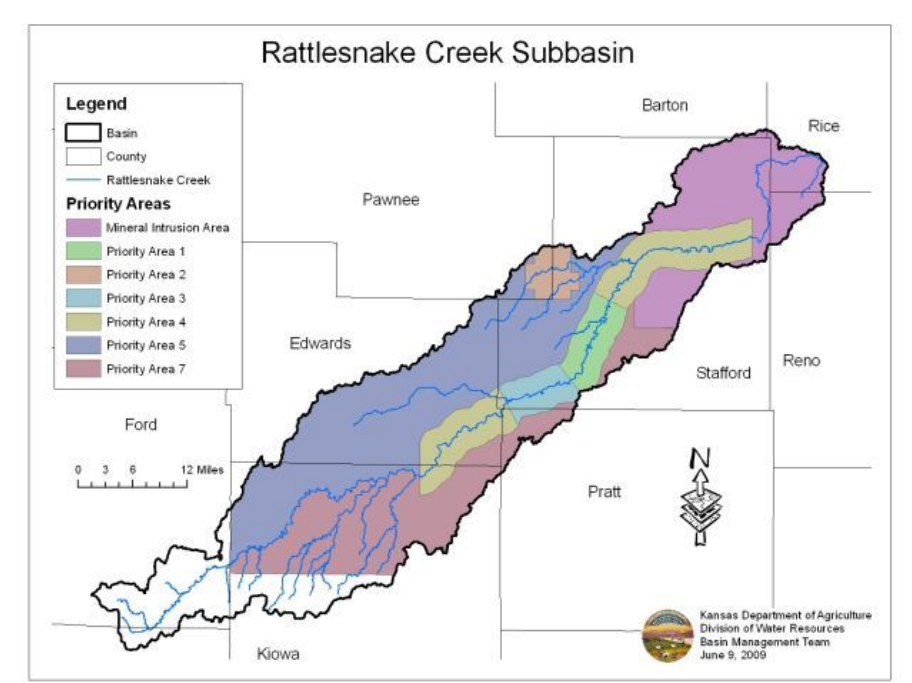
By: 2024-2025 Farm Credit Student Board of Directors

FORT HAYS STATE UNIVERSITY

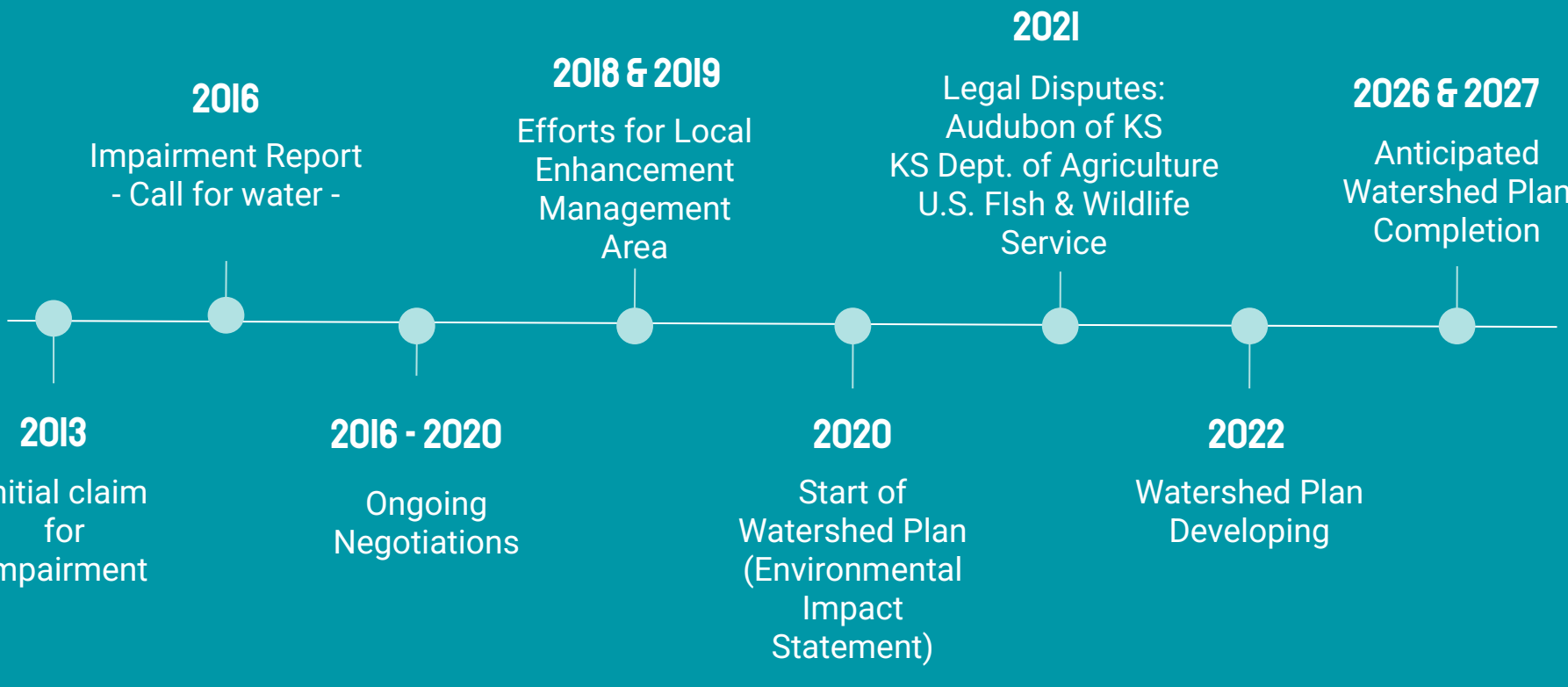
High Plains Farm Credit

RATTLESNAKE RIVER BASIN OVERVIEW

Hydrogeologic Environment



BACKGROUND & TIMELINE



WATER RIGHTS AND MANAGEMENT

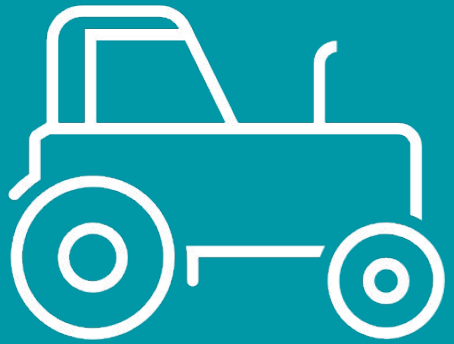
- **WHO GOVERNS IT?**
  - **US Fish and Wildlife Services** hold the senior water rights
    - Senior water rights means first in time, first in right
  - The importance of partnerships
- **WHY IS IT IMPORTANT?**
  - Water management ensures that water resources are shared fairly among all users, including agriculture, industry, households, and ecosystems.
  - Making Kansas a leader in water management practices

SUSTAINABILITY AND FUTURE OUTLOOK

- Leg work for the Rattlesnake Creek Watershed Plan Environmental Impact Statement
- Plan made in cooperation with GMD 5, US Fish & Wildlife, Kansas Department of Agriculture Division of Water Resources & many others
- Goal is to provide for long-term sustainable agricultural water management
- 3 phases of the plan
    - Planning (current), Design & Implementation
    - Hope to move into design and implementation in 2026 & 2027

ECONOMIC IMPACTS

- **AGRICULTURAL SECTOR**
  - Reduced crop yields due to water scarcity
  - Increased costs for irrigation and water-saving technologies
  - Financial losses for farmers
  - Impact on food prices and supply chains
- **ADAPTING TO WATER SCARCITY**
  - Crop Diversification
  - Improved Irrigation Technologies



ECONOMIC IMPACTS

- **RURAL COMMUNITIES**
  - Economic instability tied to agriculture-dependent livelihoods
  - Job losses in farming and related industries (e.g., food processing)
  - Population decline as residents seek better opportunities elsewhere
  - Pressure on local governments for funding water infrastructure and aid

OGALLALA WATERSHED

INTRODUCTION TO THE OGALLALA WATERSHED

- **Location**:
  - Spans across 8 states: Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming.
  - Primarily affects western Kansas — a vital region for Kansas agriculture.
- **Size & Significance**:
  - The Ogallala Aquifer is one of the largest sources of freshwater in the world.
  - Provides nearly 30% of the groundwater used for irrigation in the U.S.
- **Importance to Agriculture**:
  - Critical for irrigation in dry, arid regions, especially for Kansas' wheat, corn, and other crops.
  - Supports livestock operations and economic activities in rural communities.

CURRENT WATER CHALLENGES AND ISSUES

- **Declining Water Levels**:
  - **Overuse**: Water withdrawals exceed natural recharge rates, causing levels to drop in key areas.
  - **Irreversible Depletion**: Parts of the aquifer, particularly in western Kansas, have seen significant reductions in water levels, impacting agricultural productivity.
- **Economic Impact on Kansas Agriculture**:
  - Reduced access to water increases **irrigation costs** and risks lower crop yields.
  - The **s**ustainability of farming and livestock in regions dependent on the aquifer is at risk.
- **Management Efforts**:
  - New water management policies and water conservation technologies are being implemented to mitigate depletion and preserve water supplies for the future.

WATER RIGHTS AND MANAGEMENT

- First in time, first in right
    - Quivira has had water rights since 1957 - 14,000 acre feet of water
- No longer granting new permits to pump in Ogallala watershed
- Increase in severity of penalties for water right violations (4th offense = revocation of water rights)
- Federal Crop Insurance for limited irrigation crops

WATER RIGHTS AND MANAGEMENT

- **Five Year Plan**
  - Voluntary water rights buyouts (Water Transition Assistance Program, Conservation Reserve Enhancement Program)
  - Leasing programs (Water Banks, Water Conservation Areas)
  - Precision irrigation technologies
  - Soil moisture monitoring systems
  - Drought tolerant crops
- **Cost**

ECONOMIC IMPACTS FOR THE FARMER

- Agriculture and agriculture-related sectors have a total impact of **$81.2 billion in output and 253,614 jobs** in Kansas.(Including indirect and induced effects)
- Finney County is expected to **lose 57% of irrigated land** by 2100. **18%** of that land is expected to be put into pasture, the rest is expected to be converted to dryland.
- Potential **$3.8 billion loss** in the land value of Western Kansas without the Ogallala

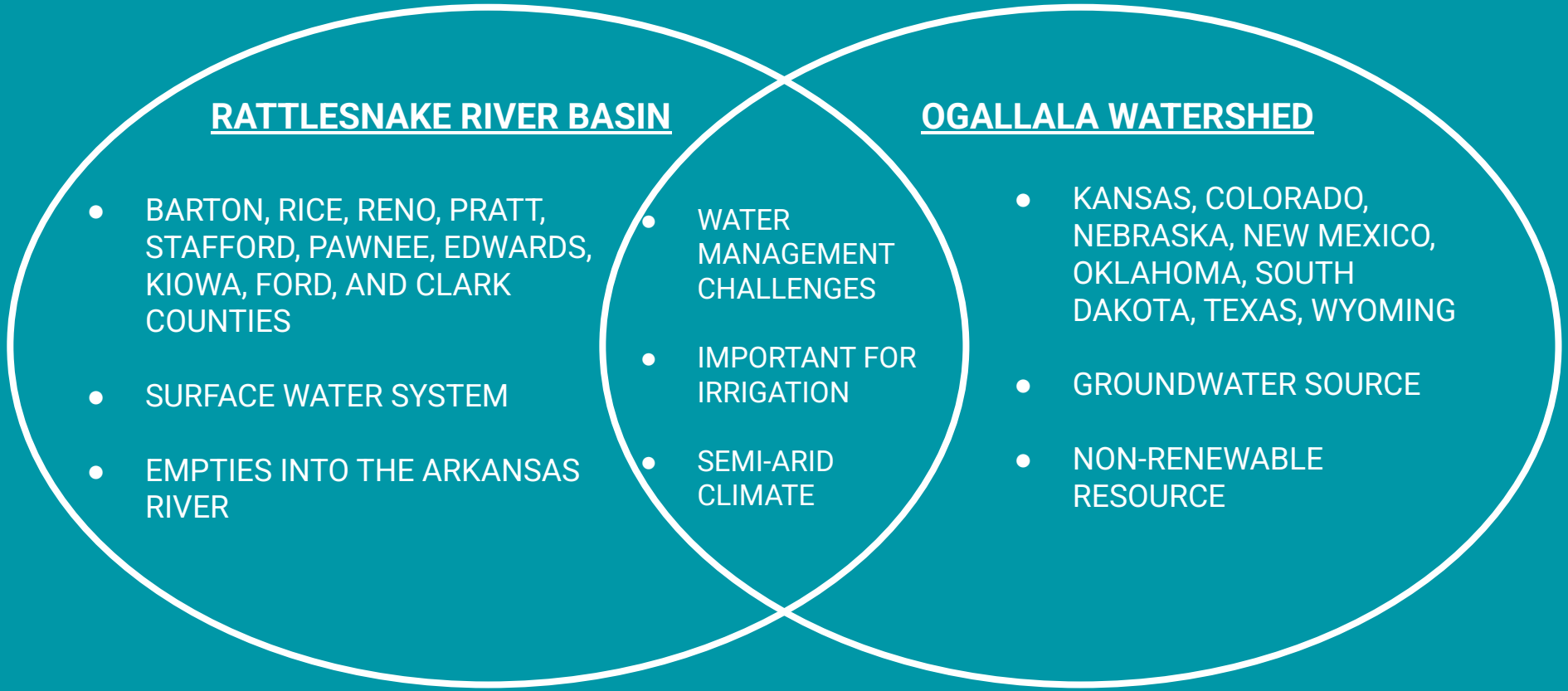
ECONOMIC IMPACTS FOR THE COMMUNITY

- Farm closures leave a **ripple effect** on local dealerships, elevators, etc.
- Feedlots, dairies, ethanol plants, packers have to **relocate**
- **Shrinking population**/less kids returning to farm if there is no future
- **Reduced taxes** for funding local schools, roads, emergency services and healthcare
- **Communities Crumble**

SUSTAINABILITY AND FUTURE OUTLOOK

- **Current 2025**
  - $26 million allocated to the State Water Plan Fund, 3X higher than 2022
  - Cost-share programs
  - Lemas will be encouraged (GWD 1&4 saw an increase of water supply)
- **Future**
  - Educate on irrigation… less water = more $ in the short and long term
  - New softwares such as OpenET show the outcomes of irrigation management
  - Many organizations will push for a new farm bill supporting the Ogallala

CLOSING


RATTLESNAKE RIVER BASIN
BARTON, RICE, RENO, PRATT, STAFFORD, PAWNEE, EDWARDS, KIOWA, FORD, AND CLARK COUNTIES
SURFACE WATER SYSTEM
EMPTIES INTO THE ARKANSAS RIVER
WATER MANAGEMENT CHALLENGES
IMPORTANT FOR IRRIGATION
SEMI-ARID CLIMATE
OGALLALA WATERSHED
KANSAS, COLORADO, NEBRASKA, NEW MEXICO, OKLAHOMA, SOUTH DAKOTA, TEXAS, WYOMING
GROUNDWATER SOURCE
NON-RENEWABLE RESOURCE

QUESTIONS?