

**KU** KANSAS  
GEOLOGICAL  
SURVEY  

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The University of Kansas

# OGGALLALA

*a game about water resource management*

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# About

## Sunday Siomades



Science Communication  
Assistant Researcher

## Andy Connolly



Science Communication  
Specialist

*Why we made it*

*Why it's worth making*

*How it works*

*What the players said*

*What happens next*

# *A Lack of Geology Teaching Resources*

- **Virtual resources**
  - Keep material relevant and accessible in all locations
- **Aquifer Activities package**
  - DIY aquifer model
  - Maps of water usage and precipitation
  - Informational video with worksheet
  - Measure aquifer levels using our online well database
  - **And...**

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## *...a Game!*

- Personal experience with board games used for educational purposes
- Wanted to create a fun way to approach a topic that may seem boring or unimportant
- Create a print-and-play game with materials that can be easily obtained

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# *Educational Goals*

- Introduce the concept of a shared, depletable resource
- Compare water consumption and profit between different plant and animal stocks
- Demonstrate the role of technology in sustainable water use
- Encourage community cooperation

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# *Broader Impacts*

- Expand research base of educational games as teaching mechanisms
- Explore teaching methods to support alternative learning styles
- Improve the accessibility of science to broader audiences

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- Why we made it*
- Why it's worth making*
- How it works**
- What the players said*
- What happens next*

# *The Context*

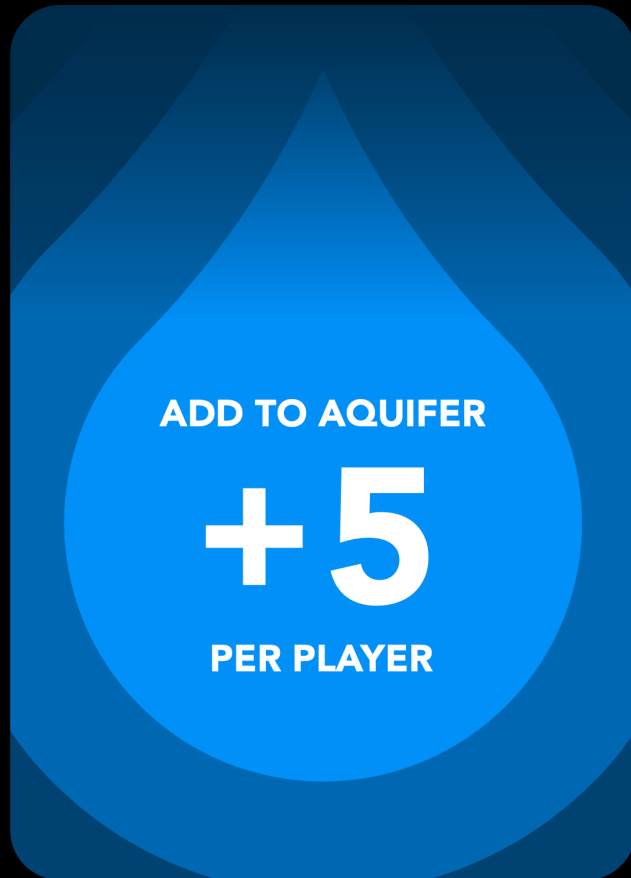
Players assume the role of farmers, growing crops and livestock while working together to withdraw water sustainably.

# *How to Win*

Accumulate the most profit without emptying the aquifer.

# Water Cards

Replicate variable annual precipitation conditions in Kansas



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**How it works**

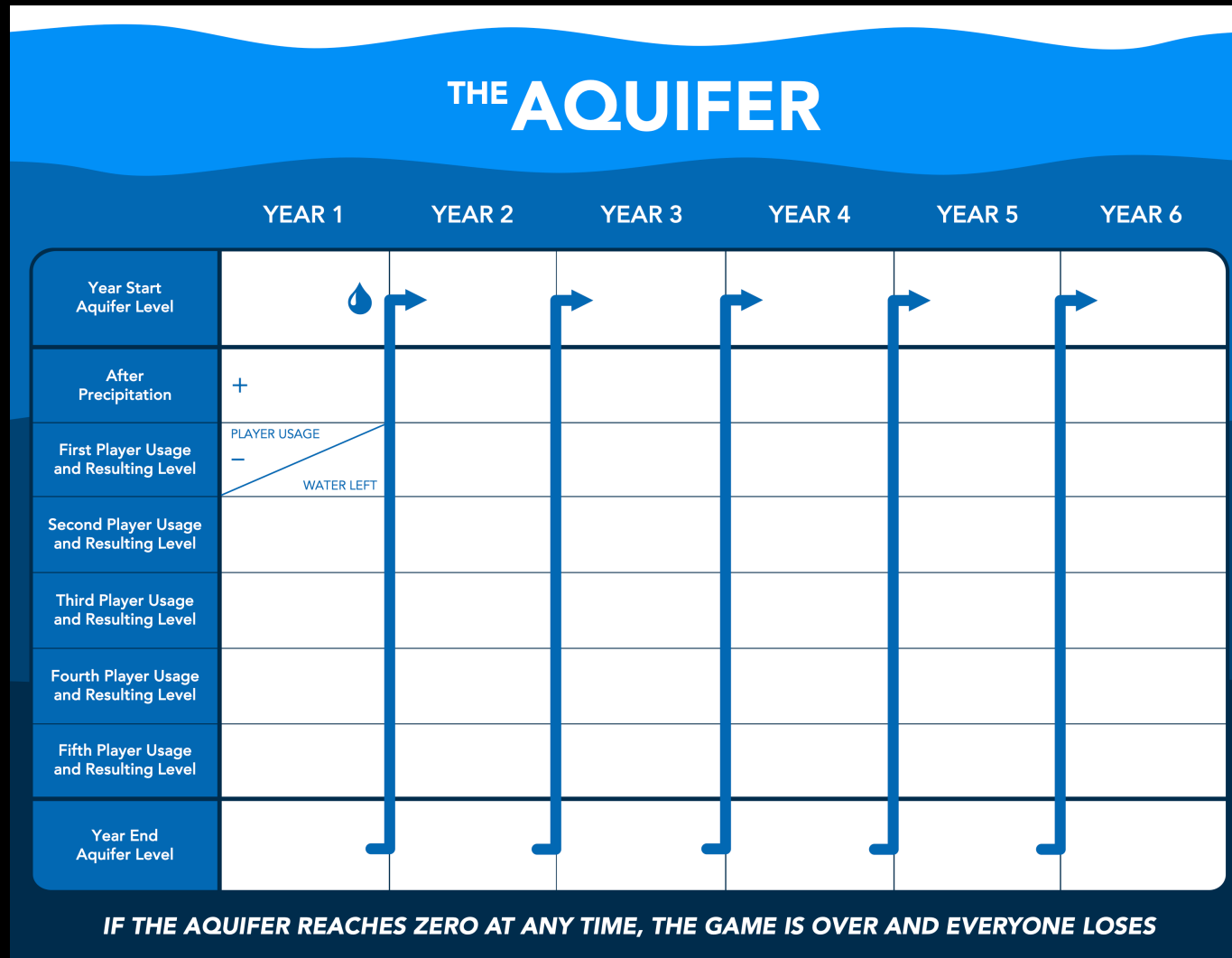
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# The Aquifer

Players keep track of their community water reserves



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# The Farm Board

Players select crops, livestock, and technology

## YOUR FARM

CROPS	LIVESTOCK
<p>-1  <b>CORN</b> </p> <p>+\$20</p>	<p>-4  <b>CHICKEN</b> </p> <p>+\$30</p>
<p>-2  <b>WHEAT</b> </p> <p>+\$20</p>	<p>-6  <b>PIG</b> </p> <p>+\$40</p>
<p>-2  <b>SOYBEAN</b> </p> <p>+\$15</p>	<p>-16  <b>COW</b> </p> <p>+\$60 LIMIT 1*</p>

### TECHNOLOGY

<p><b>CROP ROTATION</b></p> <p>COST: \$20 <b>LIMIT 1</b></p> <p>Thanks to the soil nutrients legumes provide, you don't need to purchase fertilizer. If you grow a Soybean, collect an extra \$40.</p>	<p><b>SPRINKLERS</b></p> <p>COST: \$10 <b>LIMIT 2</b></p> <p>Invest in efficient irrigation. ONE Corn, Wheat, or Soybean can be grown without using water.</p>	<p><b>DROUGHT INSURANCE</b></p> <p>COST: \$10 <b>LIMIT 1</b></p> <p>When the NEXT Drought card is revealed, you may elect to not withdraw water for your Crops/Livestock (and consequently not collect money from them), and instead receive \$70 as your income for the year.</p>	<p><b>WASTE RECYCLER</b></p> <p>COST: \$30 <b>LIMIT 2</b></p> <p>You purchase a Livestock refuse recycling system. The water requirement of ONE Chicken, Pig, or Cow is halved.</p>	<p><b>*COW STOCKADES</b></p> <p>COST: \$60 <b>LIMIT 2</b></p> <p>You build extra paddocks. Your maximum number of Cows increases by ONE.</p>
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# Event Cards

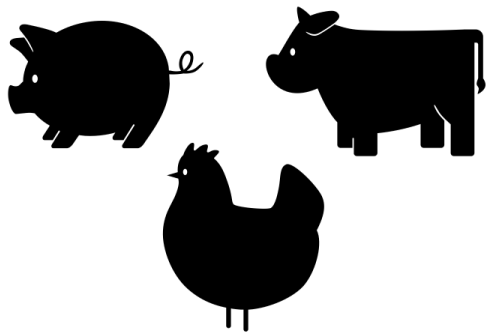
Replicate the effects of economic and environmental conditions

Locust plague destroys crops



Plants make \$0 profit

BBQ demands are up



Meat makes an extra \$20 each

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**How it works**

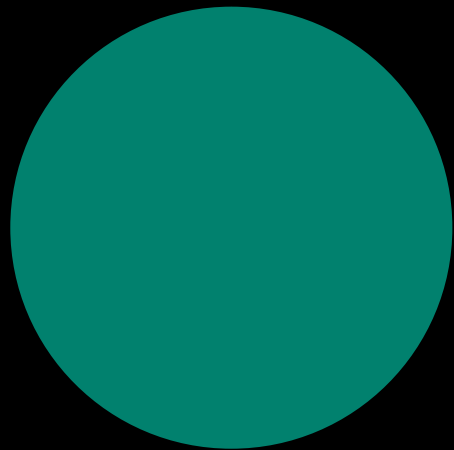
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# Playtesting

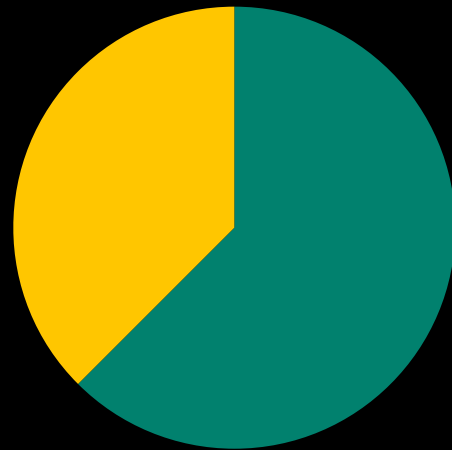
- Overall: positive responses
- Players reportedly enjoyed the game and often expressed interest in participating in another round

*"The game mechanics fit the game"*



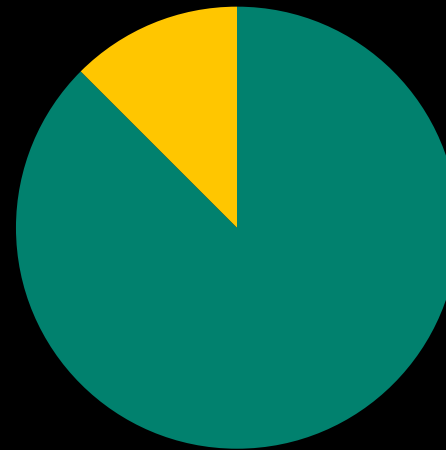
■ Agree

*"The rules made sense and reflected the theme"*



■ Agree ■ Disagree

*"I knew how my decisions affected the outcome of the game"*



■ Agree ■ Disagree

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## Next Steps

- Summer 2024: Continue refining rules and materials in response to player feedback
- Fall 2024: Finalize rules and materials, continue building classroom connections and begin data collection design

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***Think you've got what it takes to be a Kansas farmer?  
Visit the KGS table to playtest Ogallala!***

# Thank You

*Questions can also be directed to [ssiomades@ku.edu](mailto:ssiomades@ku.edu)*