

# **A Framework for Oklahoma Water Management: Thoughts from a Groundwater Scientist**

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# A word from the OSU legal dept...

- The views on this important issue are those of Dr. Halihan, not Oklahoma State University or its school of geology
- Through in-depth research, Dr. Halihan provides vital scientific data that is helping with the study of water in our region
- We would hope this research will further the study and conversation, informing key players and decision-makers
- As a land-grant university, Oklahoma State University has an obligation to conduct research and share that research with society
- We welcome your thoughts and views on this issue



# Framework Issues from the Science Perspective

1. Three things that are hard to avoid
2. Four lessons learned in management
3. Other frameworks that have been tested

When the well is dry, we know the worth of water.  
– Ben Franklin, Poor Richards Almanac, 1746

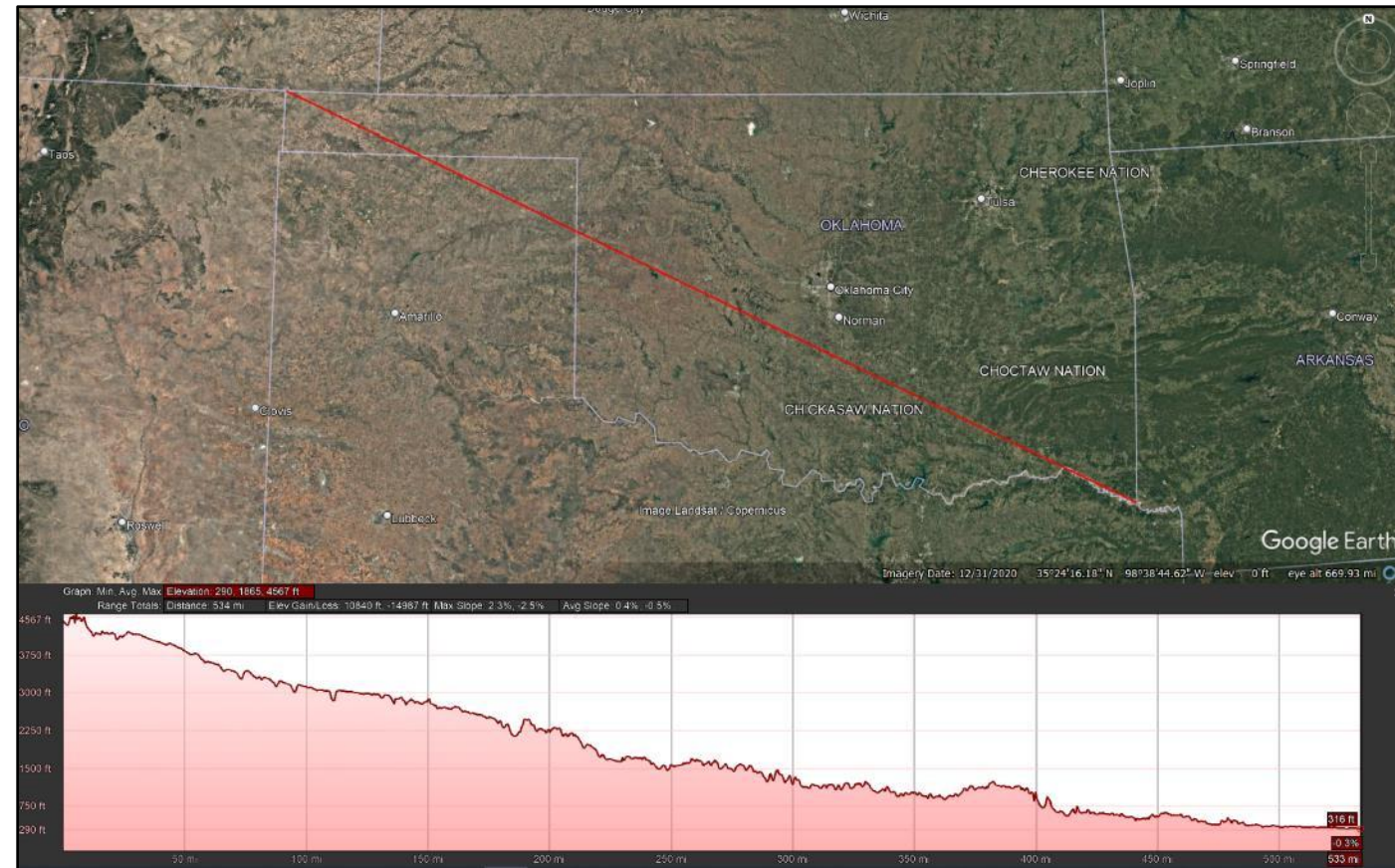


[thewaterspace.com/take-a-dive-into-the-science-of-water/](http://thewaterspace.com/take-a-dive-into-the-science-of-water/)

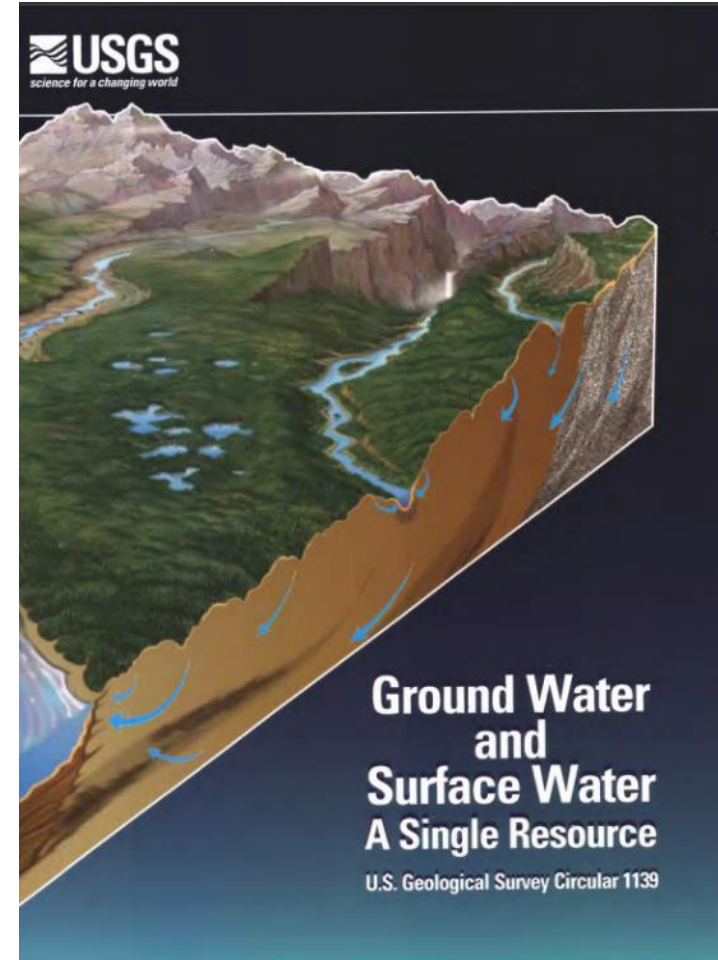


# 1. Water is Heavy

- OK rain is at the SE (bottom of hill)
- Moving water to dry areas needs a lot of energy



## 2. Basins are 1 Resource



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- 1878, John Wesley Powell, head of USGS, proposed that political jurisdictions conform to watersheds in the west. Mr. Powell lost his job as the head of the U.S. Geological Survey (Powell, 1878).
- “Every student of hydrology quickly learns that the management of water resources only makes sense when it’s done on a watershed basis. Governments, however, are organized by city, township and county boundaries, which are irrelevant to the natural scheme of things. Thus **the challenge has been to make sensible water resources plans out of the nonsense of political subdivisions.**”

Bill Sharpe, 1999

[www.wrc.udel.edu/research/what-if-the-united-states-of-america-were-based-on-watersheds/](http://www.wrc.udel.edu/research/what-if-the-united-states-of-america-were-based-on-watersheds/)

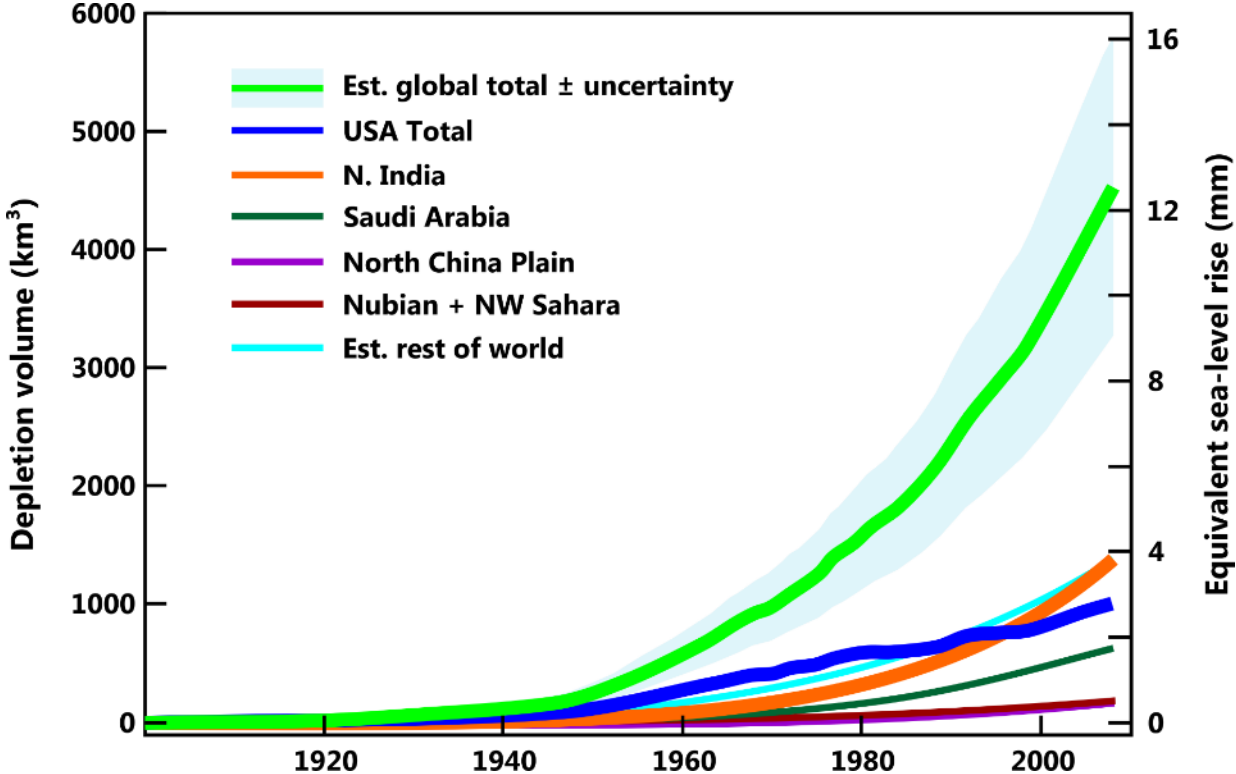


# 3. Humans Evaporate Water



Annual Evaporation:  
 1.4 m (4.5 ft)  
 USGS, 1952

*THE ASSOCIATED PRESS*  
 February 16, 2015

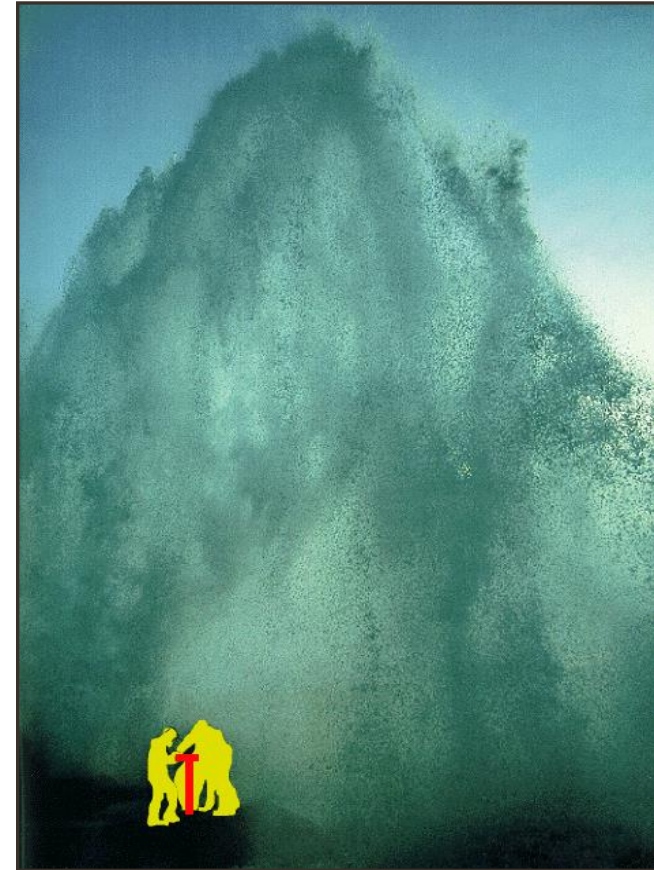


*Konikow, 2011*

# Lesson 1: People will use your rules



[www.elpasotimes.com/story/news/2016/07/06/el-paso-water-west-texas-ranch-acquisition/86777450/](http://www.elpasotimes.com/story/news/2016/07/06/el-paso-water-west-texas-ranch-acquisition/86777450/)



Modified from National Geographic



# Lesson 2: Hard to improve without data



Logan Layden / StateImpact Oklahoma

# Lesson 3: Need Funding for Answers

- Pay before play: If someone wants to use water needs to pay to determine answer
- Water Management District: Funding by government and grants to determine management plan
- State Agencies: Limited interaction with stakeholders
- Universities: No authority and grants have specific objectives



# Lesson 4: Need To Define Values

- Economic?
- Environment?
- Human Right?
- Recreation?
- Social Worth?



Public Domain,  
<https://commons.wikimedia.org/w/index.php?curid=99705198>



# South Africa: Water as a Human Right



National Water Act of 1998  
Water Services Act of 1997

# New Zealand: Water for the Environment



Rights of Rivers  
2023 Water Services Reform Programme  
2024 Act Repealed



# Murray Darling Basin, Australia: Water For Agriculture & Humans

- Water Act 2007
- Optimises economic, social and environmental outcomes



[www.abc.net.au/news/2020-09-04/pitt-committs-no-more-buybacks-creates-new-water-compliance-body/12627758](http://www.abc.net.au/news/2020-09-04/pitt-committs-no-more-buybacks-creates-new-water-compliance-body/12627758)



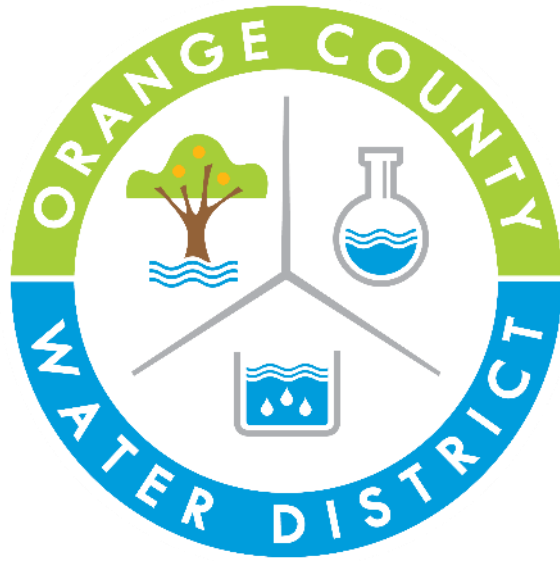
[www.australiancountry.com.au/food-files/murray-river-gourmet-produce/](http://www.australiancountry.com.au/food-files/murray-river-gourmet-produce/)



[www.facebook.com/mldrin/](https://www.facebook.com/mldrin/)

# Orange County, California: Urban Evaporation Management

- Orange County Water District (OCWD), 1933
- to provide a reliable, high quality water supply in a cost-effective and environmentally responsible manner

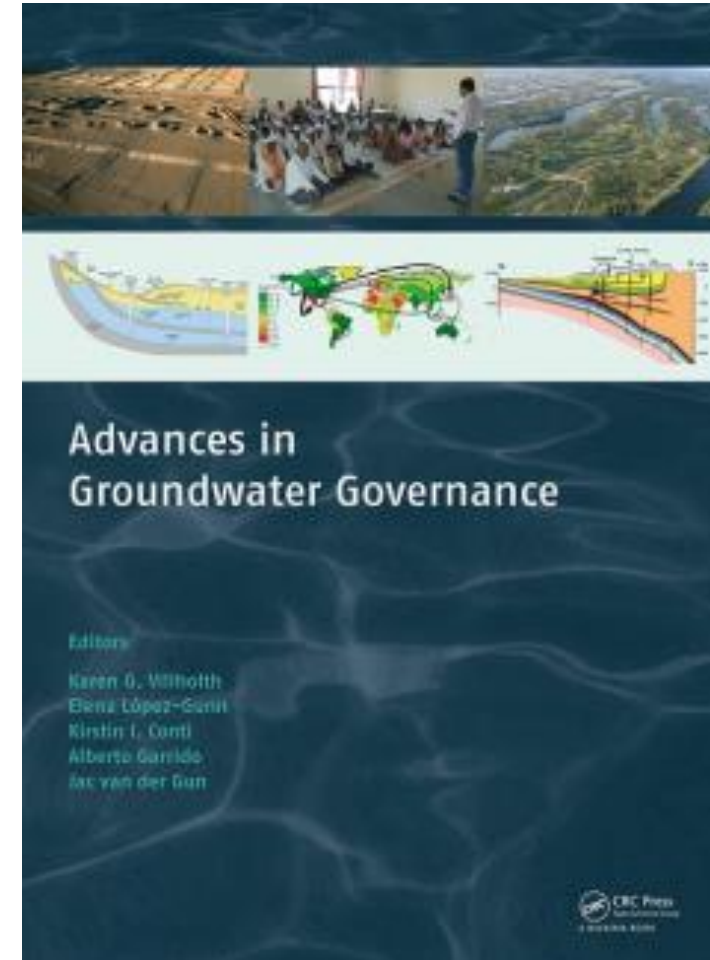


<https://www.ocwd.com/what-we-do/groundwater-management/>



# Best Management Practices?

- Depends on goals/values
- A range of options are available
- Consensus is harder





# A Framework for Oklahoma Water Management:

## Thoughts from a Groundwater Scientist

1. Some water facts can be difficult to get around
2. Water management is inherently complex
3. Lots of other models available to better anticipate pitfalls

Questions?



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