Dealing with a ‘Secret, Occult and Concealed’ Resource: The Groundwater Governance Conundrum

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Judge Brinkerhoff states: Because of the existence, origin, movement and course of such waters, and the causes which govern and direct their movements, are so secret, occult and concealed, that an attempt to administer any set of legal rules in respect to them would be involved in hopeless uncertainty and would be therefore, practically impossible. (Emphasis added)

That was 1861. Another Ohio decision was Cline vs. American Aggregates (1984).
How far have we advanced in 150+ years?

• Prominent Spanish groundwater expert M. Ramón Llamas in his foreword to a collection of papers, entitled *Groundwater Intensive Use* (2005, ISBN 04 1536 444 2) points to the judge’s finding in 1984 that “Scientific knowledge in the field of Hydrology has advanced in the past decade to the point that water table and sources are more readily discoverable. This knowledge can establish the cause and effect relationships of the tapping of the underground water…”

• But Llamas notes “Unfortunately…[f]or many people groundwater issues still continue to be something secret, more related to water witches than to engineers and scientists.”
Interest in governance of the “invisible water” globally and nationally

For most of the public, groundwater is out of sight and out of mind. Groundwater, and the boundaries that define it as a water management unit, are physically invisible to humans – unless you’re in a cave, you can’t see it. This lack of physical visibility has contributed greatly to its lack of visibility in many discussions of water policy, governance and management.

THE 12 OECD WATER GOVERNANCE PRINCIPLES

1. Data and information
2. Policy coherence
3. Financing
4. Regulatory frameworks
5. Innovative governance
6. Integrity and transparency
7. Monitoring and evaluation
8. Clear roles and responsibilities
9. Trade-offs across users
10. Stakeholder engagement
11. Efficiency
12. Effectiveness
Motivation for survey work – Can’t paint the U.S. with a single brushstroke

https://www.fewresources.org/water-scarcity-issues-were-running-out-of-water.html
Mosaic of situations and governance approaches
Water policy reflects many determining factors

- Resource Availability
- Location of water demands and supplies
- Economics
- Historic and Current Legal/Institutional Framework
- The nature of involvement of multiple governmental and non-governmental entities, including the extent of centralized versus decentralized decision making
- Politics of Area
- Public values and socio-cultural factors
- Historical context
- Information
- Etc…

Importance of Context
Defining groundwater governance

There are as many definitions of water governance as there are papers on it.

*Groundwater governance is the overarching framework of groundwater use laws, regulations, and customs, as well as the processes of engaging the public sector, the private sector, and civil society.*


Governance is not the same as government

Groundwater management is what we do.
Two surveys of state-level officials

• “Initial” Survey completed in 2013, focused more on water quantity

• Survey funded by the Ground Water Research and Education Foundation completed in 2017, focused more on water quality
Groundwater governance priorities selected by survey respondents

Example of a complex issue that requires further investigation.
Frequency of Groundwater Concerns Listed in the Top Three by States

- Quality (37)
- Quantity (26)
- Private Wells (18)
- Overdraft (18)
- Budget (13)
- Drought (11)
- Personnel (8)
- Other (11)

Number One Ranked **Groundwater Concern** by State

![Map showing groundwater concerns by state.](image-url)

Likely Issues Requiring Attention in the Next 10 Years

Have interesting state-level similarities and differences, but...

- More research is needed for validation and interpretation
  - Of matters related to law recognizing the surface water – groundwater connection
  - Of evaluation of success or lack of success in achieving policy goals
- Need more robust set of survey respondents or interviewees
- State laws, rules, and practices concerning managed aquifer recharge
- Case study analysis
Water management innovations will arise out of the need to meet the water needs of a region in the context of the legal framework.

Robust stakeholder engagement is key to successful regional groundwater governance and management.

Sharing best practices for regional cooperation, recognizing that groundwater is a very local resource.
Transboundary groundwater

Transboundary Aquifer Assessment Program Aquifers of Focus

Legend
- Clays
- Res. Min. International Border
- State Boundaries
- Rivers
- Border Region Watersheds

California
Arizona
New Mexico
Albuquerque
Rio Grande
Chihuahua
Sonora
Nogales
Tijuana
San Diego
Mexico City
Tampico
Monterrey
San Antonio
Dallas
Fort Worth
Texas
San Antonio
Houston
Austin
U.S. - Mex. International Border
State Boundaries
Rivers
Legend
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- Res. Min. International Border
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Public Policy Review

The Cooperative Framework for the Transboundary Aquifer Assessment Program: A Model for Collaborative Transborder Studies

The transboundary aquifer assessment program (TAAAP) is a joint effort to assess and manage transboundary aquifers that support international cooperation to ensure sustainable management. The program aims to identify areas of cooperation and potential conflicts between countries, and to develop strategies for joint management. The framework is designed to promote coordination and collaboration among stakeholders.

The study of the transboundary aquifer assessment program is a valuable tool in evaluating the effectiveness of joint management efforts. It allows for the sharing of knowledge and data on climate, geology, and water resources, and can inform the development of scientific information and decision-making in subsequent plans.

Información completa

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2018 AWRA Summer Specialty Conference
The Science, Management, and Governance of Transboundary Groundwater July 9-11, 2018 Fort Worth, Texas
The conundrum – There is no recipe for achieving sustainable groundwater management

• Strategies will depend on the local situation, including those related to community norms and values

• Villholth et al. in the Preface to their edited book *Advances in Groundwater Governance* acknowledge this when they write in the preface: “The book does not present final conclusions or recommendations as no silver bullets exist for groundwater governance.”

But there is value in sharing lessons learned
Thank you!
And thanks to the many collaborators on the efforts discussed in this presentation

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