

Nonrenewable Groundwater Management

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What Is Nonrenewable Groundwater?

- *Limited replenishment (recharge)*
- *Limited replenishment, large storage*
- *Replenished, but over long time scales*
- *Water is being mined (extraction > recharge)*
- *'Decoupled' from hydrological cycle*

What Is Nonrenewable Groundwater?

A Proposed 'Definition'

"Nonrenewable groundwater is like **pornography**. I can't define it, but I know it when I see it."

M. Campana

(apologies to former US Supreme Court Justice Potter Stewart)

(Non) Management of Nonrenewable

Groundwater – New Mexico USA

- In some USA states, NR GW often falls outside the realm of 'renewable' groundwater and eludes regulation.***
- Case in point: state of New Mexico, where non-potable groundwater deeper than 800 m that is isolated from drinking water aquifers cannot be regulated by state water officials.***
- Developers want this water, which will have to be desalted. One estimate: 18,500 km³!***
- Rush to pump this water (>370 MCM/year) before New Mexico decides to regulate it.***

Chaos?

Management of Nonrenewable Groundwater: New Paradigm? Unitization

“...government-mandated unitization of groundwater ... is a solution to excessive access and drawdown ... a single “unit operator” extracts from and develops the reservoir. All other parties share in the net returns as share holders.” – Gary Libecap (2005)

***[http://www.u.arizona.edu/~libecapg/downloads/
TheProblemOfWater.pdf](http://www.u.arizona.edu/~libecapg/downloads/TheProblemOfWater.pdf)***

Management of Nonrenewable Groundwater Unitization - More

The ***unitization*** concept, borrowed from the reservoir (petroleum) engineering field, is currently being developed by Todd Jarvis and Gary Libecap for groundwater resources.

Stay tuned!

***NGWA-OSU-UNESCO-World Bank
First International Conference on
Nonrenewable Ground Water
Portland, Oregon, USA
13-14 October 2008***

Summary available at:

***[http://aquadoc.typepad.com/waterwired/files/
nonrenewable_gw_conference_report_oct2008.
pdf](http://aquadoc.typepad.com/waterwired/files/nonrenewable_gw_conference_report_oct2008.pdf)***

Very successful!

Plans for 2nd Conference in 2010 or 2011

More Information

- Visit ***WaterWired*** blog and search on 'nonrenewable groundwater' or 'desalination' (NM case): **aquadoc.typepad.com/waterwired**
- **This presentation will be posted on *WaterWired* blog**
- UNESCO Publication, Series on Groundwater No. 10 (2006), edited by S. Foster and D. Loucks (see NR GW conference report for citation and URL)
- **World Bank Briefing Note No. 11 (2003), by S. Foster et al. (see NR GW conference report for citation and URL)**