Brackish Ground Water - an untapped resource for energy development?

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Brackish Ground Water—an untapped resource for energy development?

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Albuquerque
Why brackish water for energy?

- Development near energy source, rather than market—remote?
- Finite life?
- Water quality not so important?
  - High-value use
  - Some uses don’t require quality
- Some energy developments PRODUCE brackish water.
Lots of brackish water in NM

- As an example—319 million acre-feet in San Juan and Tularosa Basin!
- NM consumptive use ~ 2 million/year, so—
- Is this information meaningful? No.
- Cost
Brackish water resources are important, but--

- Not newly discovered, nor undescribed.
- If undeveloped, it’s because of cost.
- Not disconnected from fresh-water realm, nor beyond OSE administration.
- The familiar constraints apply!
Connection with Existing Fresh-Water Supplies

• Streams
  – Some is directly tributary: Malaga Bend, Capitan Reef
  – More subtle connections: Rio Grande, San Juan

• Potable ground water
  – Drawdown in overlying aquifer
  – §72-12-25: where is the “top?”
  – Ticking bomb of unrealized depletions
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water table

geophysical log of nearby Atrisco No. 5

aquifer supplying shallow wells

low-permeability silt and clay

high permeability sand and gravel

main aquifer

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Streamflow depletion due to pumping from a hypothetical 100,000 ac-ft/yr well field south of Albuquerque

Blue curve only based on Papadopoulos & Assoc (2000).
Dependency

- High Plains aquifer, Gallup
- Plan B (or C, etc.)?
- Appropriate for energy development—mining water to support mining.
- Salt concentration
Salvage

• Interception of water destined for ET
• Drawdown effects
• Environmental issues
  – Habitat
  – Dust
Estancia Basin

Manzano Mtns.

Recharge

Transpiration from salt cedar and evaporation from playa lakes

Ground-water flow

Well

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Whose water is it, anyway?

- OSE role
- Threat of compact violation
- Scrutiny of §72-12-25
- Produced water—OSE and OCD
- Administered as if it were fresh water, where there isn’t any.
Uncertainty

- Effects can always be calculated, but--
- Wide divergence of opinion: Zuni Salt Lake
- Data even more sparse for brackish resources.
- “Worst-case,” or litigation?