New Mexico Desalination Association

Desalination Opportunities in New Mexico

IWEST Energy Water Symposium – April 6, 2023
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- The NM Desalination Association was established in 2017 to promote and assist stakeholder knowledge of:
  - Desalination approaches, technologies, costs, and opportunities
  - New Mexico's brackish and non-traditional water resources

- Facilitate implementation of desalination technologies to create new water supplies for New Mexico to:
  - Support sustainable fresh water supplies and support economic growth,
  - Protect the environment and improve ecology, and
  - Maintain social and cultural traditions.

More information at: www.nmdesal.com

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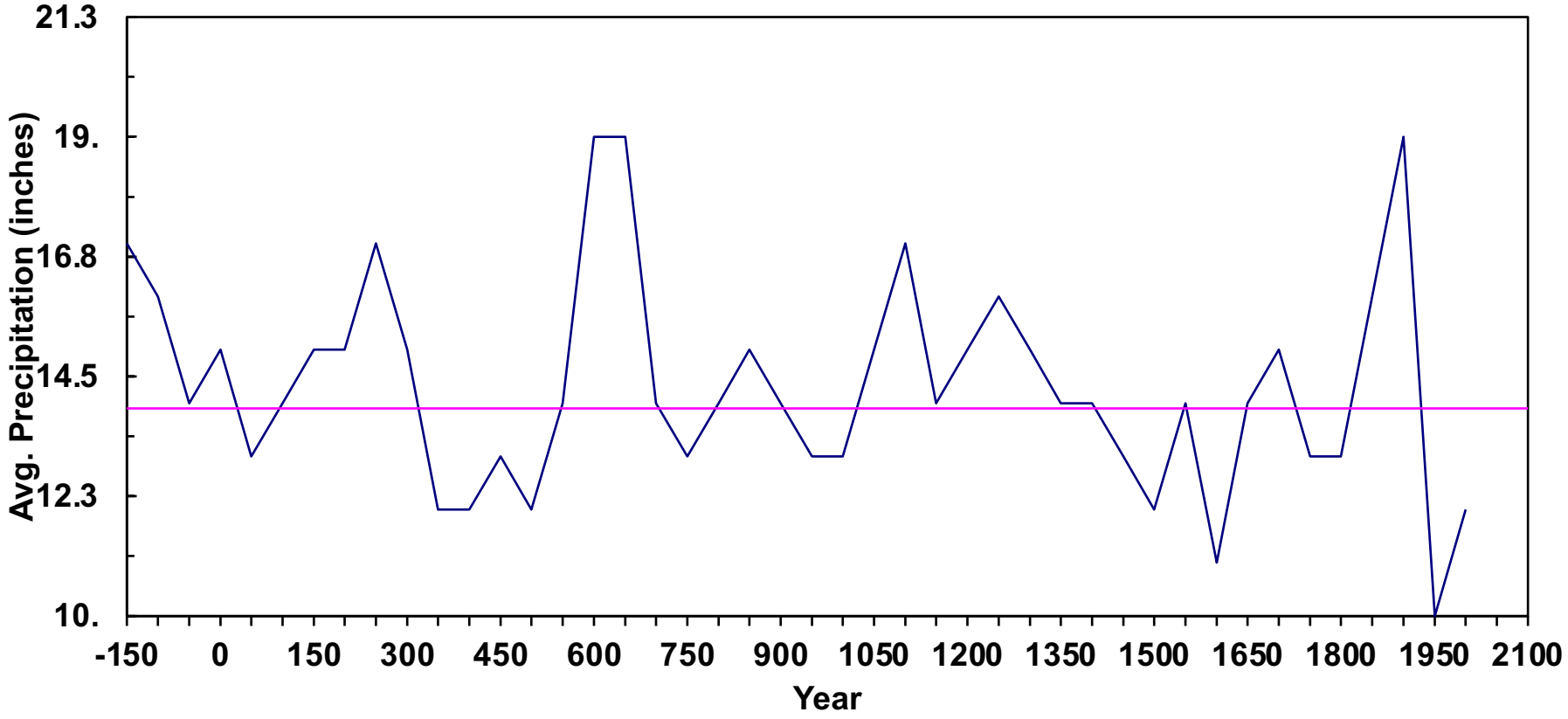
What's the problem – Mid-latitude Climate Cycles



U of A Tree Ring Data

Climate analysis in NM 50-year water plan, shows

NM cannot continue to operate under the current water planning model.

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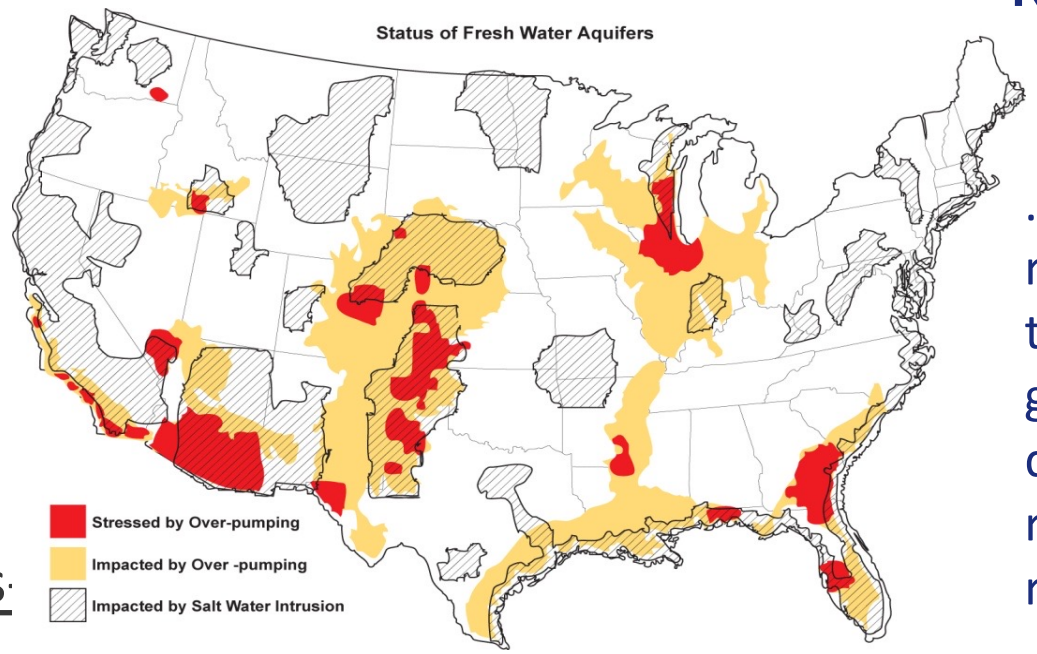
What is needed in the West ?

- Municipalities, industries, energy, and agricultural need new water supply solutions.
- Use non-traditional water with fit-for-purpose treatment.
- Need better characterization of non-traditional water resources drawdown, yields, volumes, quality, infrastructure needs, etc.



NM Water Policy and Infrastructure Task Force 12/22

…need to augment supply regionally, through such tools as brackish groundwater desalination, wastewater reuse, and treated or recycled produced water.

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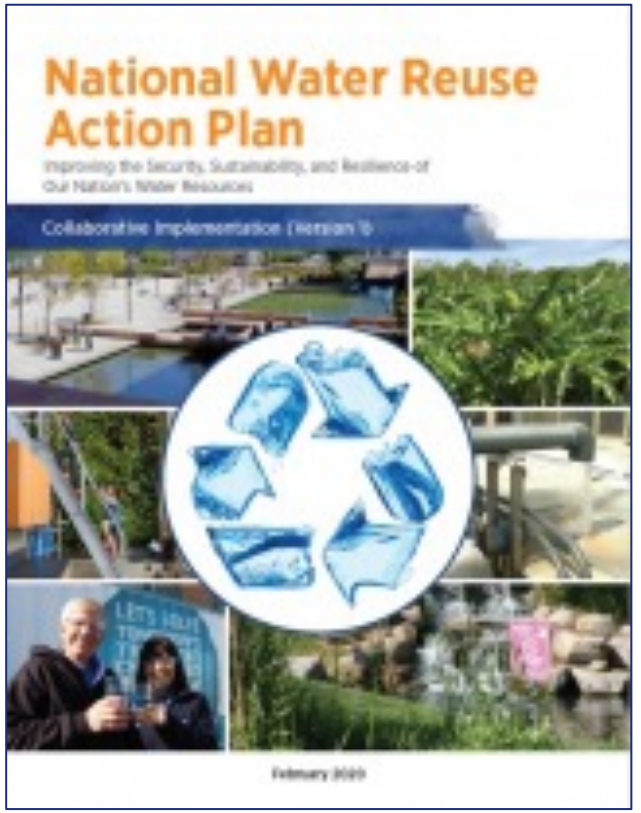
Global Water Solution - “One Water”

- “One Water” is a concept that all water has “**Value**” including waste water if treated for appropriate use
- Two of the United Nations’ Sustainable Development Goals identify **water reuse as key to a more sustainable future.**
- Focus is on the social, health, environmental, and economic “**Value**” of water.

2021 World Water Development Report

Includes oil and gas and power plant waste water treatment and reuse, ie the energy/water nexus



US EPA 2020

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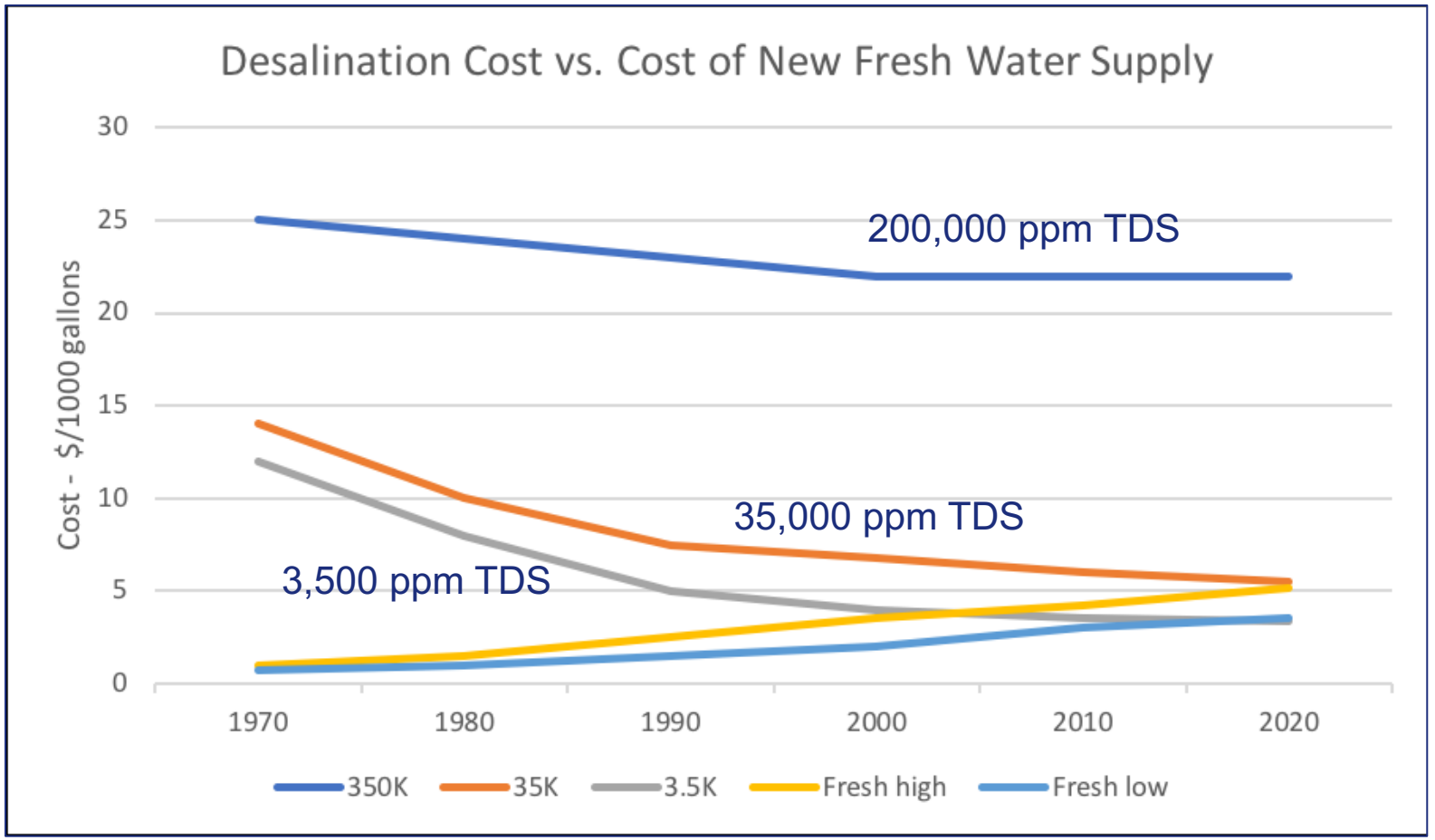
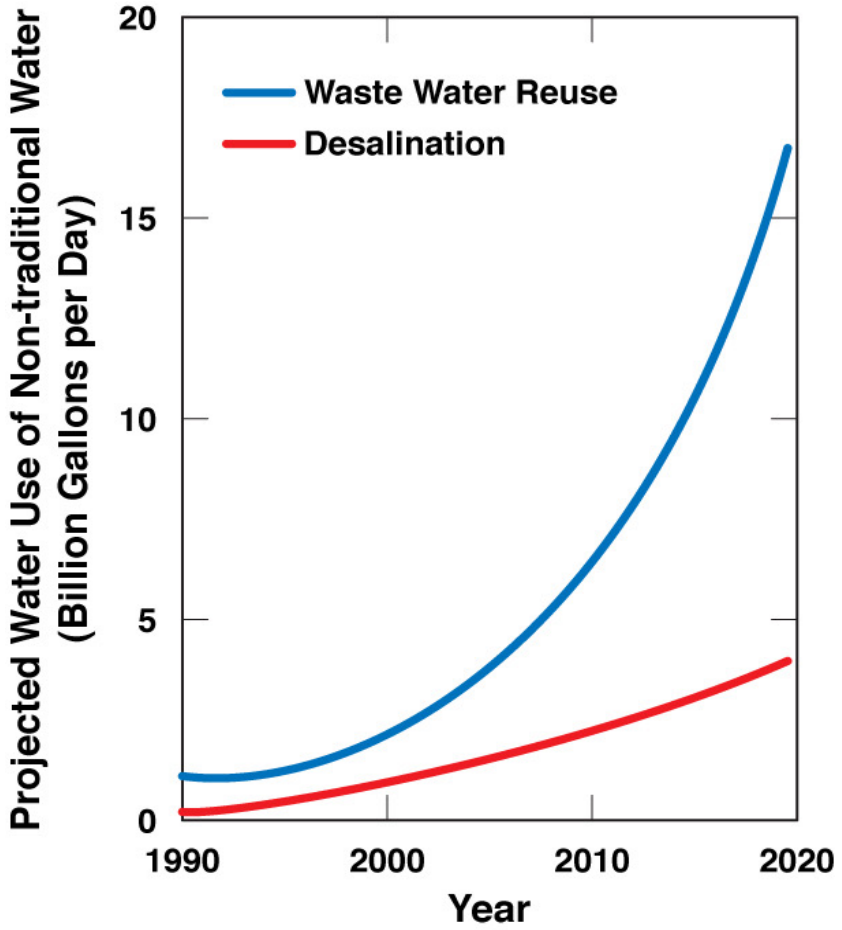
Changing Treatment vs. Fresh Water Costs



(EWRI Hightower 2018)



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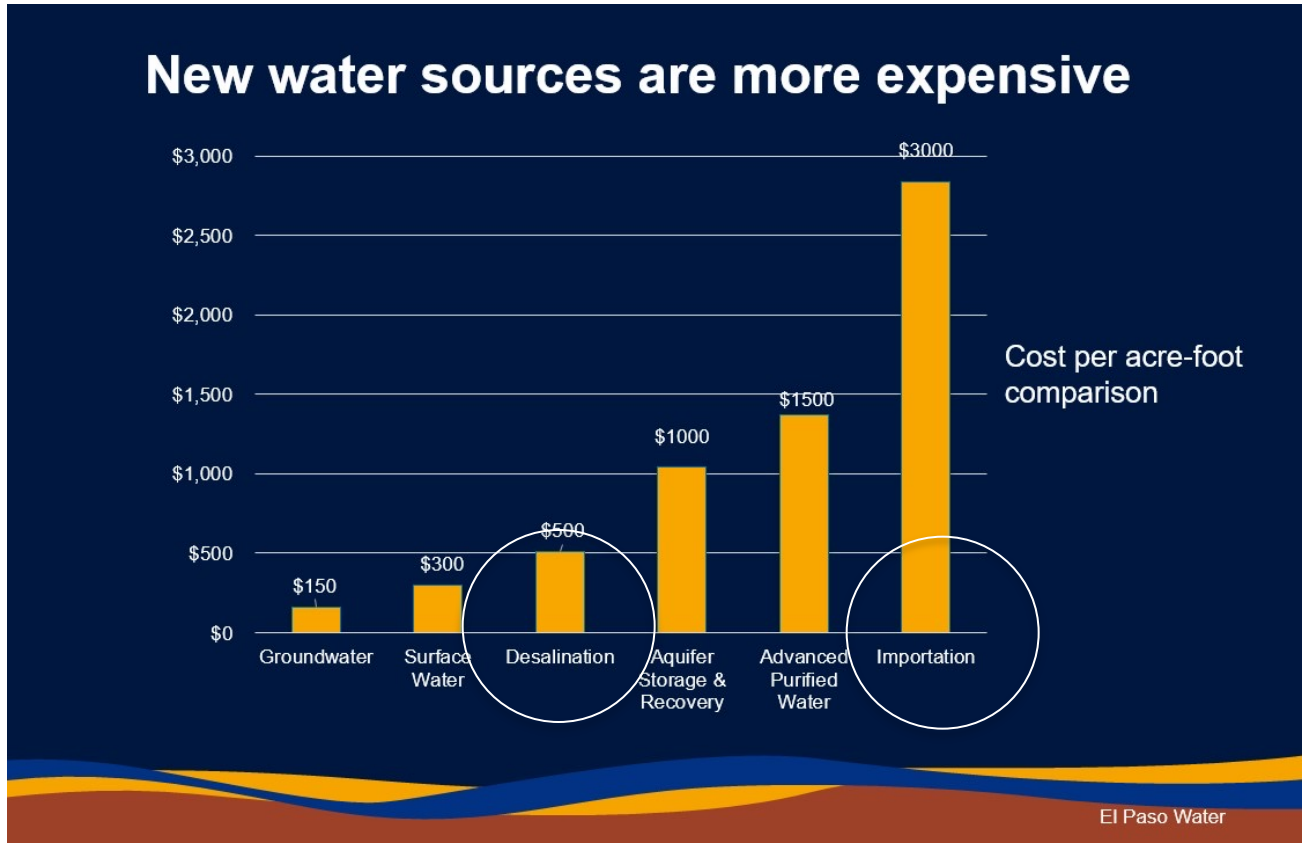
Local Brackish Water Treatment Costs vs. Fresh Water Importation – El Paso

El Paso Water is setting its sights about 80 miles east to Dell City. The Bone Spring-Victorio Peak aquifer underneath New Mexico is fed by monsoon flows from the Sacramento Mountains. It's one of the few West Texas aquifers that's consistently replenished by rainfall.



An example of the Energy Water Nexus

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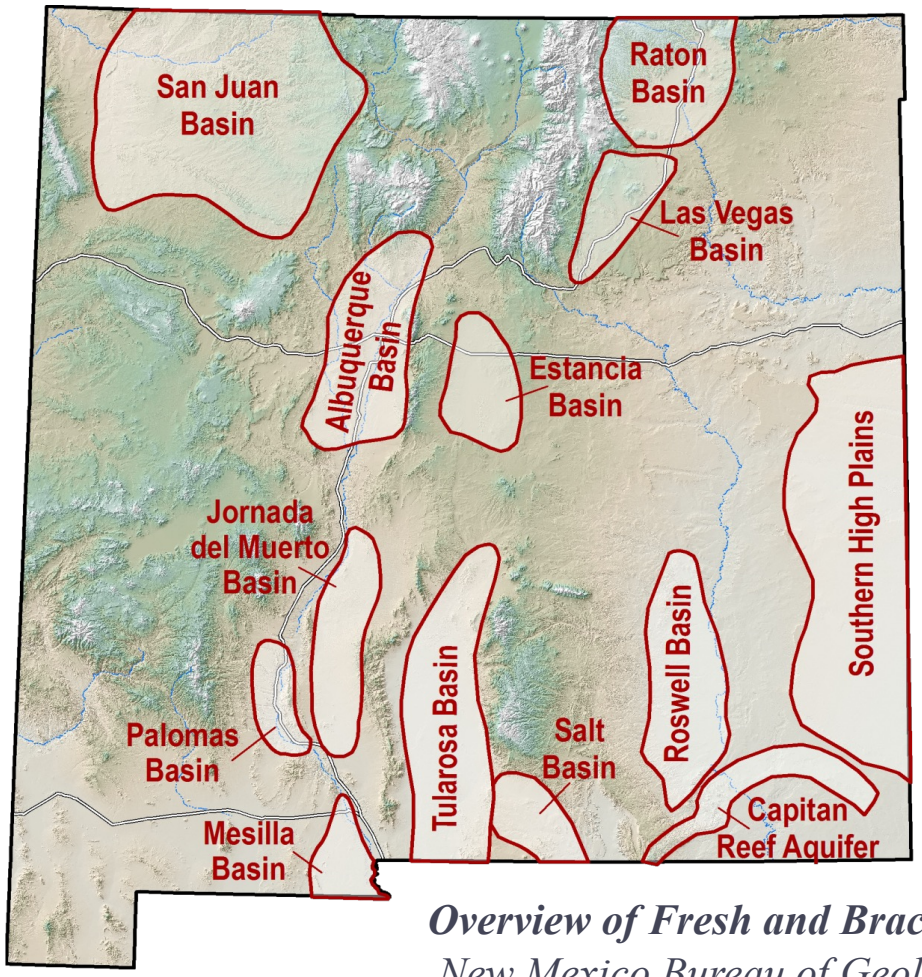
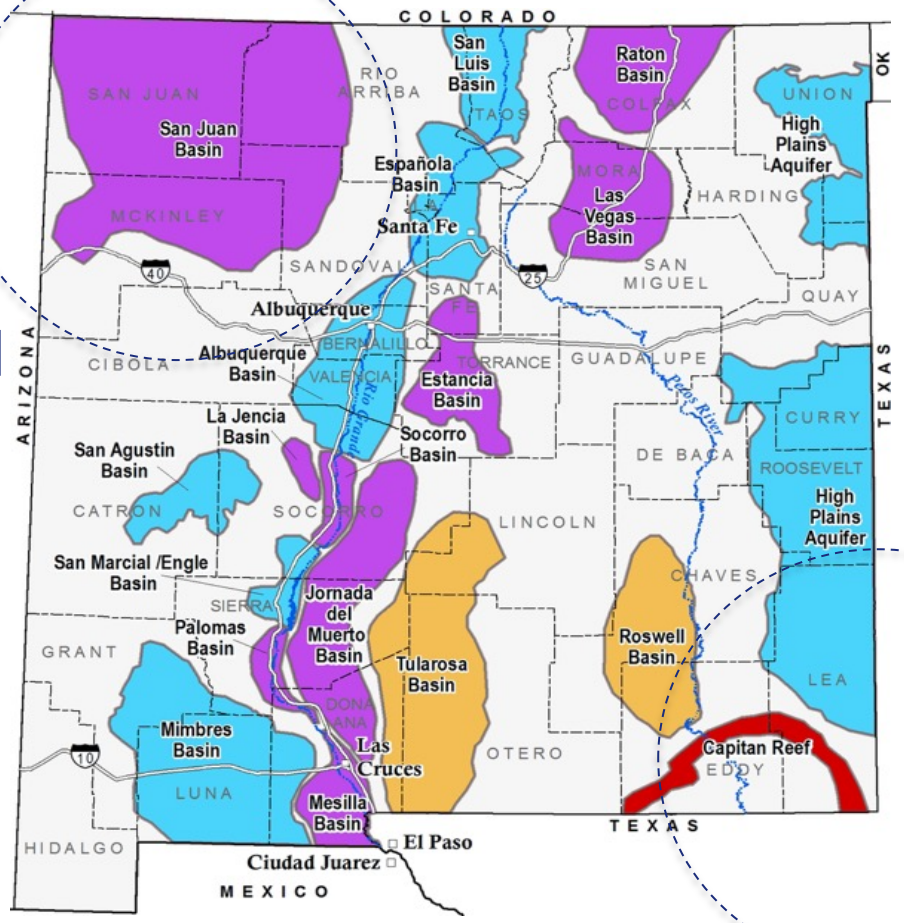
Major NM Brackish Water Locations – 2 billion ac ft



Produced Water



Produced Water

Overview of Fresh and Brackish Water Quality in New Mexico.
New Mexico Bureau of Geology and Mineral Resources, OFR-583, New Mexico Tech, Socorro, NM, June 2016.

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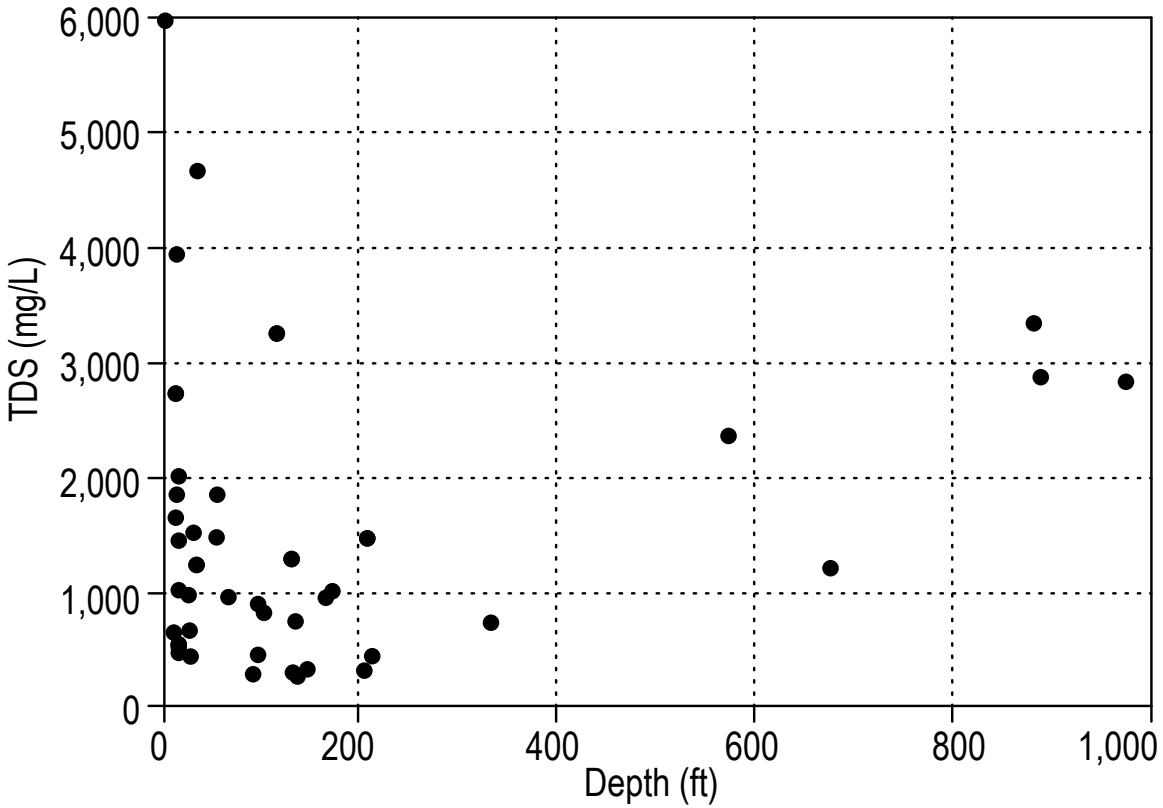
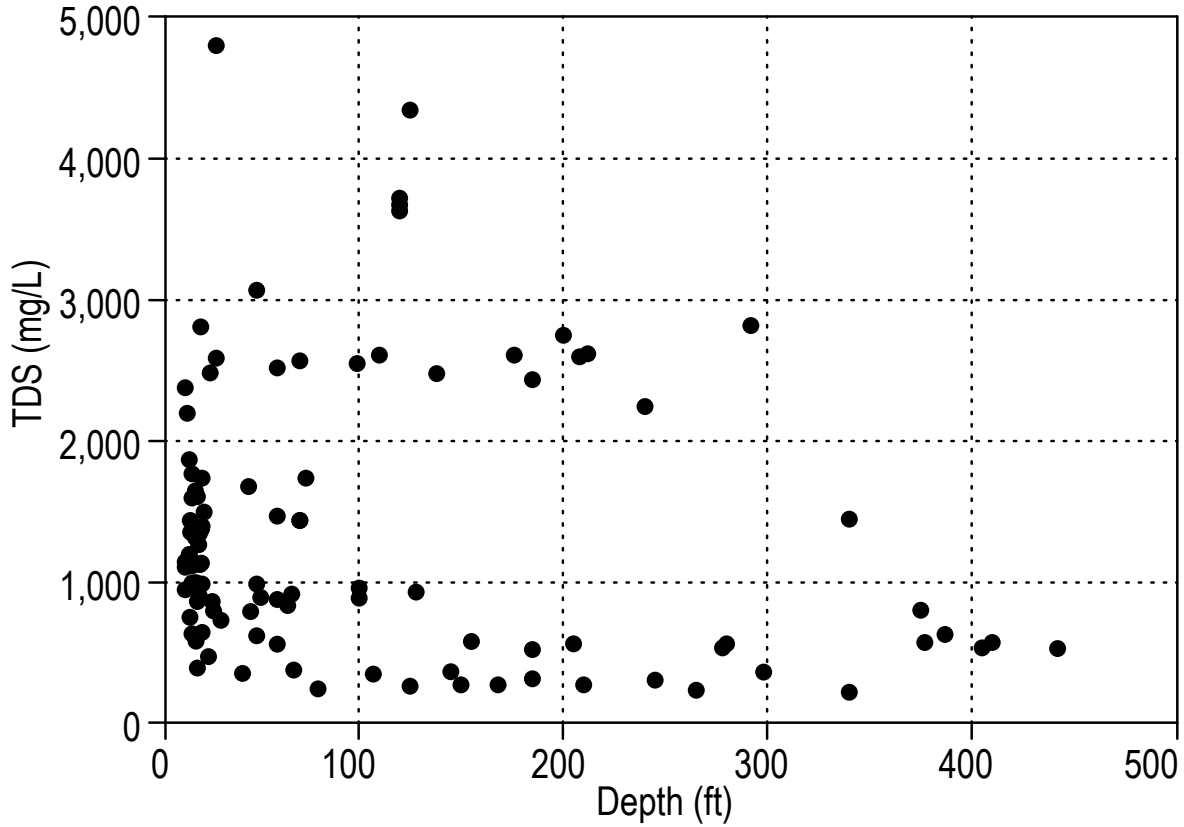
Brackish Water Development Opportunities



Raton and Las Vegas Basins



Palomas (T or C) Basin

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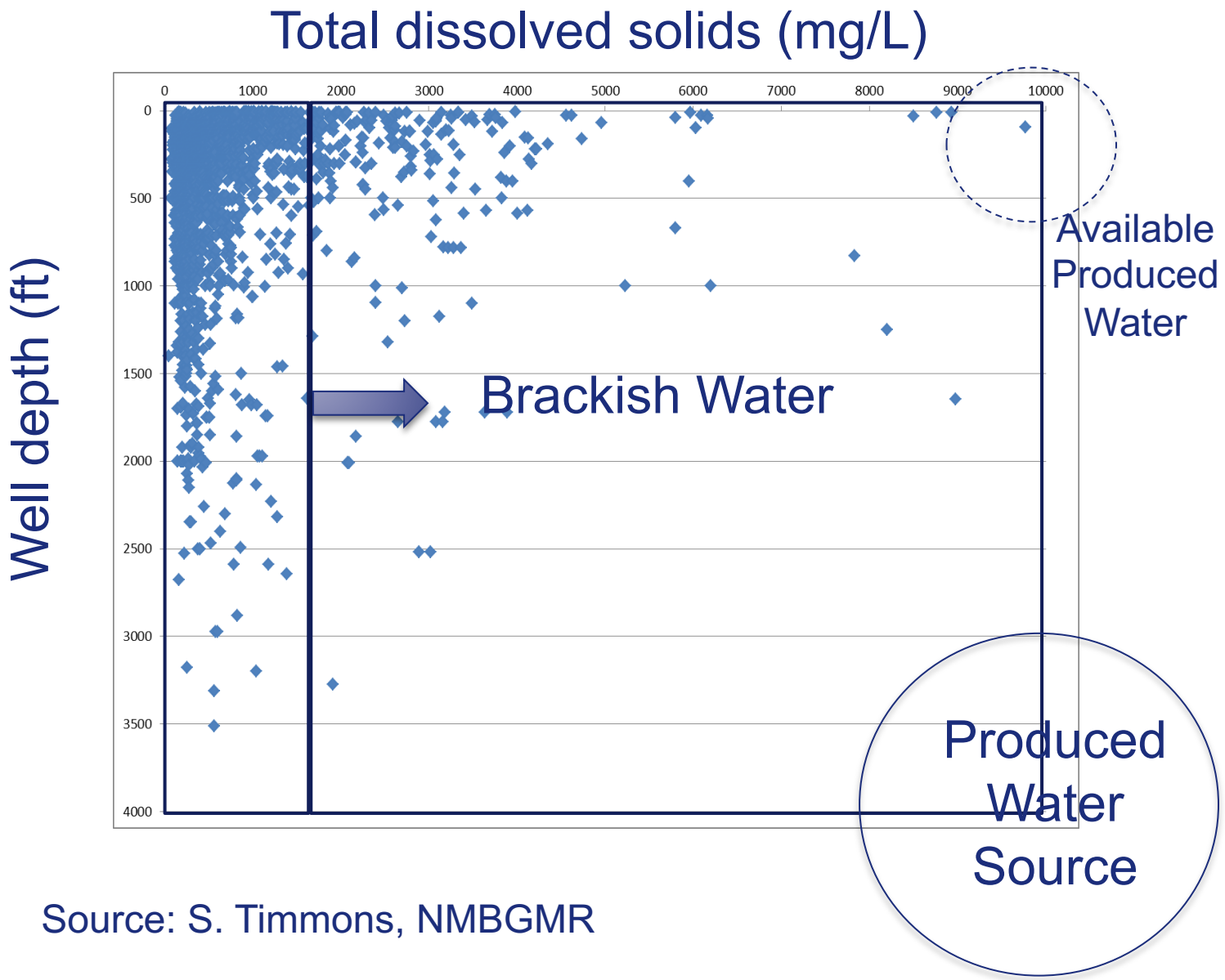
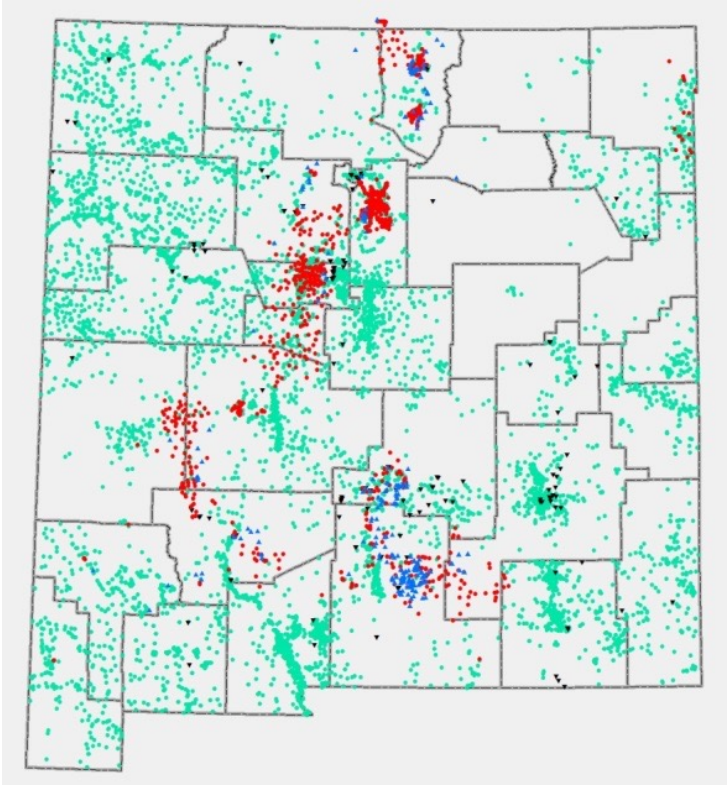
Much less is known about saline vs freshwater aquifers





Most data are from fresh water or produced water

Source: S. Timmons, NMBGMR

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Desalination – Some Issues - Huge Opportunities

- More data on brackish/saline water availability
  - Good locations - area, depths, quality etc. requires geophysics, modeling, and drilling
  - Quality and yield - requires well drilling, pump tests
- Evaluation of production, transportation, treatment, concentrate disposal, and infrastructure costs
- Opportunities to treat and use in energy transition efforts –
  - Use treated saline water for blue or green hydrogen,
  - Use treated saline water for biofuels,
  - New water from carbon sequestration in saline aquifers,
  - Treated saline water for combined cycle gas (natural gas/hydrogen) cooling

Energy Water Nexus Examples

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