New Mexico Desalination Association

Supporting New Mexico's Strategic Water Supply Through Innovative Desalination Applications

AWWA Rocky Mountain Section 10th NM Water Conference
April 10-11, 2025

John D'Antonio, Jerri Pohl, Mike Hightower
New Mexico Desalination Association

- 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
- Educate stakeholders on using desalination to create "New Water for New Mexico", in order to:
  - Support sustainable economic growth,
  - Protect the environment, and
  - Maintain social and cultural traditions.

More information at:
https://nmdesal.com
The New Mexico Desalination Association (NM Desal) is a 501-C3 non-profit corporation

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What's the problem?

The climate analysis in the 50-year water plan (see Phillips et al 2022) shows that we cannot continue to operate under a business-as-usual scenario for water.

What's the need?

We need to provide municipalities, industries, and agricultural entities with resilient water solutions.

What's the solution?

Use of multiple and distributed sources of water, including non-traditional waters, treated and delivered at the "right" quality at the "right" time.

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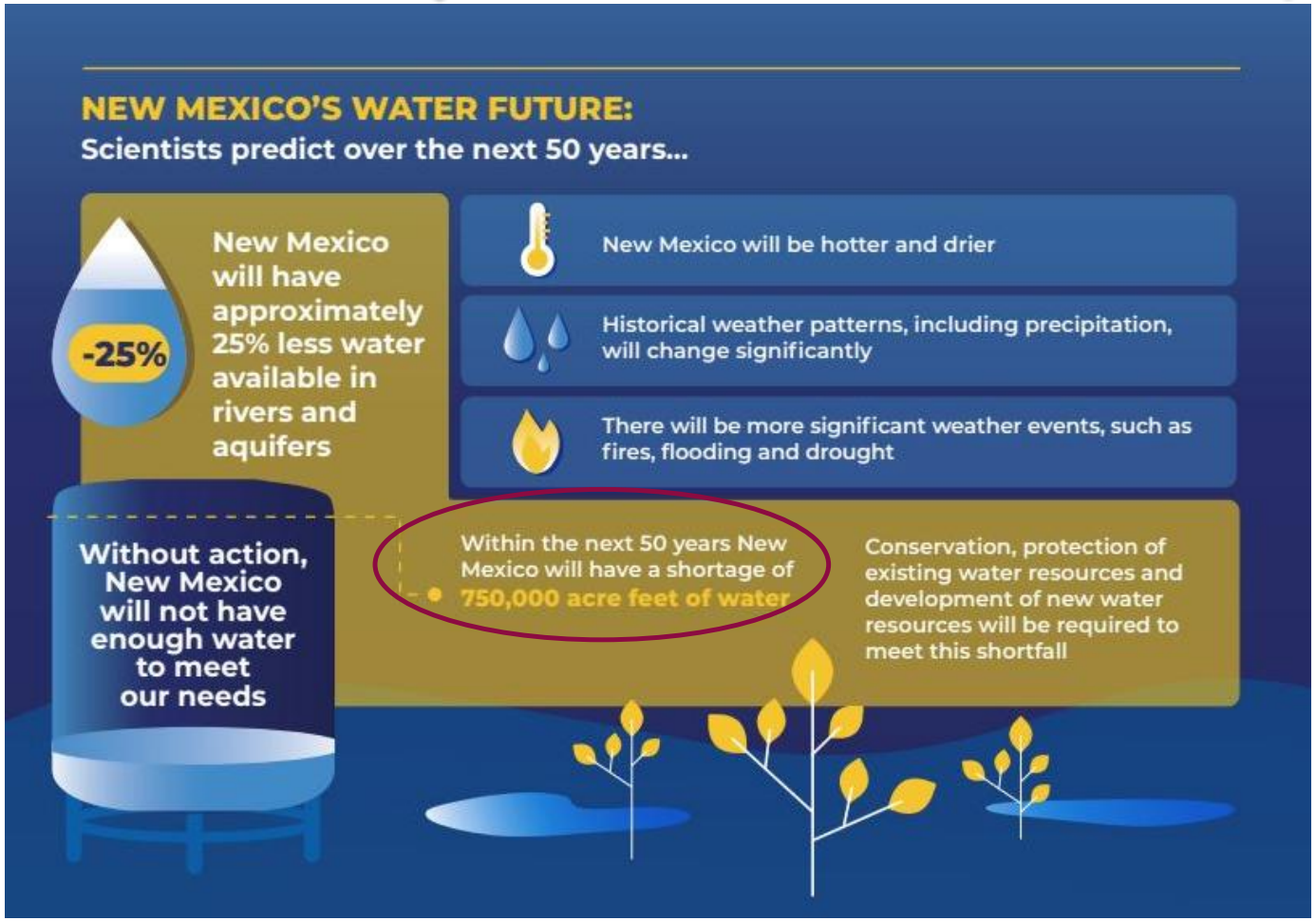
The problem

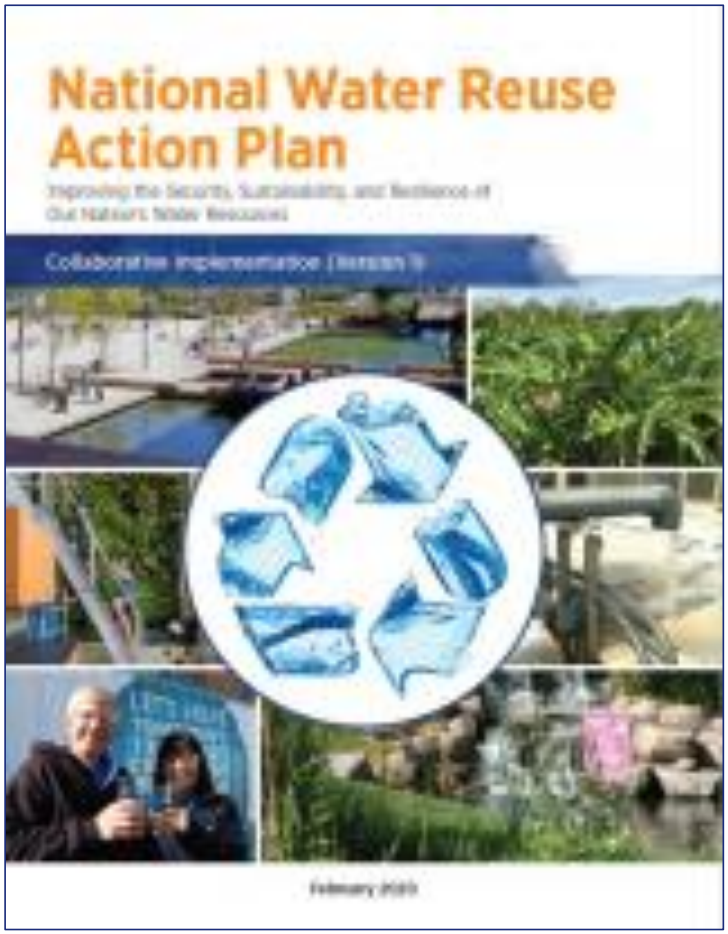


The solution

OSE Water Policy and Infrastructure Task Force - December 2022

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

SWS Complements EPA 2020 National Water Reuse Action Plan



- WRAP focuses on the fit-for-purpose treatment and reuse of waste water for national water supply augmentation
- Five major programmatic areas:
  - Thermo-electric cooling water
  - Agricultural waste water
  - Municipal waste water
  - Produced water
  - Storm water
- Common issue, all require desalination for safe reuse

Strategic Water Supply Program Created in 2025

- HB 137 NM State Legislature
  - NMED and NMOSE may enter into contracts or award grants
  - Eligible projects involve treated brackish water for the purpose of enhancing the state's freshwater resources
  - Requires public notice and public hearing process
  - Clearly demonstrate how the project will advance state, tribal or local government economic development goals
  - Requires a specific, actionable and measurable community benefits plan
  - Grant recipient shall be a public entity or federally recognized Indian Nation, Tribe, or Pueblo

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Strategic Water Supply Program Created in 2025

- HAFC Sub. For HB2 & HB3 NM State Legislature
  - $40M NMED – For the development, implementation or support of the SWS Program, contingent on the enactment of HB 137. (expended thru FY 2028)
  - $19M NM Institute of Mining and Technology – To the Bureau of Geology for aquifer monitoring and improved groundwater characterization for expenditure in FY 2026.
  - $4M NM State University – For innovation, research, monitoring, support and development of technology associated with potential projects for the SWS Program grant or contract, for expenditure through FY 2028.

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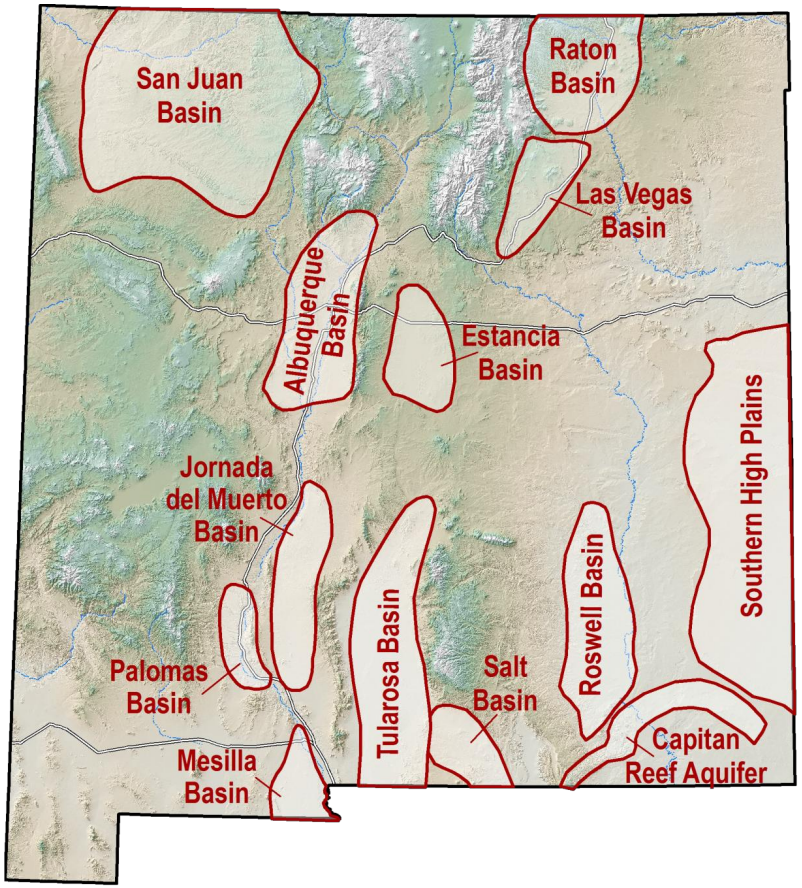
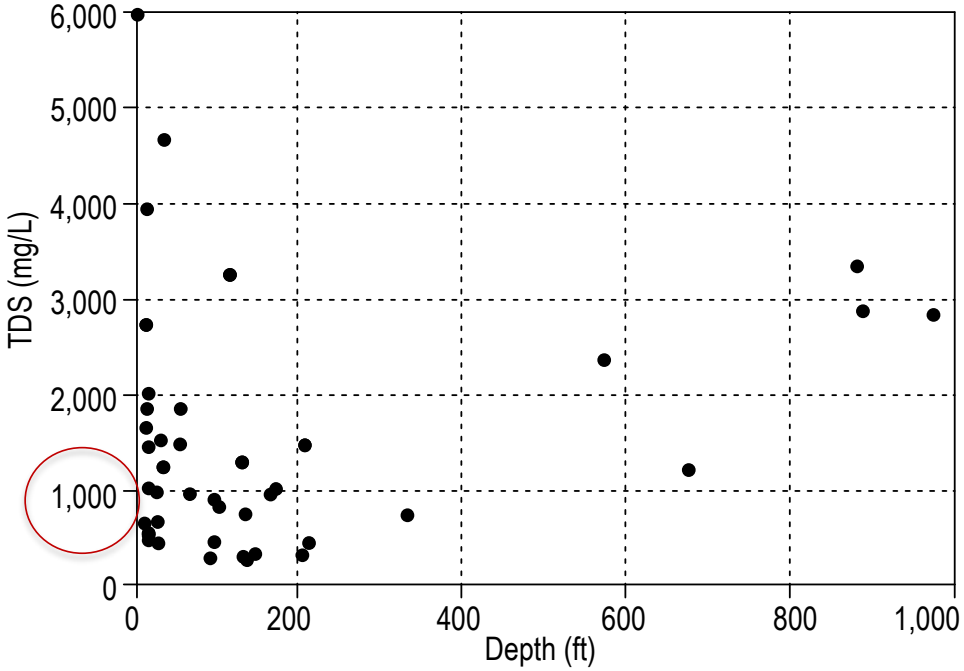
General Data on Brackish Water in NM

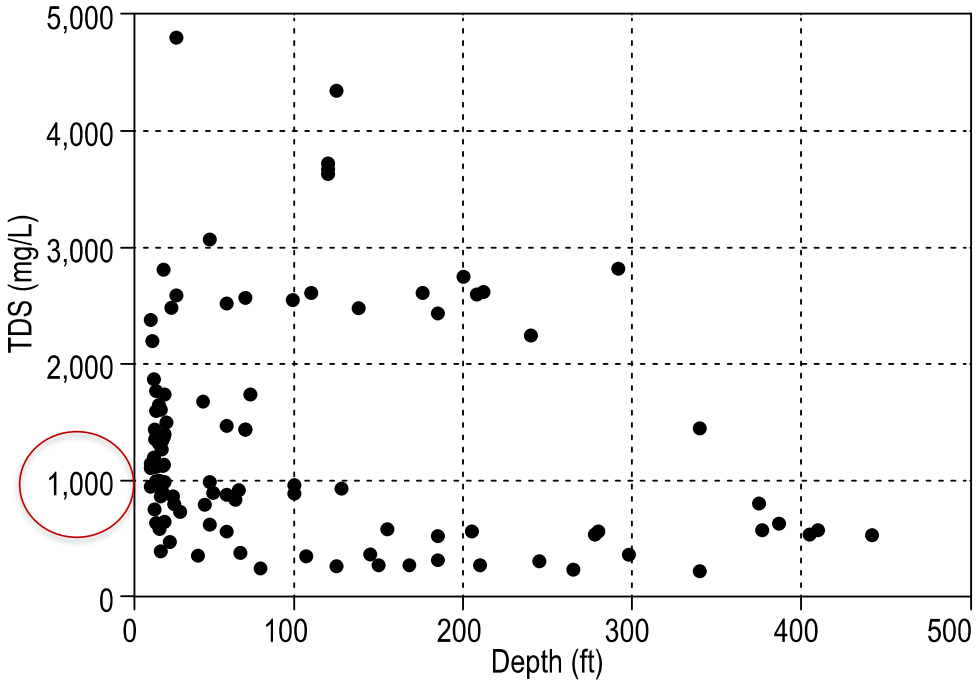
- Albuquerque Basin
- Tularosa Basin
- Mesilla Basin
- Estancia Basin
- Roswell Basin
- San Juan Basin
- Southern High Plains
- Jornada del Muerto
- Palomas Basin
- Salt Basin
- Capitan Reef Aquifer
- Raton Basin
- Las Vegas Basin



NM Ground Water Basins Commonly Contain Zones of Brackish Water that Could be Easily Recoverable

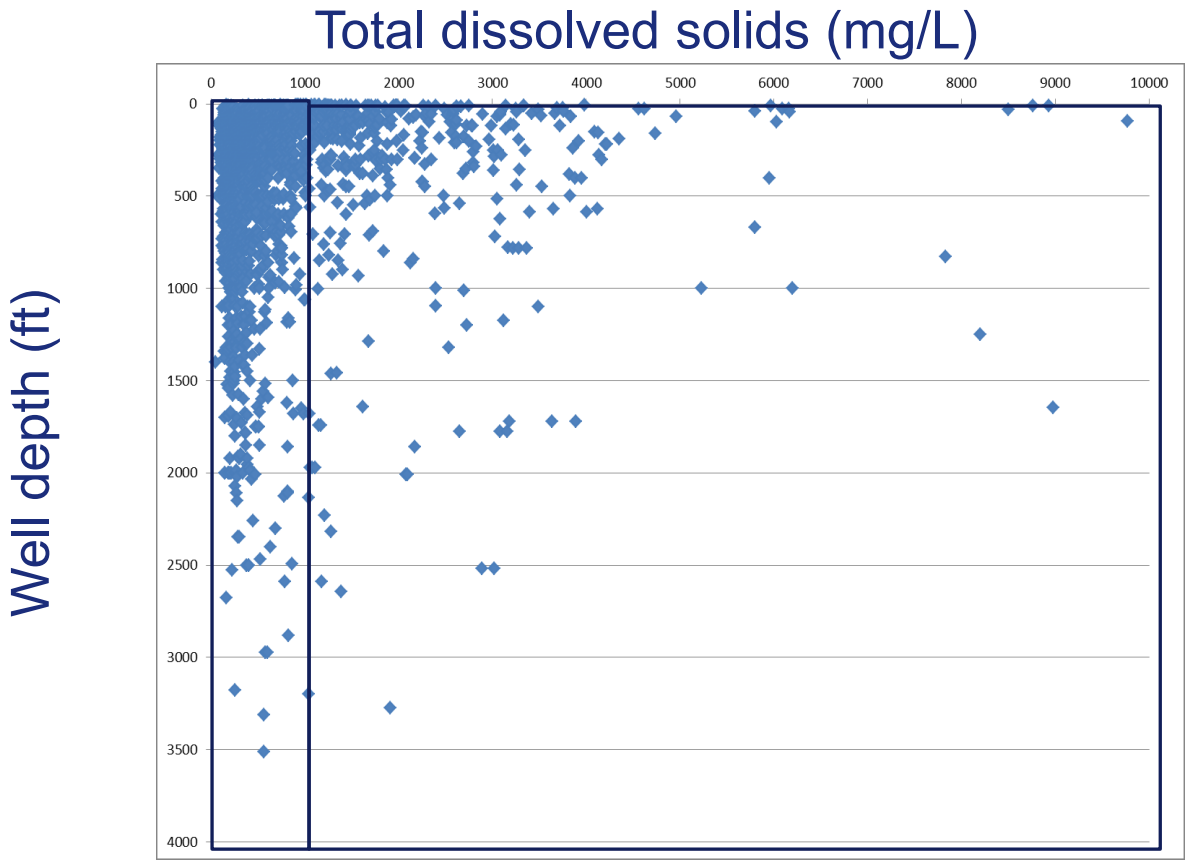


Raton and Las Vegas Basins



Palomas (T or C) Basin

But, Less Data on Brackish vs Fresh Water Quantity/Yields



Source: NMBG

SWS Brackish Water Data Efforts

- Data Compilation:
  - Priority Locations (latitude/longitude)
  - Well depth ± sample zones
  - TDS or Conductivity ± ion chemistry
  - Geology (interpreted from geophysics of borehole data)
  - Hydraulic data

- Goals to understand:
  - Depth(s)
  - Extent of brackish aquifers
  - Hydraulic properties
  - Water chemistry
  - Connection (or not) with fresh-water zones
  - Potential yields (gpm)

SWS Brackish Water Sustainability Analysis Goals

- Best sources – locations and information on shallow or deep wells?
- Proximity of source to potential user/users
- Will the water source be sustainable for the projected need?
- How will it fit within a total water supply strategy for a community or region?
- What does extraction and use mean for the environment and community?

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SWS Engineering and Treatment Evaluations

- Chemistry of inland brackish water can be more complex than seawater - means adapting treatment processes to local water quality
- Consideration of treatment system - design, acquisition, installation, operation, and concentrate disposal cost and performance
- Environmental and human health and safety evaluation of fit-for-purpose treatment applications
- Aquifer hydrologic impact and longevity evaluation

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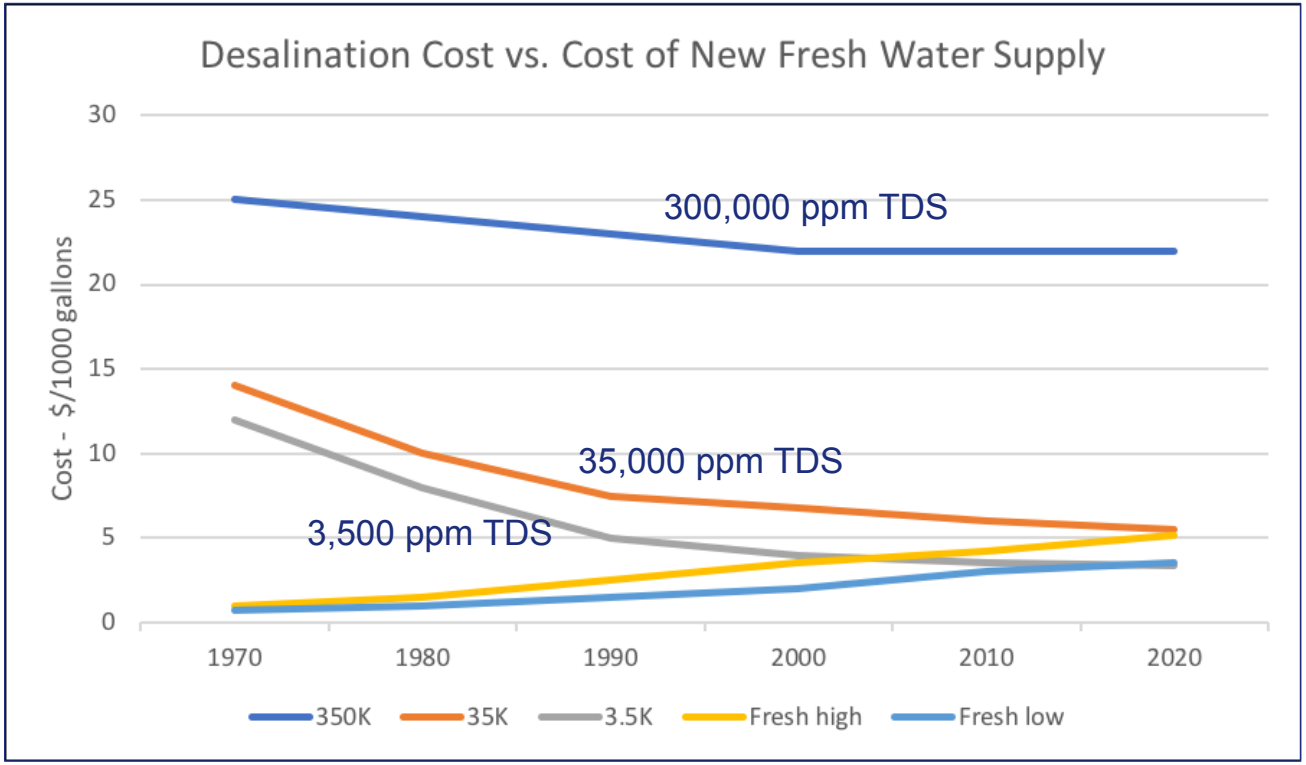
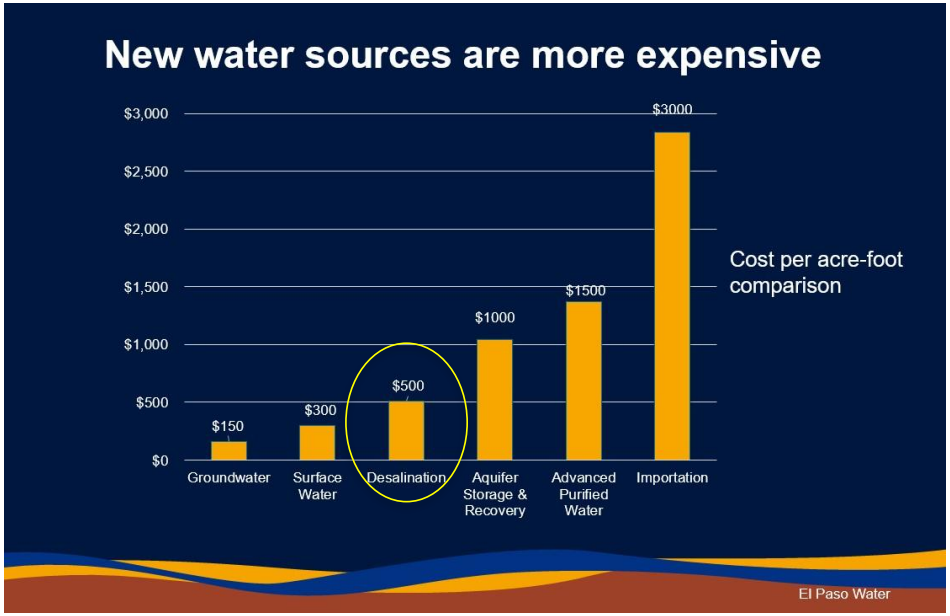
Brackish Desalination Costs Approaching Fresh Water Costs



(EWRI Hightower 2018)

Example Of Brackish Water Treatment Costs vs. Fresh Water Importation Costs – 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.



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Engineering Cost and Performance Evaluation

- Evaluate costs for acquisition, transport, and treatment
- Cost of concentrate disposal or reuse?
- Costs will need to meet or exceed that of traditional fresh water sources acquisition and transport
- Will the water source be sustainable for the projected need?
- How will it fit within a total water supply strategy for a community or region?
- Environmental costs?

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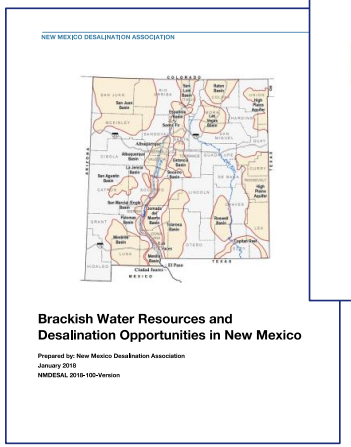
Major NM Desal Public Outreach Efforts

- Nov 2018 Workshop on produced water reuse for NM EMNRD
- October 2019 Regional Workshop with AMTA on High Recovery Desal and Concentrate Reuse
- 2020 – Supported establishment of the NM Produced Water Research Consortium
- 2020 paper
  - Industrial Aquifer designation of brackish groundwater
- 2022 - Drought response planning for rural communities using desal systems
- Annual “New Water for New Mexico” Conferences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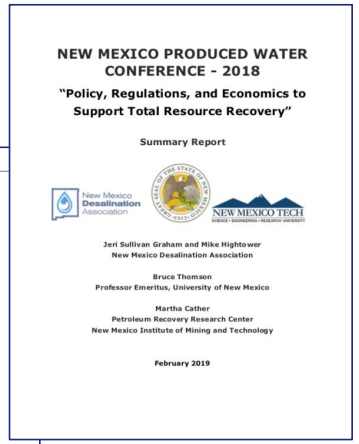
Brackish Water Resources and Desalination Opportunities in New Mexico

Prepared by: New Mexico Desalination Association
January 2018
NMDESAL 2018-100-Version


NEW MEXICO PRODUCED WATER CONFERENCE - 2018

“Policy, Regulations, and Economics to Support Total Resource Recovery”

Summary Report

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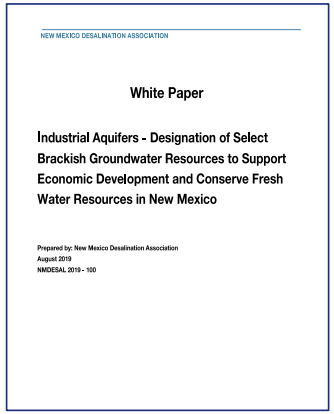
NEW MEXICO TECH

Jeri Sullivan Graham and Mike Hightower
New Mexico Desalination Association

Bruce Thomson
Professor Emeritus, University of New Mexico

Martha Cather
Petroleum Recovery Research Center
New Mexico Institute of Mining and Technology

February 2019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White Paper

Industrial Aquifers - Designation of Select Brackish Groundwater Resources to Support Economic Development and Conserve Fresh Water Resources in New Mexico

Prepared by: New Mexico Desalination Association
August 2019
NMDESAL 2019 - 100

www.nmdesal.com

Future SWS Support

- Support NMED and NMOSE in conducting outreach/workshops for SWS RFPs.
- Coordinate with community leaders to support local partnerships and vendors on potential projects.
- Coordination of efforts with NMBG and NMSU on geology and engineering connections and support for communities.
- Provide independent 3rd party evaluation of project performance and coordination of technical support if needed.

Contact info

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