

New Mexico Desalination Association



## Fresh Water Stress Global, National, and Regional Challenges

Mike Hightower New Water for New Mexico Conference October 20, 2022

## What is the problem? Fresh water is getting scarce!

- Climate analysis in the 50-year water plan (see Phillips et al 2022), as well as personal observations shows that New Mexico cannot continue to operate under a business-as-usual scenario for future water resource availability.
- Municipalities, industries, and agricultural entities will require new and more resilient water supply solutions.
- What does that mean? The use of multiple and distributed sources of water, including non-traditional waters, treated and delivered at the "right" quality at the "right" time.

## "Water is where the climate rubber meets the road"



## This water stress is driving a "One Water" model

- "One Water" all water has "Value"
- "Value" is not synonymous with cost!
- 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, measured by ESG metrics



### **2021 World Water Development Report**

## Water will impact economic concerns by 2030

Today one in five people live in areas of water stress.

This is expected to rise to two in three.

Demand for water is set to outstrip supply by 40%.

Business as usual water management will put at risk \$63trillion or 1.5 times today's entire global economy.

Water will have more rapid and unavoidable consequences for some businesses than carbon

**Goldman Sachs** 

" Investors know how damaging inaction, inappropriate action or delaying interventions on waterrelated issues can be... The global economy will favor business that take a pro-active approach to water stewardship."

- Eurizon Capital

#### "NEW WATER FOR NEW MEXICO"

CDP

## **U.S. fresh water stress under average conditions**





Sources: GAD energeis of state weter memagent (responses to GAD survey; Map Resources (map).

GAO 2014

#### GAO 2003

## But water is a major GDP economic indicator





- Water for agriculture
- Water for manufacturing
- Water for energy
- Water for domestic needs
- Water for recreation

"Water promises to be to the 21st century what oil was to the 20th century: the precious commodity that determines the wealth of nations."

Fortune Magazine, May 15, 2000

## **EPA National Water Reuse Action Plan**



- Focus on fit-for-purpose treatment and reuse of waste water
- In five major areas:
  - Thermo-electric cooling water
  - Agricultural waste water
  - Municipal waste water
  - Produced water
  - Storm water
- NM leading collaboration (NM, AZ, TX, WY, OK, CO, PA, KS) on produced water treatment research and implementation

Requires

for reuse

some level of

desalination

## Most uses do not require fresh water

Application	Common Water Quality Requirements (ppm) TDS
Water Supply Augmentation	200-1,000
Agriculture	Class 1 <700, <60% Na, B<0.5 Class 2 2000, 60-75% Na, B<2.0 Class 3 >2000, 75% Na, B~2
Rangeland	2,000 - 6,000
Energy Development	500 – 2,000
Environmental Surface Flows	600-2,000
Mineral Recovery	>100,000 (brine)
Road Construction	Up to 30,000
Industrial Applications	500 – 2,000

## Climate change has reduced fresh surface water availability by 50% in the western U.S.



## Fresh ground water scarcity is also driving desal



#### • Most major groundwater aquifers are over-stressed

- NM climate analysis indicates <u>high future stress</u>
- Near-border impacts (TX, AZ, Mex) may be significant

- Desalination 10% growth rate per year
- Wastewater reuse 15% per year
- 50 locations in TX, 10 in AZ, 50 in CA, 5 in NM are using desalination



# Desalination opportunities in New Mexico – knowledge and lots of brackish and saline water



Brackish Groundwater National Desalination Research Facility Alamogordo, New Mexico



El Paso Desalination Plant Research Bay "NEW WATER FOR NEW MEXICO"

