Leveraging Unconventional Water Resources

The New Water Movement

by John R "Grizz" Deal, New Mexico Desalination Association

New Mexico is in a severe water crisis. While it's not news that the Great American Southwest is arid, the fact that our state has experienced drought for the last 20 years is news to some folks.

Those that grow food, and those of us that support them, are keenly aware of the dramatic lack of water available for farmers and ranchers; folks that have been feeding us for hundreds of years. Our changing climate, urbanization, increased industrial use, and a somewhat closed hydro loop have all contributed to the current water state of affairs in New Mexico.

According to Mike Hightower, research professor at New Mexico State University, "… 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."

Seasonal precipitation variations have always been tough to navigate in the state, but the variations are becoming less varied, with drought being a nearly year-round phenomenon. This puts additional stress on the people that grow our food, and on the food supply itself.

New Water

Here's the Good News: water scarcity has led to revolutionary thinking regarding not just where to secure additional resources, but how to treat these unconventional sources for specific applications. This is known as "fit for purpose" water.

In a water rich region, it became very easy to just dispose of imperfect water as every application was thought to need water fit for human consumption. While this has never been the case, in "water fat" regions viable waters have been ignored, usually because of not only the "Perfect Water" thinking, but also due to low standards for wastewater discharge ("just throw away unfit water"), and because treating these unconventional waters has been difficult and expensive.

Like many other industries such as computing, wind and solar energy, and medicine, effective water treatment for a wide variety of unconventional resources has now become affordable. Advances in treatment methods, lower cost materials, and the fit for purpose philosophy have contributed to this recent positive outlook on water in New Mexico.

Unconventional Water Resources

The EPA National Water Reuse Action Plan focuses on fit-for-purpose treatment and reuse of wastewater in five major areas:

- Thermo-electric cooling water
- Agricultural wastewater
- Municipal wastewater
- Produced water
- Storm water

We add two additional sources: brackish groundwater and industrial wastewater.

This national plan is working only because of new state and local-level projects and regulations, consumer advocacy, and industrial practices.

To Recycle or Reuse?

While there are abundant sources of unconventional water that can be treated and recycled for other uses including farming and ranching, one goal of the New Water movement is to help industry create a closed loop system. This means industrial users will no longer send their wastewater to the local municipal plant, where they quite often pay additional fees to do so, but rather treat and reuse their wastewater right there at the plant. This would dramatically reduce industrial freshwater withdrawals leaving more water for people and to grow food.

Industry, government, academia, and stakeholders are coming together for the first time in the state's history to work harder on a solution to water stress in New Mexico, not only to save our current industrial and agricultural base, but to expand it.

Over succeeding issues of The Stockman, we'll investigate ownership and economic drivers of water in New Mexico, explain the sources of unconventional waters in the state and how to treat them, and provide case studies where New Water is already making a difference. Our intent is to provide you with a solid knowledgebase on New Water so you can make a positive difference in your own lives and in the entire ranching community. ■

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About the author: John R Grizz Deal is vice president of New Mexico Desalination Association (www.NMDesal.org), a 501-c-6 charity and CEO of IX Water, a spin-out from Los Alamos National Laboratory. The mission of both entities is to help solve regional water stress and drought.

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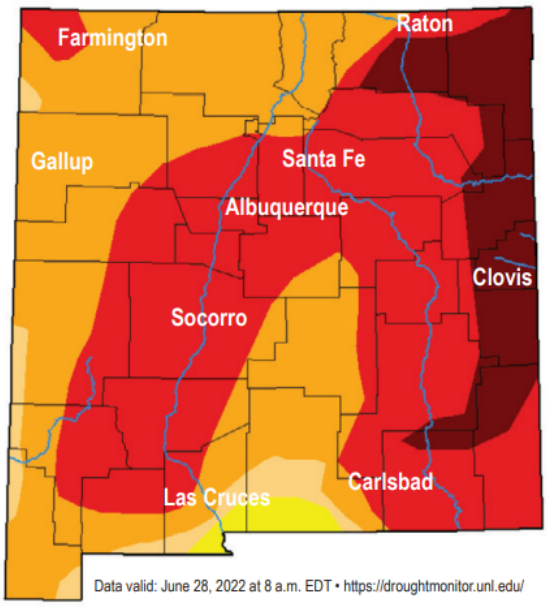
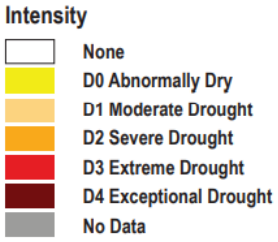
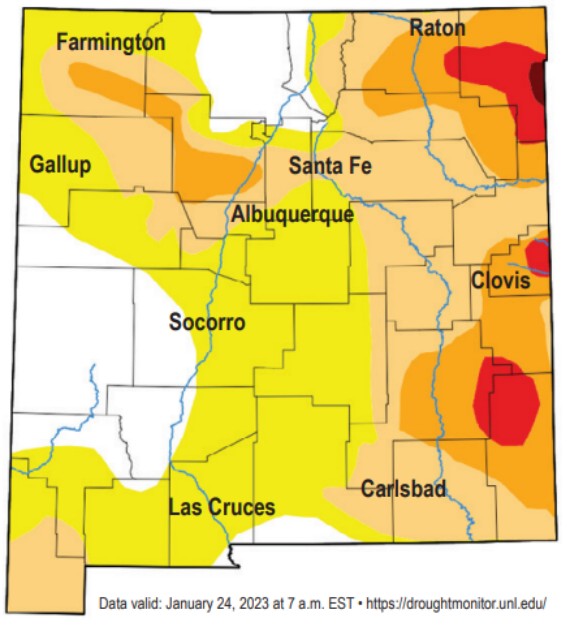
New Mexico Drought • June 2022





New Mexico Drought • January 2023



According to Almanac.com New Mexico winter 2023 weather will be "warmer than normal, with above-normal precipitation." For the same period, Weather.gov predicts "below average precipitation and above average temperatures for all of New Mexico." I guess it's up to us to figure it out. The adjacent maps show drought June 2022 compared to January 2023.

2023 IX Cartographica based on the Drought Monitor base maps.