

Water and Natural Resources Committee

Water Management in an Era of Decreasing Supply

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July 25, 2022





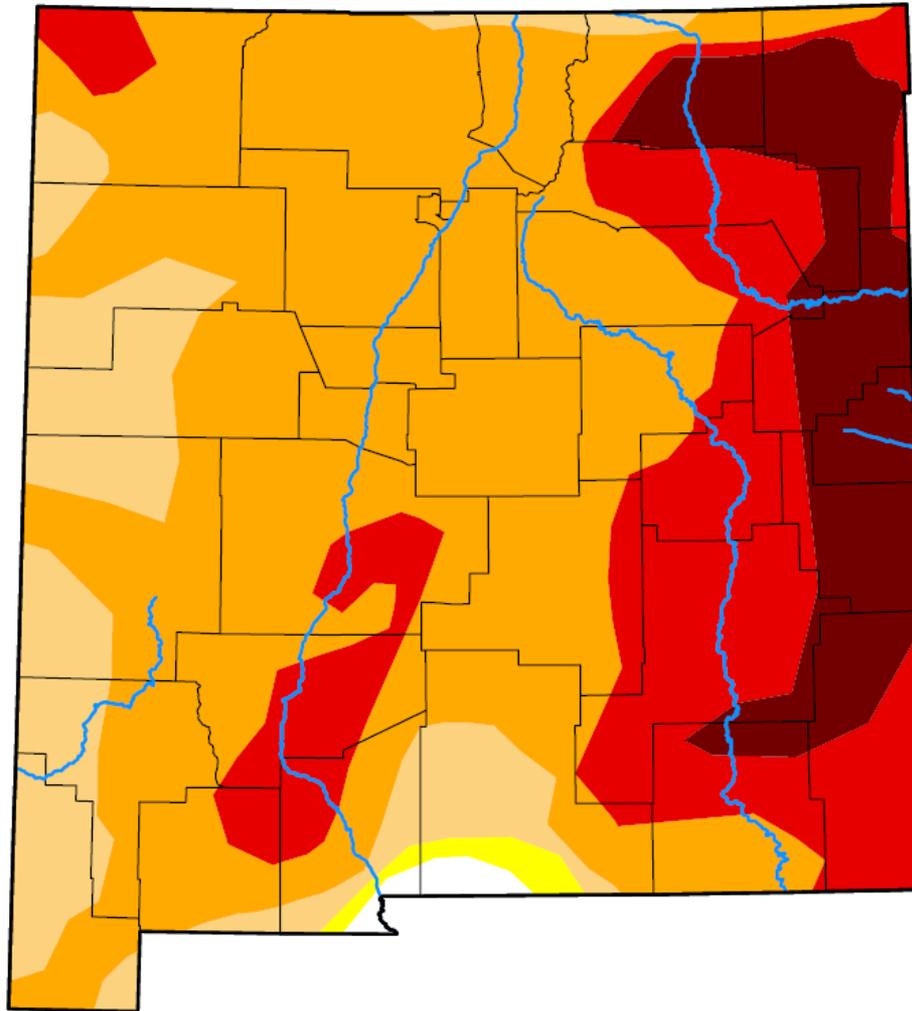
Calf Canyon / Hermits Peak Fire

Sign of the times...

Third year of significant drought conditions affecting communities throughout New Mexico.

U.S. Drought Monitor New Mexico

July 19, 2022
(Released Thursday, Jul. 21, 2022)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.68	99.32	98.51	85.47	32.76	11.08
Last Week <i>07-12-2022</i>	0.00	100.00	98.45	85.50	32.76	11.28
3 Months Ago <i>04-19-2022</i>	0.00	100.00	98.94	93.32	63.32	7.17
Start of Calendar Year <i>01-04-2022</i>	0.00	100.00	97.83	75.86	20.91	0.00
Start of Water Year <i>09-28-2021</i>	10.70	89.30	79.47	49.33	19.12	0.00
One Year Ago <i>07-20-2021</i>	7.15	92.85	83.53	70.97	44.80	21.53

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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National Drought Mitigation Center



droughtmonitor.unl.edu

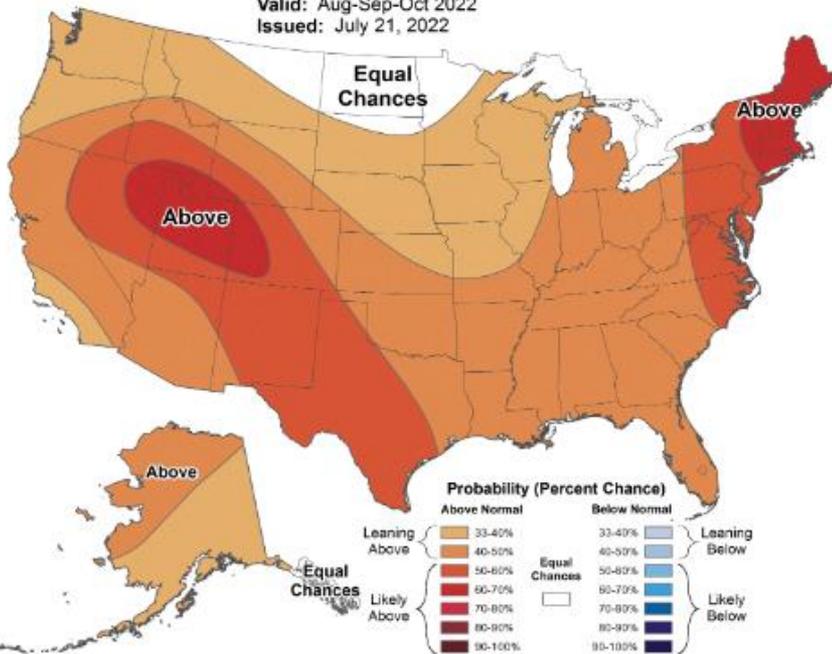
THREE MONTH OUTLOOK



Seasonal Temperature Outlook



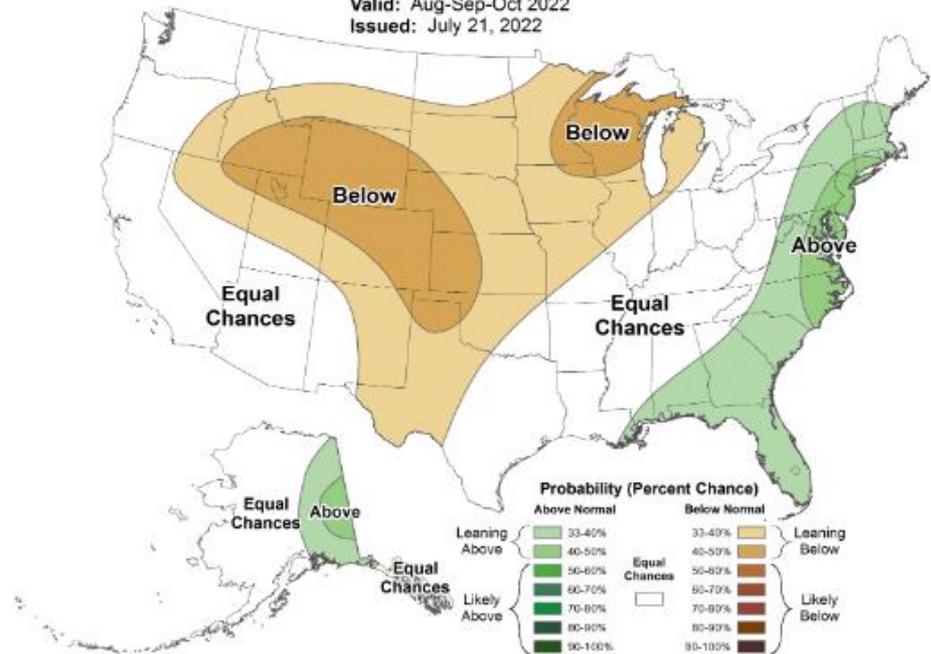
Valid: Aug-Sep-Oct 2022
Issued: July 21, 2022



Seasonal Precipitation Outlook



Valid: Aug-Sep-Oct 2022
Issued: July 21, 2022



NEW MEXICO'S WATER FUTURE = *DRIER / MORE VARIABLE*

- Anticipated continued changes in climate will mean less water is available while demands continue to increase.
- Given this new reality, *we must plan ahead* to ensure continuing economic development and the needs of all New Mexicans are met.

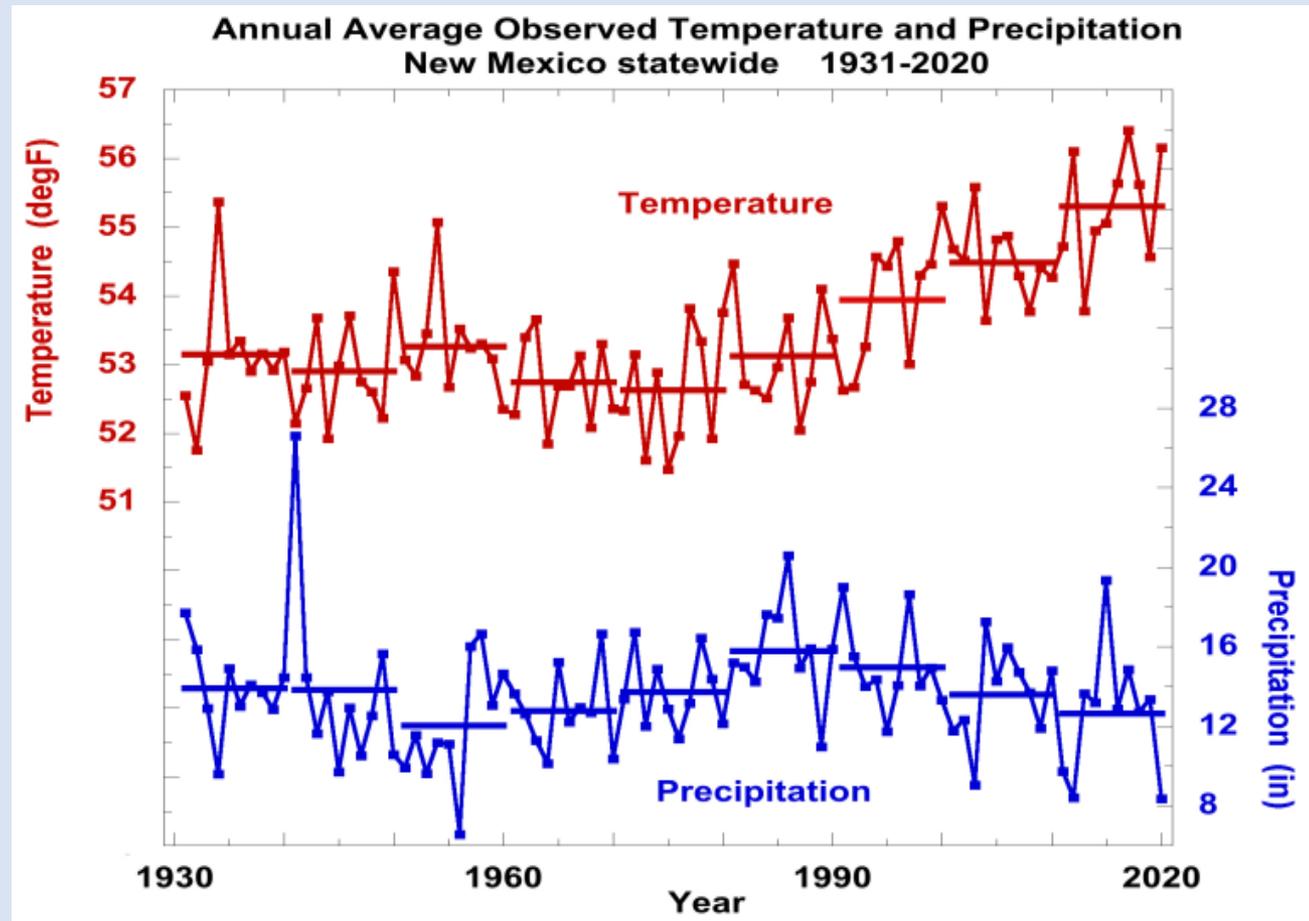
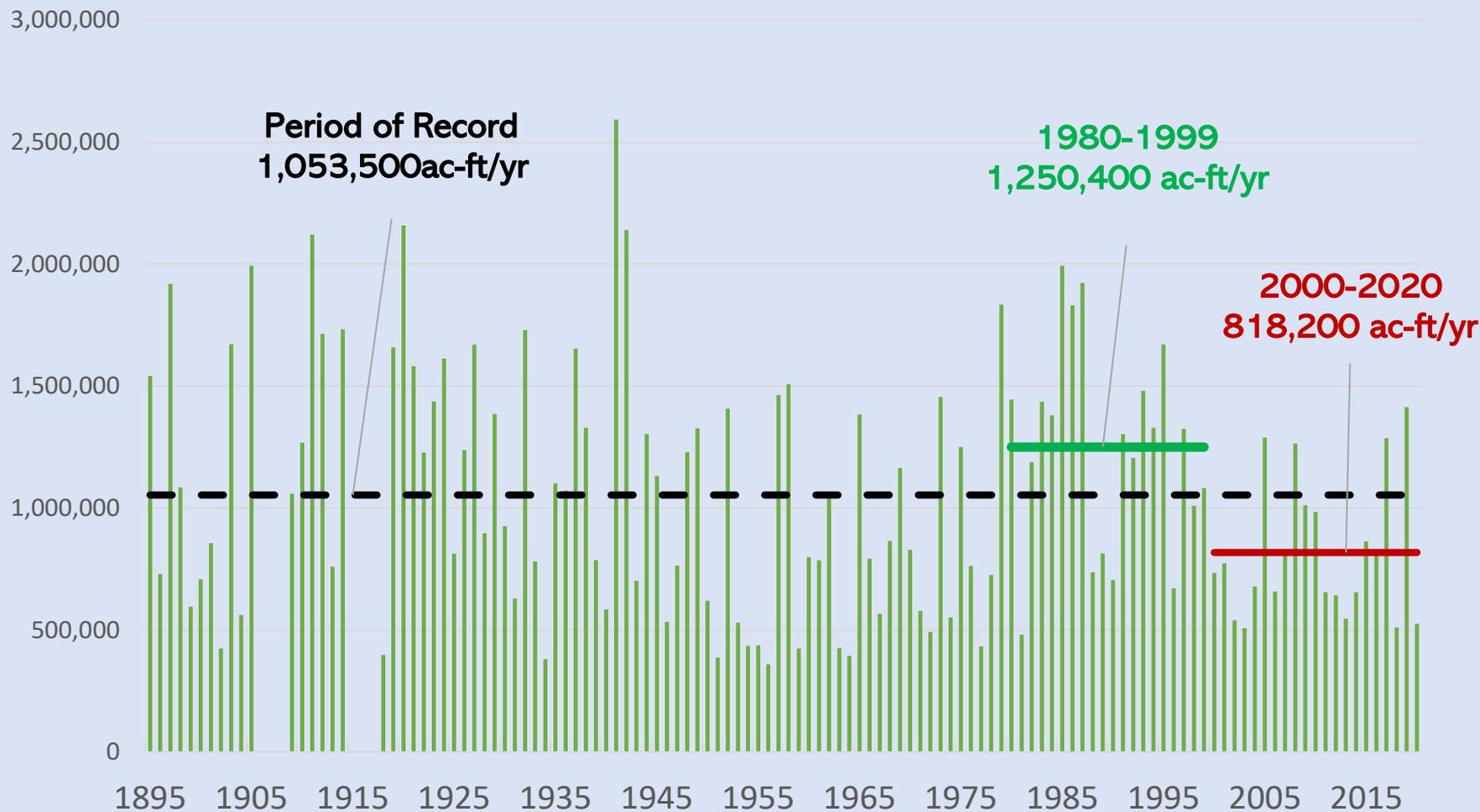


Image from [Climate Change in New Mexico over the Next 50 Years: Impacts on Water Resources](#)

ANNUAL FLOW OF RIO GRANDE AT OTOWI GAGE



From USGS in Acre-Feet per Year

BASIN UPDATES

- Middle Rio Grande - MRGCD has used all available SJC water in storage and is operating on baseflow and monsoon events - close to senior Pueblo Prior and Paramount diversions only and river expected to dry in the Albuquerque reach.
- Lower Rio Grande - EBID ended its surface irrigation season on July 19th distributing the approximate 1-foot allocation to its irrigators.
- Pecos River Basin - some recent inflows to Santa Rosa reservoir but minimal monsoon inflow elsewhere. NMISC continuing to pump groundwater for settlement commitments.
- Colorado/San Juan Basin - New Mexico is inching closer to direct flow administration below Navajo Dam. Assisting to keep Lake Powell above the power pool as part of the upper basin states' commitments.

CHALLENGES, CONSTRAINTS AND SOLUTIONS

- The NM State Constitution states that water belongs to the public and is subject to appropriation through beneficial use that is the basis, measure and limit of the right with the doctrine of prior appropriation giving the better right.
- Case law and NM statutes have further formed the basis for water rights administration that guides the OSE in determining the legal use of a water right, impairment to other rights, conservation of water and the public welfare.
- SB12 increased the required notice provisions from 30 to 70 days and publication notice procedures present challenges for processing applications.
- Current water leasing provisions need review for short-term leases to assist water users in meeting drought driven shortages.
- Active Water Resource Management (AWRM) provides for water user driven agreements in sub basins as an alternative to strict priority administration.

TEMPORARY FOLLOWING

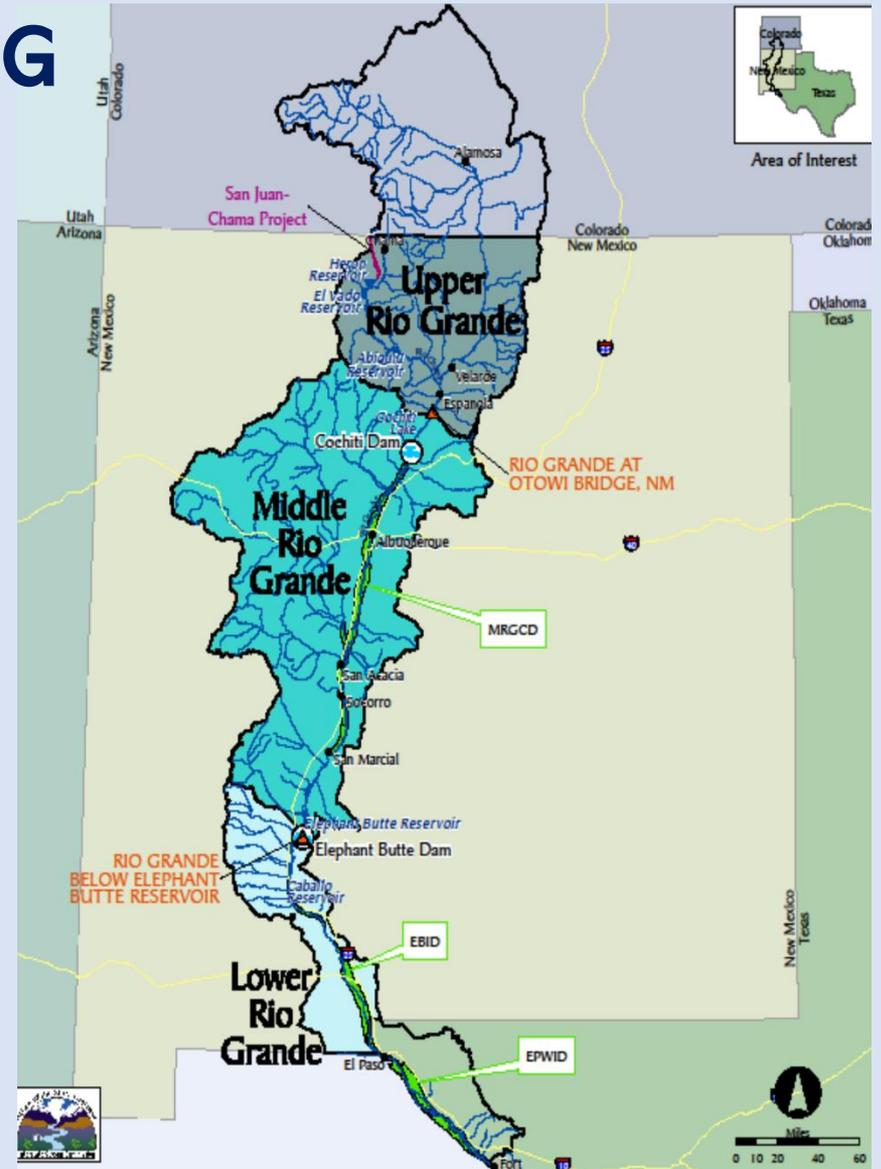
Programs are in place to support farmers and reduce depletions through temporary fallowing of agricultural lands.

Middle Rio Grande

- NFWF funding for environmental leasing for approximately 3,000 acres

Lower Rio Grande

- 2,400 acres currently enrolled in NMISC's Lower Rio Grande Pilot Program to reduce groundwater uses



GROUNDWATER DEPLETION IMPACTS: A CASE STUDY

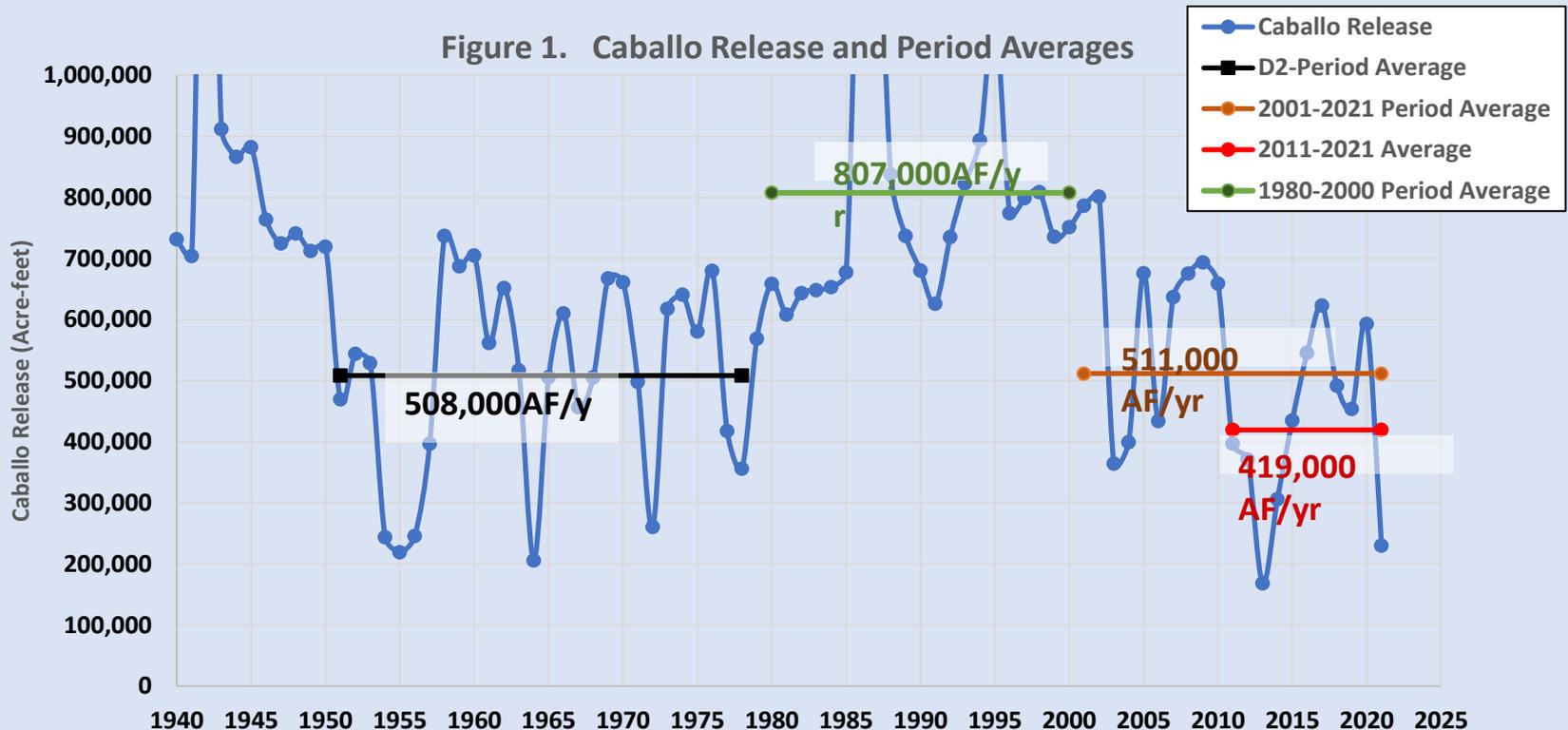
The Lower Rio Grande in New Mexico below Caballo Dam has two groundwater basins that have unique characteristics and are both utilized as “conjunctive use” supply in conjunction with the available surface supply coming from the Rio Grande Project.

The Rincon Aquifer serves the upper valley from Caballo to Hatch and is shallow and subject to salinity problems where farms require higher quality surface water as compared to the Mesilla Aquifer that serves the lower valley into El Paso, Texas.

The Mesilla serves the larger portion of farm acreage in the LRG and serves as the supplemental supply for agriculture since the drought of the 1950s while being the primary supply for municipal and rural drinking water use.

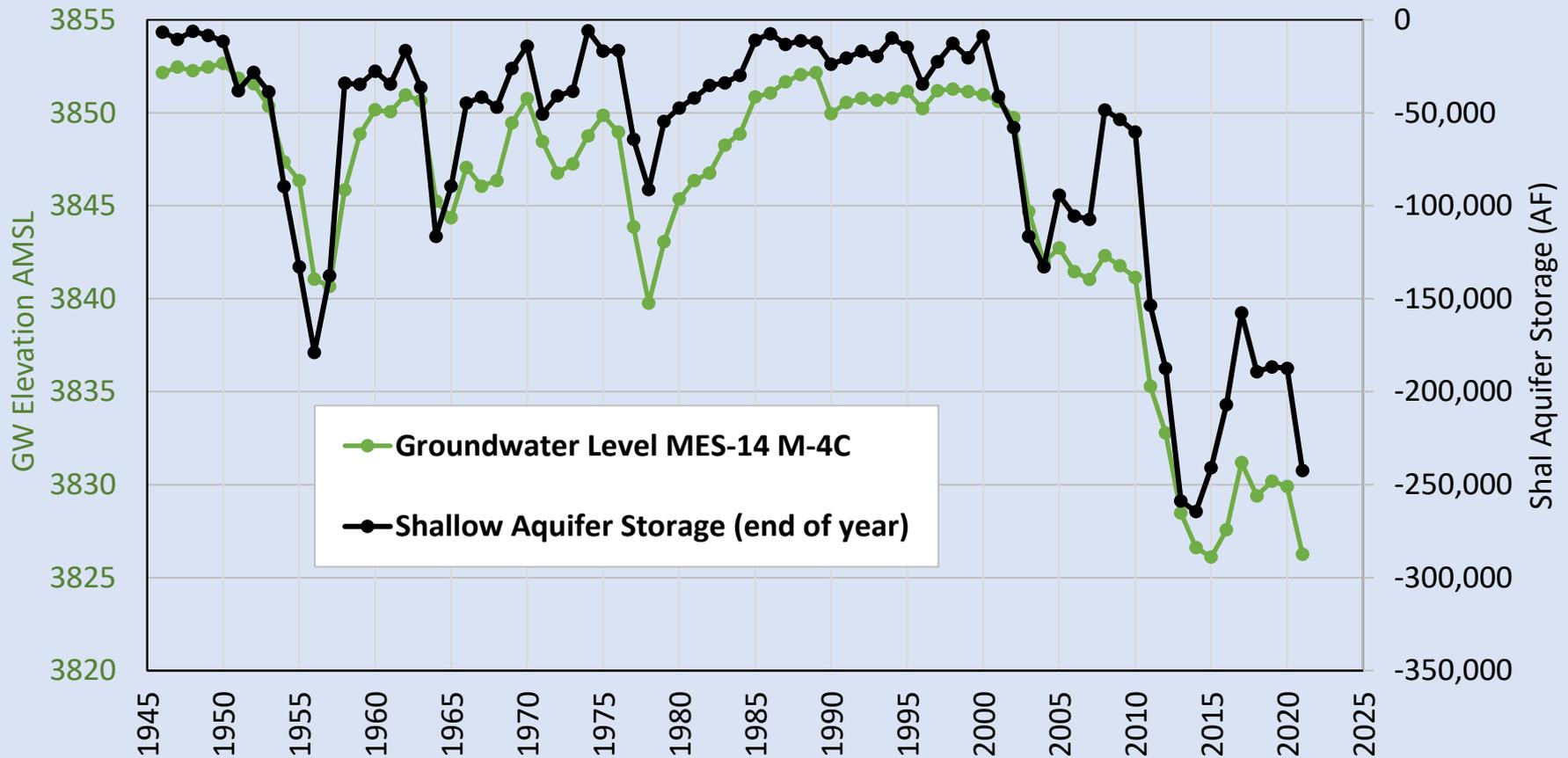
The last 15 years of below average surface water supplies and changes in Rio Grande Project supply allocations has led to a shift to groundwater becoming the primary supply and surface water the supplemental for agriculture uses.

SURFACE WATER SUPPLY TO THE LRG: RELEASES FROM CABALLO RESERVOIR



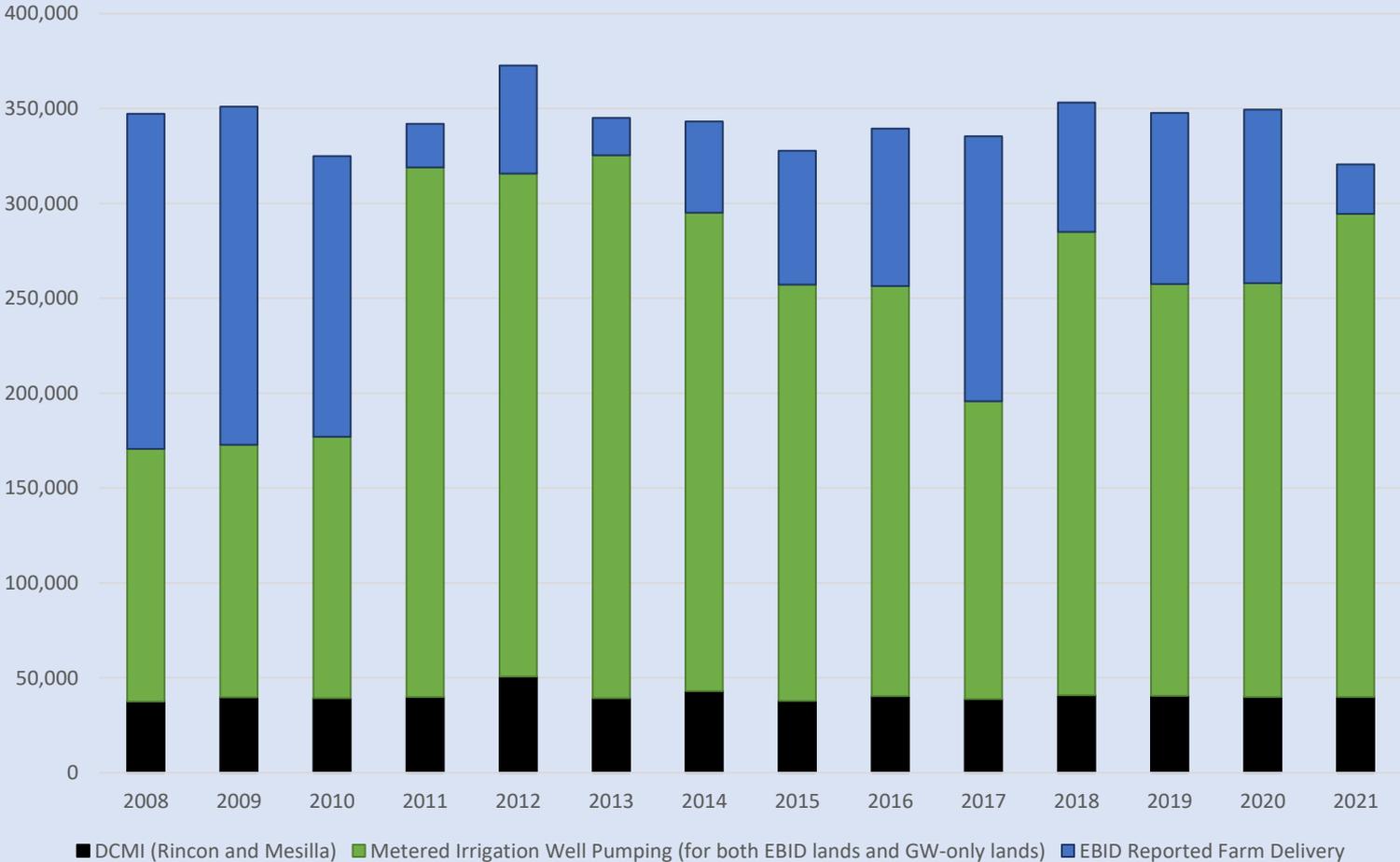
MESILLA AQUIFER CONDITIONS

Shallow Aquifer Groundwater Levels (south of Las Cruces)
and Shallow Alluvial Aquifer Storage (from observed water levels, since 1945)



RECENT TOTAL WATER USE NM LRG

DCMI Pumping + Farm Application (IWP + EBID Farm Delivery)



GROUNDWATER DEPLETION IMPACTS: A CASE STUDY

The Lower Rio Grande in New Mexico is one example of how drought and lower surface water supplies have pushed water demands into groundwater reserves. This works well if there is a cycle of recharge in abundant surface water years. What actions must be taken to address persistent drought?

This situation contributed to filing of the US Supreme Court Original 141 Texas v. New Mexico and Colorado.

Even without a settlement of this case New Mexico must administer groundwater in the LRG to prevent unsustainable depletions of these aquifers.

By contrast, the Middle Rio Grande groundwater basin was declared in 1956 and all new appropriations require offsets to keep the river and the Rio Grande Compact requirements whole.

50-YEAR WATER PLAN UPDATE

- Release for Public Comment in Early August
- Completion in September
- Goal » Help New Mexico prepare for climate change driven impacts to water resources
 - Stewardship
 - Sustainability
 - Equity



TEMPERATURE CHANGE IN NEW MEXICO

Higher Emissions (RCP 8.5) 2040-2069 vs. Historical Simulation 1971-2000, Mean Change

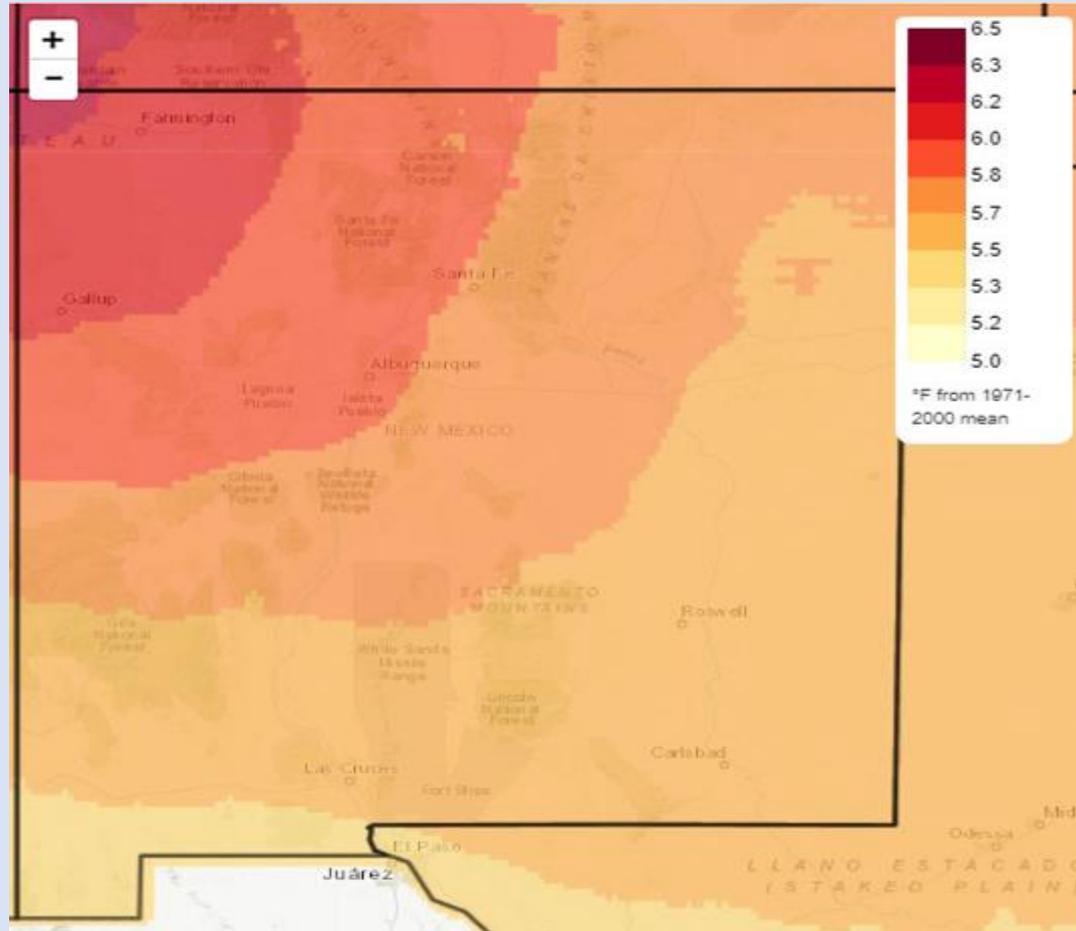


Image from [Climate Change in New Mexico over the Next 50 Years: Impacts on Water Resources](#)

Temperature increases throughout the entire state.

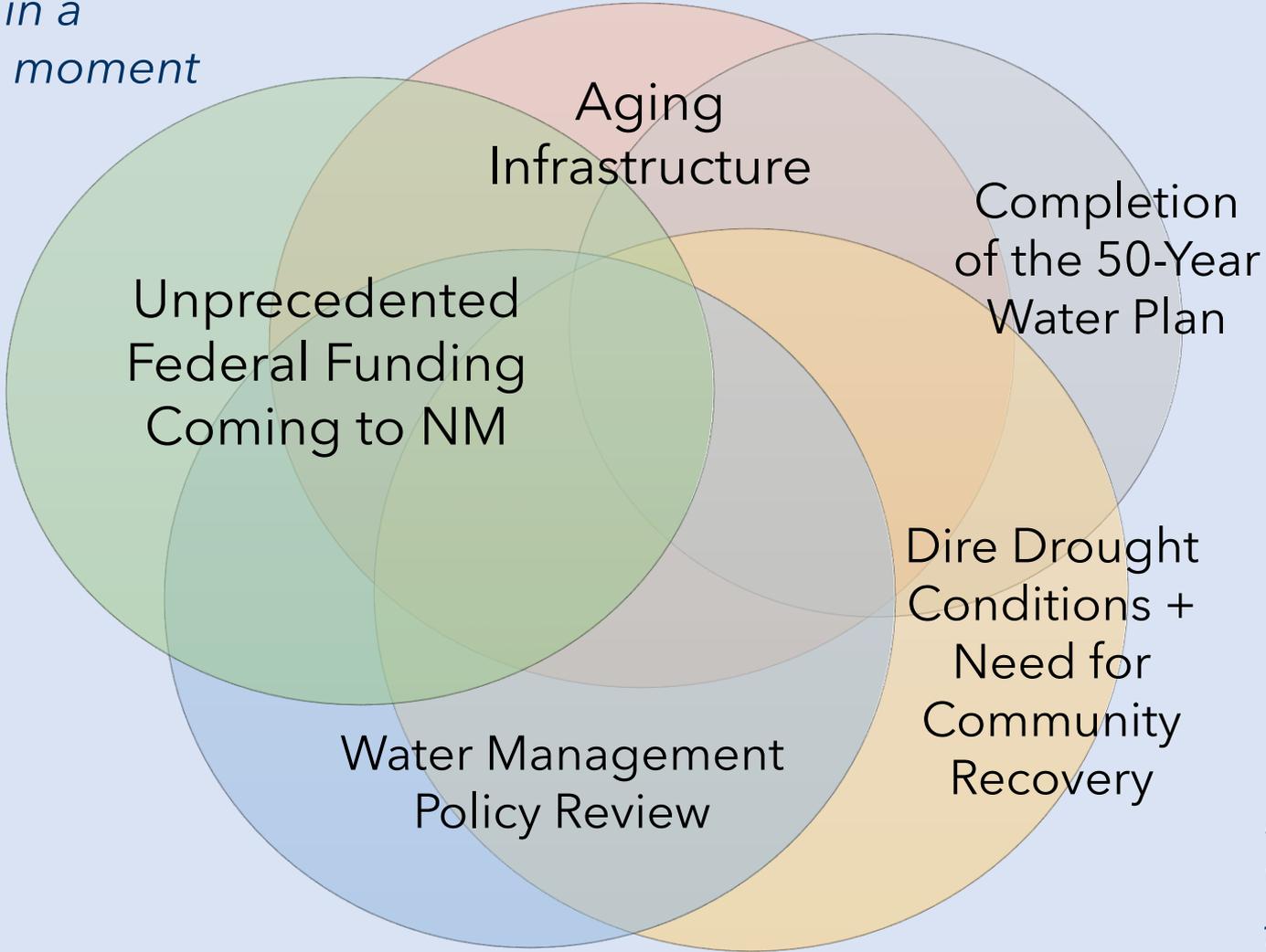
Increasing aridity.

Higher temperatures result in increased loss of water from our landscapes, including increased crop demands.

Annual average temperature simulated by 20 CMIP5 climate simulations by different models, spatially averaged over the state of New Mexico. Temperature change is defined as the difference between two thirty-year averages: (2040-2069) minus (1971-2000); the central years of these averaging periods are 70 years apart, so this plot represents 70-year temperature changes across the state.

WATER POLICY AND INFRASTRUCTURE TASK FORCE

*A once in a
lifetime moment*



*Is there a
willingness
to act?*

We need to plan for resilience together.

