Water in the Rio Grande-Bravo Basin

Current Conditions and Future Outlook

New Mexico Water Advocates Workshop. May 21, 2026

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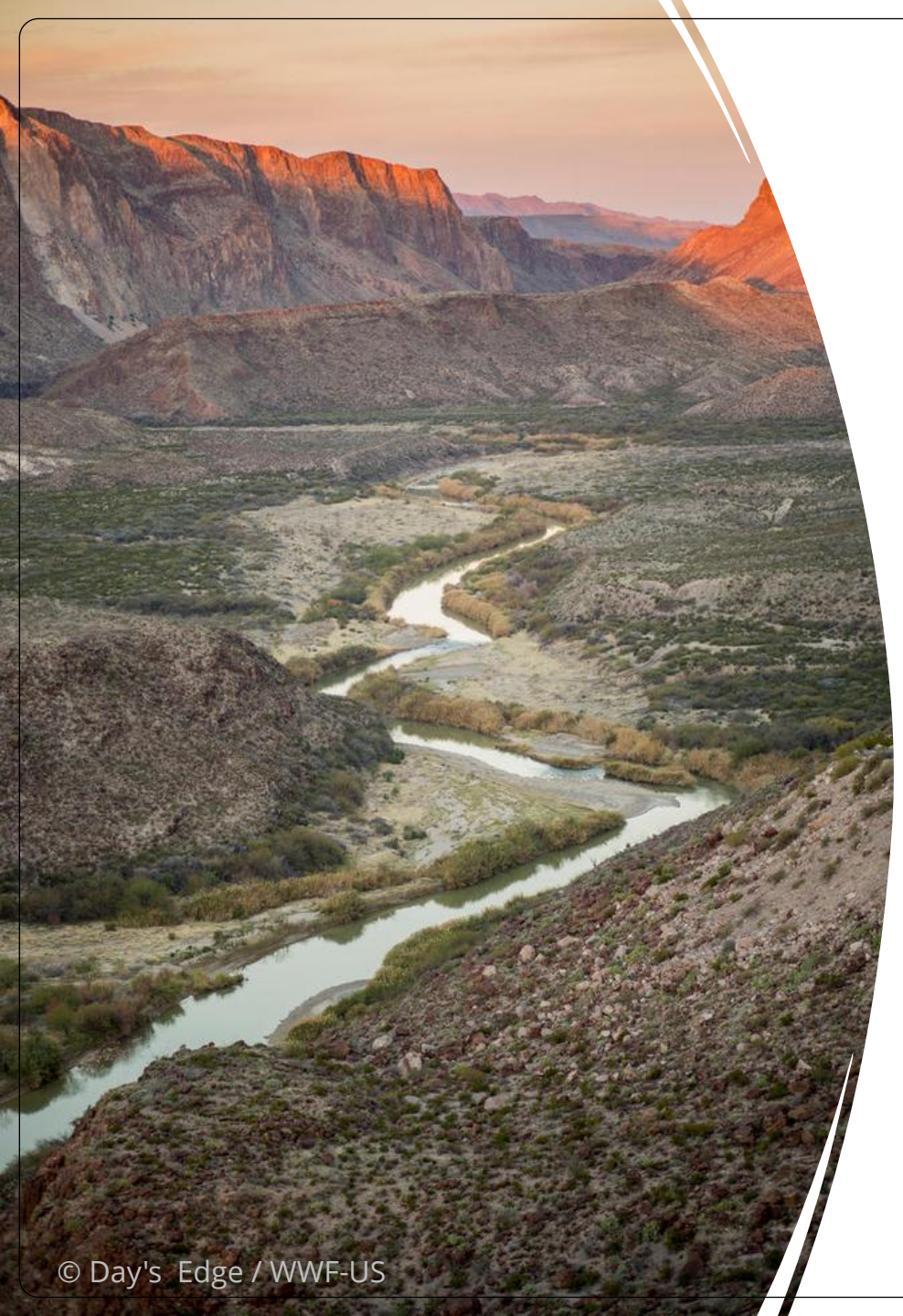


Presentation

1. Brief overview of the RGB basin
2. RGB Basin wide water accounting study
3. Rio Grande current conditions
4. Other related efforts
5. Pathways toward a resilient water future
6. Q&A

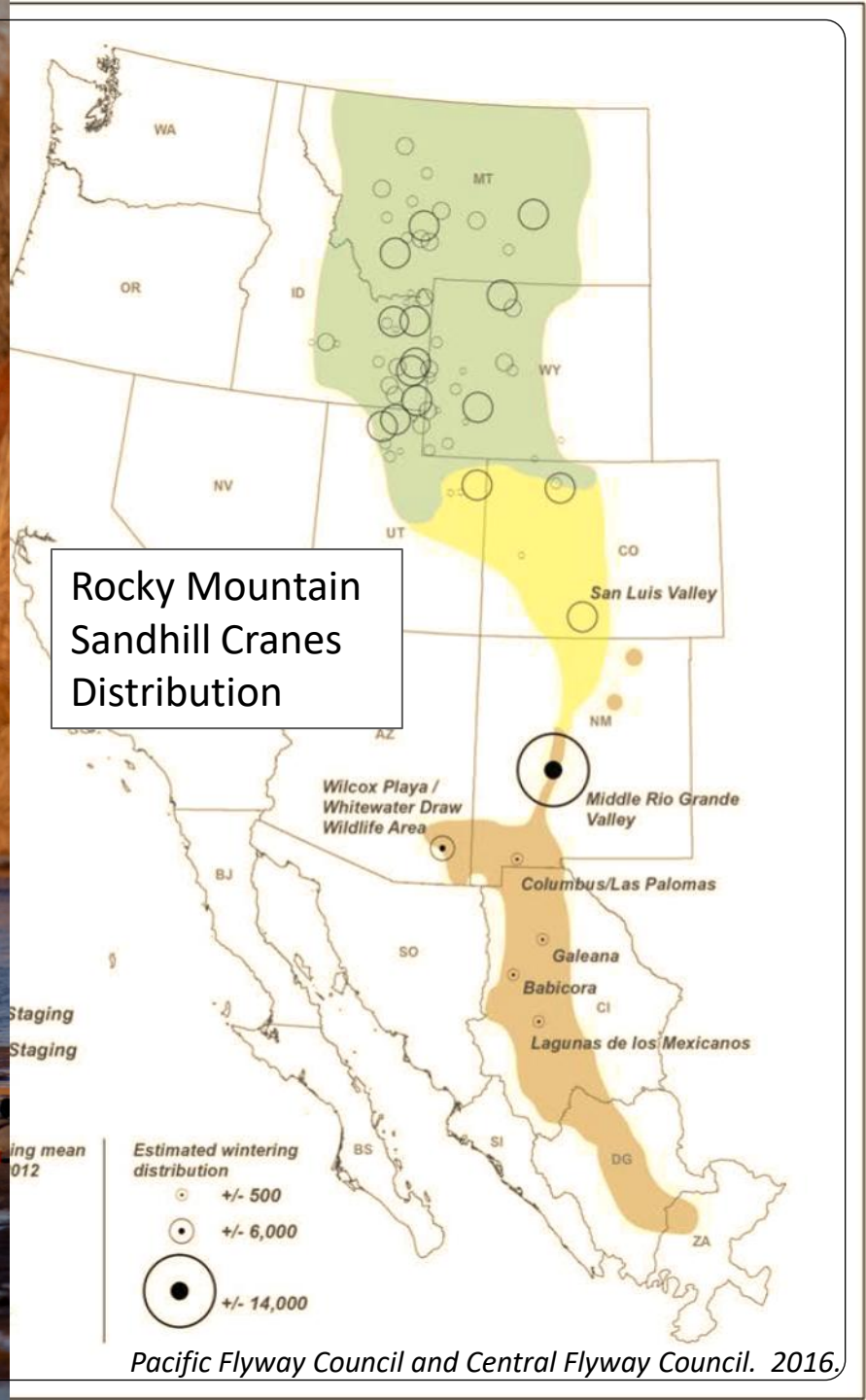
1. Brief overview of the Rio Grande-Bravo basin

An extraordinarily diverse and culturally vibrant region

The Rio Grande / Rio Bravo is a connector of ecosystems, communities, and cultures

A flyway for over 500 migratory bird species

3,000 plant species
130 mammal species
50% of the fish species are endemic



Rocky Mountain Sandhill Cranes Distribution

Pacific Flyway Council and Central Flyway Council. 2016.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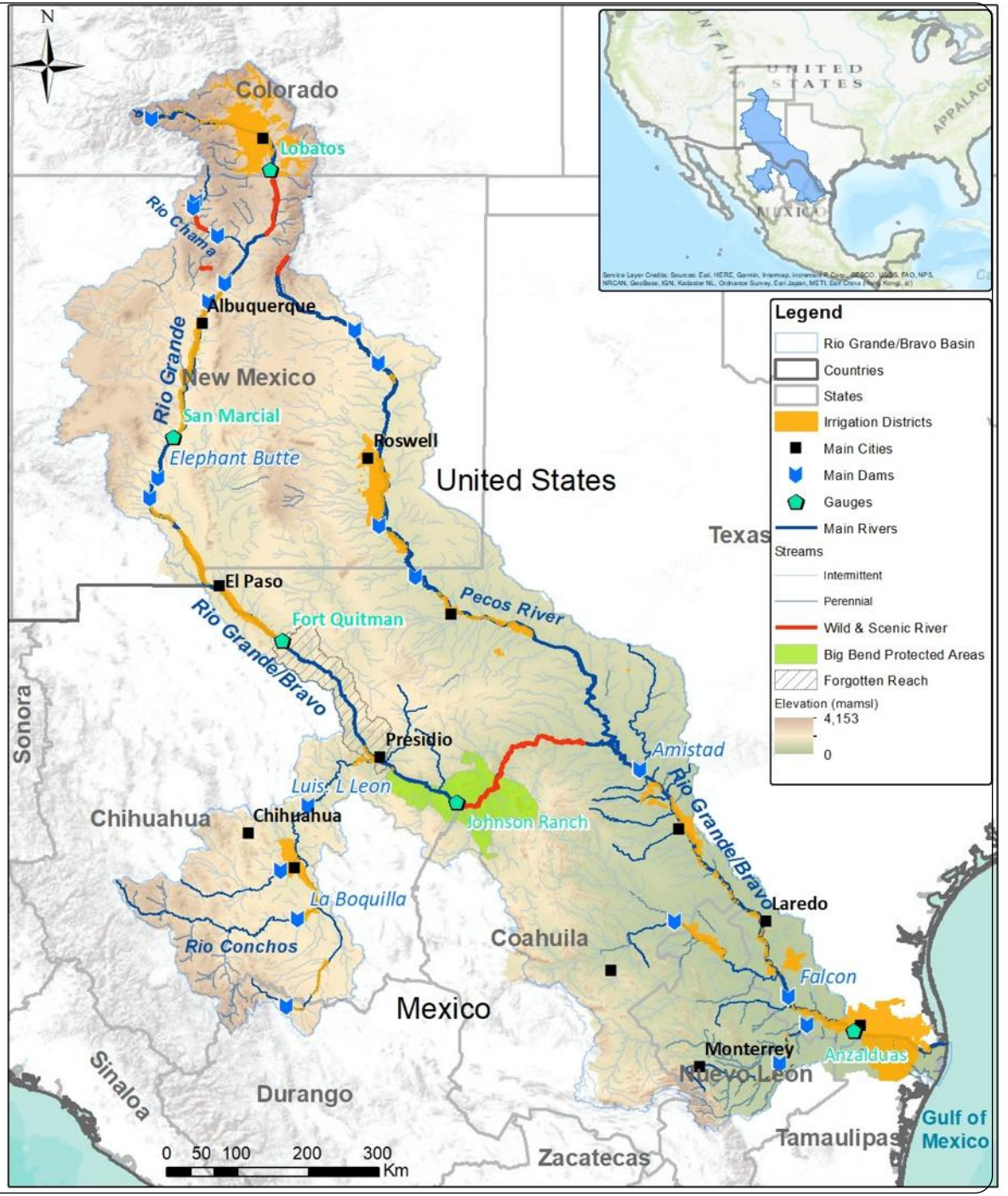
A heavily managed and depleted river

International water treaties and U.S. interstate water compacts

- The Convention of 1906 – U.S. & Mexico
- The Rio Grande Compact of 1938 – CO, NM & TX
- The Water Treaty of 1944 - U.S. & Mexico
- The Pecos River Compact of 1948 – NM & TX

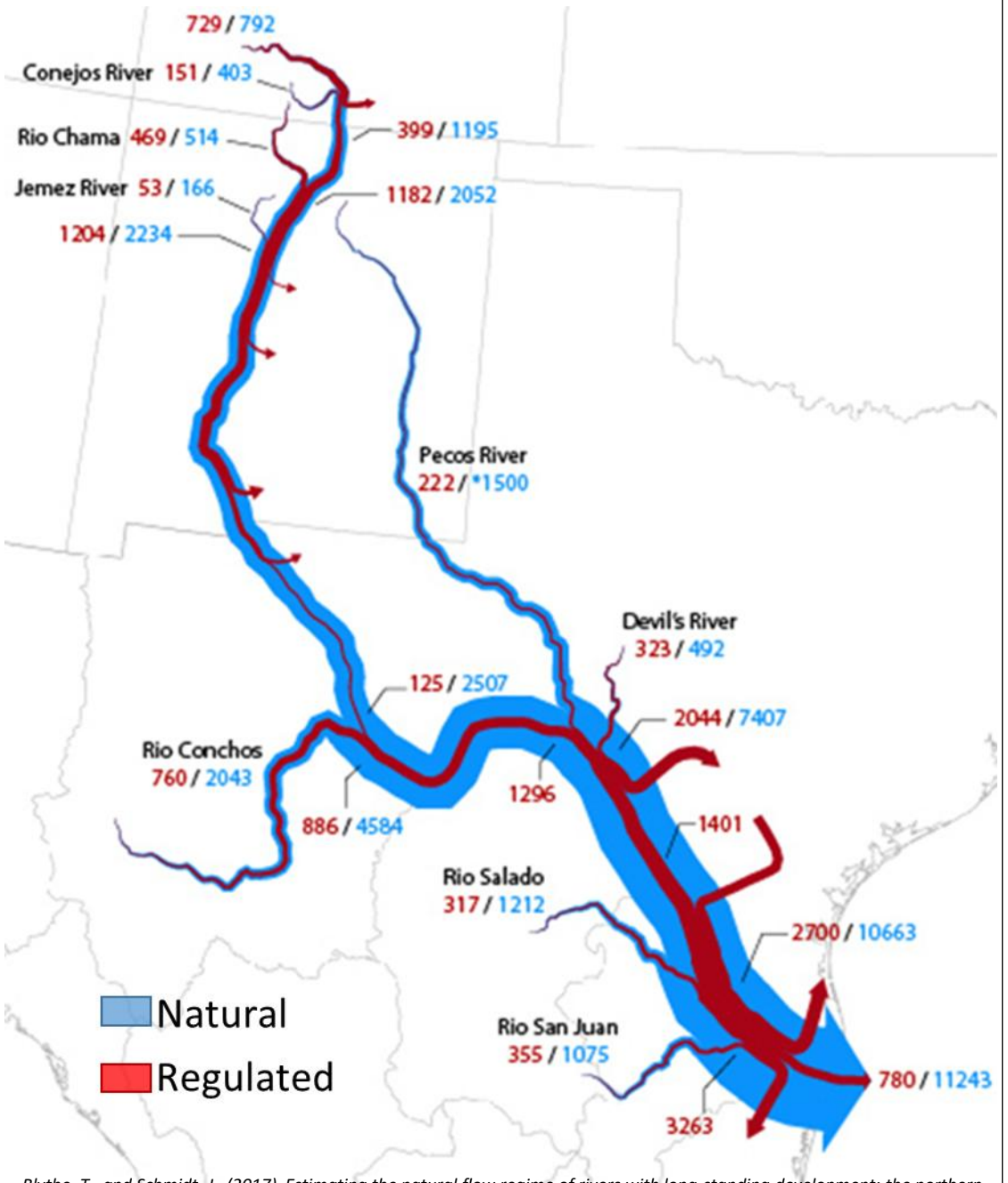
19 main irrigation districts with an irrigated area of 1.9 million acres

33 major reservoirs with a storage capacity of 15,352,451 Acre-feet



The challenge

- The river **has lost 85% of its natural flow** due to water diversions, dams, and overconsumption.
- At least **75 species imperiled** by river flow depletion and **50% of riparian habitats degraded**
- Cities, farms, and river ecosystems are suffering from **water shortages**.
- **Half of the water** consumed on cities and farms is unsustainable.
- **Overconsumption is depleting** reservoirs, aquifers, and river flows
- **Climate change** and rapid population growth are putting more pressure on the already stressed river and aquifers.



Blythe, T., and Schmidt, J. (2017). Estimating the natural flow regime of rivers with long-standing development: the northern branch of the Rio Grande. J. Water Resources Research.

WWF's Rio Grande-Bravo Strategy

Ensure that strong science and policy guides all plans and actions

Restore degraded ecosystems

Optimize available water

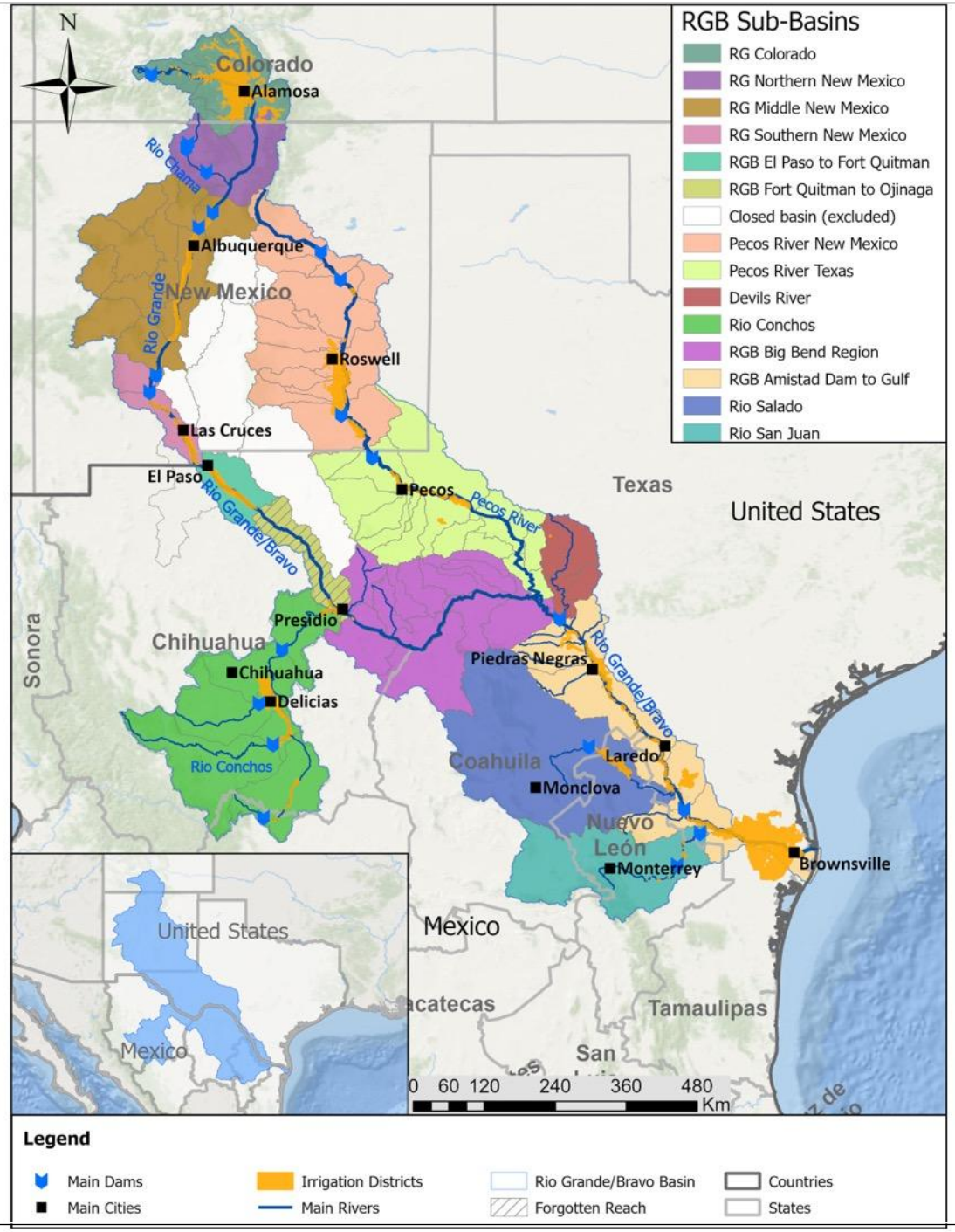
Promote water-resilient farming

2. RGB Basin wide water accounting study

Assessing Consumptive Water Use

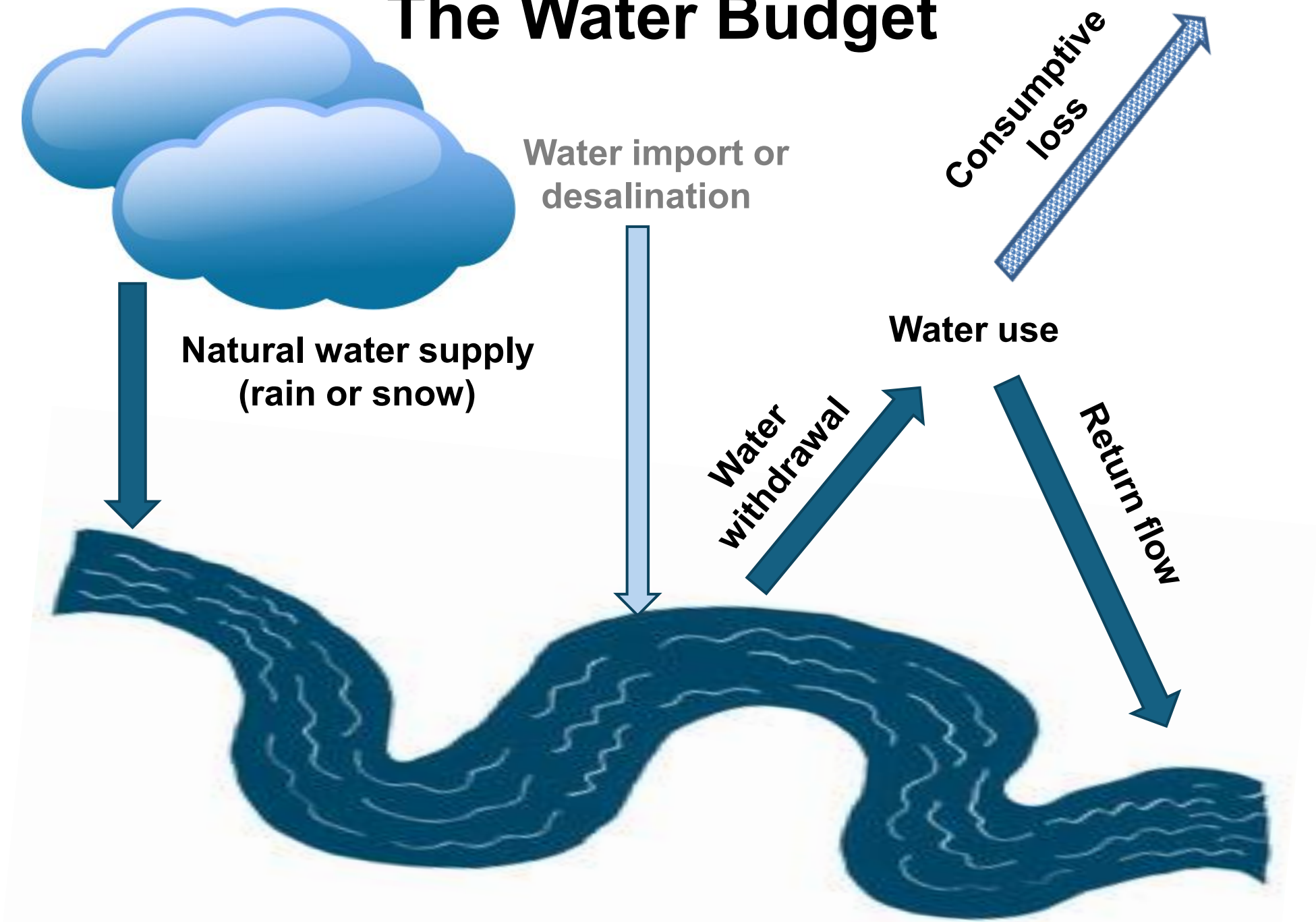
We developed detailed water consumption estimates for 14 sub-basins:

- Municipal & commercial
- Thermoelectric power plants
- Irrigated agriculture
- Reservoir evaporation
- Riparian evapotranspiration

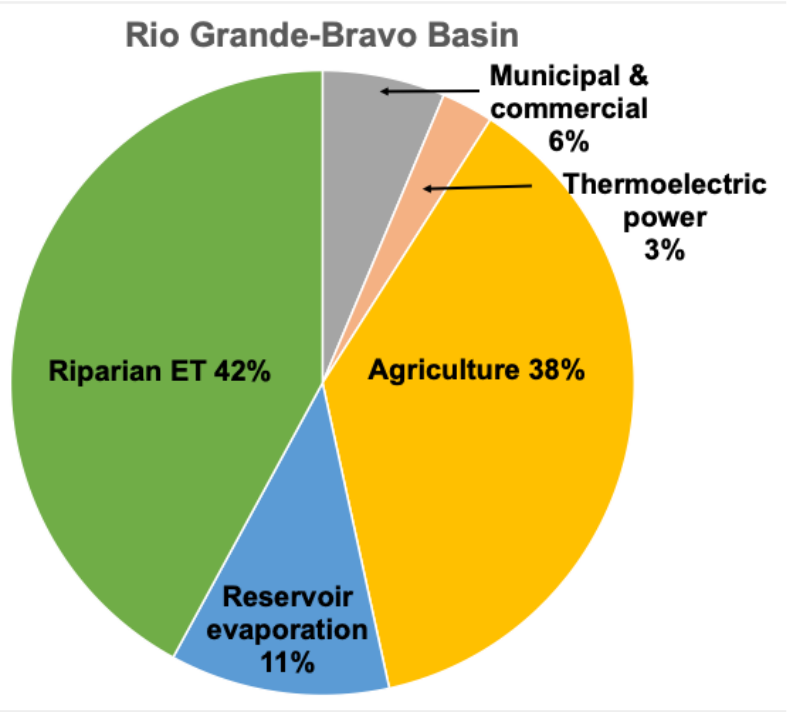


Richter, B.D. et al. Overconsumption gravely threatens water security in the binational Rio Grande-Bravo basin. Discov Water 5, 104 (2025). https://doi.org/10.1007/s43832-025-00301-2

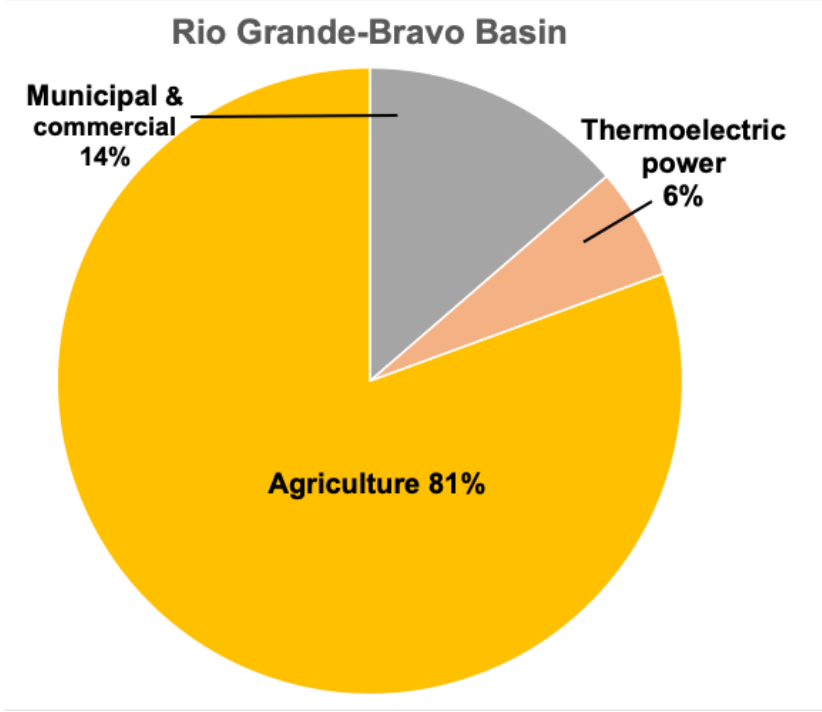
The Water Budget



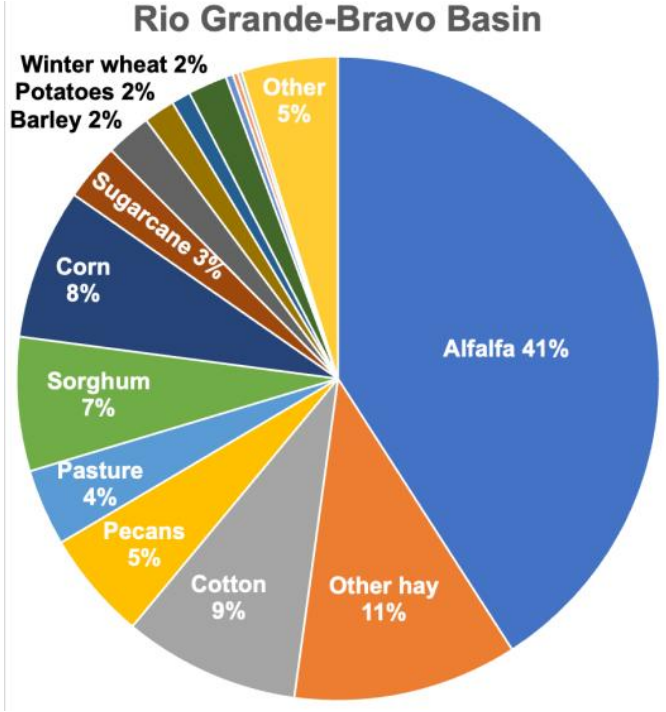
Water consumption in the RGB



Overall consumption
10.51 MAF/yr

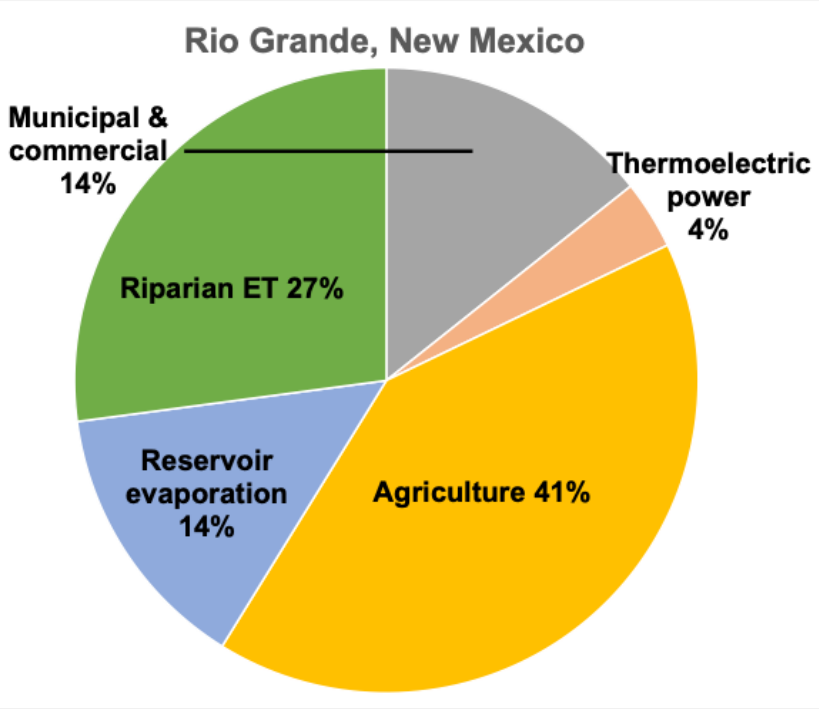


Direct consumption
4.89 MAF/yr

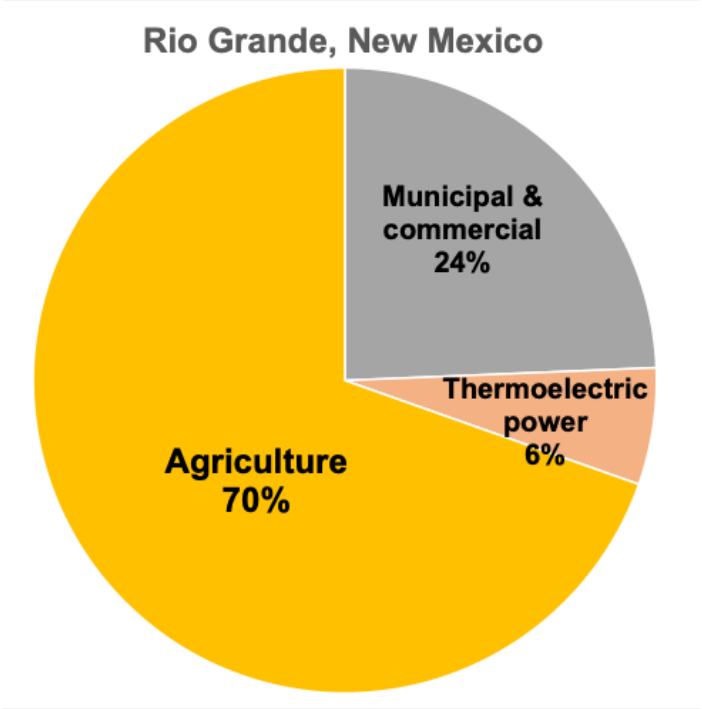


Irrigation consumption
3.94 MAF/yr

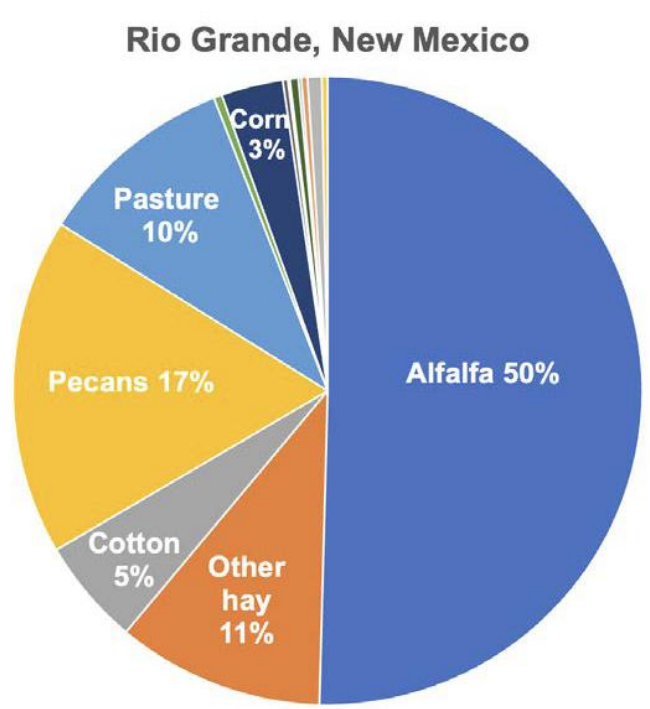
Water consumption in the Rio Grande of NM



Overall consumption
1.39 MAF/yr



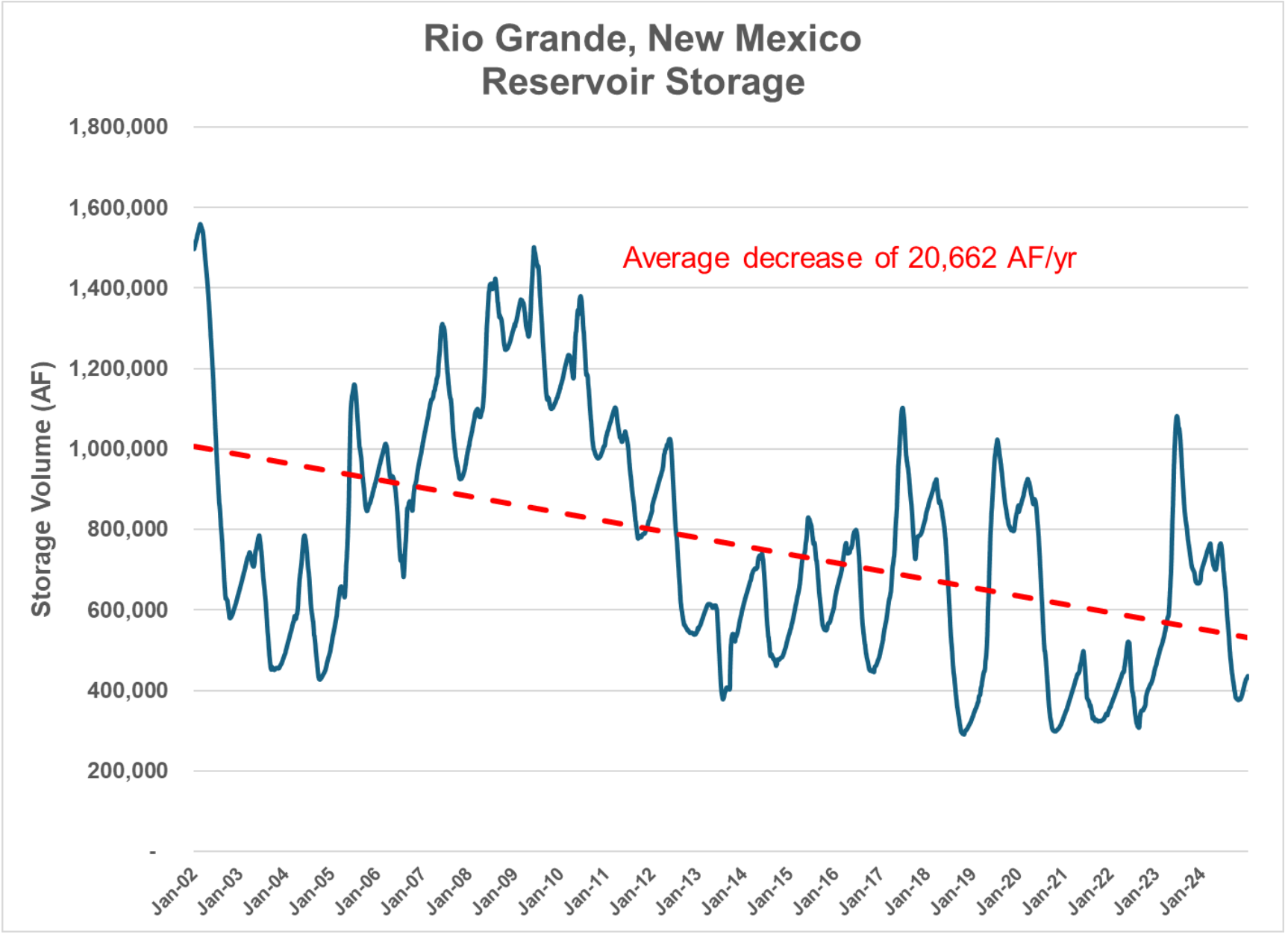
Direct consumption
0.82 MAF/yr



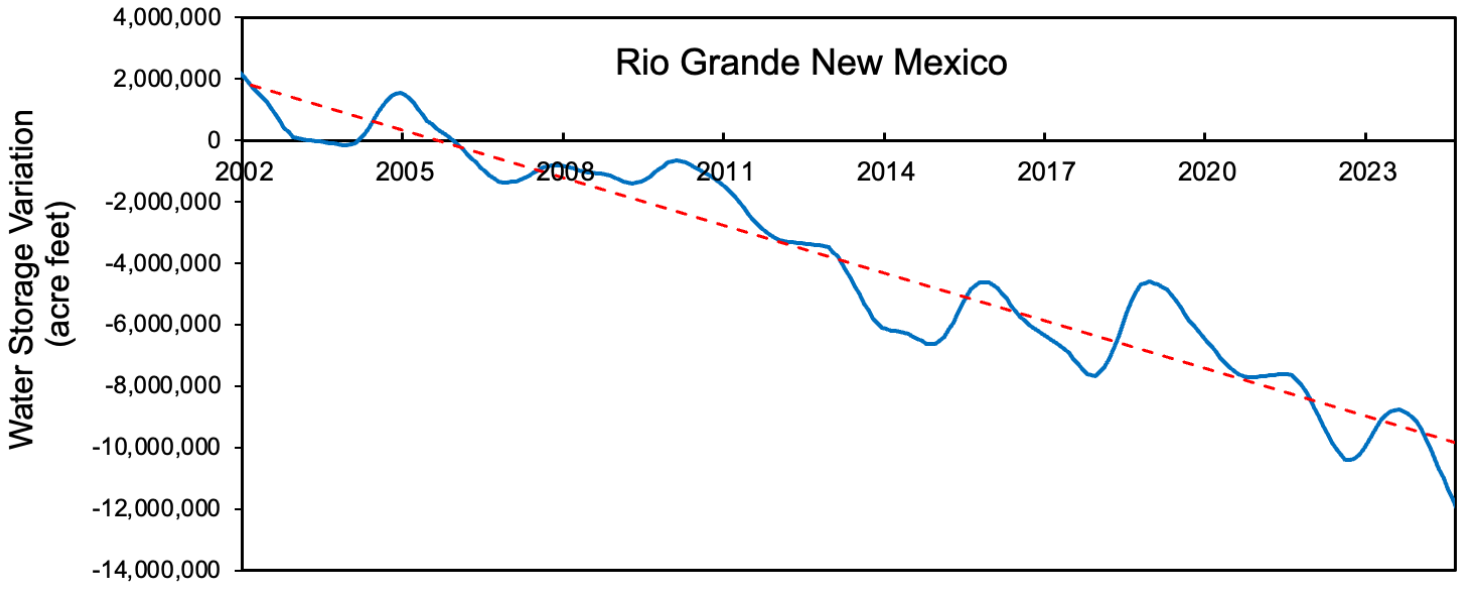
Irrigation consumption
0.57 MAF/yr

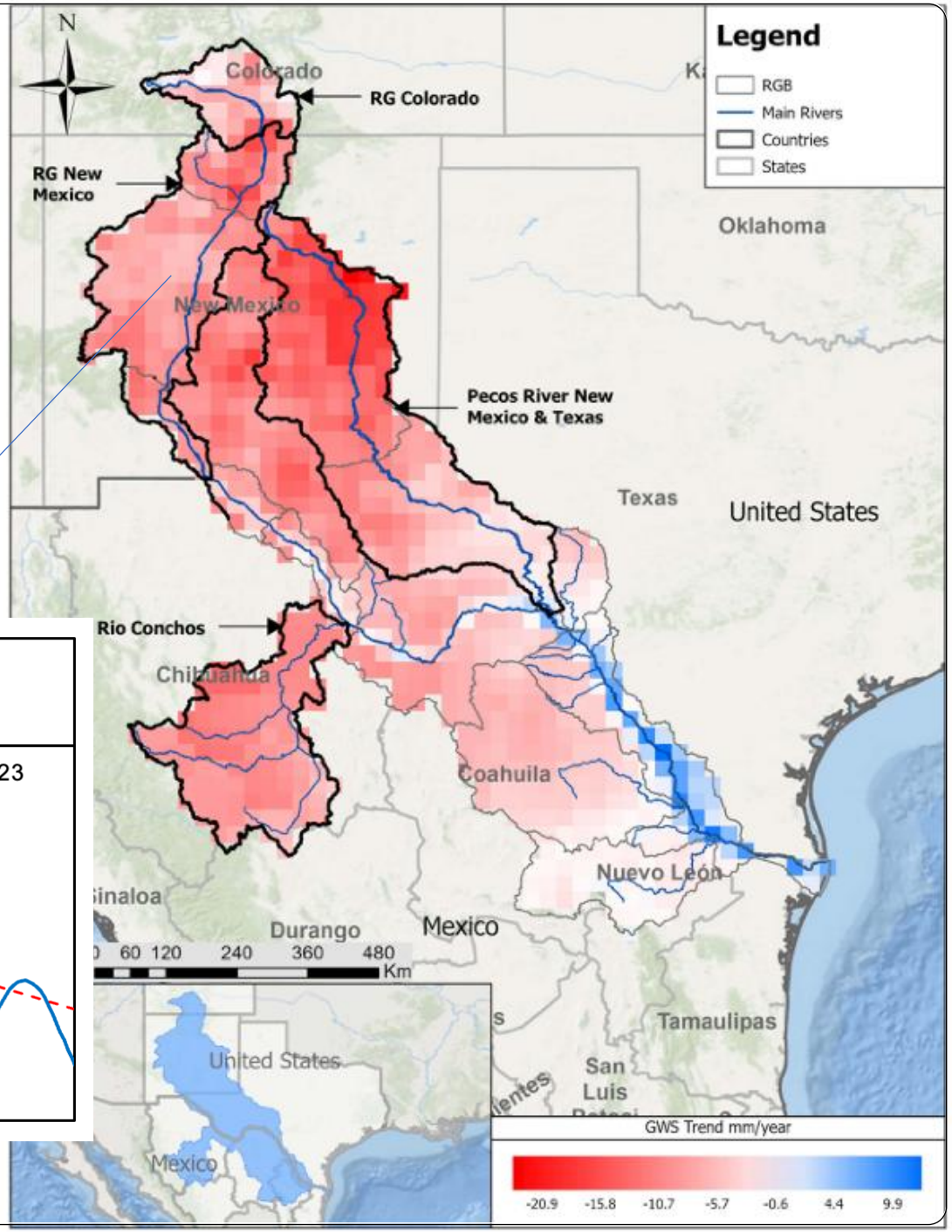
Reservoir storage depletion

Rio Grande NM sub-basins



Groundwater depletion





Our water consumption is unsustainable

Rio Grande-Bravo basin wide

- Reservoir depletion = -143,945 AF/year
- Aquifer depletion = -2,189,000 AF/year
- River flow depletion = -18,147 AF/year
- Total depletion = -2,351,092 AF/year

- Direct consumption = 4,892,041 AF/year
- Percent overconsumption = 48%

➢ **Half of the water we consume is supplied by natural river flow and groundwater recharge. The other half comes from depleting rivers, reservoirs, and aquifers.**

Our water consumption is unsustainable

Rio Grande in New Mexico

- Reservoir depletion = -20,662 AF/year
- Aquifer depletion = -510,750 AF/year
- River flow depletion = -7,852 AF/year
- Total depletion = -539,264 AF/year

- Direct consumption = 816,833 AF/year
- Percent overconsumption = 66%

➢**Two-thirds of the water we consume comes from depleting rivers, reservoirs, and aquifers.**

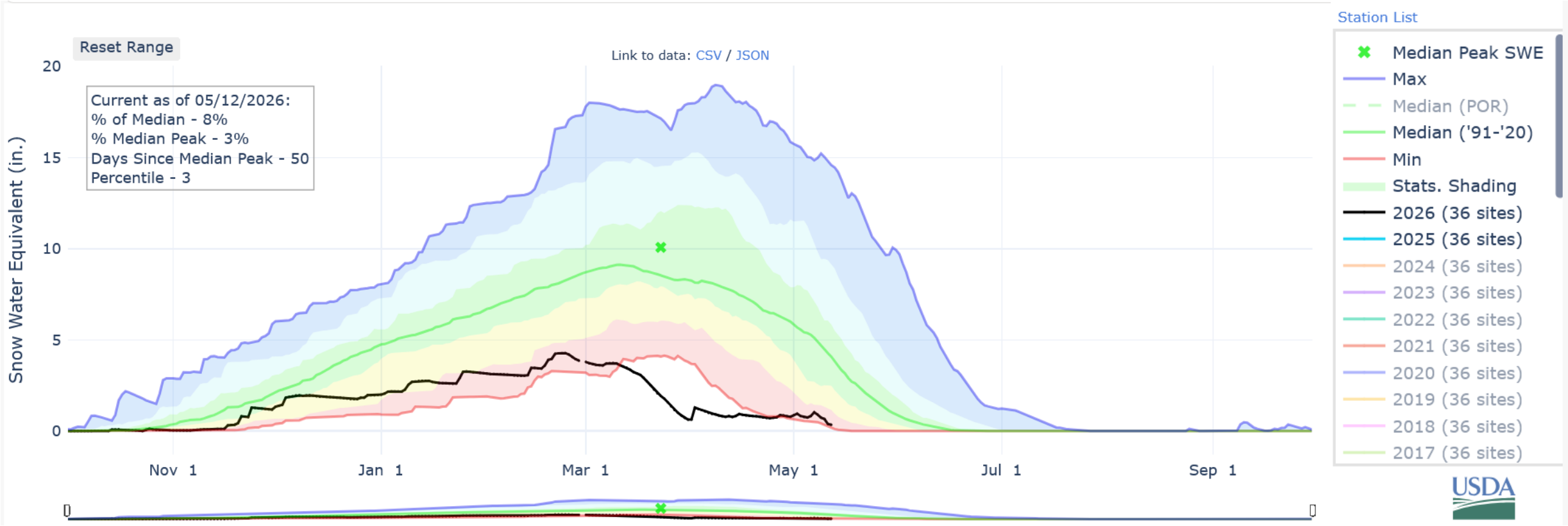
Loss of irrigated area in the RGB basin, 2000-2019

- Colorado sub-basin lost 18%
- New Mexico sub-basins lost 28%
- Pecos River sub-basin lost 49%

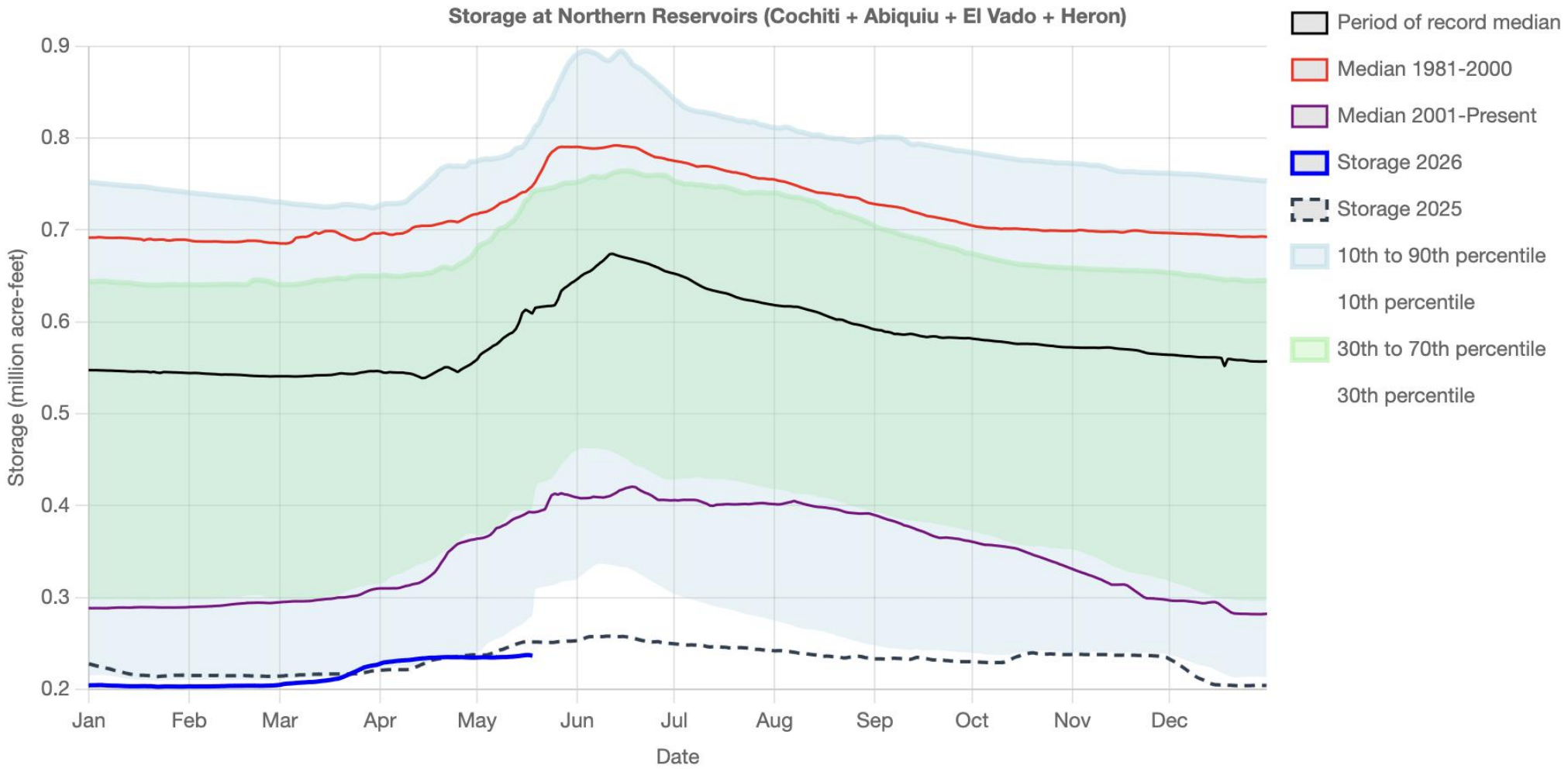
3. Rio Grande current conditions

USDA Natural Resources Conservation Service

AWS Plot | SNOW WATER EQUIVALENT IN RIO GRANDE REGION

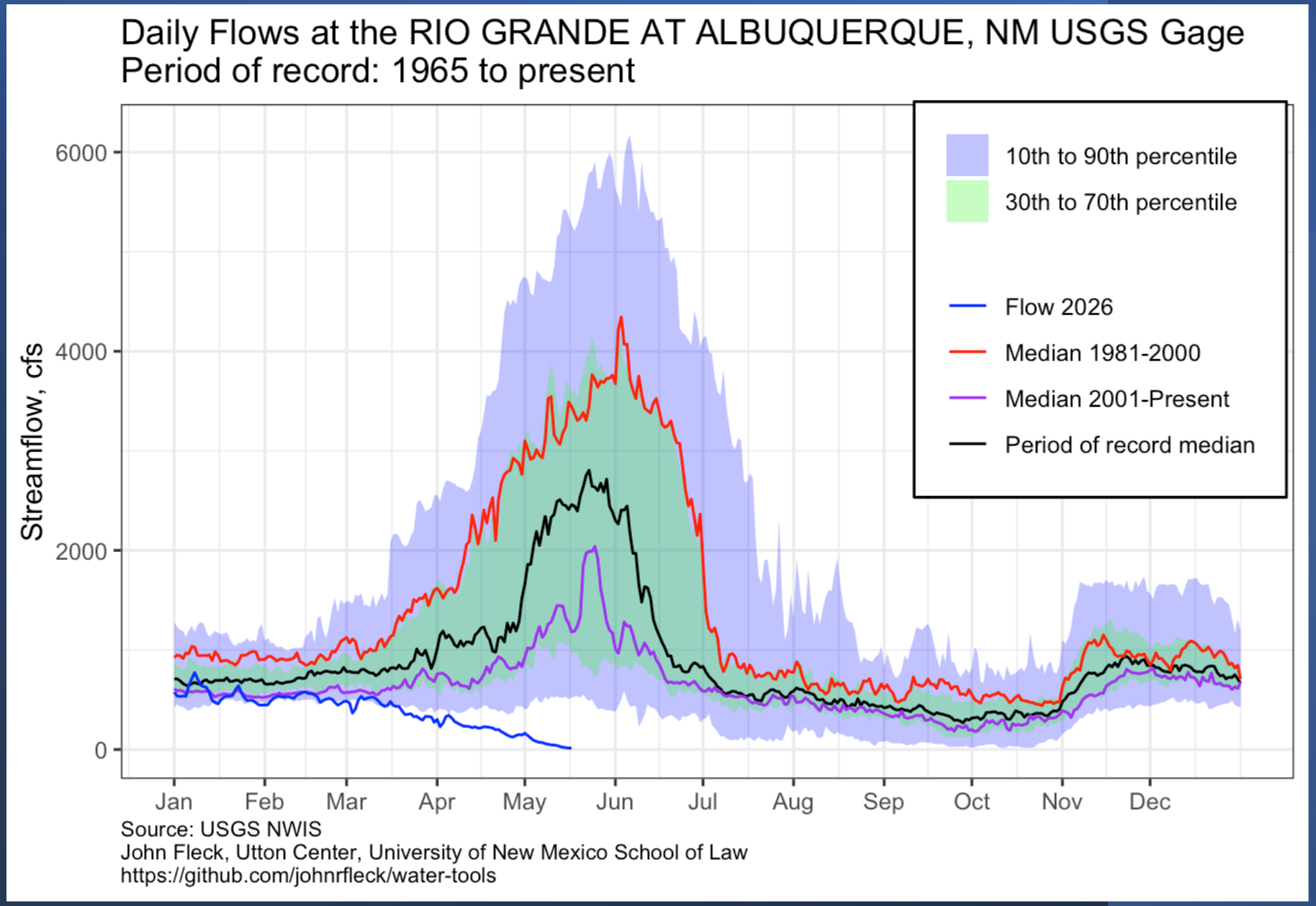


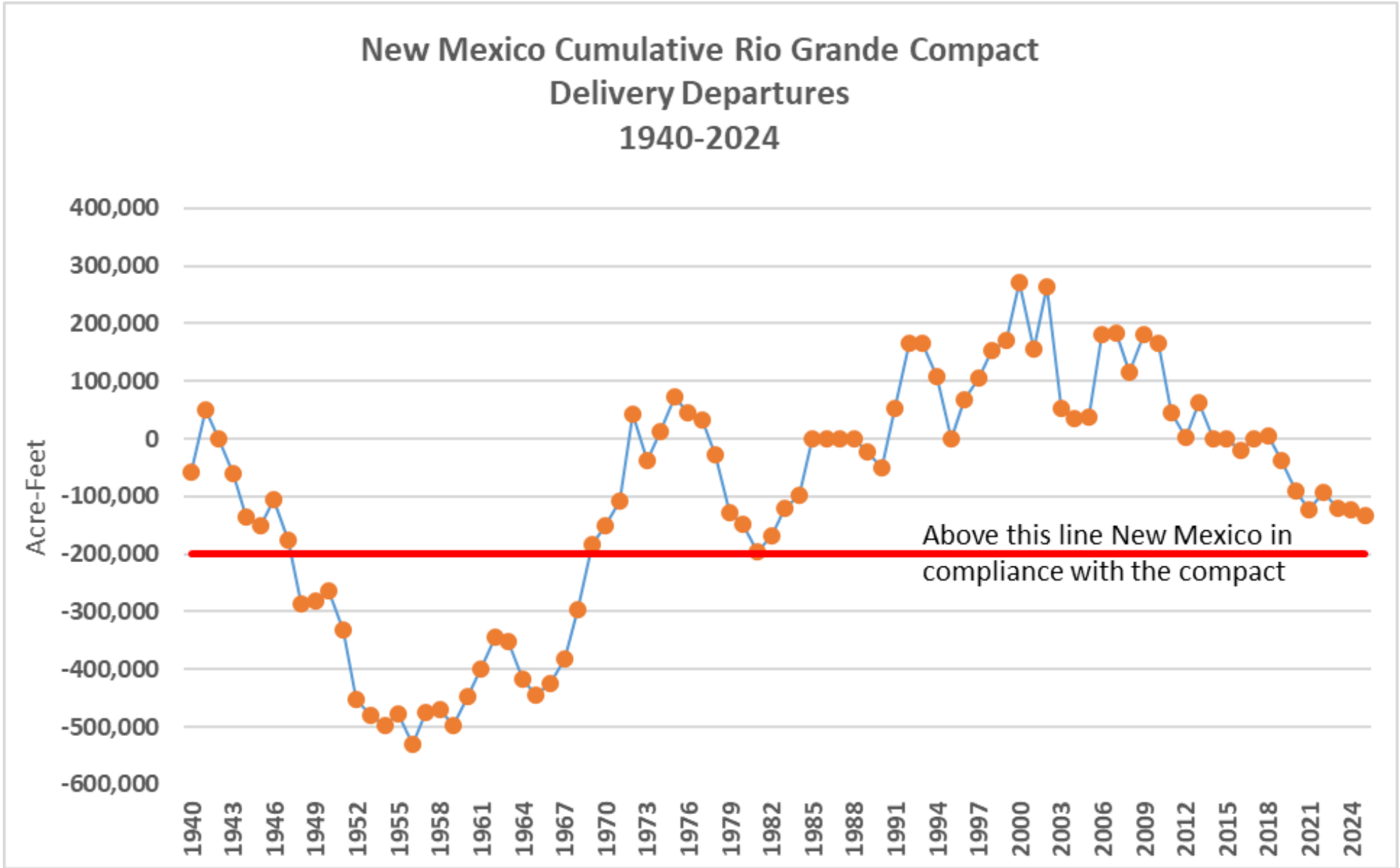
Historic compared to 2025-2026, reservoir storage in Northern New Mexico. Data USBR, graph by John Fleck



Increased periods and geographic extent of river drying

Aridification!


Daily Flows at the RIO GRANDE AT ALBUQUERQUE, NM USGS Gage
Period of record: 1965 to present
Streamflow, cfs
6000
4000
2000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
10th to 90th percentile
30th to 70th percentile
Flow 2026
Median 1981-2000
Median 2001-Present
Period of record median
Source: USGS NWIS
John Fleck, Utton Center, University of New Mexico School of Law
https://github.com/johnrfleck/water-tools


New Mexico Cumulative Rio Grande Compact
Delivery Departures
1940-2024
Acre-Feet
400,000
300,000
200,000
100,000
0
-100,000
-200,000
-300,000
-400,000
-500,000
-600,000
1940
1943
1946
1949
1952
1955
1958
1961
1964
1967
1970
1973
1976
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015
2018
2021
2024
Above this line New Mexico in
compliance with the compact

4. Other related efforts

Objective: Identify practical, farmer-informed strategies to support resilient agriculture in the MRGCD, Compact compliance, and river health under present and future water scarcity.

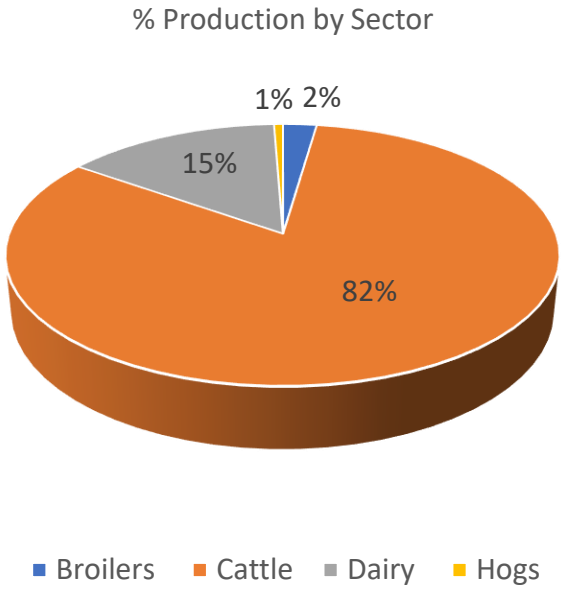
Farmers' focus groups & survey

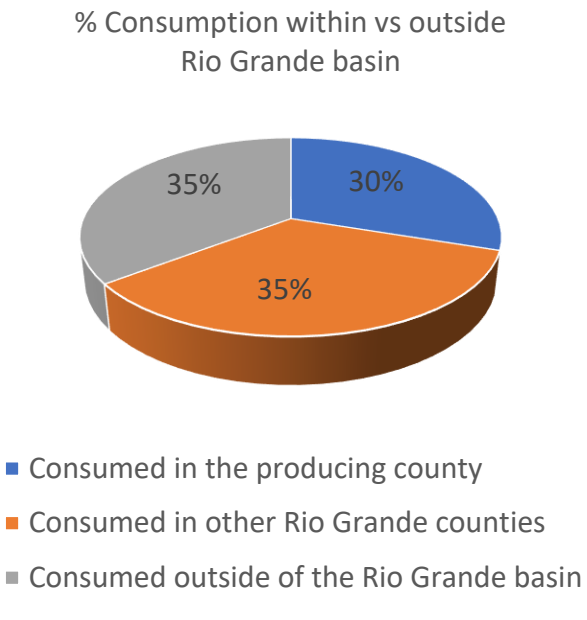
1. Understand farmers' preferences for different water conservation programs.
2. Identify variations in preferences among different types of agricultural water users.
3. Determine the key factors that influence these preferences.

Scenario planning workshops

1. Building a shared understanding of key forces driving community change
2. Developing plausible future scenarios and exploring responses
3. Identifying strategies and partnerships for water-resilient agriculture and community planning

Alfalfa Production and Consumption

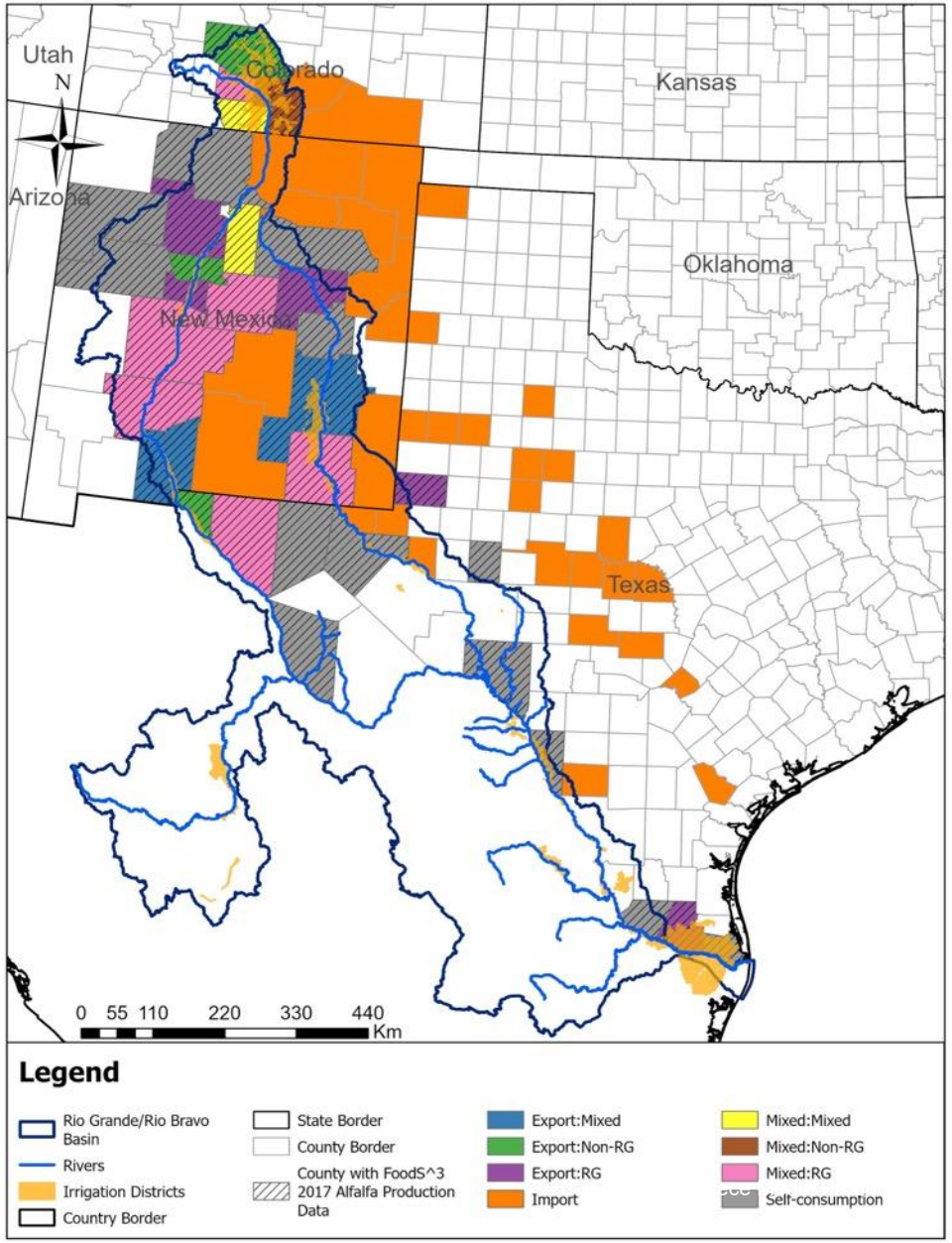




Alfalfa is the dominant irrigated crop in the basin.

We mapped alfalfa production and consumption across the basin.

Most alfalfa produced is used for cattle feed.



NM 50-Year Water Action Plan

Return on Investment:

By supporting producers to adapt farming and ranching to a future with less freshwater, **decrease water use in the agricultural sector statewide by 10% by 2035 and 20% by 2050 while maintaining economic viability** and protecting ecosystem services that benefit from crop irrigation.

5. Collaborative Pathways Toward a Resilient Water Future

Engage Communities in Visioning and Planning for resilient agriculture

- Facilitate inclusive conversations using tools like Exploratory Scenario Planning approach to imagine futures that reflect local priorities and values
- Work together to explore crop choices that align with water availability while maintaining agricultural viability.
- Co-develop financial programs to support farmers to maximize water productivity in their lands, including regenerative agriculture.
- Identify opportunities to repurpose farmland in ways that honor community values and support local economies.

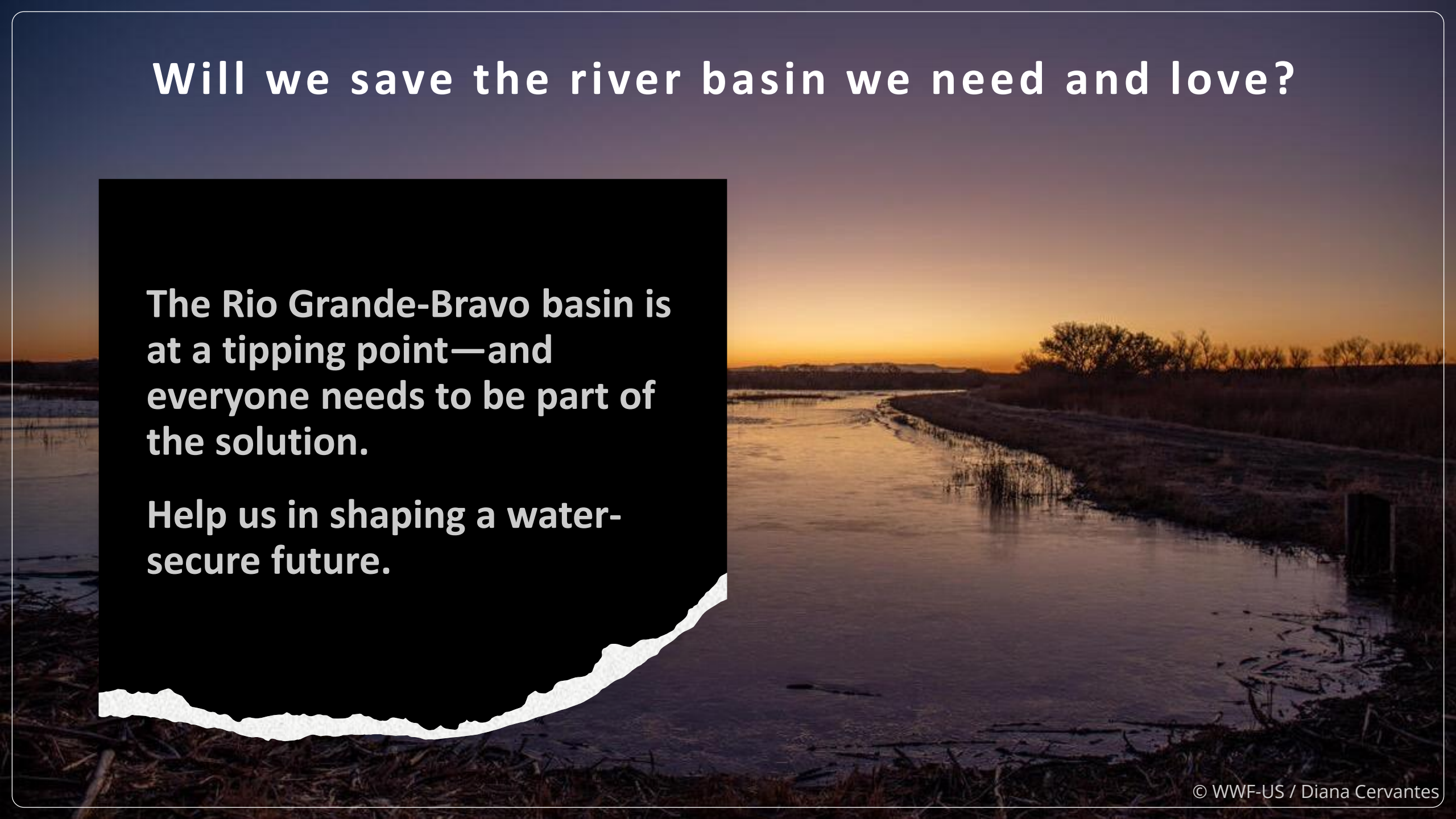
Strengthen Groundwater Stewardship Through Shared Responsibility

- Explore options to set a moratorium on new wells in critically overdrawn areas, paired with transparent and equitable groundwater pumping limits.
- Learn from successful examples of aquifer recovery, while acknowledging and addressing enforcement challenges.
- Ensure that planning processes are accessible, culturally relevant, and grounded in trust-building.

Design Policies That Empower Rather Than Penalize

- Provide robust financial incentives and technical support to help farming and urban communities navigate transitions without sacrificing livelihoods.
- Encourage bold leadership from water agencies to prioritize long-term water and food security, while remaining accountable to the communities.

Will we save the river basin we need and love?



The Rio Grande-Bravo basin is at a tipping point—and everyone needs to be part of the solution.

Help us in shaping a water-secure future.

Thank you!

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