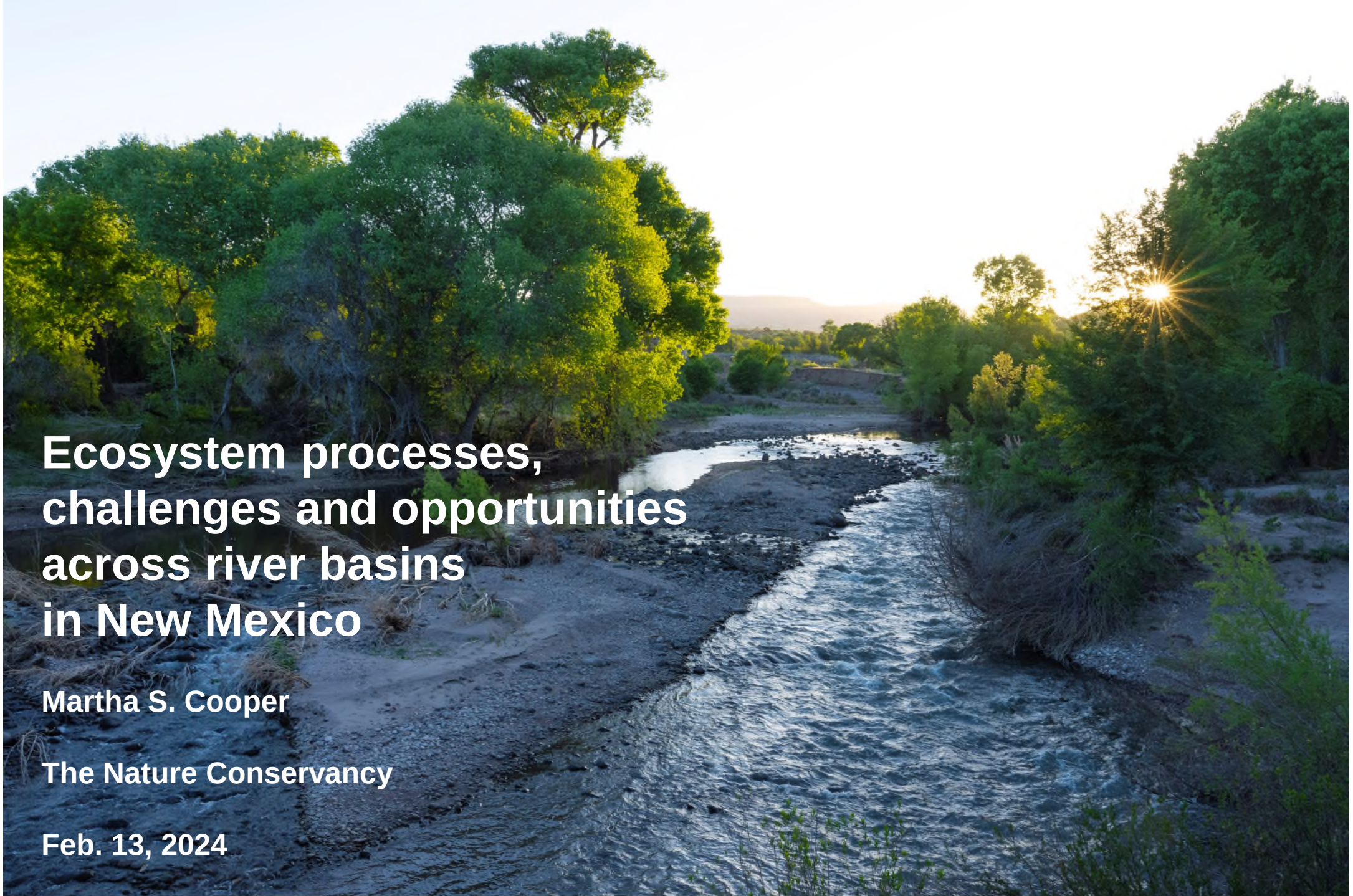
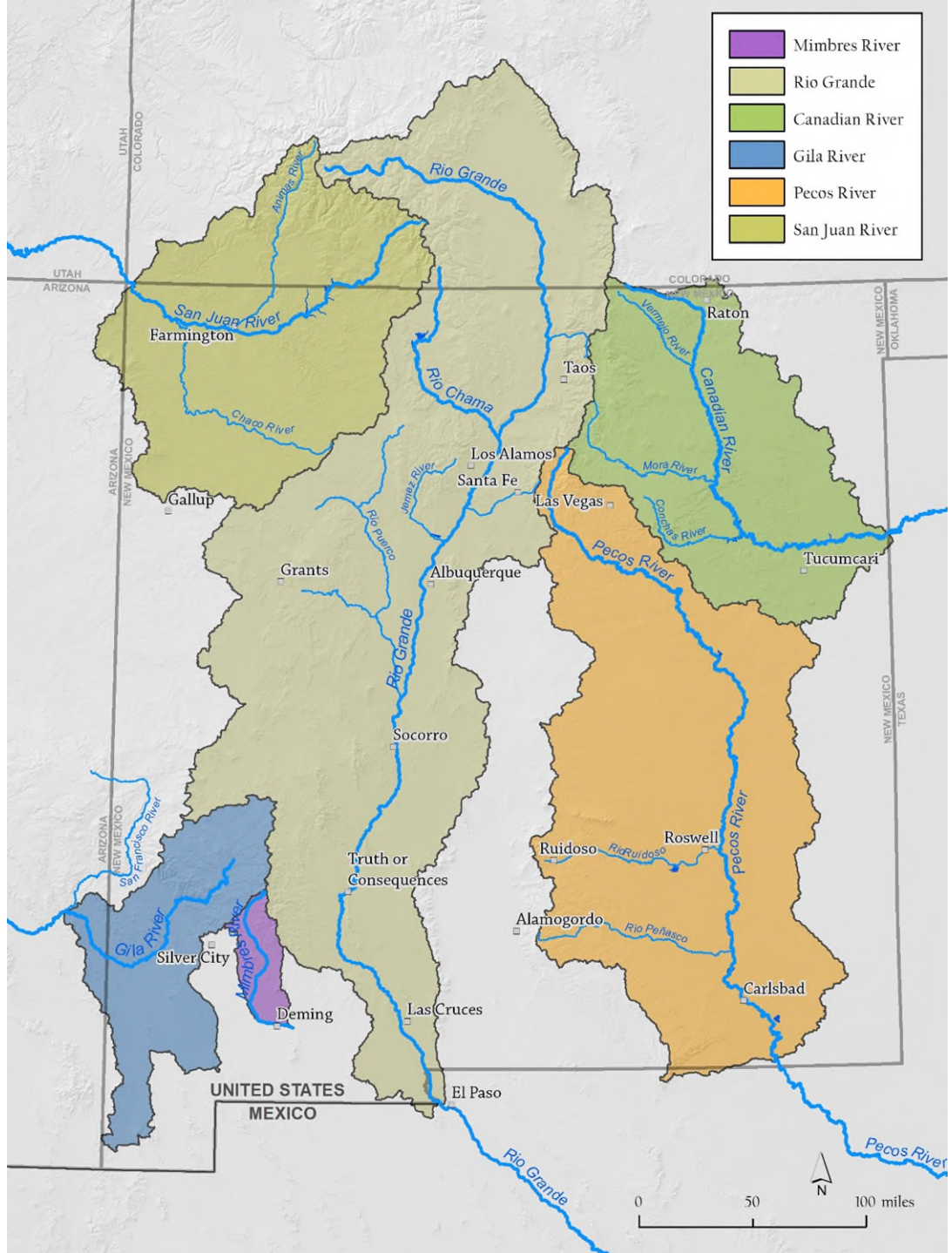


Ecosystem processes, challenges and opportunities across river basins in New Mexico

Martha S. Cooper

The Nature Conservancy

Feb. 13, 2024


Mimbres River
Rio Grande
Canadian River
Gila River
Pecos River
San Juan River
UTAH
COLORADO
ARIZONA
NEW MEXICO
OKLAHOMA
TEXAS
Animas River
San Juan River
Farmington
Chaco River
Rio Chama
Taos
Raton
Vermejo River
Canadian River
Mora River
Conchas River
Los Alamos
Santa Fe
Las Vegas
Tucumcari
Jemez River
Rio Puerco
Gallup
Grants
Albuquerque
Rio Grande
Pecos River
Socorro
San Francisco River
Gila River
Mimbres River
Silver City
Truth or Consequences
Ruidoso
Rio Ruidoso
Roswell
Alamogordo
Rio Peñasco
Carlsbad
Deming
Las Cruces
El Paso
UNITED STATES
MEXICO
N
0
50
100 miles

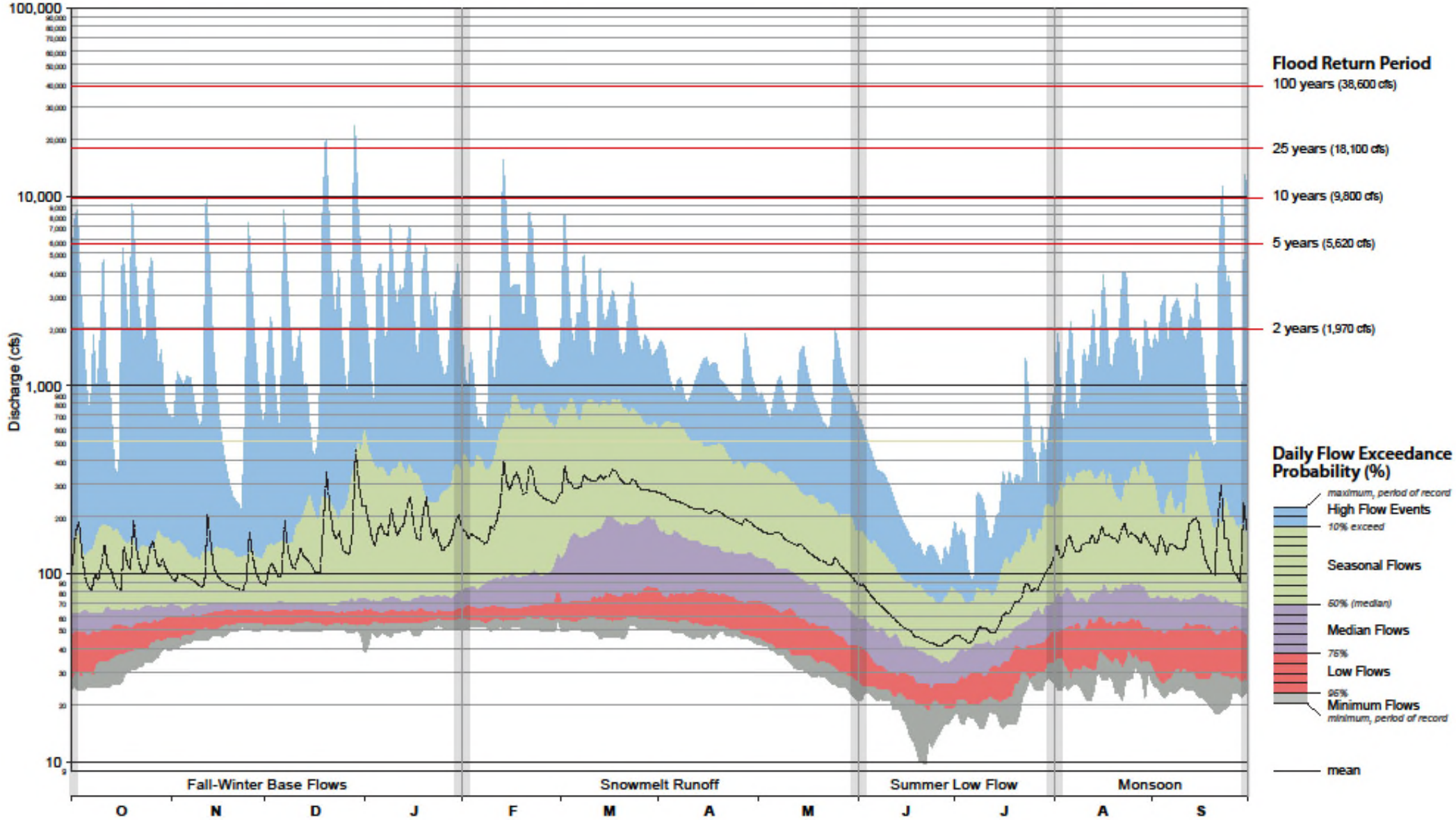

Fall-Winter Base Flow

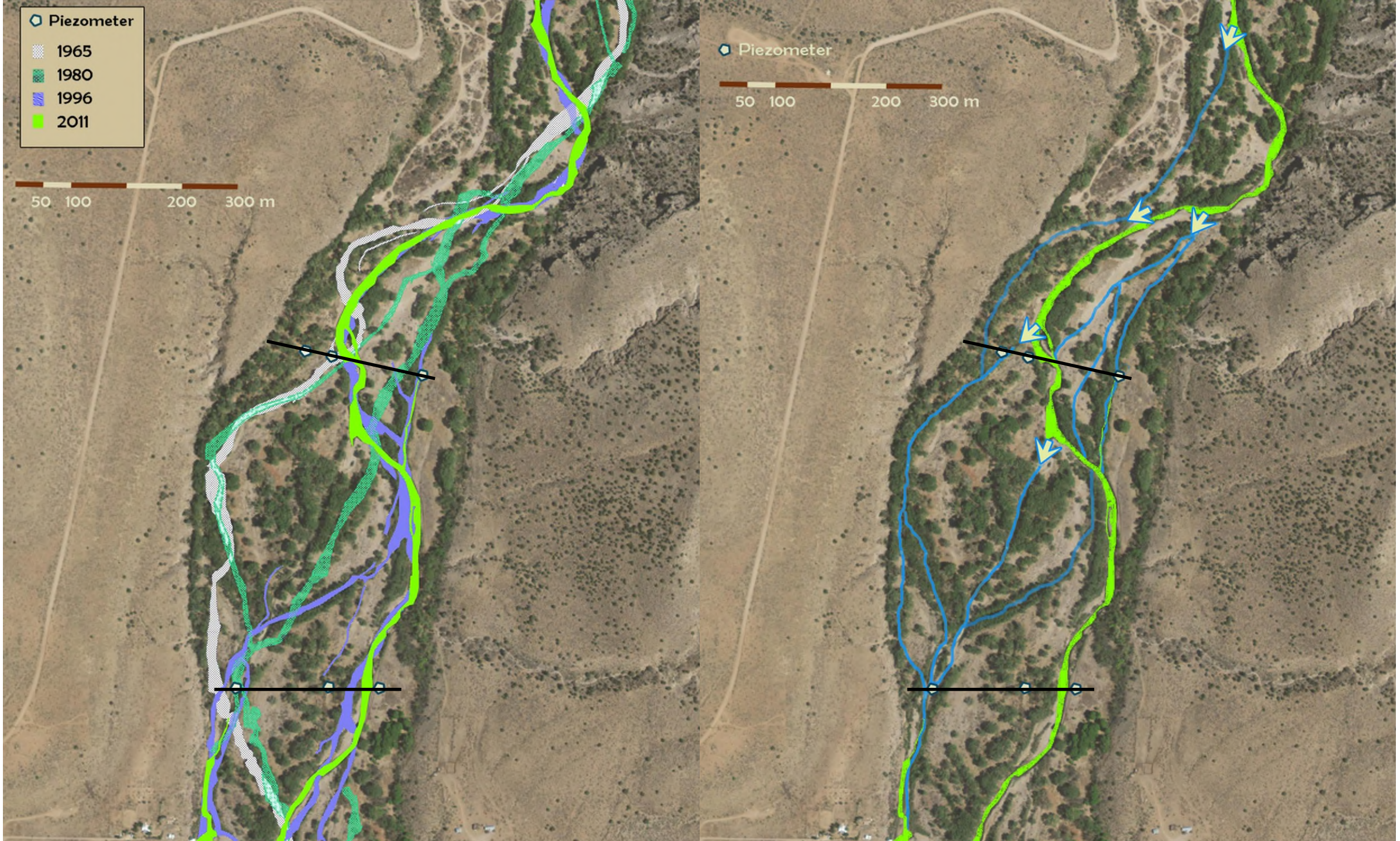

Snowmelt Runoff

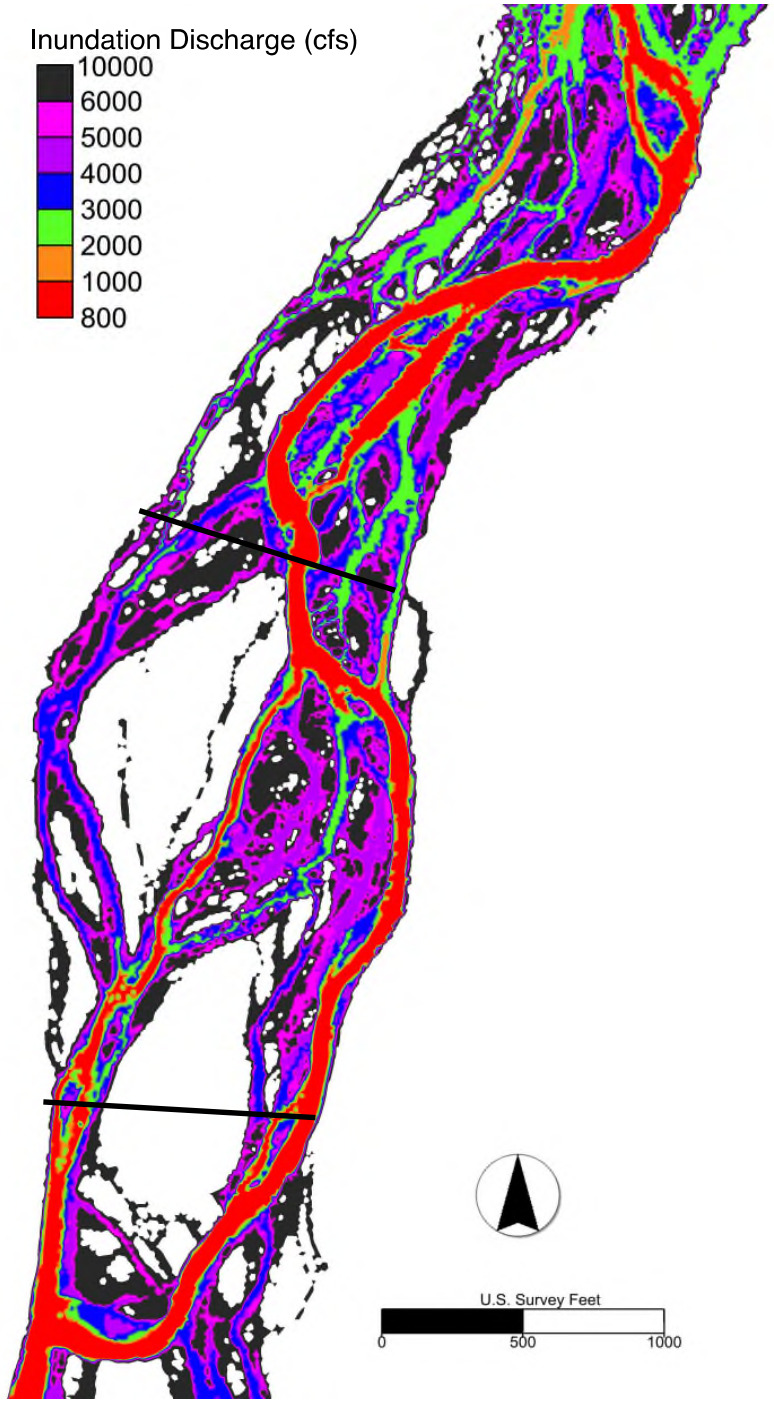

Summer Low Flow


Monsoon Flow

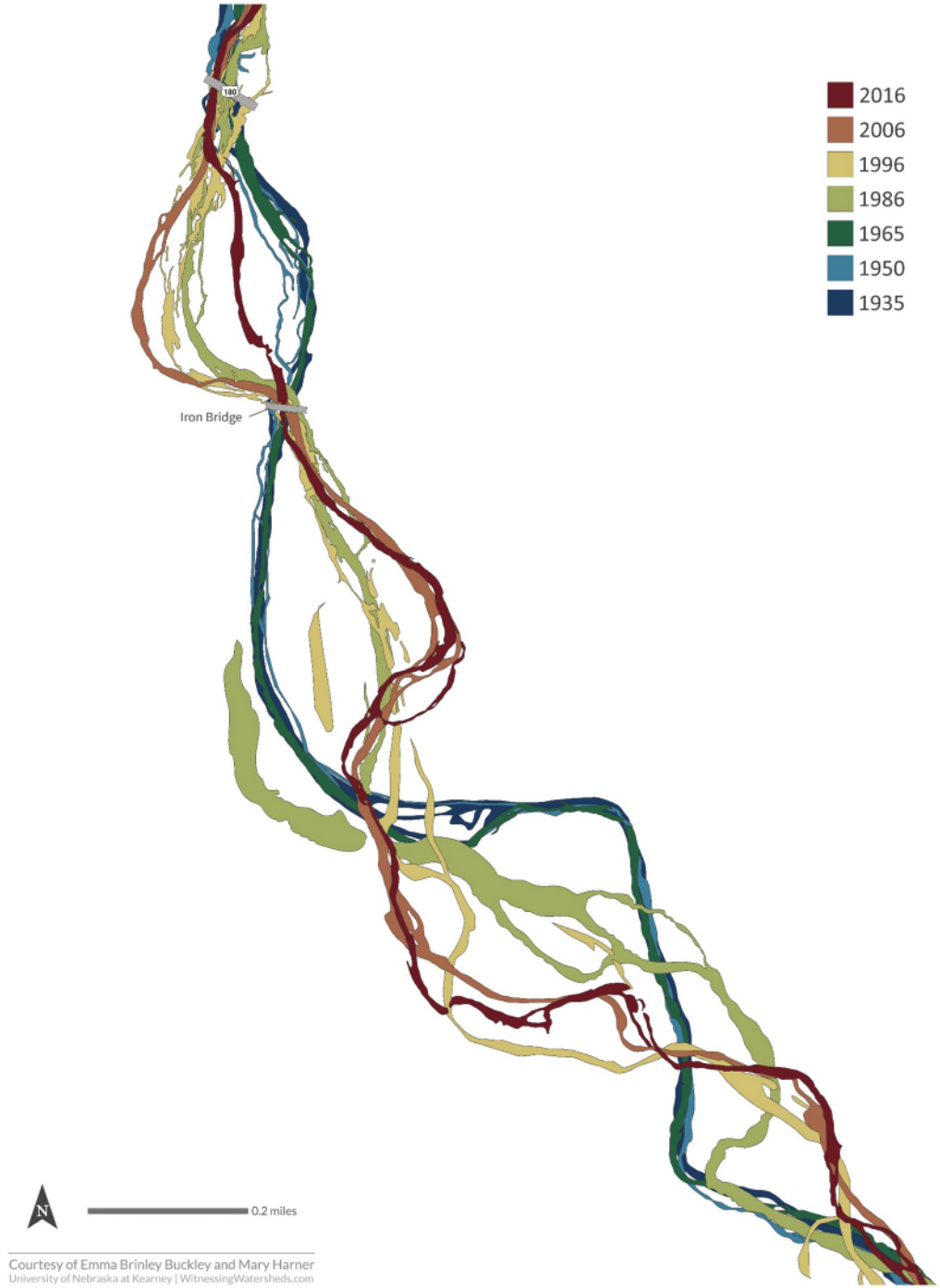
Gila near Gila — Flow Statistics (1929–2012)




Piezometer
1965
1980
1996
2011
50 100 200 300 m
Piezometer
50 100 200 300 m



Stone & Morrison, Ch. 6



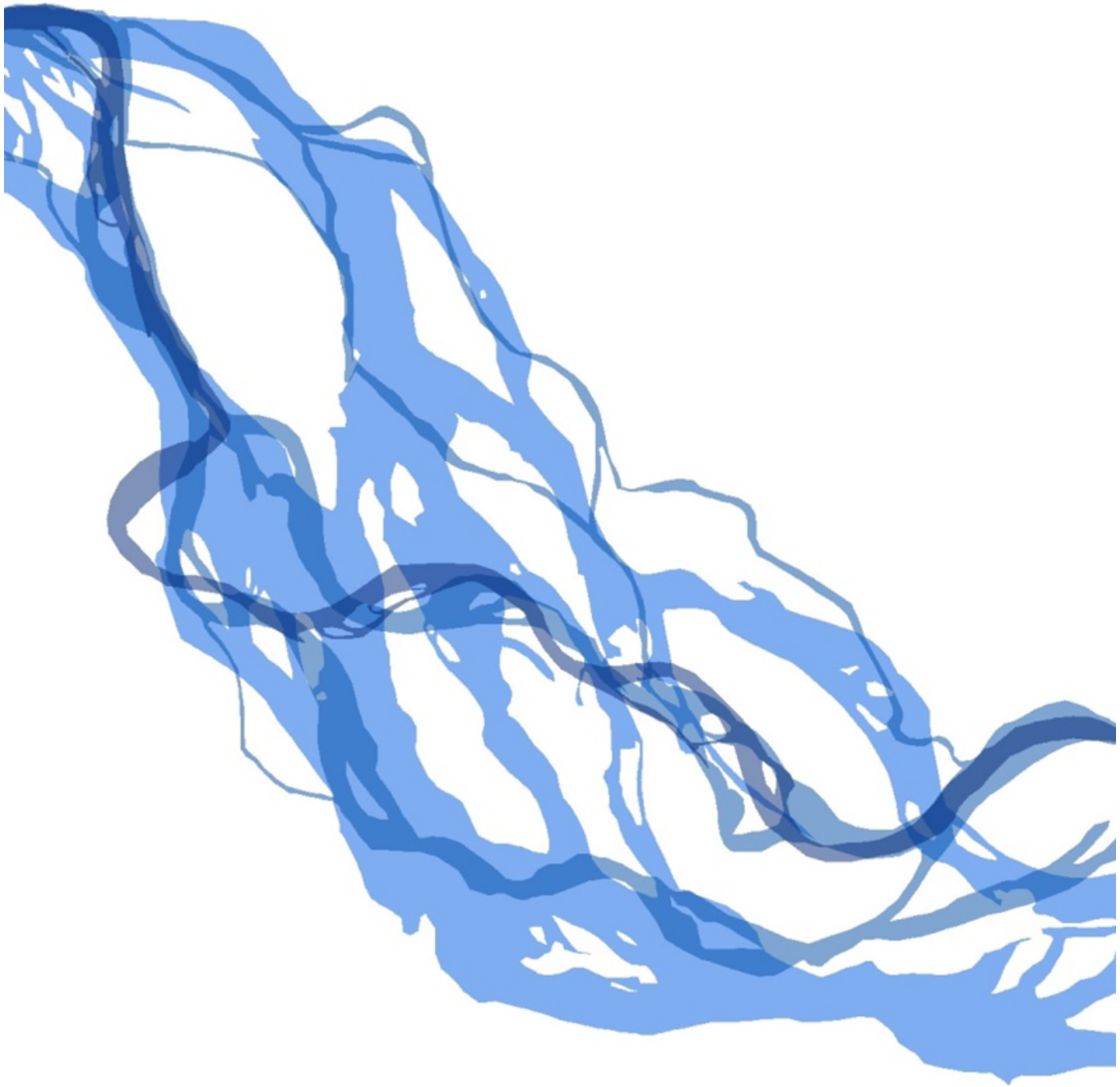
Courtesy of Emma Brinley Buckley and Mary Harner
University of Nebraska at Kearney | WitnessingWatersheds.com

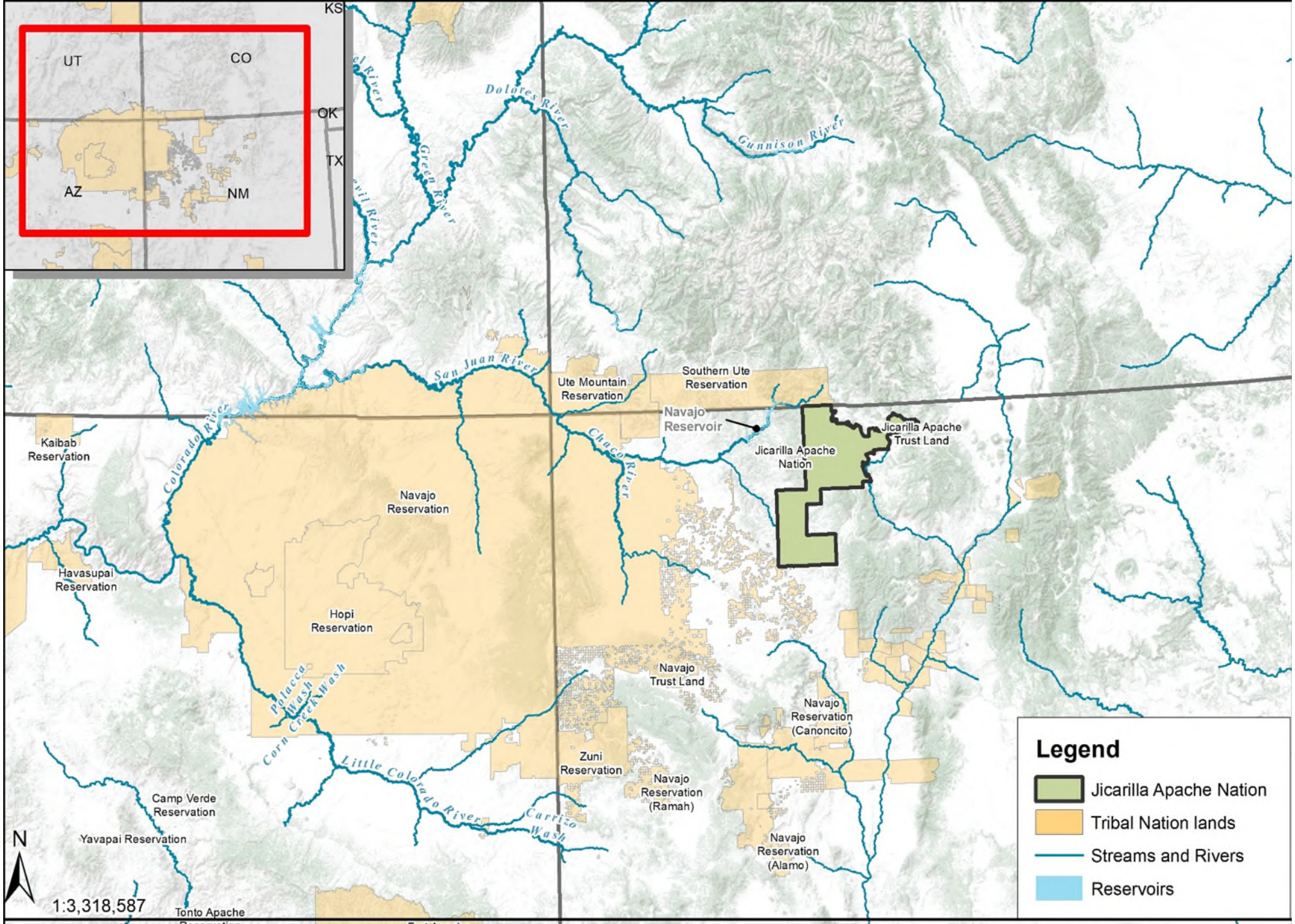
San Juan River


1930’s
1970’s
2011


295 YIA
SE


N 634
Phase II backwater site
Google Earth




UT
CO
AZ
NM
KS
OK
TX
Dolores River
Gunnison River
Green River
San Juan River
Colorado River
Chaco River
Ute Mountain Reservation
Southern Ute Reservation
Navajo Reservoir
Jicarilla Apache Trust Land
Jicarilla Apache Nation
Kaibab Reservation
Navajo Reservation
Havasupai Reservation
Hopi Reservation
Navajo Trust Land
Navajo Reservation (Canoncito)
Polacca Wash
Corn Creek Wash
Little Colorado River
Zuni Reservation
Navajo Reservation (Ramah)
Carrizo Wash
Navajo Reservation (Alamo)
Camp Verde Reservation
Yavapai Reservation
Tonto Apache
N
1:3,318,587
Legend
Jicarilla Apache Nation
Tribal Nation lands
Streams and Rivers
Reservoirs

https://www.youtube.com/watch?v=FhKCd3gtA2E

Approach to Determine 2023 Release Decision

A Technical Team consisting of representatives of the NMISC, JAN, and TNC was assembled to identify alternative uses for this water.

The Team elicited input from 14 experts in hydrology, geomorphology, and fisheries with direct knowledge of the San Juan River.

The Team conferred with BOR hydrologist to better understand dam operations.

2023 Decision by NMISC based on current collective understanding of the system, supported by literature and expert judgment.

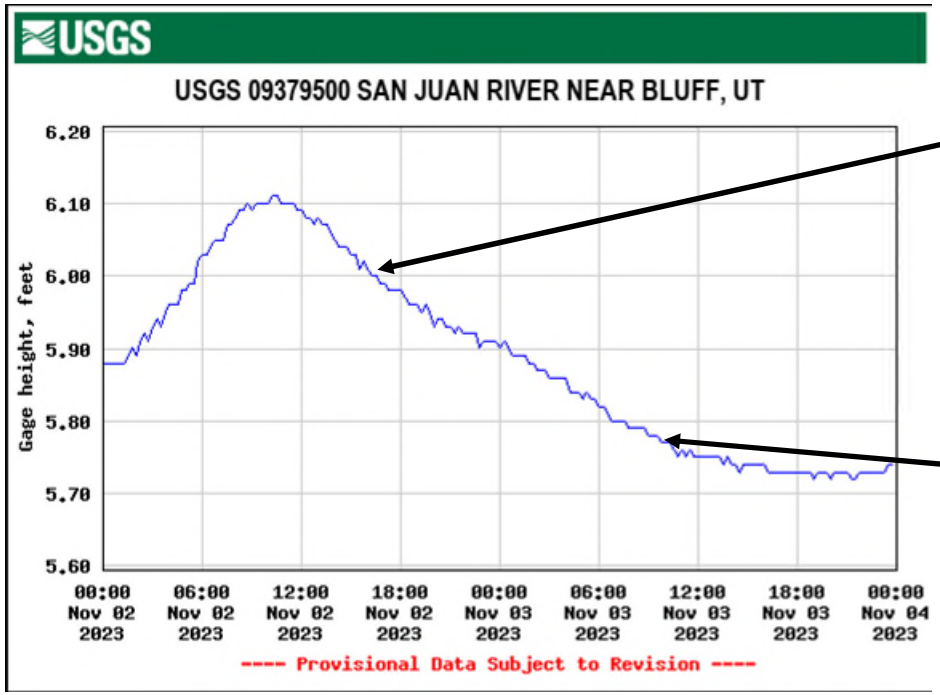
Flow Release Options

- Winter Releases (Jan-May) - High magnitude/short duration flushing flow
- Supplement the Spring Peak (May-Jun) - Add water to annual spring peak
- Supplement Summer Baseflow (Jul-Sep) - Increase post-runoff baseflows
- Supplement Fall Baseflow (Oct-Dec) - Increase fall baseflows

What we hope to learn…

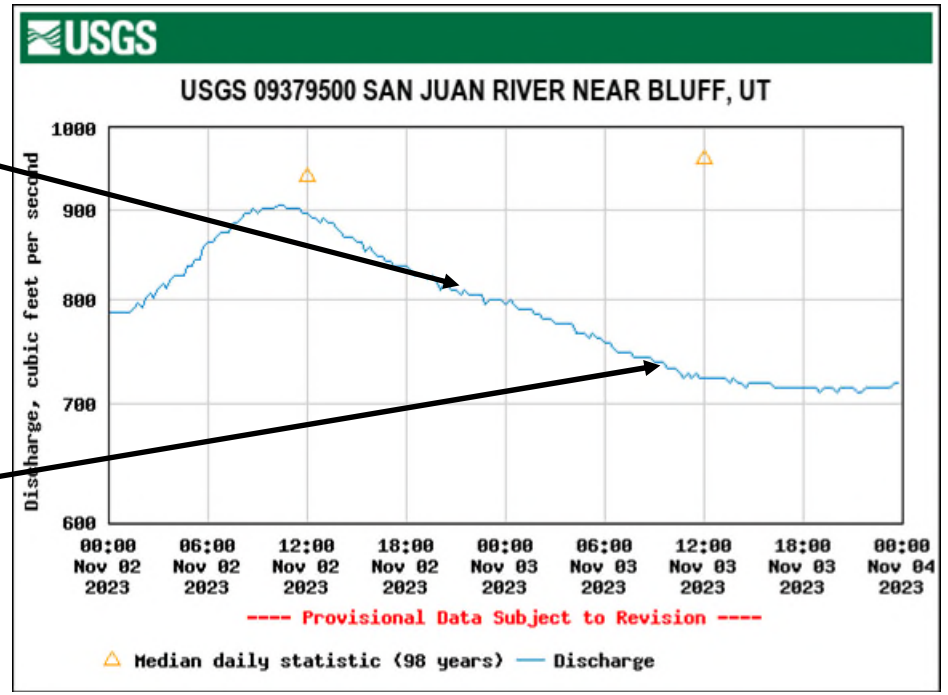
- Implementation – practical matters related to the release.
- Adaptive Management – monitor and incorporate what we learn into subsequent years' decisions.
- Flows – flows observed at the downstream gages associated with releases.
- Physical – distribution, connectivity, and quality of backwaters.
- Biological – larval/young-of-year fish persistence in the backwaters.

Pressure Transducer Installation



Connected with a few inches depth at about 800 cfs at about 5 PM on 11/2/2023

Dropped about 0.3 ft and almost disconnected at about 750 cfs at about 10 AM on 11/3/2023

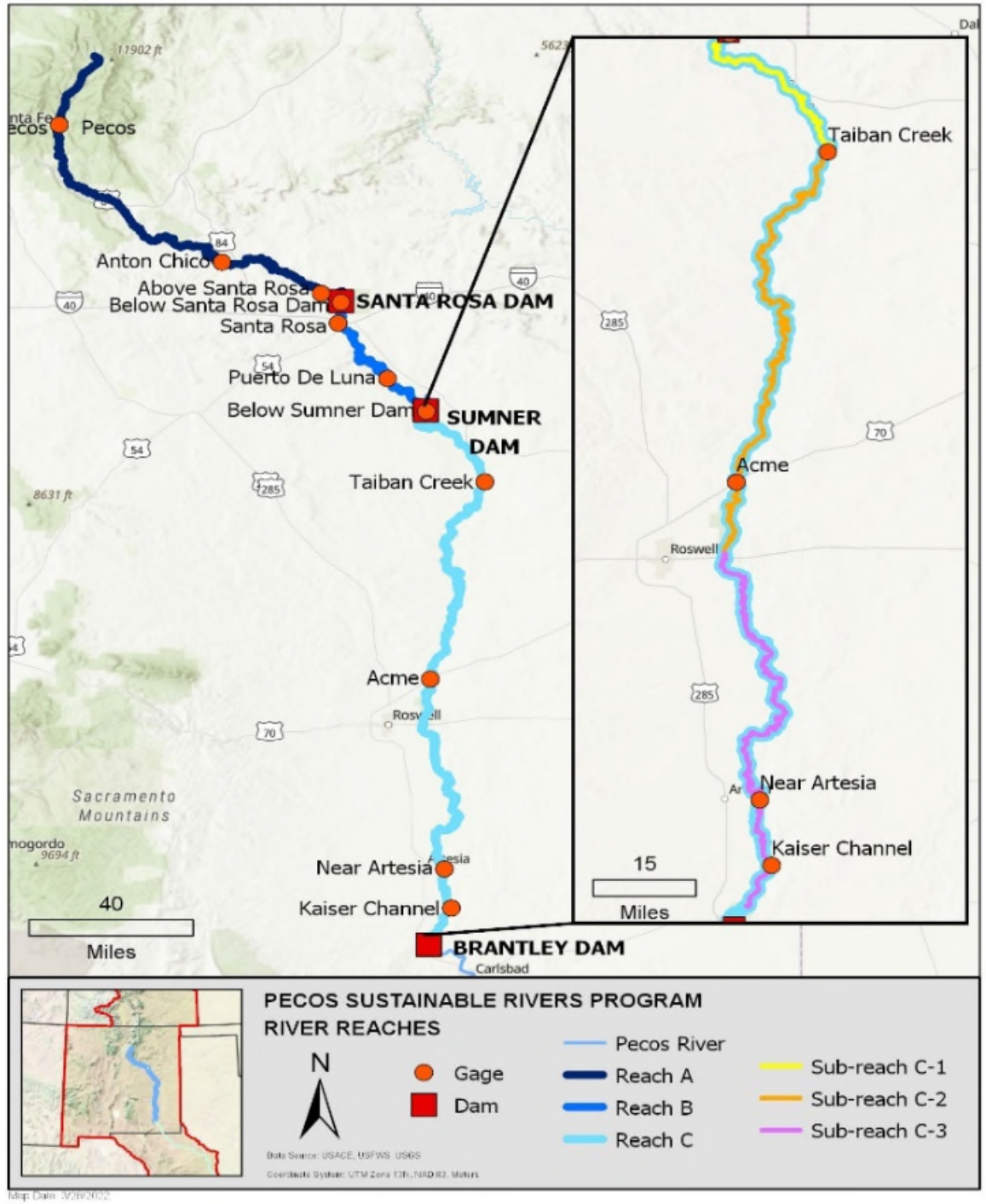


Adapting Farming and Ranching - Colorado River Resilience (resilientcoriver.org)

Identifying environmental flow requirements for the Pecos River

https://www.hec.usace.army.mil/sustainablerivers/publications/docs/Pecos%20-%20Identifying%20environmental%20flow%20requirements.pdf)

Credit: Paul Tashjian


Pecos
Anton Chico
Above Santa Rosa
Below Santa Rosa Dam
SANTA ROSA DAM
Santa Rosa
Puerto De Luna
Below Sumner Dam
SUMNER DAM
Taiban Creek
Acme
Roswell
Near Artesia
Kaiser Channel
BRANTLEY DAM
Carlsbad
Sacramento Mountains
11902 ft
8631 ft
9694 ft
40
Miles
15
Miles
PECOS SUSTAINABLE RIVERS PROGRAM
RIVER REACHES
N
Gage
Dam
Pecos River
Reach A
Reach B
Reach C
Sub-reach C-1
Sub-reach C-2
Sub-reach C-3

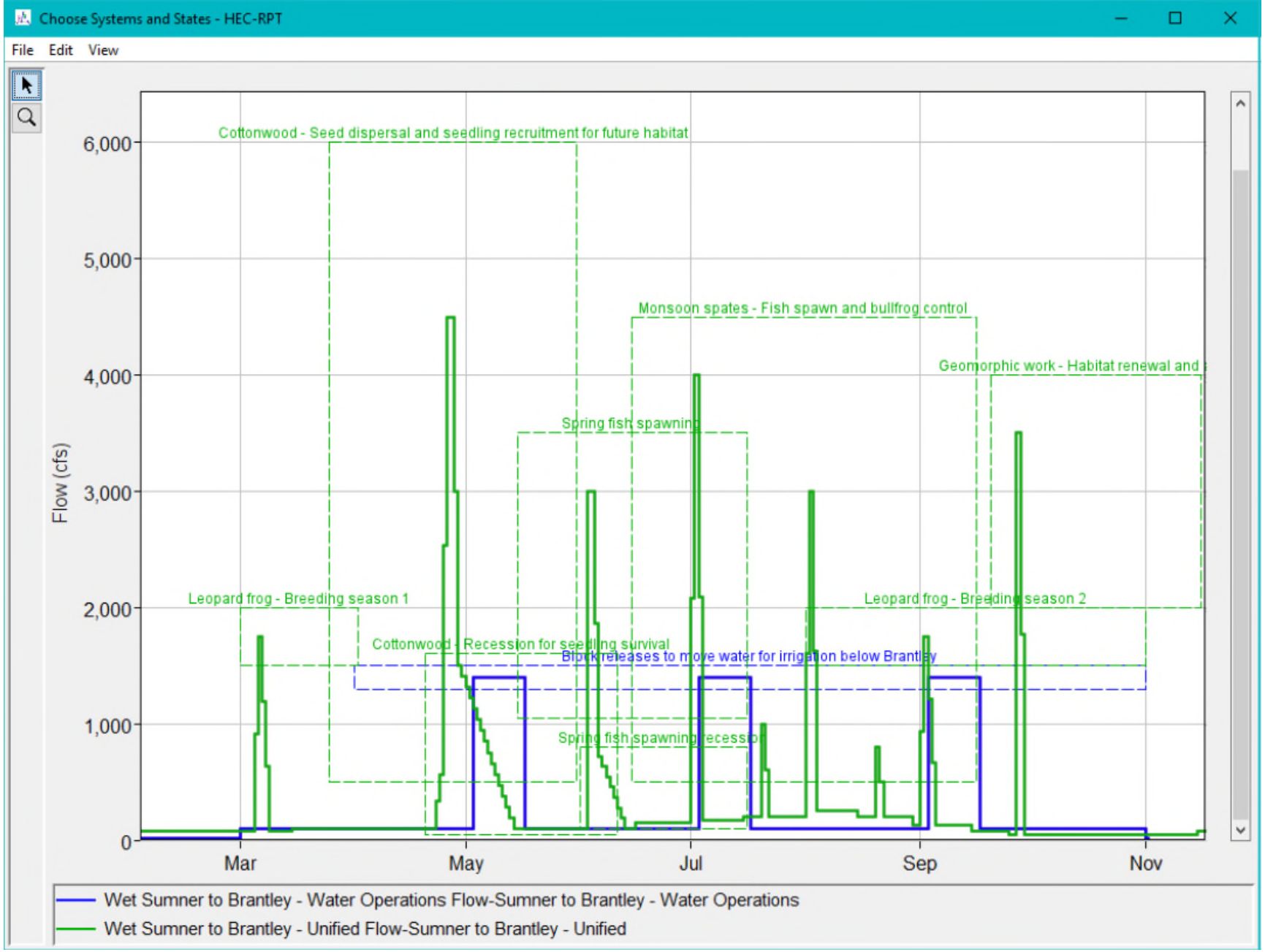


Figure 21. Unified e-flows (green) and flows prescribed by the water operations group (blue), wet years, Sumner to Brantley (Reach C).