

The Upper Verde River

*Our under-appreciated,
little-known, spring-fed
local river.*

*Presented by
Gary Beverly, PhD*

*Sierra Club
&
Citizens' Water Advocacy Group*



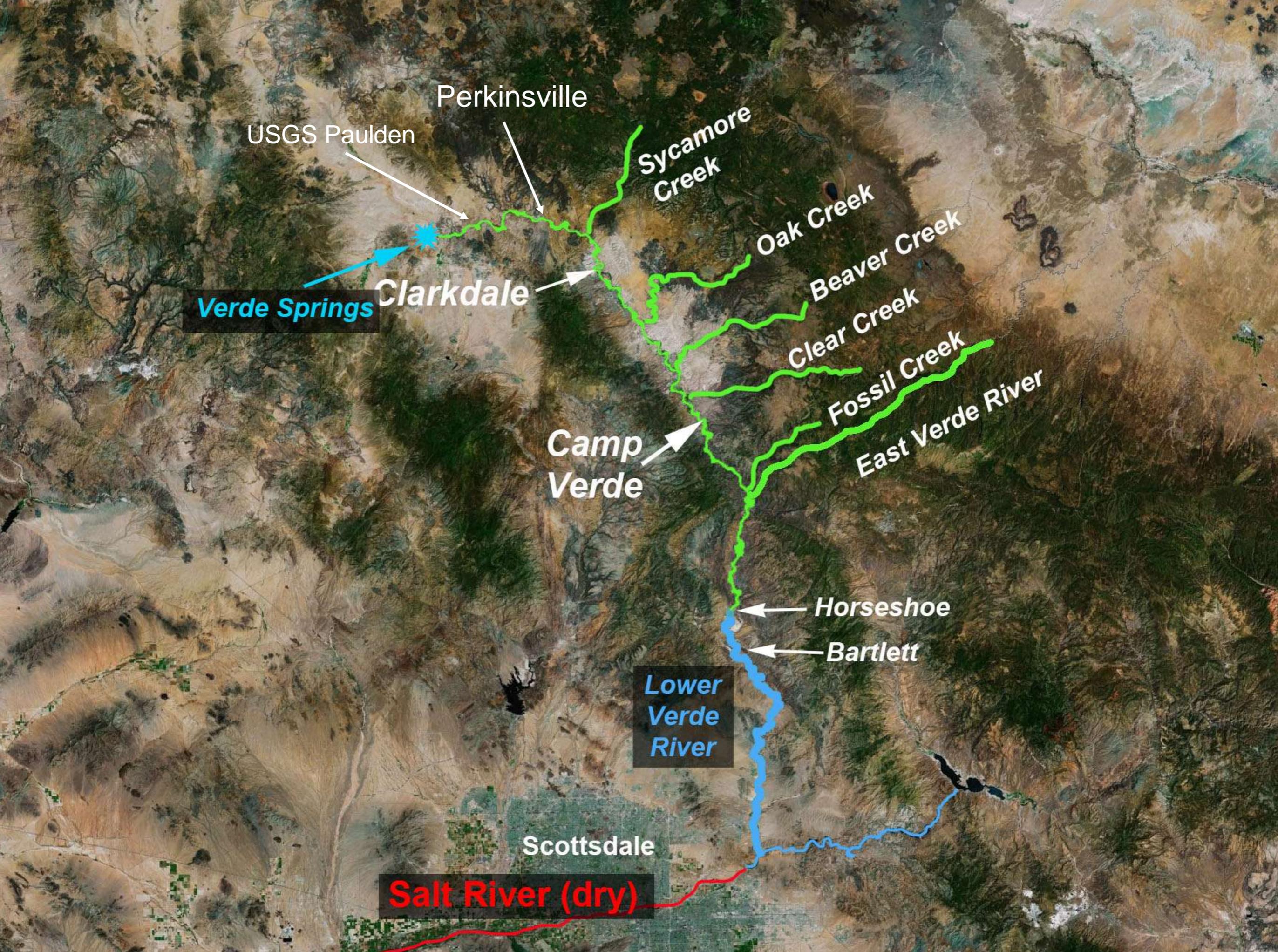
Sierra Club:
Enjoy, Explore, Protect

CWAG:
Sustainable Water Policy,
Protect the Verde



Valuable & Threatened River





Perkinsville

USGS Paulden

Sycamore
Creek

Oak Creek

Beaver Creek

Verde Springs
Clarkdale

Clear Creek

Fossil Creek

Camp
Verde

East Verde River

Horseshoe

Bartlett

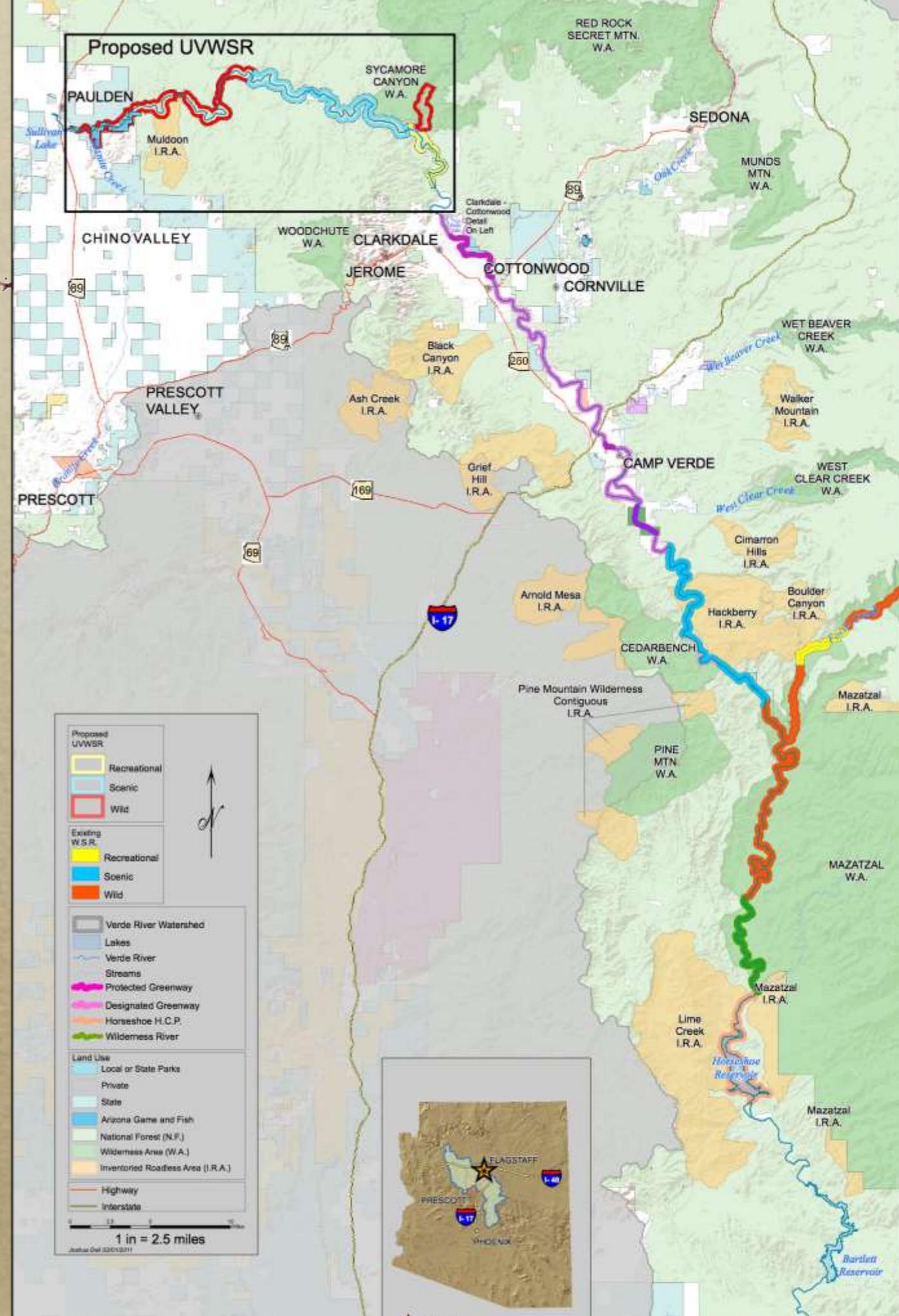
Lower
Verde
River

Scottsdale

Salt River (dry)

Green Artery Pulsing Through the Heart of Arizona

- *Continuous flow - 190 miles*
- *Connects Sonoran Desert to alpine*
- *Five Wilderness Areas*
- *Eight Inventoried Roadless Areas*
- *Three National Forests*
- *Two WSR's*
- *Two State Parks*
- *One Wildlife Preserve, 3 IBAs*
- *One National Monument*
- *543,000 contiguous protected acres*

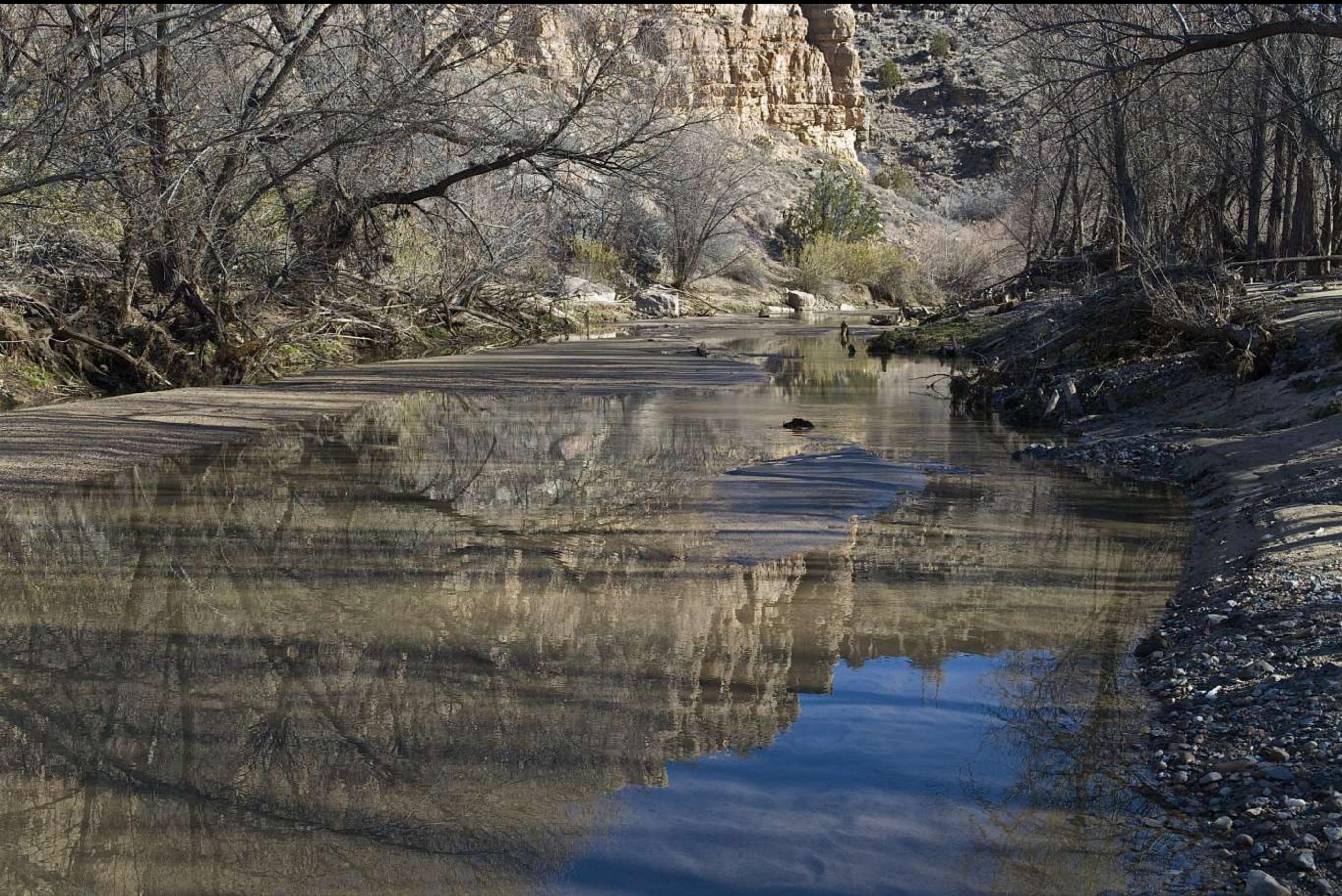


Verde Value

- *Water supply*
- *Economy*
- *Recreational*
- *Cultural*
- *Scenic*











Rich Watershed Wildlife

- 5.8% AZ land area
- 78% AZ breeding birds species
- 25 of 28 AZ bats
- 17 of 19 carnivores
- 5 of 6 native ungulate species
- 76% reptile/amphibian genera
- 478 total vertebrate species

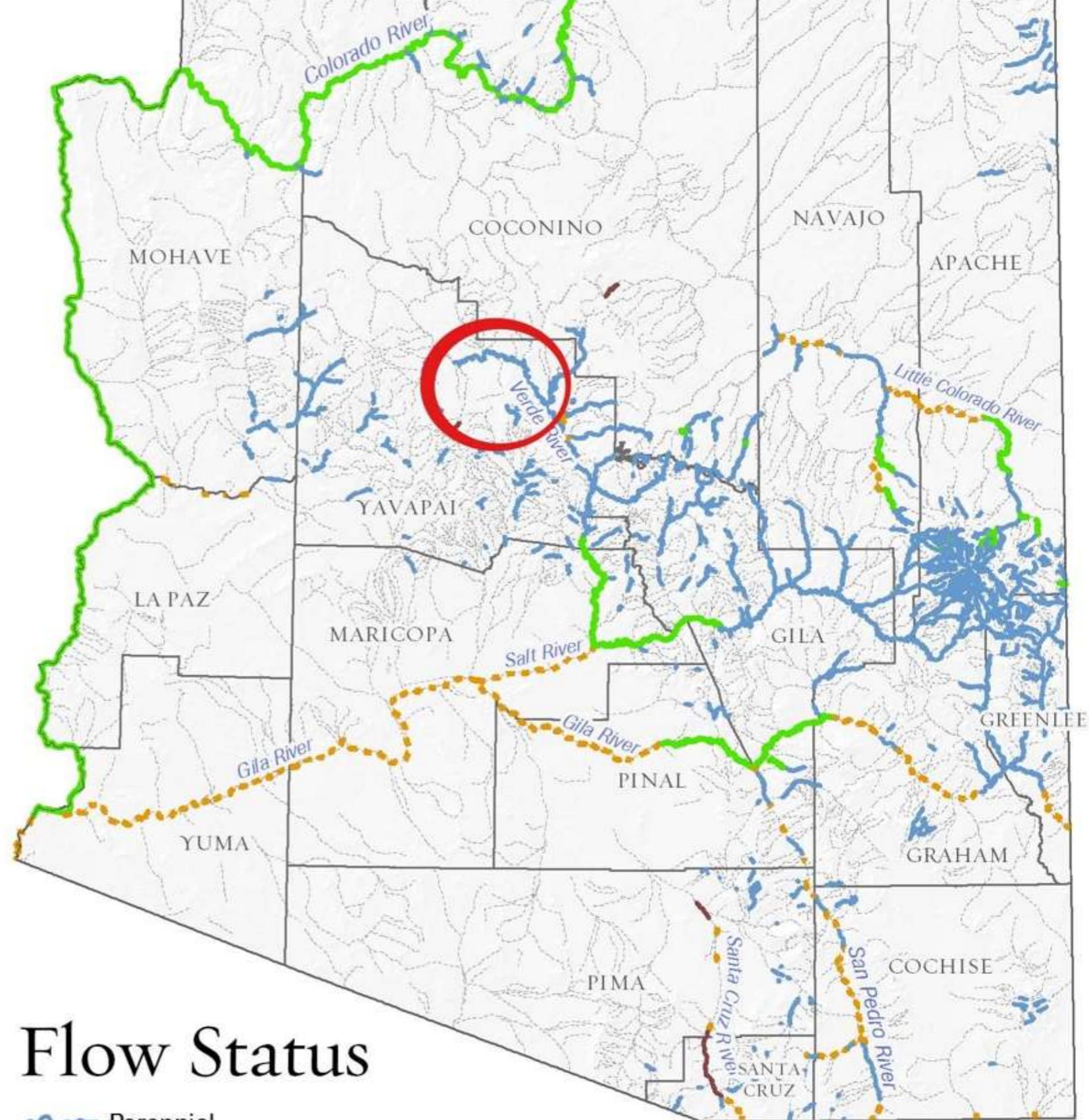


15 ESA Listed Species - Riparian (o&f)

- Yellow-billed cuckoo (Threatened, CH proposed)
- Southwestern willow flycatcher (Endangered, CH designated)
- Narrow-headed gartersnake (Threatened, CH proposed)
- Northern Mexican gartersnake (Threatened, CH proposed)
- Chiricahua leopard frog (Threatened, CH designated)
- Arizona cliffrose (Endangered, no CH)
- Spikedace (Endangered, CH designated)
- Loach minnow (Endangered, CH designated)
- Razorback sucker (Endangered, CH designated)
- Gila chub (Endangered, CH designated)
- Colorado pikeminnow (Endangered, experimental population)
- Gila topminnow (Endangered, CH designated)
- Gila trout (Threatened, CH designated)
- Roundtail chub (proposed for listing, threatened)
- Headwater chub (proposed for listing, threatened)
- and...Six upland species

Irreplaceable

- *Most Arizona rivers are seriously impaired.*
- *Verde is last, best, longest living perennial river in AZ.*

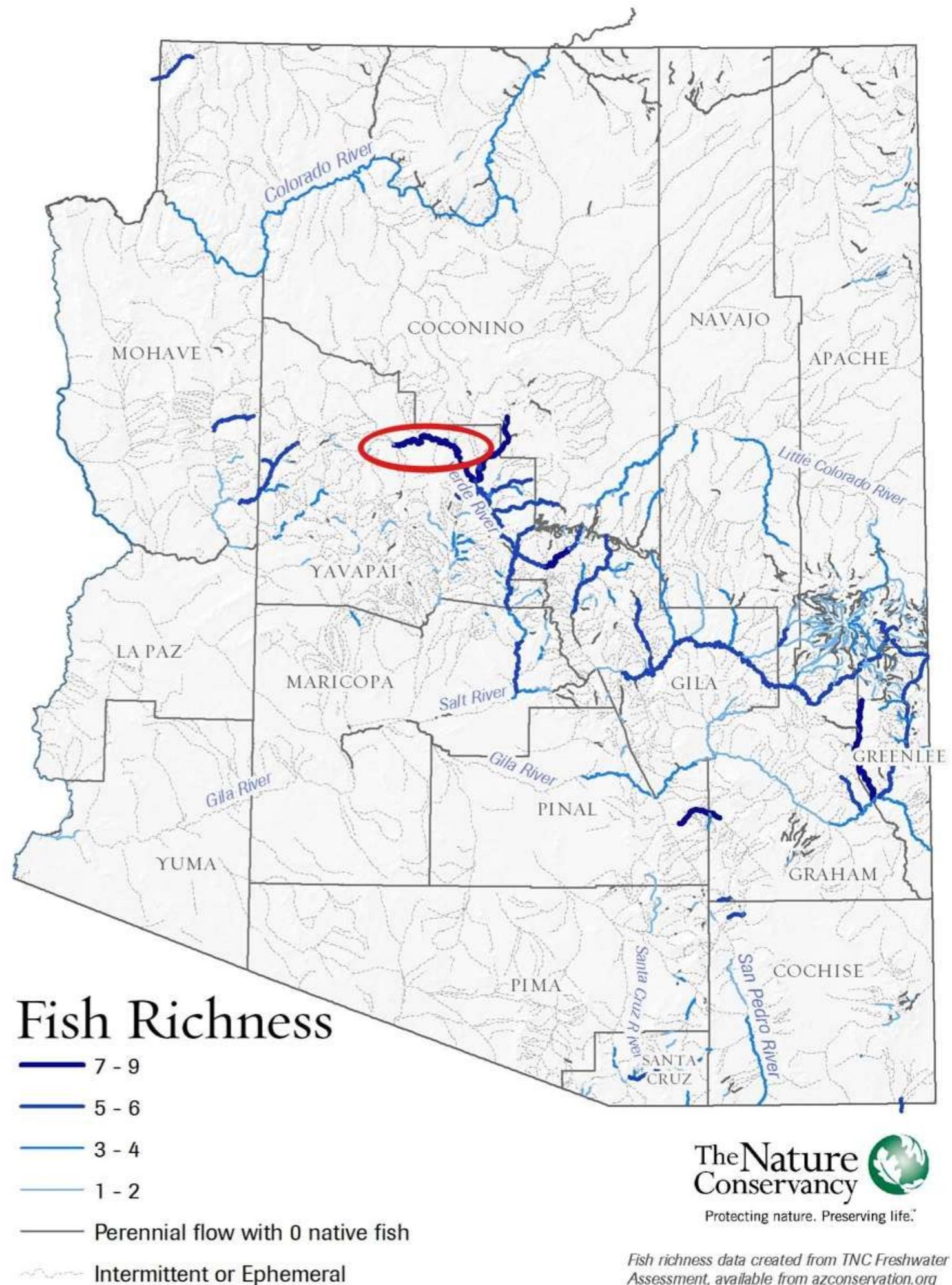


Flow Status

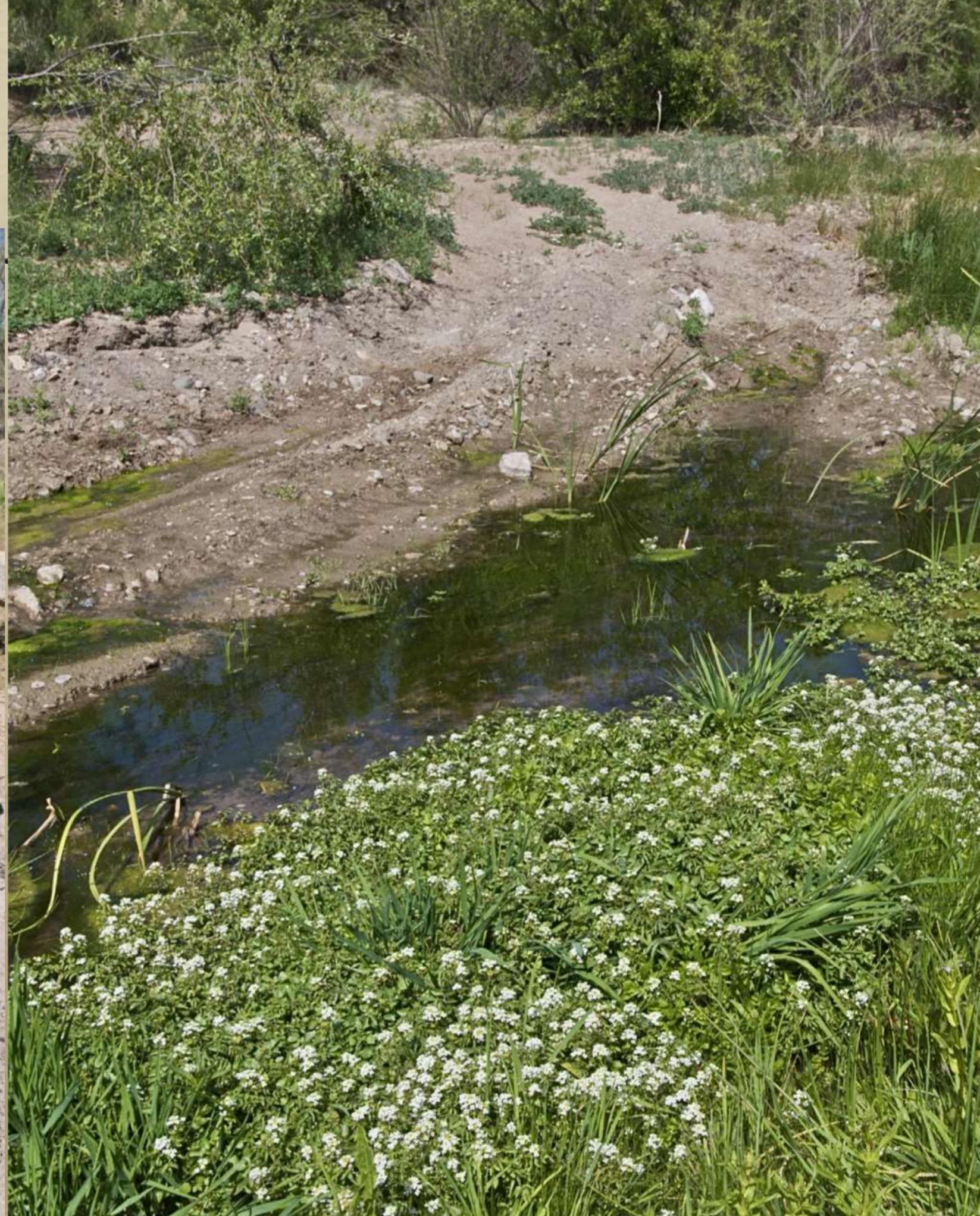
- Perennial
- Formerly Perennial
- Regulated
- Effluent Dominated (May Be Formerly Perennial)
- Intermittent or Ephemeral

Native Fish

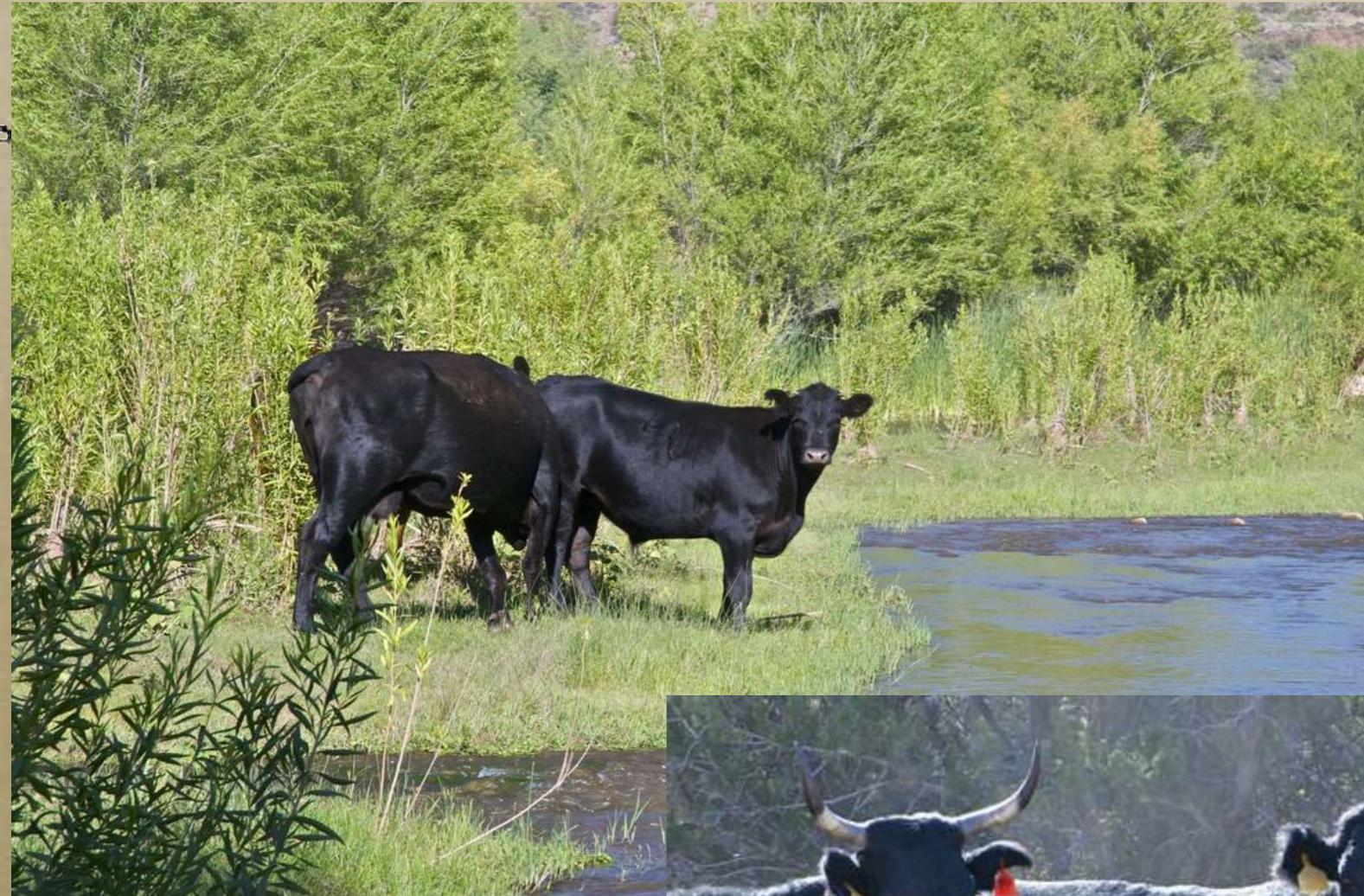
- Upper Verde is one of two best rivers in AZ for native fish.
- Of 33 native fish species, 19 are ESA listed and 3 are extinct.
- ESA Endangered, Critical Habitat: spikedace, loach minnow, razorback sucker



Threat: Destructive Recreation



Problem: Unauthorized Grazing



Upper Verde Wild and Scenic River

A Citizens' Proposal



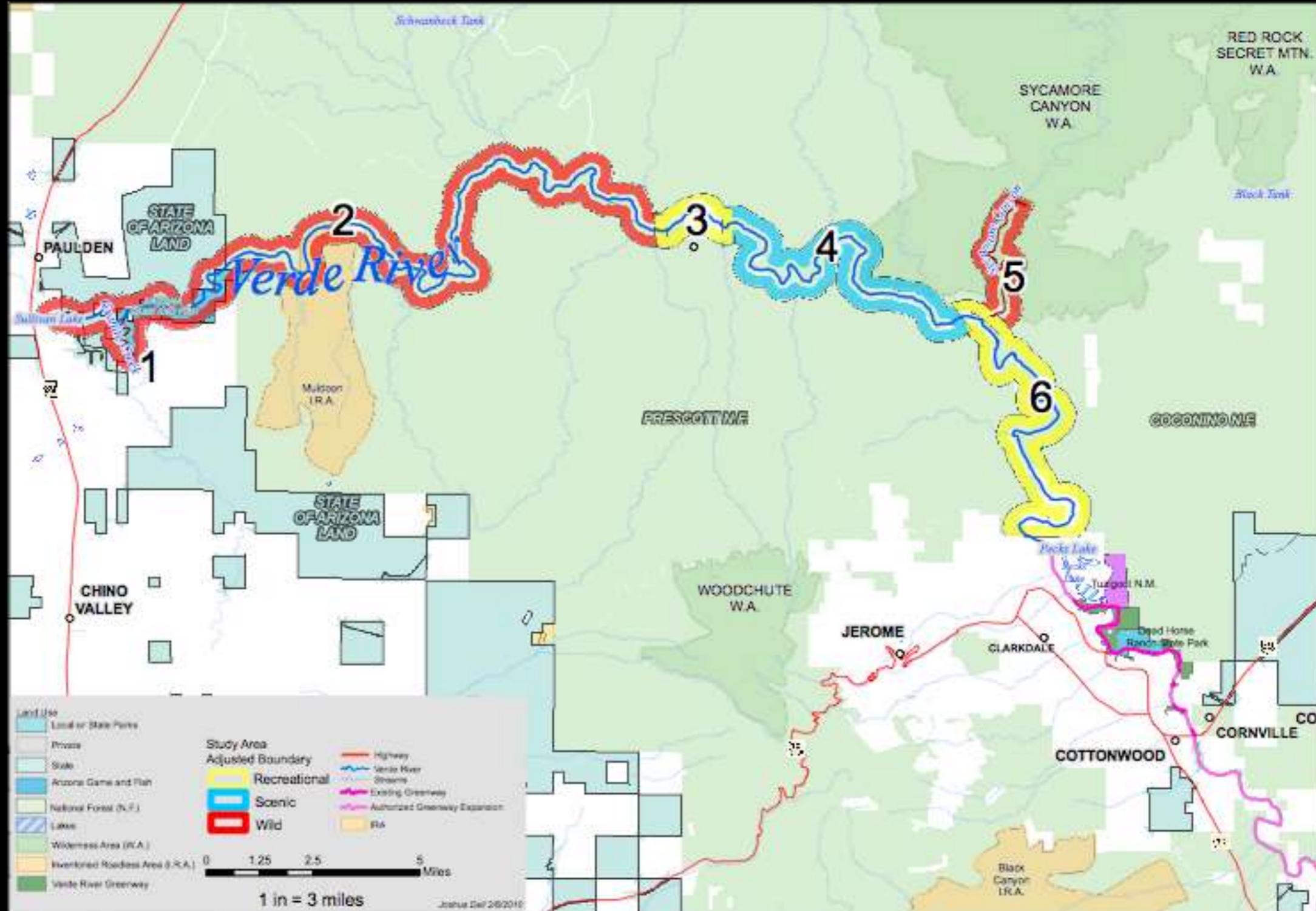
A green artery pulsing through the heart of Arizona

Default Management: Upper Verde Wild & Scenic River

48.3 miles

*10,800
acres*

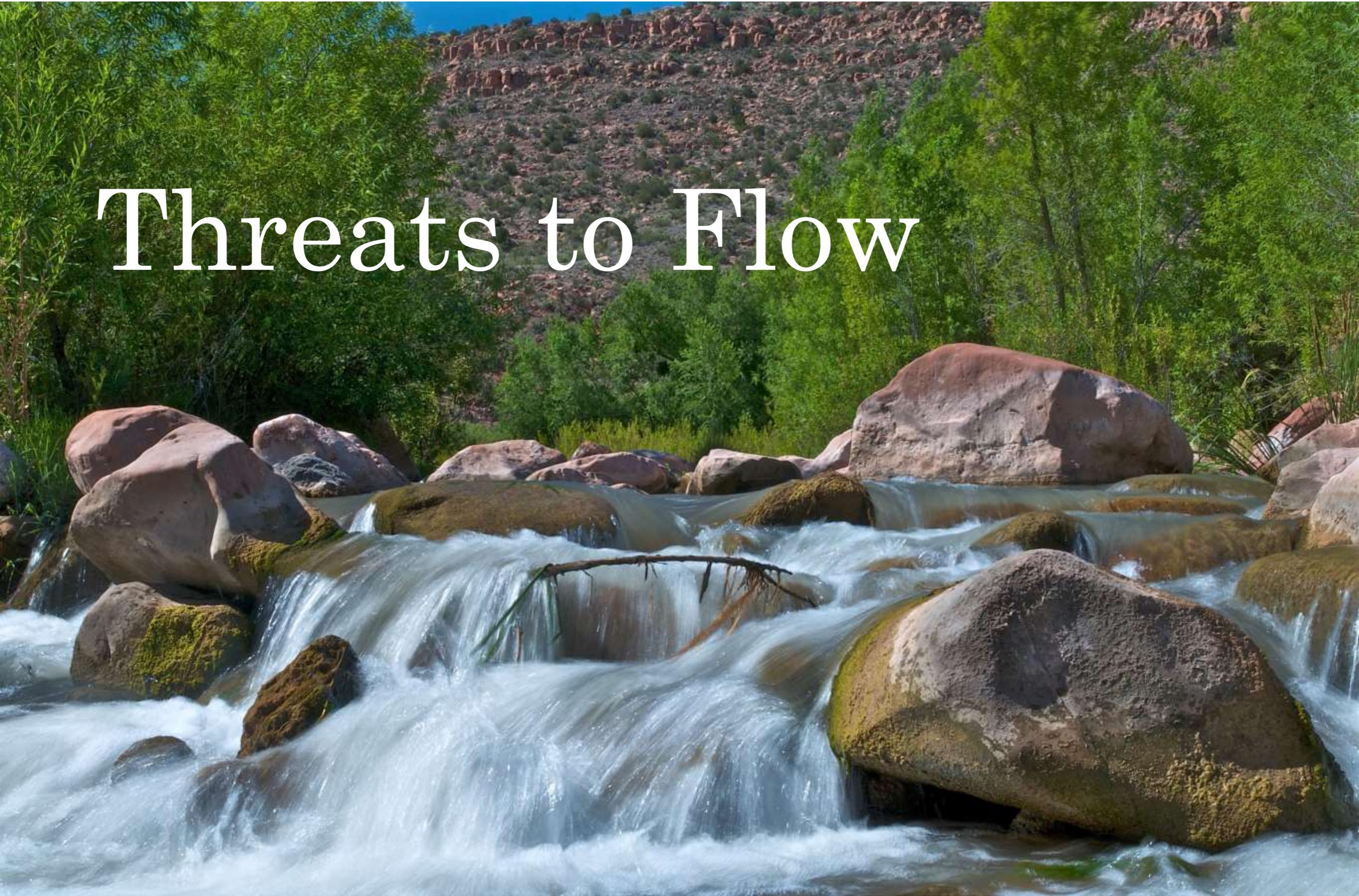
7 ORVs



The Federal Government Cannot Fully Protect the Verde River



Threats to Flow



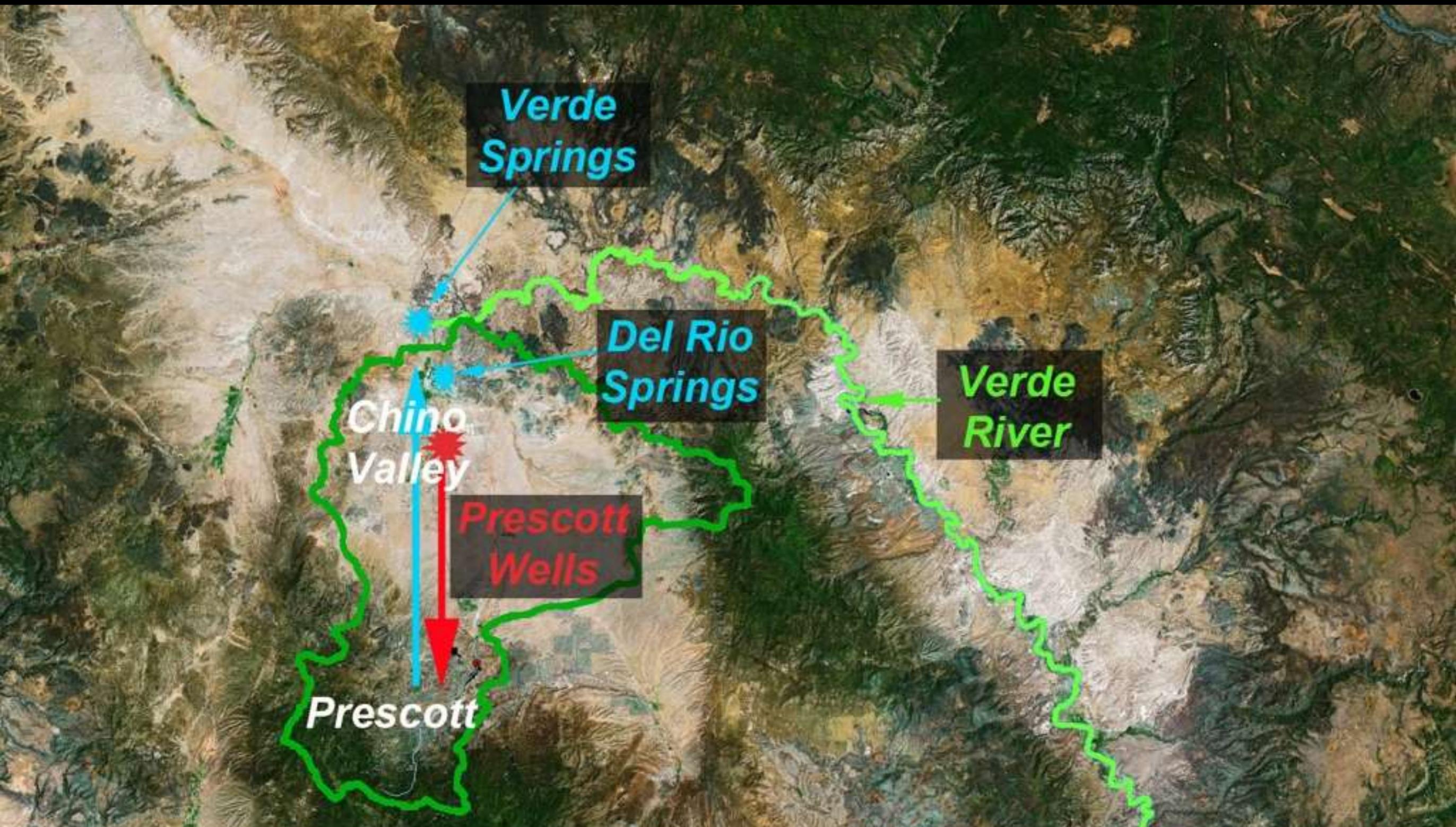


Diversions

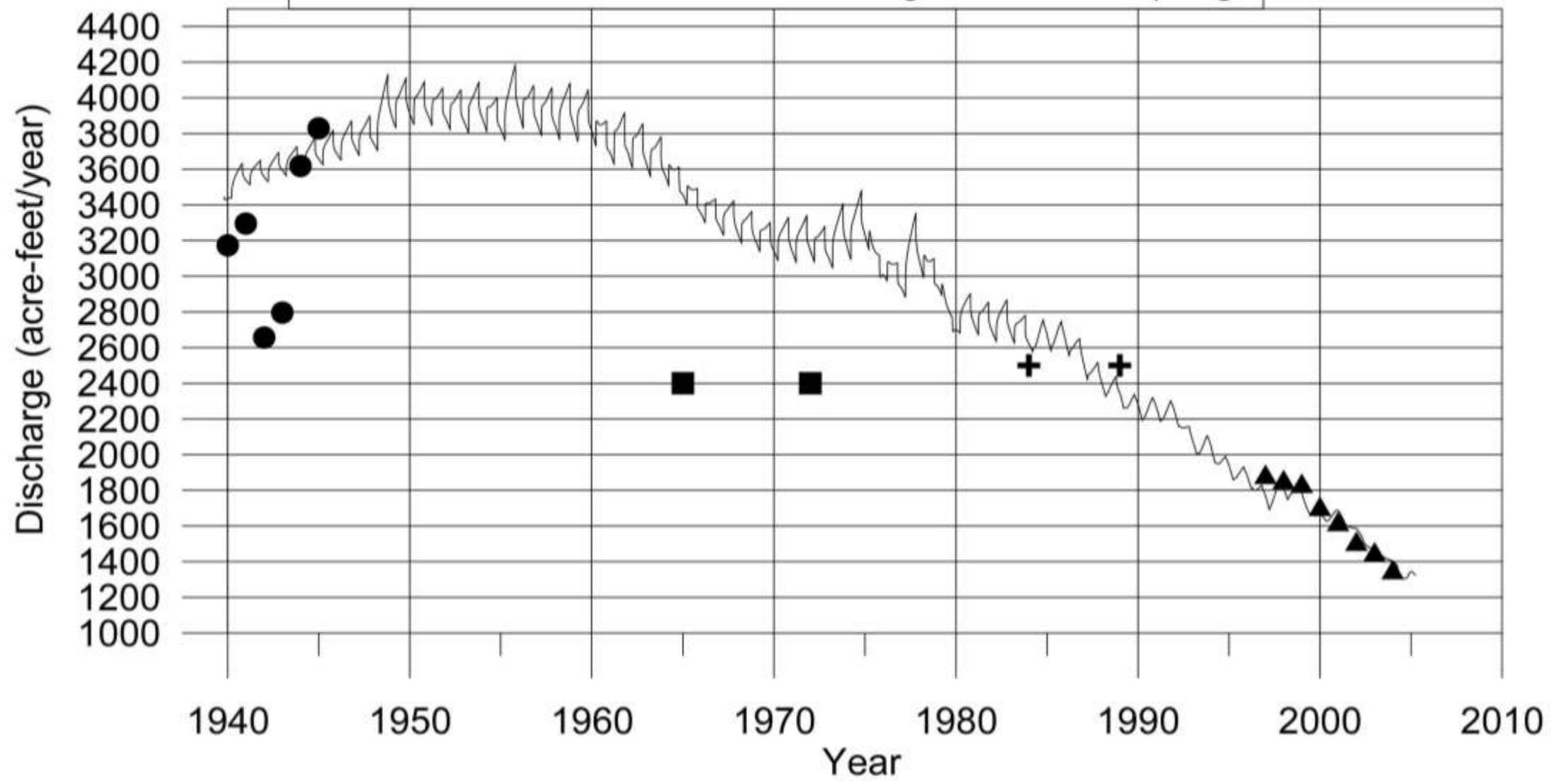


Climate Change

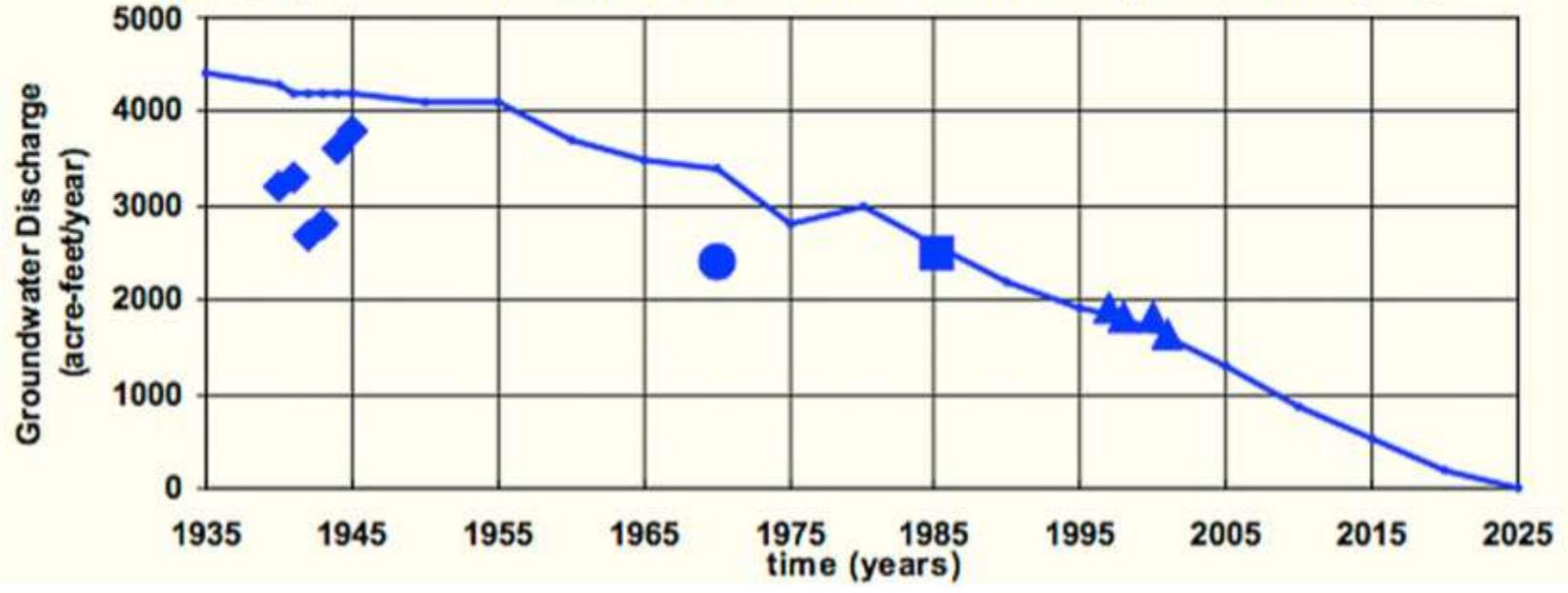
Capture of streamflow by groundwater pumping



Hydrograph 19
Prescott AMA: Groundwater Discharge at Del Rio Springs



Hydrograph 7: Simulated and Observed Groundwater Discharge at Del Rio Springs



Verde Springs

Sole source for 25 miles

Chino Valley

Perkinsville

Verde River

Prescott



Supplies 80-86% of Verde Springs flow

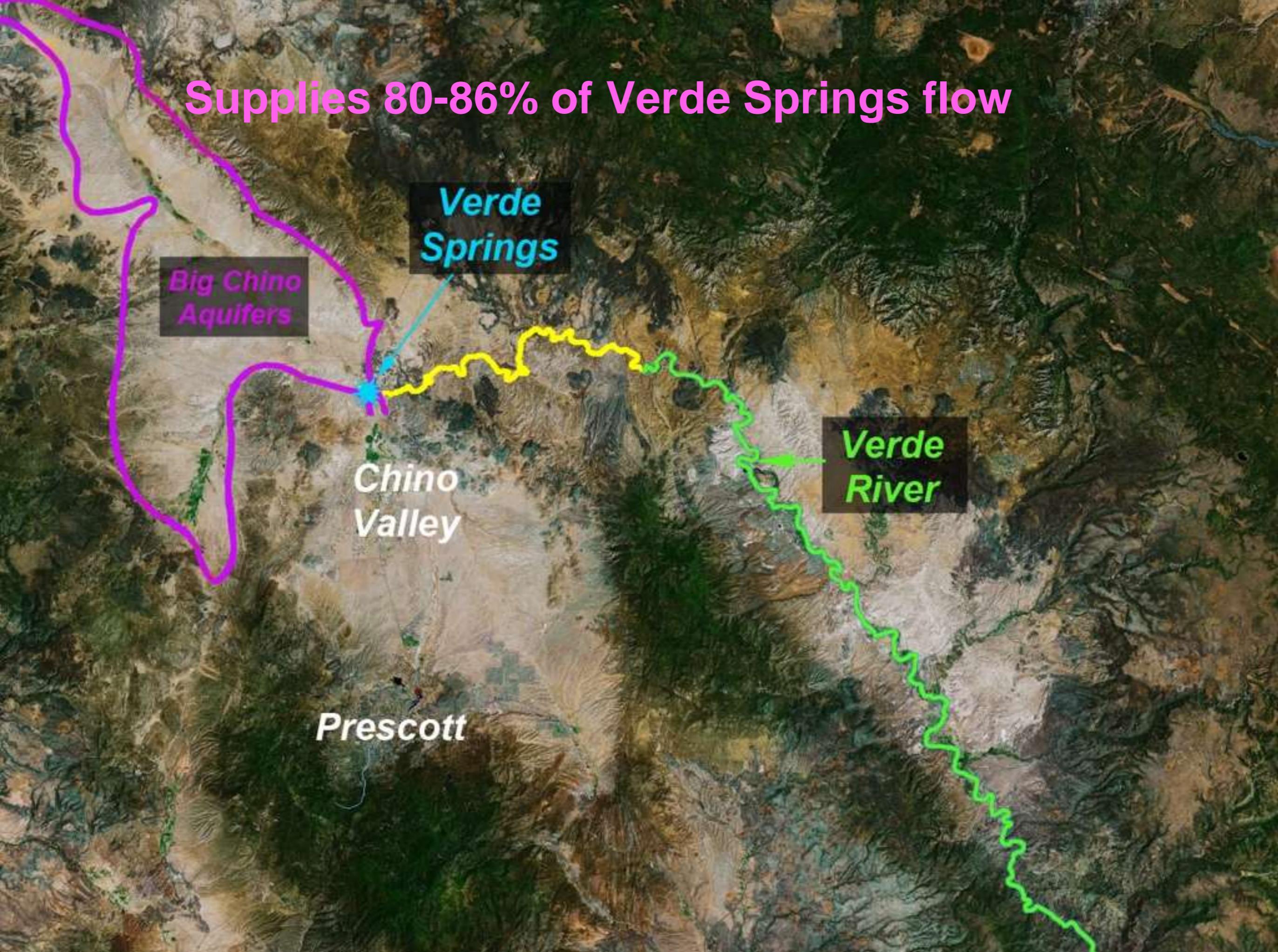
Verde Springs

Big Chino Aquifers

Chino Valley

Verde River

Prescott



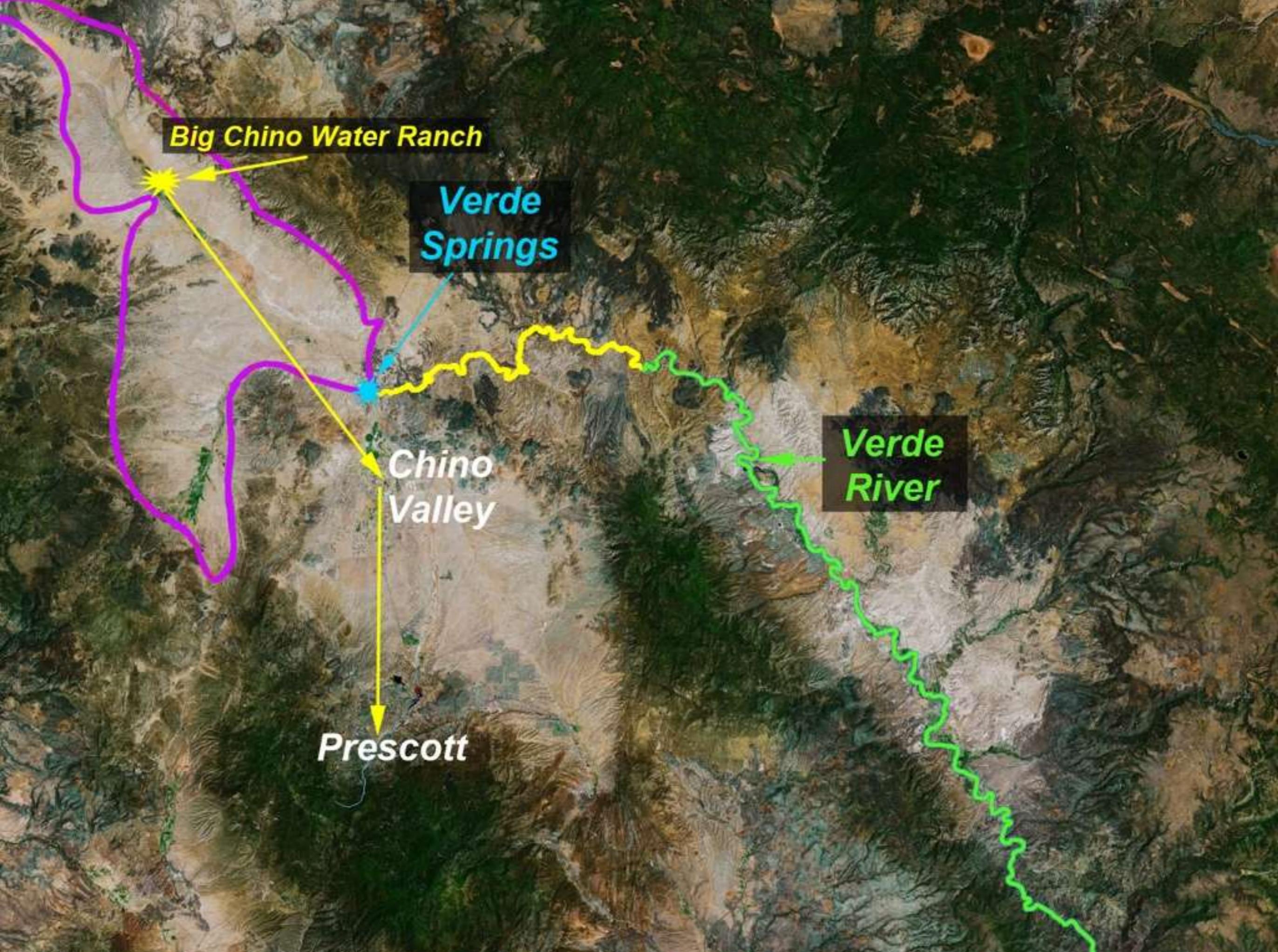
Big Chino Water Ranch

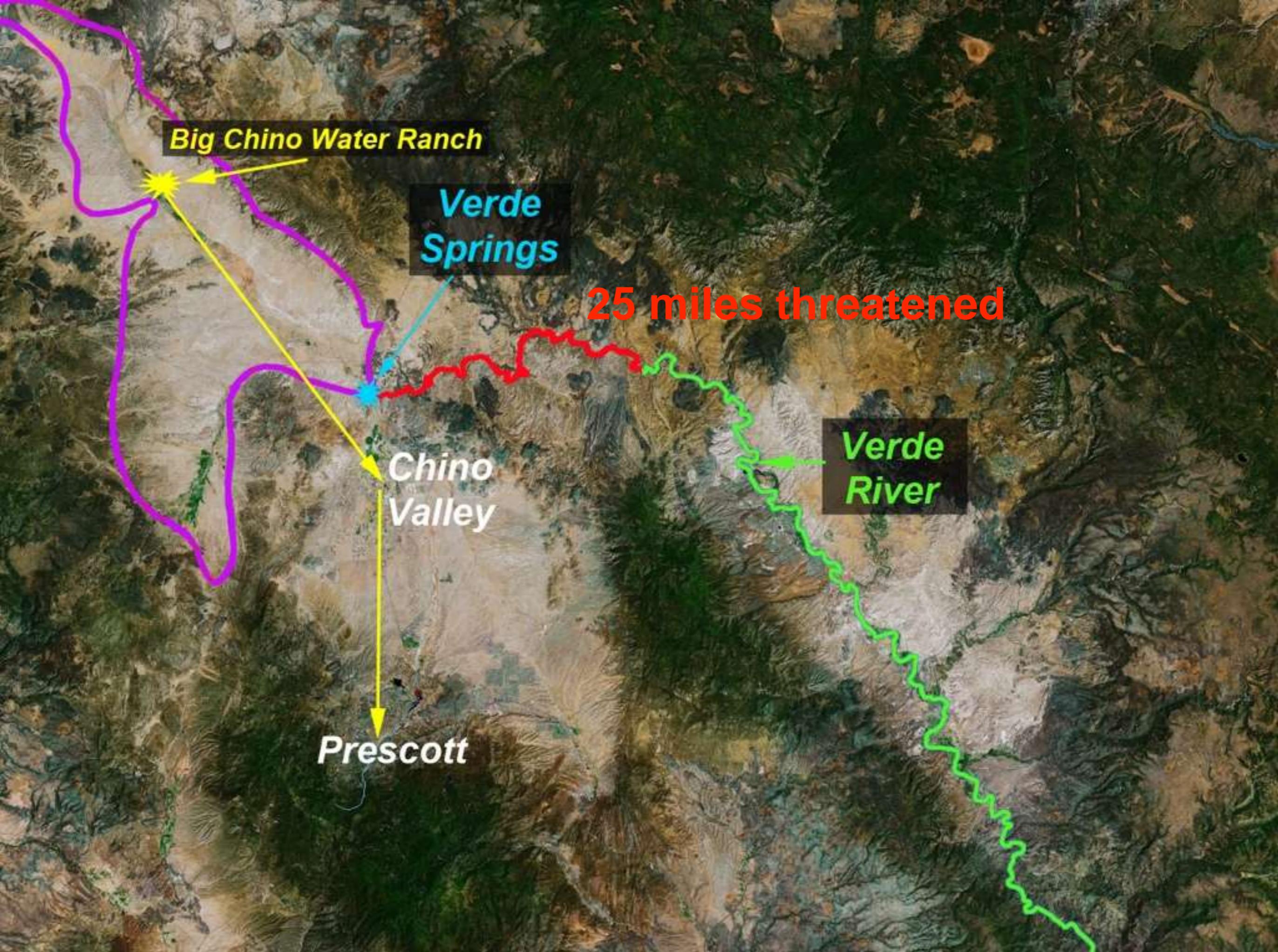
Verde Springs

Verde River

Chino Valley

Prescott





Big Chino Water Ranch

Verde Springs

25 miles threatened

Verde River

Chino Valley

Prescott

Mile 9.8
USGS
Paulden
Gage

19.0 cfs
4/17/2013



Citizen Science:
Sierra Club
Water Sentinels

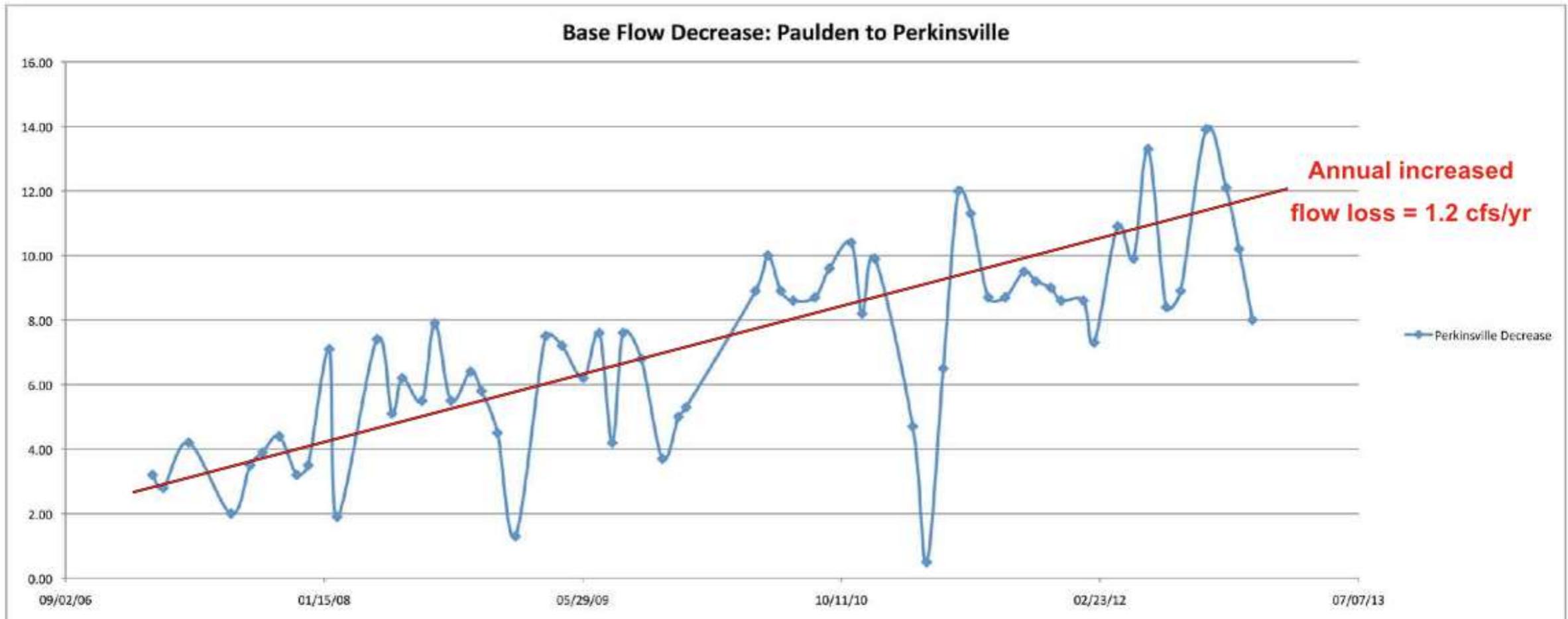
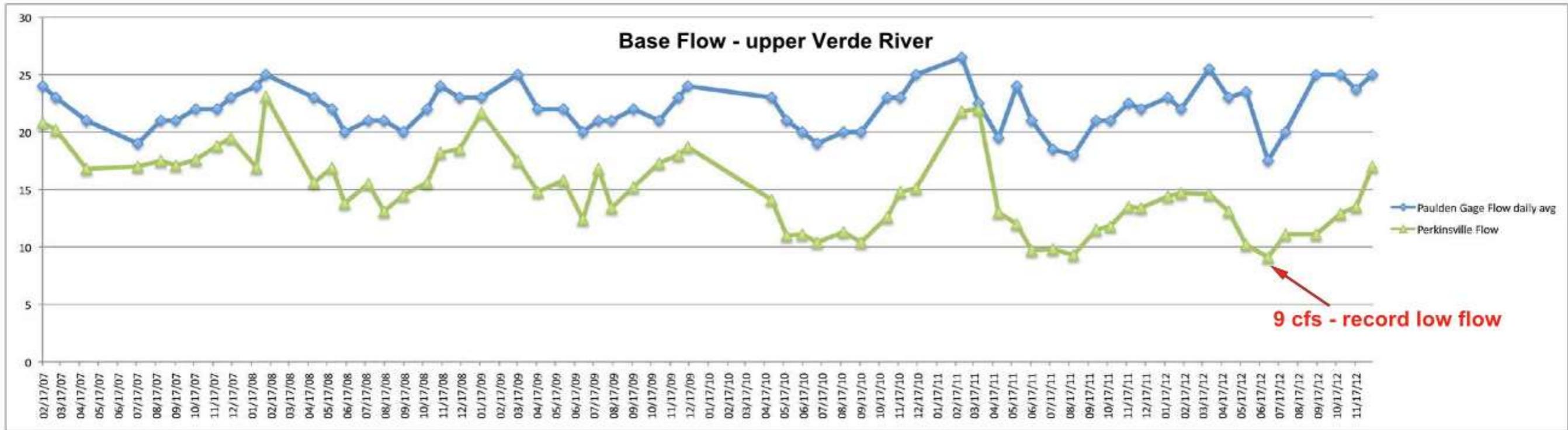
Water Quality

Water Quantity

Flow Gage



Sierra Club Water Sentinels





Big Chino Concern: Unconstrained Groundwater Pumping

- Big Chino Pumped Storage Project
- Big Chino Water Ranch
- Agricultural irrigation
- Growth and development

Proposed Big Chino Pumped Storage Project



Proposed Big Chino Water Ranch





Ag Irrigation

Development



Estimated Big Chino Legal Groundwater Demand (Kafy)

	Now	Future
Pumped Storage	0	2 - 30
Big Chino Water Ranch	0	8
Historically Irrigated Acreage Exports	0	11
Irrigation	~ 3	20
Domestic uses	~ 3	10 - 30
Total Pumping	~ 6	50 + ??
Base Flow: USGS Paulden	<13	0



Prepared in cooperation with the Arizona Department of Water Resources and Yavapai County

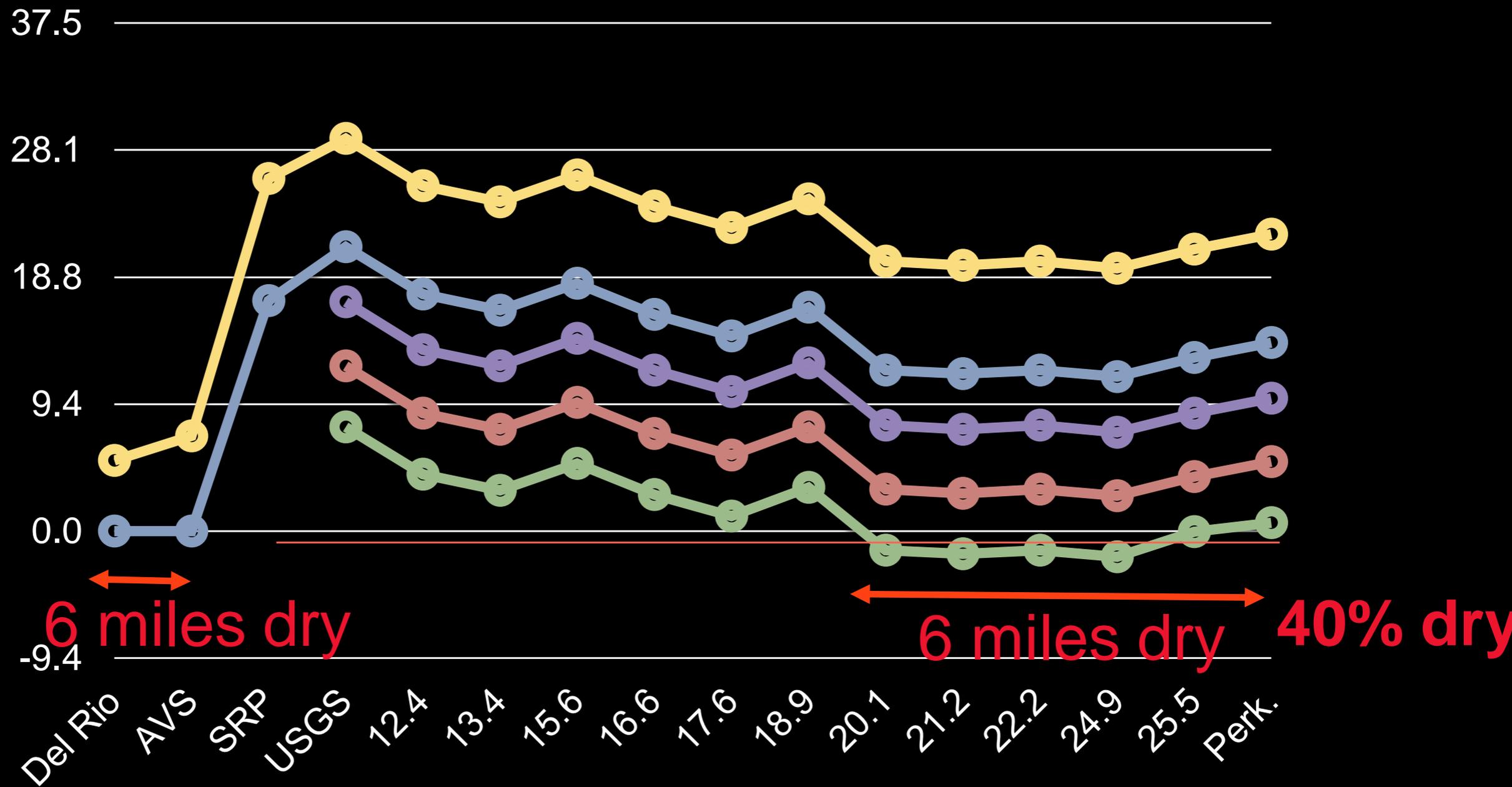
Regional Groundwater-Flow Model of the Redwall-Muav, Coconino, and Alluvial Basin Aquifer Systems of Northern and Central Arizona



Scientific Investigations Report 2010-5180, v. 1.1

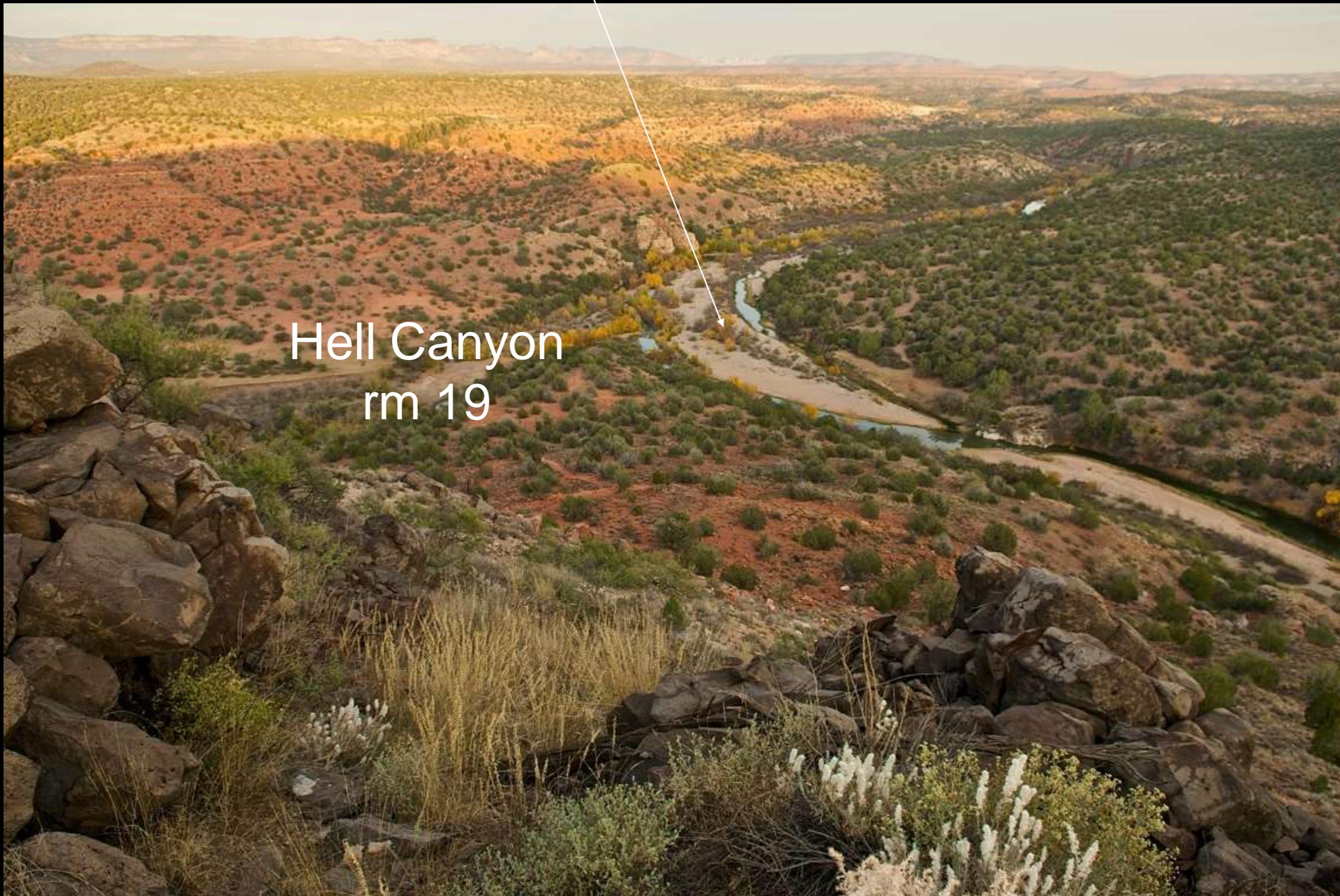
NARGFM Scenarios

- 1940 est
- 2013 - Actual
- 2110 - continue 2005
- 2110 - Additional 18% growth
- 2110 - Additional Demand @ 12 Kafy

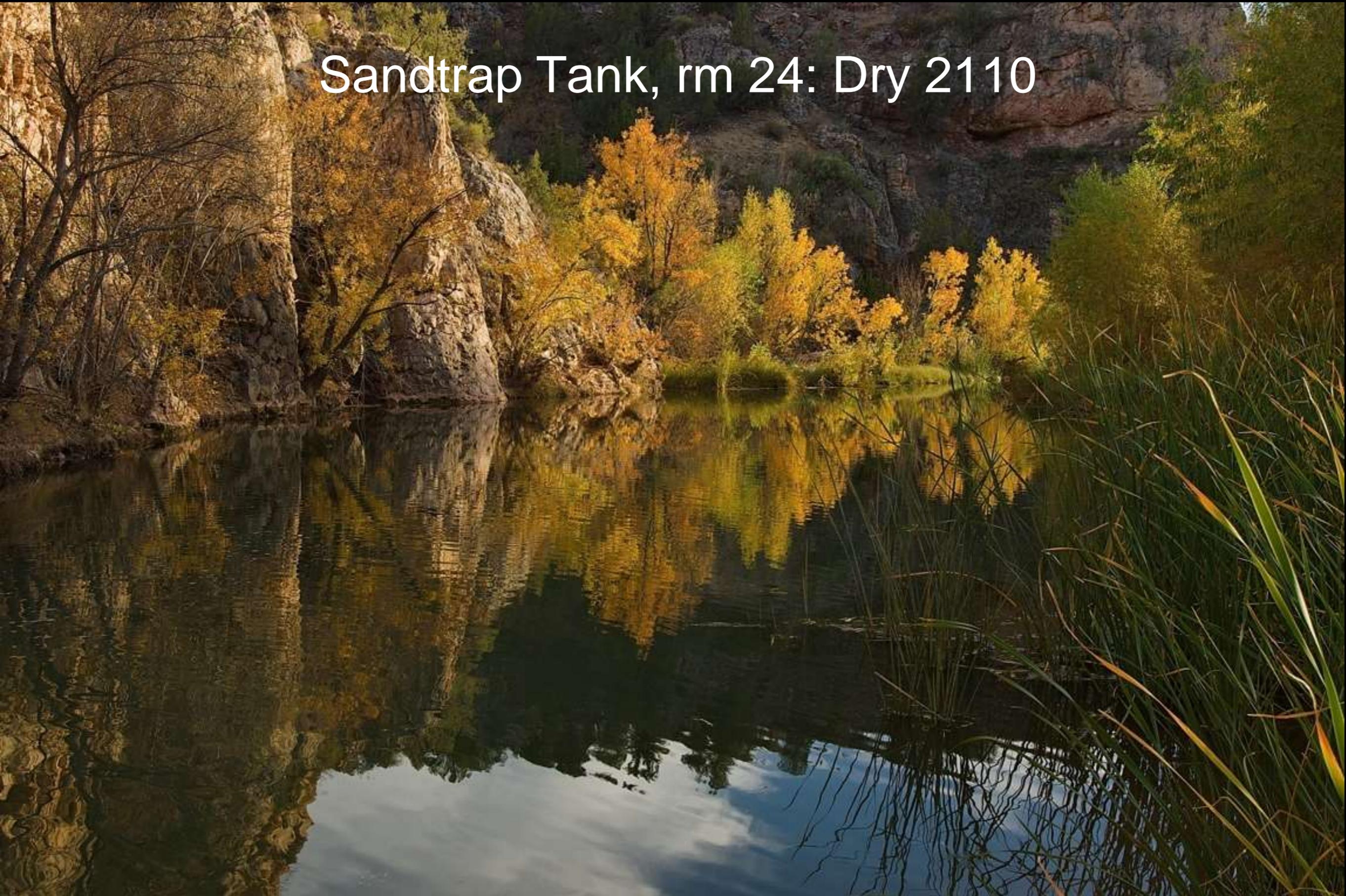


Dry 2110

Hell Canyon
rm 19



Sandtrap Tank, rm 24: Dry 2110



Perkinsville Bridge, rm 26: Dry 2110



Conclusions



- Verde River is healthy now
- The Verde's future is problematic.
- Legally permitted groundwater pumping in the Big Chino will dry the upper Verde.
- Groundwater pumping will degrade the entire river - the sole surviving perennial river in Arizona.
- Groundwater pumping must be constrained in order to protect base flow.

Political Solution

- Water law must recognize and prioritize ecological water resources.
- “Ecological Water” bill introduced 2018.



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AZ Water Future

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We live in the desert

LET'S ACT LIKE IT

[READ THE CONSERVATION VISION](#)

We've convened a Sustainable Water Working Group to propose policies that will prevent further degradation of Arizona's rivers, lakes and springs and find new ways to balance Arizona's water interests.

Help us Protect the Verde!

*(and Arizona's other springs
and rivers)*

