

AGRIBUSINESS WATER COUNCIL OF ARIZONA

Introducing 2023



Colorado River Update

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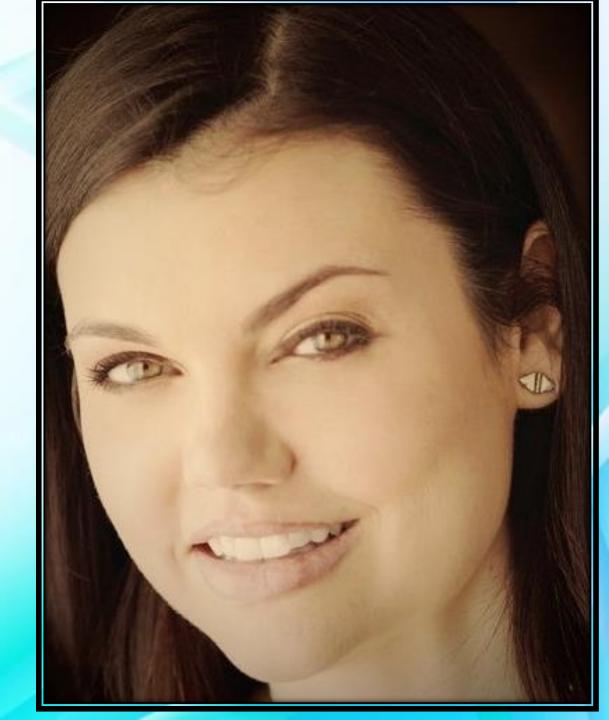


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Noble Law Office Attorney

Meghan Scott, Esq.

Delivering a welcoming message



Erin Shriner

Environmental and Resource Management for my major.
Business sustainability student
Arizona State University W.P. Carrey school.



Thank you to our Hosts













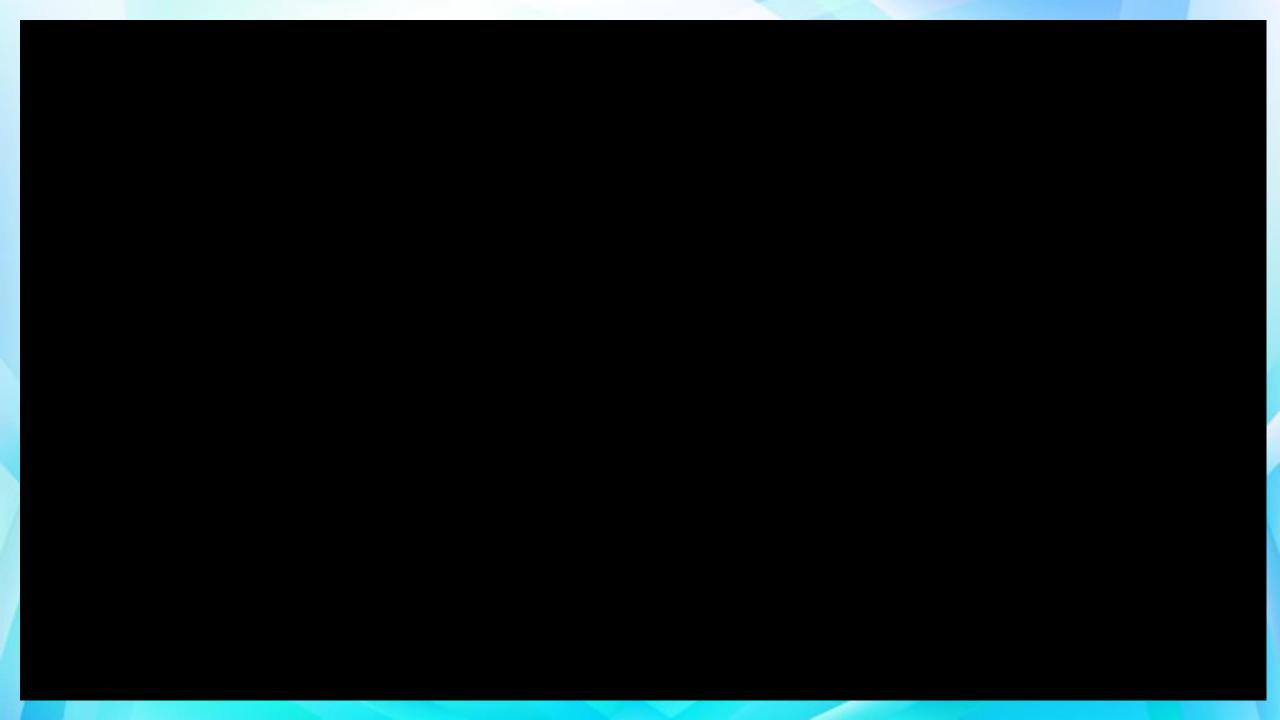


A Message from our Arizona

Governor Katie Hobbs







Colorado River Hydrology



Vineetha Kartha

Central Arizona Project Colorado River Programs Manager





Patterns within Patterns

EL NINO AND LA NINA

La Nina – Cold Sea Surface Temperatures (SST)

El Nino – Warm SSTs

PACIFIC DECADAL OSCILLATION

Longer Periods of the Pacific Ocean being colder SST or warmer SST is known as the Pacific Decadal Oscillation

Both La Nina and El Nino occur during the Pacific Decadal Oscillation



Pacific Decadal Oscillation

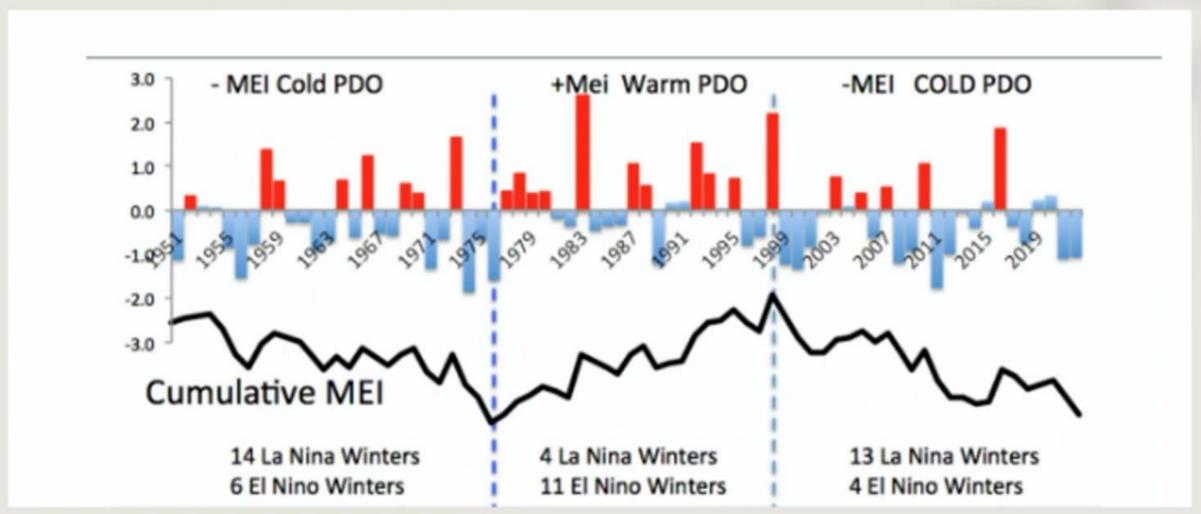
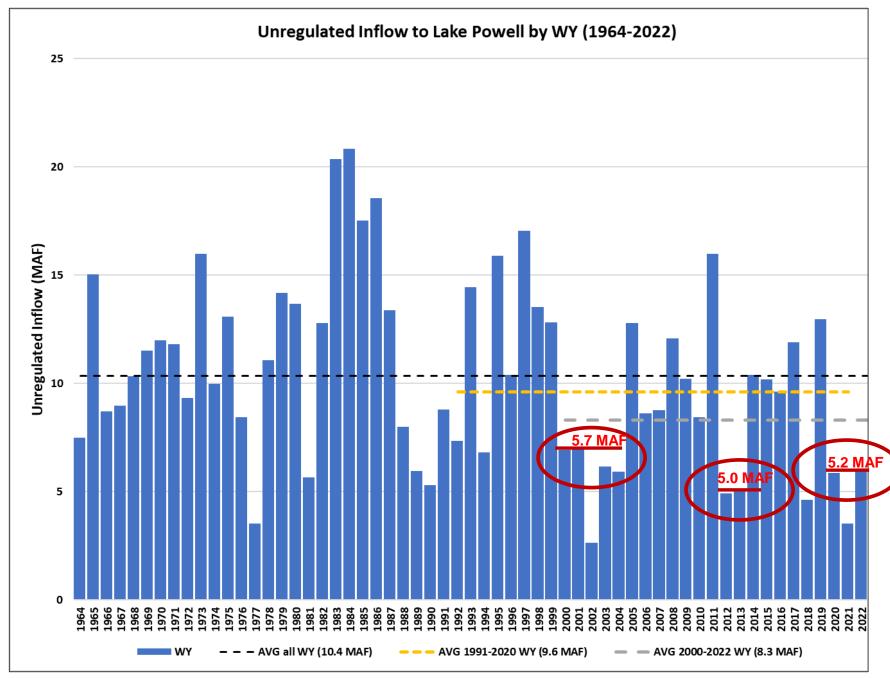


Image courtesy, Don Day, Day Weather Inc



Average Unregulated inflow to Lake Powell

2000-2004 - 5.7 MAF

2012-2013 - 5.0 MAF

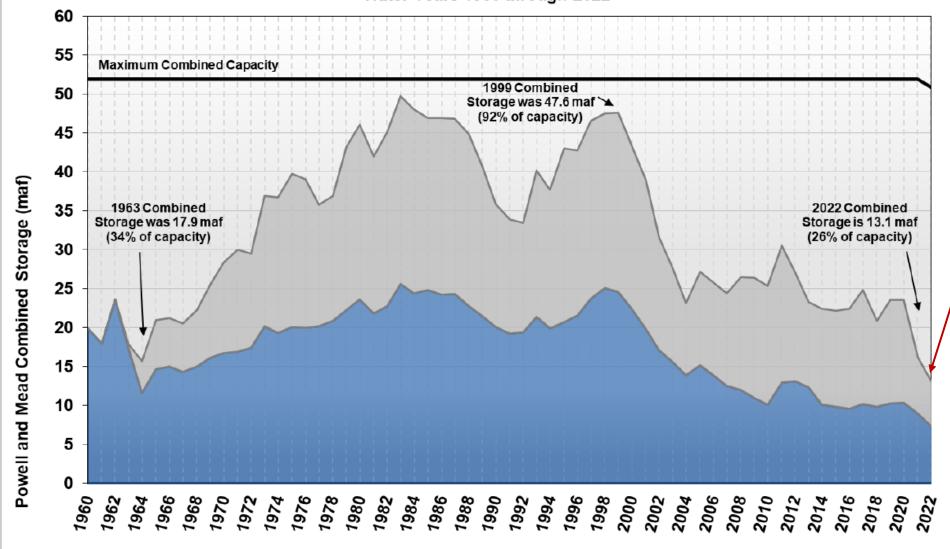
2020-2022 - 5.15 MAF



¹Water Year statistics are based on the 30-year period of record from 1991-2020, Average 1991-2020 – 9.60 maf

Lake Powell and Lake Mead End of Water Year Storage





■ Lake Powell Storage

■ Lake Mead Storage

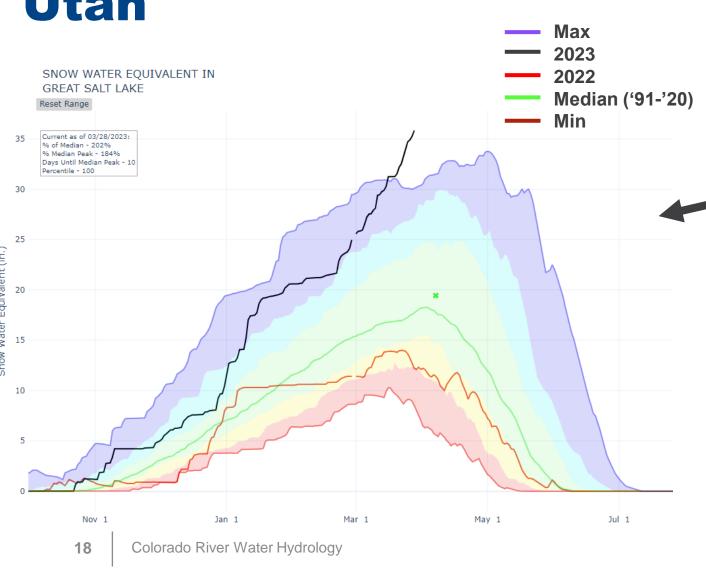
- Lowest System
 Storage since
 initial filling
- Triggered calls for additional conservation and SEIS

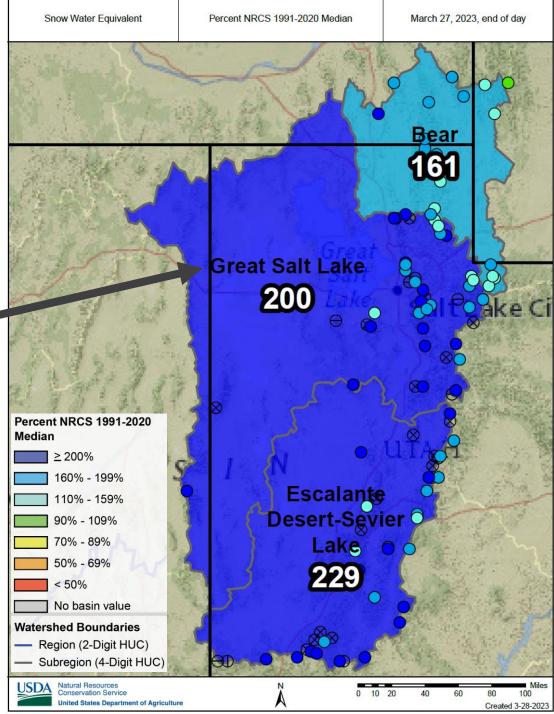


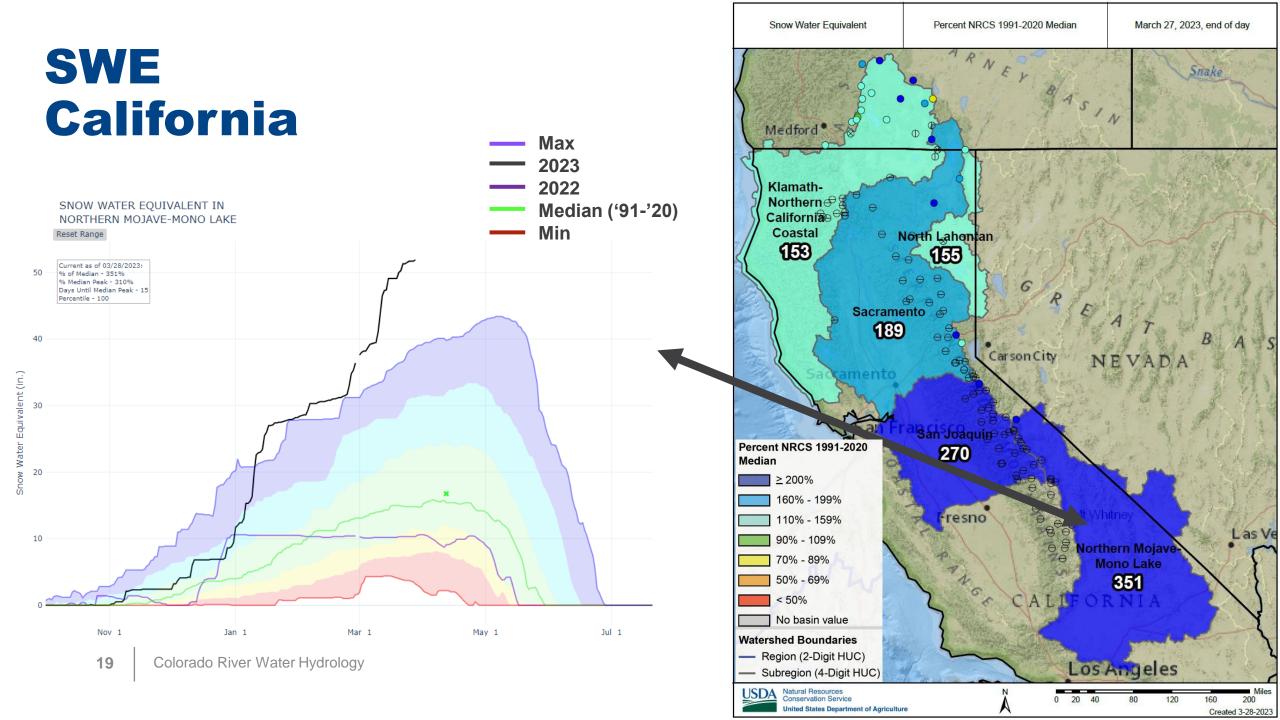
SWE Western U.S.

Snow Water Equivalent Percent NRCS 1991-2020 Median March 27, 2023, end of day WYOMING Medford* 161 003 218 Cheyenne 153 200 155 1223 Denver 196 1340 251 POLORADO 229 164 203 242 208 270 133 347 181 resno Percent NRCS 1991-2020 Median 351 anta Fe 386 185 110% - 159% STAKED PLAIN) 90% - 109% MEXICO Los Angeles 00 522 No basin value Observation Missing San Diego 192 Mexicali () Median is zero Tucson Median missing Tijuana. Ciudad Watershed Boundaries Juárez BAJA Odessa — Subregion (4-Digit HUC) ElPaso Natural Resources Conservation Service 0 30 60 240 120 180 300 United States Department of Agriculture Created 3-28-2023

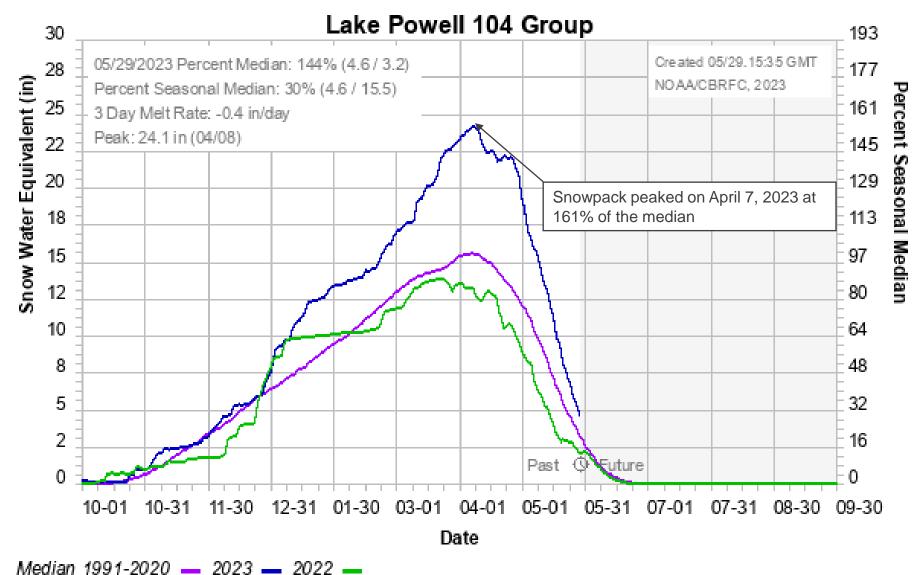
SWE Utah







Colorado Basin River Forecast Center



Snowpack vs. Runoff (% of average)										
	Snowpack Runof									
2020	105%	61%								
2021	86%	37%								
2022	90%	63%								
2023	161%	148%*								

*Runoff forecast based on CRBFC mid-May Projections Preliminary data, subject to change



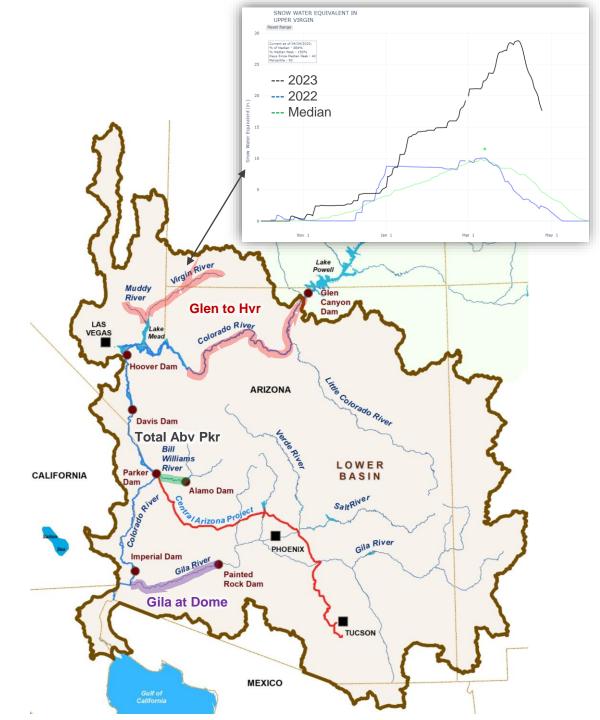
April 2023 24-Month Study Assumptions

	Gle	en to Hvr		Gila at Dome			
	5-year	April 24-MS	5-year	Bill Williams	April 24-MS	April 24-MS	
Average		CBRFC Adj	Average	Inflow Est.	Total Abv Pkr	Inflow Est.	
April 2023	60.1	188.8	6.6	37.5	44.1	0.0	
May 2023	36.6	142.0	3.6	38.7	42.3	31.0	
June 2023	21.8	72.7	10.1	37.5	47.6	35.6	

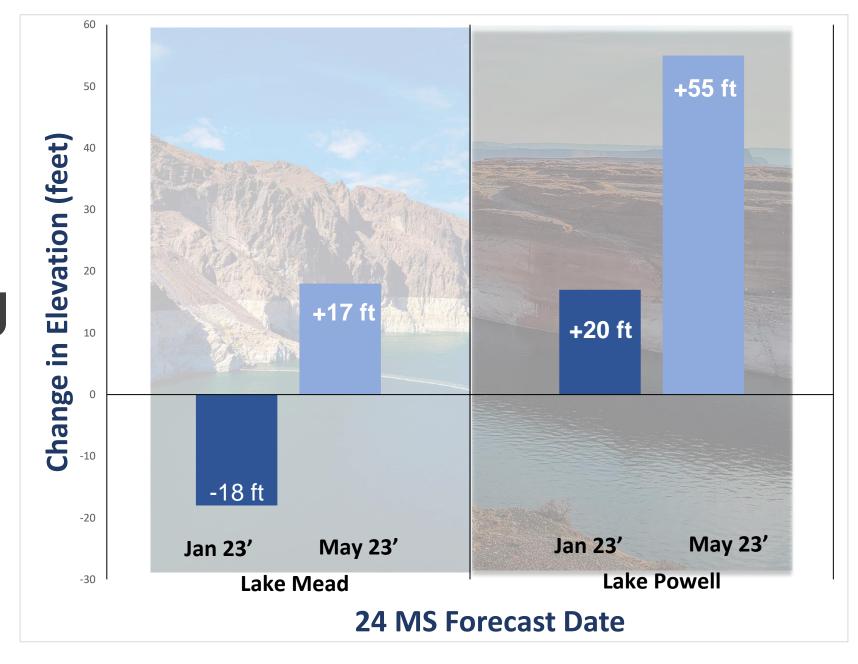
All values in thousand acre-feet **Bold** are values in April 24-MS

Additional activities that could impact Lake Mead elevations:

- Lake Mead intervening flows (Glen Canyon to Hoover Dam) uses CBRFC forecast, instead of 5-year average
- Alamo Dam Releases are anticipated to go up to 140 KAF- reducing the need for releases from Lake Mead
- Painted Rock Dam releases are anticipated to go to 8,000 af/day, potentially reducing the need for releases from Lake Mead.



Colorado River Storage Increasing in 2023



Probability of Reaching Critical Elevations in Any Month: April 2023 CRMMS Model Run

Lake Powell		WY 2023	WY 2024	WY 2025	WY 2026	WY 2027
	Jan-23	100%	37%	30%	23%	17%
Less than 3,525 feet	Apr-23	100%	0%	0%	3%	3%
Less than 3,490 feet	Jan-23	0%	10%	10%	20%	13%
(minimum power pool)	Apr-23	0%	0%	0%	0%	0%
Lake Mead		2023	2024	2025	2026	2027
	Jan-23	17%	33%	40%	40%	50%
Less than 1,020 feet	Apr-23	0%	0%	0%	3%	7%
	Jan-23	0%	13%	13%	13%	13%
Less than 1,000 feet	Apr-23	0%	0%	0%	0%	0%
Less than 950 feet	Jan-23	0%	0%	0%	0%	0%
(minimum power pool)	Apr-23	0%	0%	0%	0%	0%

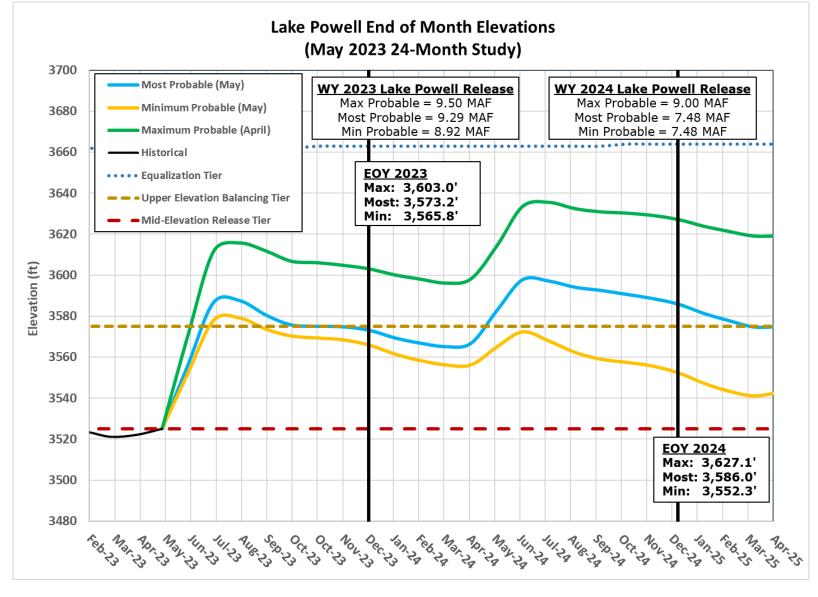
Source: U.S. Bureau of Reclamation

Hydrology Period: 1991-2020



Lake Powell May 2023 24-Month Study

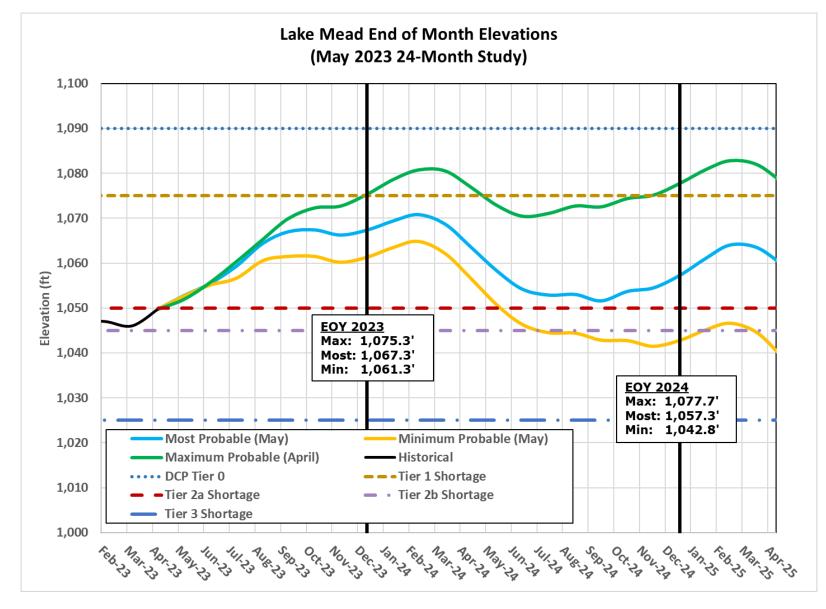
- Lake Powell release is 9.3 MAF in WY2023, with balancing releases evaluated each remaining month of the water year
- WY2023 Max is 9.5
 MAF, Min is 8.66 MAF





Lake Mead May 2023 24-Month Study

- Lake Mead will operate in Tier 2a Shortage condition in 2023
- Lake Mead is currently projected to be in Tier 1 for 2024
- Tier determinations are based on physical elevations





Shortage Reductions and Water Savings Contributions Under the 2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan (DCP)*, and Binational Water Scarcity Contingency Plan (Volumes in thousand acre-feet)

Lake Mead Elevations (in feet)	2007 Interim Guidelines Shortage Reductions (U.S.) Minute 323 Delivery Reductions (Mexico)			Total Combined Shortage Reductions (U.S. and Mexico)	DCP Water Savings Contributions (U.S.)			Binational Water Scarcity Contingency Plan Water Savings (Mexico)	Combined Volumes of Shortage Reductions and Water Savings Contributions by Lower Basin State and by Country (U.S. and Mexico)				Total Combined Volumes (U.S. and Mexico)	
(in reet)	AZ	NV	Mexico	Lower Basin States + Mexico	AZ	NV	CA	Mexico	AZ Total	NV Total	CA Total	Lower Basin States Total	Mexico Total	Lower Basin States + Mexico
1,090 - >1,075	0	0	0	o	192	8	0	41	192	8	0	200	41	241
1,075 - >1050	320	13	50	383	192	8	0	30	512	21	0	533	80	613
1,050 - >1,045	400	17	70	487	192	8	0	34	592	25	0	617	104	721
1,045 - >1,040	400	17	70	487	240	10	200	76	640	27	200	867	146	1,013
1,040 - >1,035	400	17	70	487	240	10	250	84	640	27	250	917	154	1,071
1,035 - >1,030	400	17	70	487	240	10	300	92	640	27	300	967	162	1,129
1,030 – 1,025	400	17	70	487	240	10	350	101	640	27	350	1,017	171	1,188
<1,025	480	20	125	625	240	10	350	150	720	30	350	1,100	275	1,375

Lake Mead

Projected
Operation for 2024
Based on the April

2023 24-Month Study

The operational determination for 2024 will be made in August

2024 Lake Mead Operations

Some of the factors that could affect the 2024 Lake Mead Operations include:

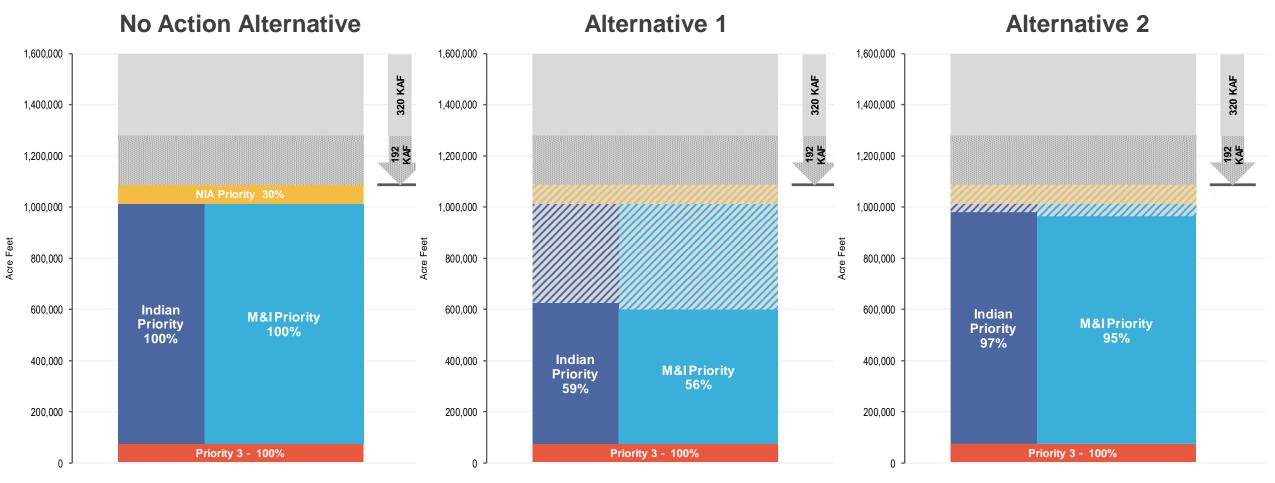
Magnitude of Lake Powell balancing release



Operations pursuant to a final Supplemental Environmental Impact Statement (SEIS)



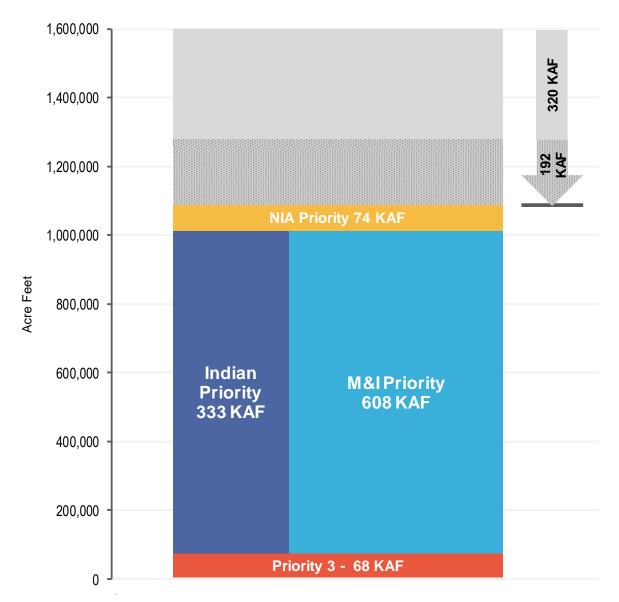
Mead Elevation 1,075' to 1,050' - SEIS Impacts







Impact of Lower Basin States Proposal

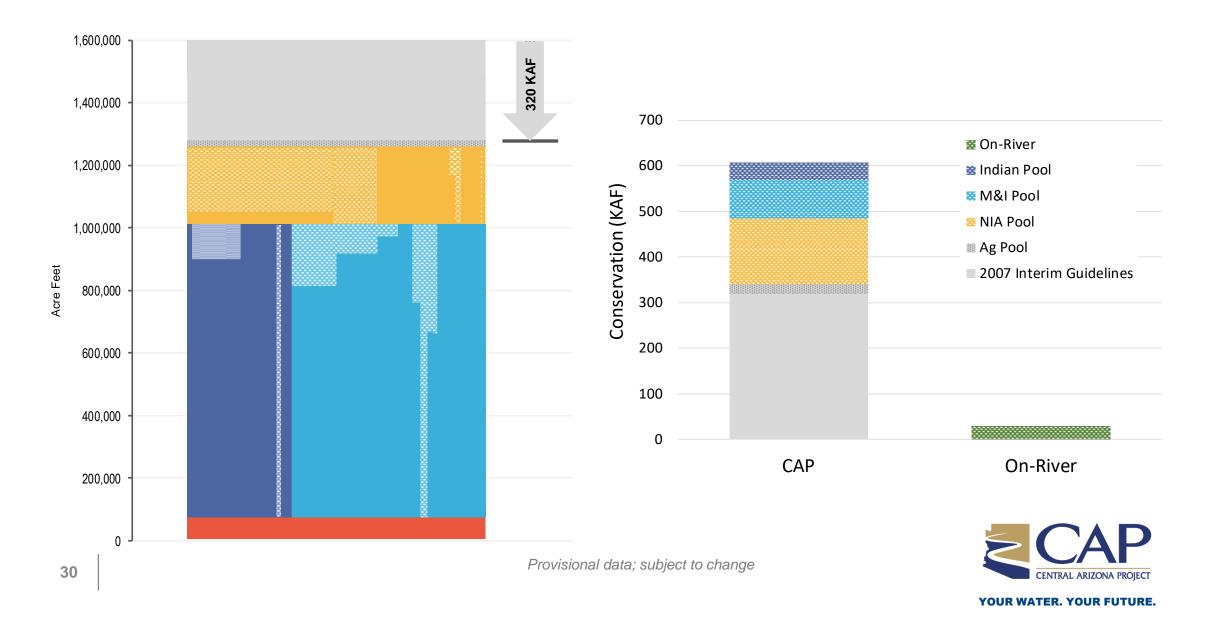


If conservation is allowed to count towards reductions, then the deepest impacts could be avoided.

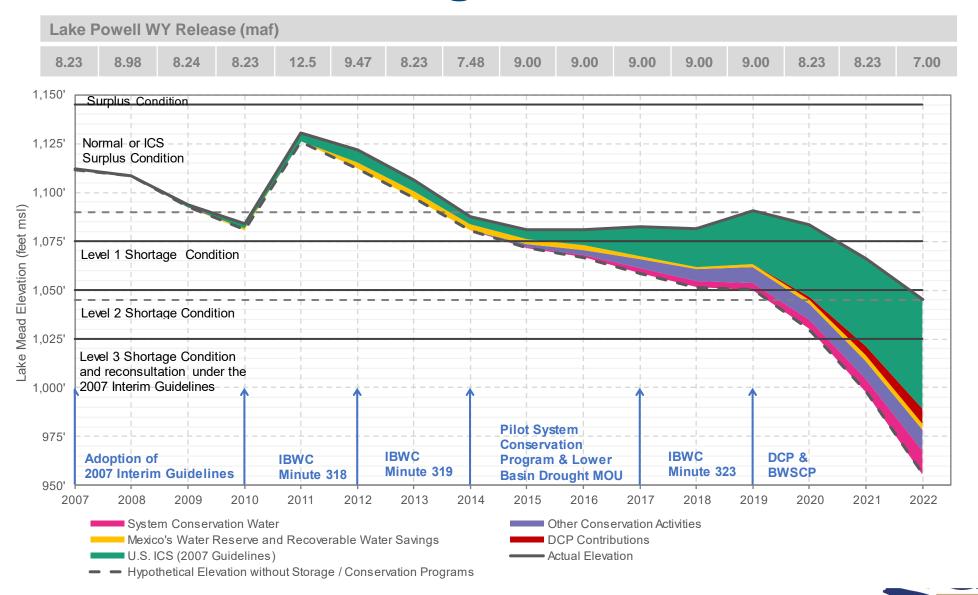
 First, start with the mandatory reductions under the 2007 Interim Guidelines and contributions under 2019 Drought Contingency Plan



Impact of Lower Basin States Proposal



Lake Mead Storage and Conservation¹



¹End of calendar year 2022 balances of U.S. ICS and Mexico's Water Reserve, system conservation water, and other voluntary contributions to Lake Mead are based on projections from the December 2022 24-Month Study and are subject to change.





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Questions?

For additional information and updates, visit

ADWR: new.azwater.gov

CAP: www.cap-az.com

Reclamation: www.usbr.gov

May 31, 2023

Ouestions Answers

NEPA SEIS EIS Processes



Kristen Johnson

Manager of the Colorado River Management Section of the Arizona Department of Water Resources



Arizona Association of Women in Water and Agriculture: Colorado River Update Meeting NEPA & SEIS Process



Kristen Johnson, J.D.
Colorado River Programs Manager
Arizona Department of Water Resources
May 31, 2023

NEPA Overview

National Environmental Policy Act (enacted in 1970) (40 CFR 1500 et seq.)

- Required analysis for all discretionary actions by Administrative Agencies
- Requires agency decision makers to make informed decisions.
 - Does not require an agency to selected the "Environmentally Preferred Alternative"
 - However, it does require an agency to disclose environmental impacts
- Types of Analysis
 - Categorical Exclusion (for administrative actions that have been determined not to have environmental impacts)
 - Environmental Assessment → Finding of No Significant Impact
 - Environmental Impact Statement → Record of Decision
 - 30-day mandatory "cooling off" period between the issuance of a Final EIS and a ROD

Supplemental EIS Purpose (Fall 2022)

- DOI recognized that operational strategies needed to be revisited due to critically low reservoir elevations, at the time, and potential for worsening drought which threatens critical infrastructure and public health and safety.
- Last fall, potential impacts of low runoff conditions in 2021 and 2022, and projected low run-off for winter 2023, posed unacceptable risks to operations of Glen Canyon and Hoover Dams.
- Development of modified operating guidelines were intended to inform operations in 2023-26.
- Scoping comments were due December 20, 2022.
- Draft SEIS was issued on April 14, 2023 for a 45-day comment period.

April 2023 Draft Supplemental Environmental Impact Statement

Published SEIS Purpose and Need

Purpose – To supplement the 2007 Interim Guidelines to modify guidelines for operation of the Glen Canyon and Hoover Dams

Need - Potential for continued low-runoff conditions in the Basin could lead Lake Powell and Lake Mead to decline to critically low elevations, impacting operations through the remainder of the interim period (prior to January 1, 2027).

Published SEIS Scope

- The SEIS focuses on:
 - New information
 - Changes in conditions since 2007
 - Impacts associated with the considered alternatives
- The SEIS only analyzes the operations of Lakes Powell and Mead and does not consider operations of the Upper Basin reservoirs above Lake Powell.



April 2023 Draft SEIS - Key Actions Evaluated

- Shortage Conditions Decrease quantity of water apportioned for consumptive uses in the Lower Division States
- Coordinated Operation of Lake Powell and Lake Mead Revise Mid-Elevation Release Tier, and Lower Elevation Balancing Tier, to reduce releases from Glen Canyon Dam
- Mid-Year Review Expand the mid-year review to include reduction of deliveries from Lake Mead



Alternatives

No Action Alternative

- Required under NEPA to analyze impacts if the action agency does not take action.
- Analyzes impacts under the current operating agreements including the 2007 Interim Guidelines and the Drought Contingency Plan

Alternative 1 – the "priority" alternative

• Reductions pursuant to '07 Guidelines and DCP, plus additional cuts by an interpretation of priority under the Law of the River

Alternative 2 – the "pro rata" alternative

- Uniform percent reductions applied to all users based on 2021 consumptive use, plus reductions pursuant to '07 Guidelines and DCP
- Includes a potential 500 kaf of DROA release from the Upper Basin
- Reclamation did not fully analyze the Six-State or the California alternatives



Modeling Assumptions (Hydrology)

- Colorado River Mid-term Modeling System (CRMMS) September 2022 model
- Initial reservoir conditions as of August 31, 2022
- Run period: September 2022 through December 2026
- Input hydrology consists of:
 - 1991 2020 Hydrology
 - 100, 90, and 80 percent of streamflow forecasts combined into a single ensemble
 - A total of 90 traces were analyzed



Powell and Mead Critical Elevations 3490' at Powell, 950' at Mead

No Action Alternative

- Lake Powell
 - 38% (2024) of the traces fell below critical elevations
 - 31% and 34% (2025, 2026) of the traces fell below critical elevations
- Lake Mead
 - 0% (2024) fell below critical elevations
 - 9% and 14% (2025, 2026) of the traces fell below critical elevations
 - In 2026, 8% of the traces approach dead pool
 - Lake Mead projected elevations are dependent on release of water through the bypass tubes (which may not be technically feasible)



Powell and Mead Critical Elevations 3490' at Powell, 950' at Mead

Action Alternative 1

- Lake Powell
 - 9% (2024) of the traces fell below critical elevations
 - 2% and 0% (2025, 2026) of the traces fell below critical elevations
 - Eliminates the outcome of Powell falling below 3500' by 2026
- Lake Mead
 - 6% (2024) of the traces fell below critical elevations
 - 9% and 7% (2025, 2026) of the traces fell below critical elevations
 - Elevations in Lake Mead stabilizing or increasing in 2025



Powell and Mead Critical Elevations 3490' at Powell, 950' at Mead

Action Alternative 2

- Lake Powell
 - Action Alternative 2 performs identical to Action Alternative 1
 - Eliminates the outcome of Powell falling below 3500' by 2026
 - Up to 500 KAF of DROA is included
- Lake Mead
 - 3% (2024) of the traces fell below critical elevations
 - 8% and 4% (2025, 2026) of the traces fell below critical elevations
 - Elevations in Lake Mead stabilizing or increasing in 2025



May 2023 Lower Basin Proposal

- On May 22nd the Seven Basin States submitted a letter requesting a suspension of the comment period on the Draft SEIS, which was scheduled to close on May 30, 2023, and also requested analysis of the Lower Basin Proposal.
- The Lower Basin Principals also sent a letter to Commissioner Touton outlining the Lower Basin Proposal.
- On Friday, May 26th, Reclamation published a Federal Register Notice (88 Fed. Reg. 34151) and officially withdrew the Draft SEIS.

May 2023 Lower Basin Proposal, cont.

- Commissioner Touton testified on May 23, 2023 before the House Natural Resources Subcommittee on Water, Wildlife, and Fisheries, the proposed alternative will be analyzed under NEPA, and a new Draft Supplemental Impact Statement will be issued later this year with a new comment period.
 - The Federal Register Notice only withdrew the Draft SEIS. The Notice of Intent is still valid.
- The Lower Basin Proposal should be analyzed under current hydrology as to its effectiveness to protect elevation 3,490' in Lake Powell and 950' in Lake Mead.

May 2023 Lower Basin Proposal, cont.

- Through the interim period, the Lower Basin States have proposed at least
 3.0 million acre-feet in additional conservation not attributable by state.
- Current conservation proposals by state:
 - Arizona ~ 1.1 maf
 - California ~ 1.6 maf
 - Nevada ~ 285 kaf
 - These conservation volumes are in addition to contributions and reductions under the 2007 Interim Guidelines and DCP.
- None of the 3.0 maf will be created by mandatory reductions.
- At least 1.5 maf of the 3.0 maf reductions will be achieved by the end of Calendar Year 2024.

May 2023 Lower Basin Proposal, cont.

- Up to 2.5 maf will be compensated with federal funding from the Inflation Reduction Act and/or other federal programs. At least 500 kaf will not be federally compensated.
- The 500,000 acre-feet may be ICS creation; may be compensated by non-federal sources.
- No changes to provisions of the Upper Basin Drought Response Operations provisions of the DCP.

Lower Basin System Conservation and Efficiency Project Proposals ("Bucket 2")

- On Friday, May 19 Reclamation issued the Funding Opportunity for Voluntary Participation in the LC Conservation and Efficiency Program.
 - Bucket 2 funding pool under the Inflation Reduction Act.
- Eligible projects include, but are not limited to:
 - Canal lining and conveyance system rehabilitation
 - Agricultural upgrades, whether in technology or management
 - Urban water efficiency projects
 - Non-functional turf replacement
 - Water storage projects that allow for operational flexibilities
- Proposals must be submitted electronically to Reclamation by July 19, 2023.

Endangered Species Act actions (MSCP)

- In 2022, BOR, with input from the Lower Basin States, initiated Reconsultation with the U.S. Fish and Wildlife Service to expand ESA coverage for reductions in flow in the Lower Colorado River.
 - USFWS issued a Biological Opinion on December 7, 2022
 - Expanded coverage to 1.547 maf reduction in flow in all Reaches on the River.
- On April 17, 2023 BOR initiated Reconsultation with the USFWS.
 - The current Reconsultation is intended to provide coverage for reductions in flow contemplated in the April Draft SEIS, up to 4.0 maf reduction in flow.
 - The requested term for the contemplated BiOp is a bridge until consultation on the post-2026 system operations is complete.

Post-2026 Guidelines

- The current Interim Guidelines sunset at the end of Calendar Year 2026.
- New operating criteria, and any supporting legislation and agreements, need to be effective before January 1, 2027.
- The Basin States Principals requested in their letter to DOI that the Notice of Intent for the post-2026 process be published in the Federal Register by June 30, 2023.





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May 31, 2023

Ouestions Answers



Networking Break!

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VETTING FORUM 4 WATER





All stakeholders and Legislators are invited to bring forward water-related proposals to the Vetting Forum.

If you would like to have a specific proposal added to the agenda for discussion, please contact Warren Tenney or Chris Udall.

The Vetting Forum 4 Water is an open platform to evaluate water-related legislation among decision makers and water stakeholders prior to the legislative session.

Beginning in September

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A Water User's

Perspective

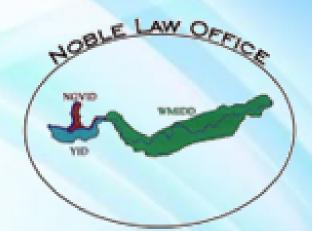




Sarah Thielman

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Meghan Scott, Esq.

Attorney Noble Law Office



Cynthia Campbell

City of Phoenix Water Resources Management Advisor





Famie Kelley, Esq.

Mohave County Water Authority Attorney



Famie Kelley, Esq.

Mohave County Water Authority Attorney





Arizona Cotton Growers Association

Fadee Rohner

Arizona Cotton Growers Association Executive Director

Ouestions Answers



Lunch & Metworking Break!

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A Message from the Bureau of Reclamation Commissioner

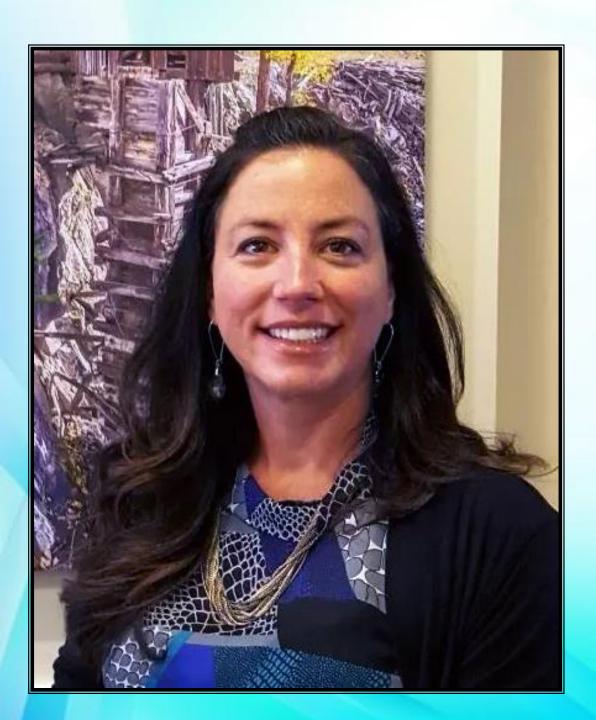


Bureau of Reclamation Commissioner Camille Touton

Ouestions Answers

An Upper Basin

Perspective



Rebecca Mitchell (Becky)

Upper Colorado River Commission Commissioner

Upper Basin Perspectives

Becky Mitchell

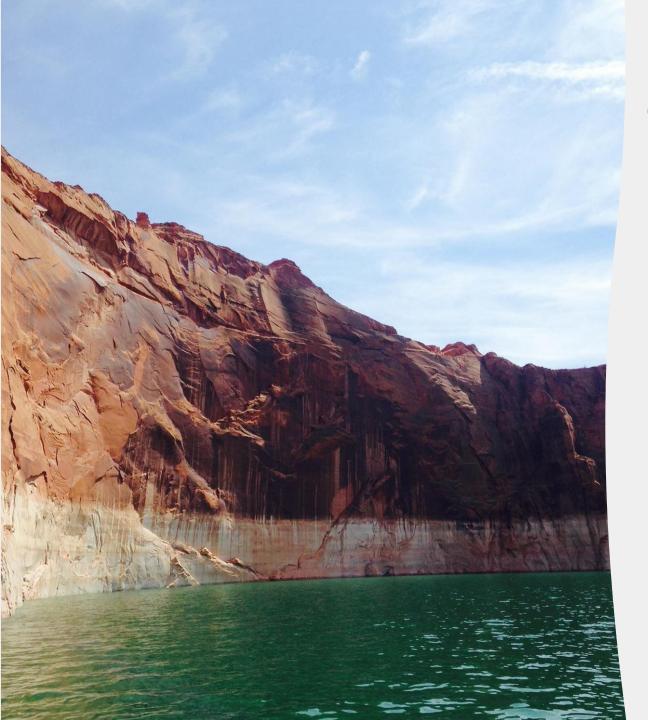
Colorado River Commissioner, State of Colorado





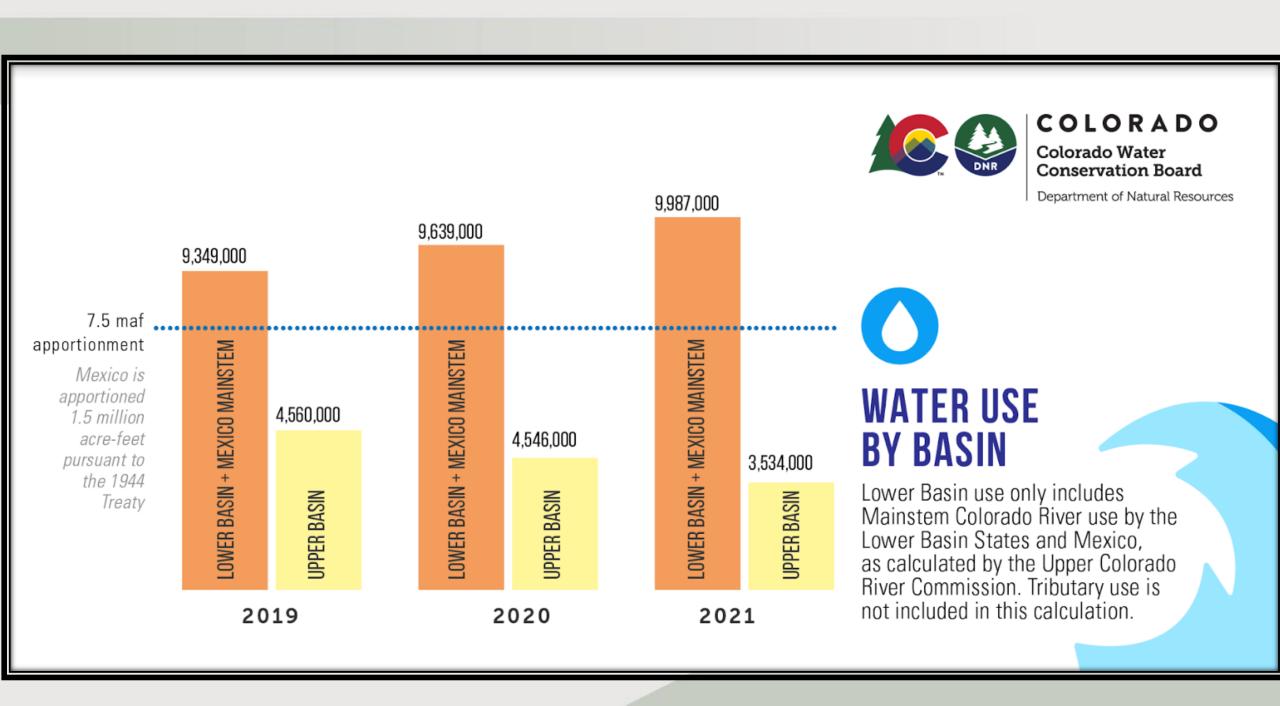
1922 Colorado River Compact

- Upper Basin States have never been out of compliance
- Not renegotiating the Compact
- Provides roughly equal sharing of the River between Upper and Lower Basins



2007 Guidelines

- Interim in nature
- Coordinated operations of Lake Powell and Lake Mead and shortages for Lower Basin States
- Insufficient to address current hydrology and reservoir depletions



Colorado River Recent Events

June 2022

Reclamation announces need to conserve 2 to 4 million acre-feet per year in Colorado River System

July 2022

Colorado, New Mexico, Utah, and Wyoming create the 5 Point Plan in response to Reclamation

December 2022

Congress reauthorizes the System
Conservation Pilot Program for
voluntary Upper Basin conservation

January 2023

Six states reach consensus on an alternative to model in the SEIS

April 2023

Reclamation releases the draft SEIS to adjust current operations for Glen Canyon and Hoover Dams

Next Steps

- Re-focus on longer-term solutions through negotiation of post-2026 operations
- Operations must be sustainable, within means of the River.
- Inclusion of Tribal Nations



Be Involved

• EngageCWCB.org





Ouestions Answers

Power Impacts



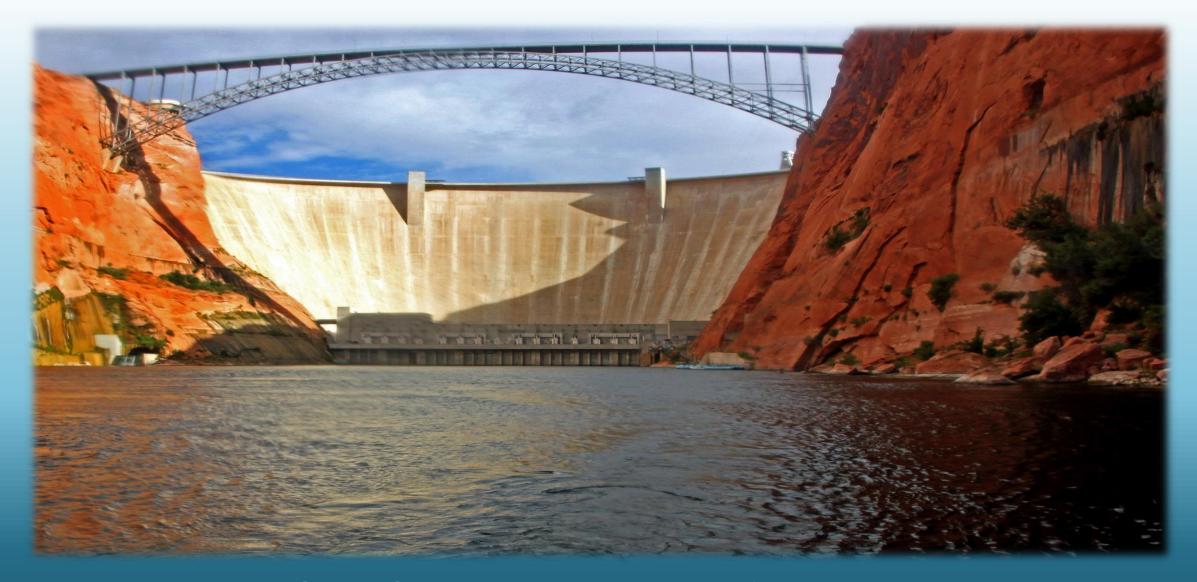
®

Sheri Farag

Salt River Project Public Power Relations

GLEN CANYON DAM

The Unsung Hero of the Western Power Grid

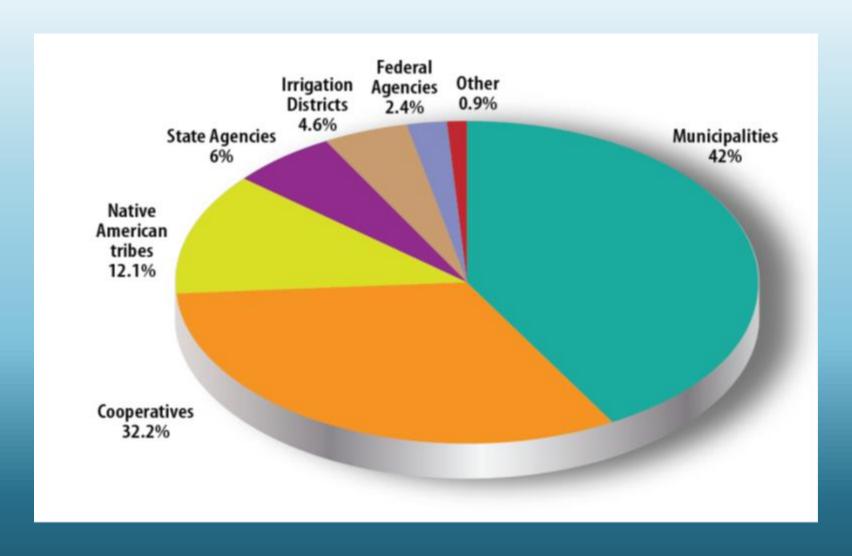


Glen Canyon Dam located in Page, AZ

GLEN CANYON DAM (GCD)

- GCD is a dispatchable resource
- GCD is a renewable and carbon free energy resource
- GCD supports the power grid in the West

Who receives CRSP Hydropower?



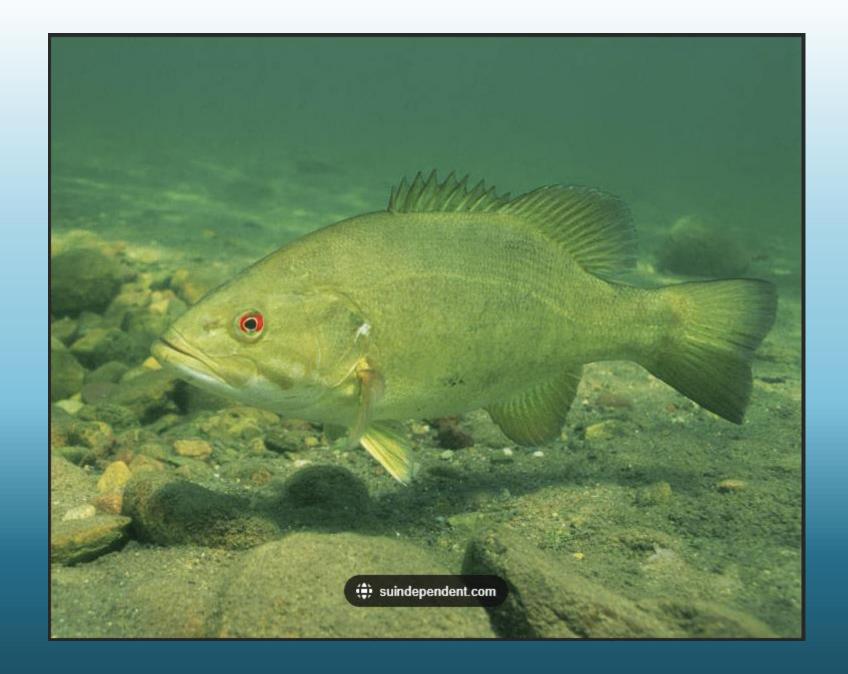
What are the impacts of drought to hydropower at Glen Canyon Dam?



REDUCED HYDROPOWER GENERATION

- Purchase of Replacement Power
 - Market Prices \$\$\$
 - Increased Green House Gas Emissions
 - Rate Increases
- Environmental Changes warmer water

Smallmouth bass are not native to the Colorado River, but historic low water levels at Lake Powell have contributed to warmer water being released downriver, creating ideal spawning conditions. These invasive fish pose a threat to native fish, such as the Humpback Chub.



BYPASS OPERATIONS = NO POWER GENERATION

- Utilities plan for load and generation years in advance
- Increased risk to regional reliability with increased potential for rolling blackouts
- Potential for stranded generation
- Capacity short region due to resource retirements
- Supply chain challenges
- Summer peak demand periods

ALL THINGS IN BALLANCE

• LTEMP AMWG Resource Goals

 Goal 4: Hydropower and Energy. Maintain or increase Glen Canyon Dam electric energy generation, load following capability, and ramp rate capability, and minimize emissions and costs to the greatest extent practicable, consistent with improvement and long-term sustainability of downstream resources.

THE VALUE OF HYDROPOWER

- Glen Canyon Dam is a main source of power generation to Native American Tribes in the area.
- Meets clean energy standards
- Lowest Cost Available
- Power house during the energy transition
- Pillar of reliability in emergency situations

KEEL II, EOUILYBLE

- "If our nation is grounded in the notion of equal opportunity for all, then there cannot be partial, or unevenly distributed, electricity. We cannot continue to be the nation we have become and also endorse or produce haves and have-nots in the world electric."
 - Gretchen Bakke, The Grid: The Fraying Wires Between Americans and Our Energy Future

Ouestions Answers



Networking Break!

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VETTING FORUM 4 WATER





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The Vetting Forum 4 Water is an open platform to evaluate water-related legislation among decision makers and water stakeholders prior to the legislative session.

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Water Management Certificate Program

This unique collaboration has been designed by distinguished practitioners of water sources and power management who have decades of experience and are among the most knowledgeable and recognized leaders in the field.

The Water Management Certificate Program provides professional education and training to persons who are, or will be, managers of organizations that have governance authority and institutional responsibility to develop, store, and deliver water resources to the people they serve. The program's objective is to help individuals become more effective managers, whether they are in public or private institutions.

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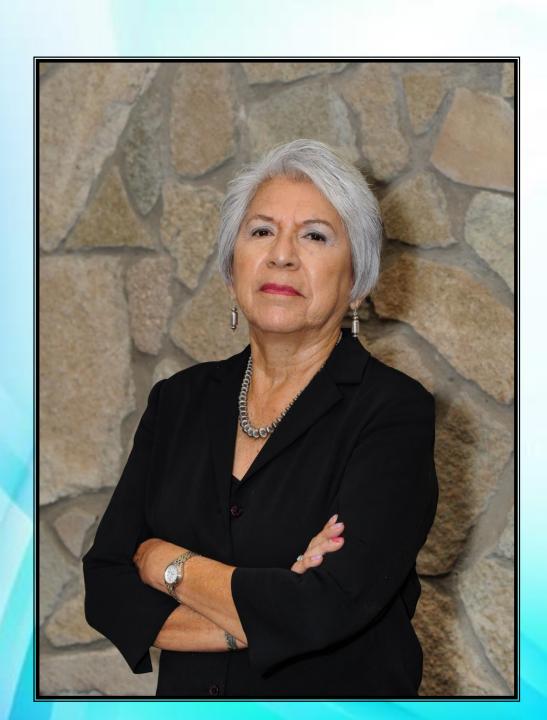
ATribal Perspective

Moderated by

Gina Adami

George Cairo Engineering LLC
Project Manager and Water Resources Civil Engineer



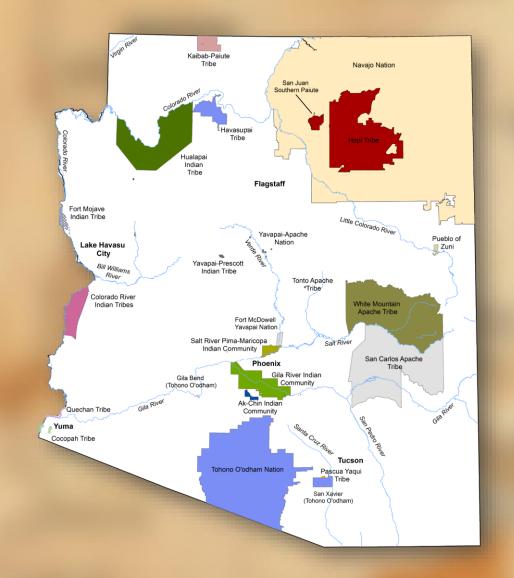


Amelia Flores

Colorado River Indian Tribes Chairwoman



Federally Recognized Tribes of Arizona







Lands include:

- 225,995 acres in Arizona
 - 42,696 in California

*LA PAZ LAND RESTORED 1915-2005 16,000 acres



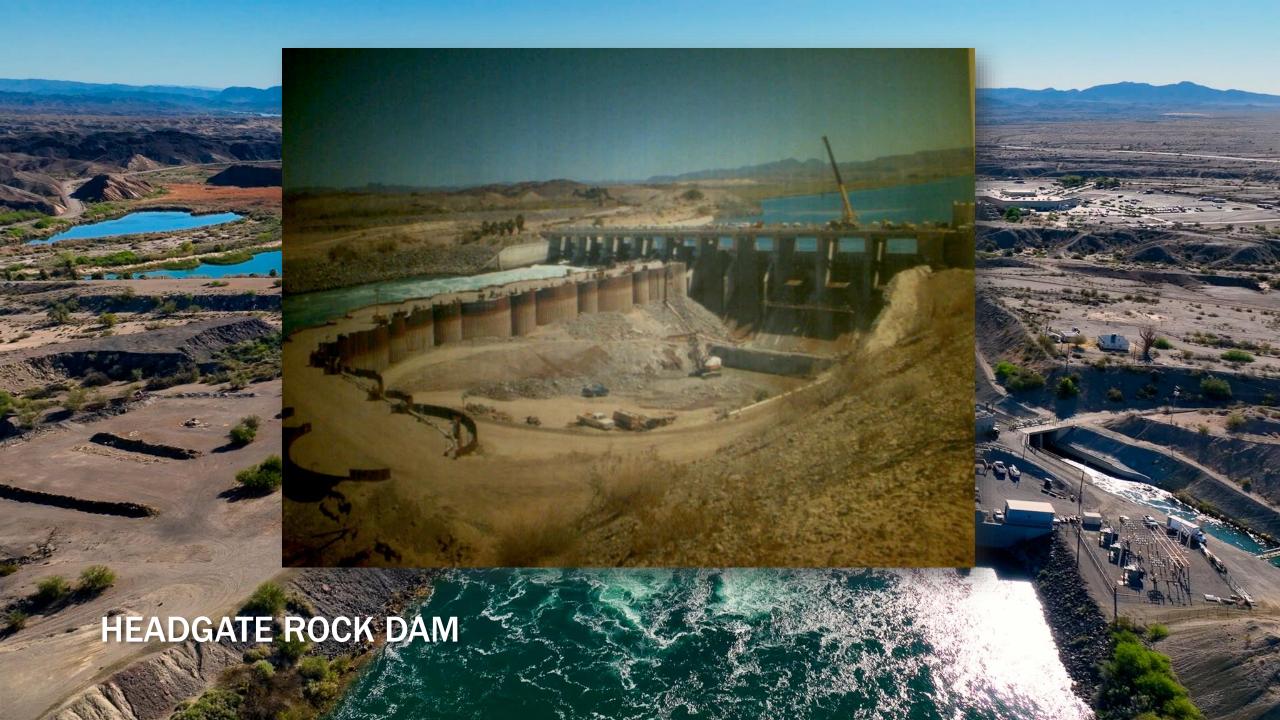






"The land is plentiful. But the water is scarce. Irrigation canals such as that shown on the Colorado River Indian Reservation, will be constructed to bring more water from the Colorado River to land to be occupied by evacuees of Japanese ancestry at War Relocation Authority center on this Reservation."

Department of the Interior War Relocation Authority (02/16/1944 - 06/30/1946) Title: Parker, Arizona.









For the Mohave people, the tree of life is the Mesquite tree.

Ahakhav Tribal Preserve Est. 1995









Before



After



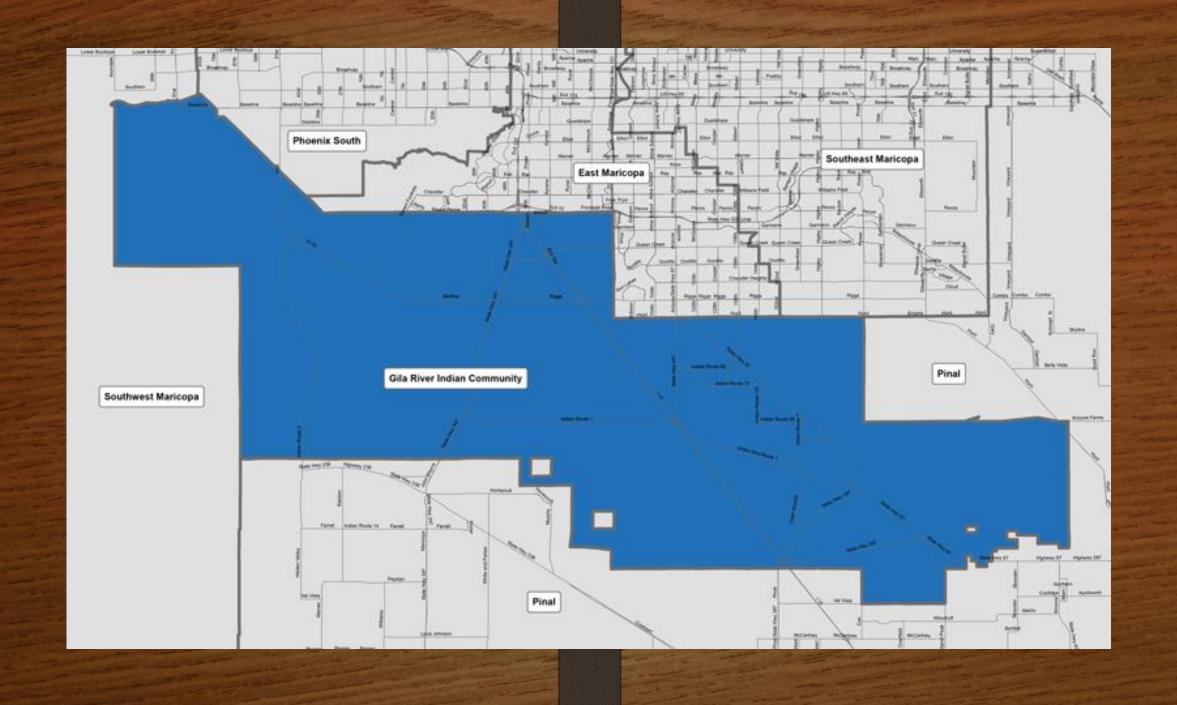




Monica Antone

Gila River Indian Community Lieutenant Governor





WATER IS LIFE





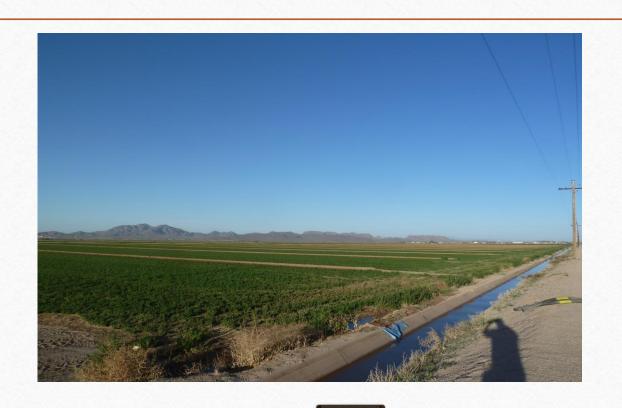
YEARS OF ANCESTOR FIGHTING WE WON OUR WATER SETTLEMENT-2004

Water Settlement

- Arizona Water Settlements Act of 2004 was signed into law, which included the Gila River Indian Community Water Settlement Act
- Settlement provided infrastructure funding
- Settlement provides for a total annual water entitlement of 653,500 AF

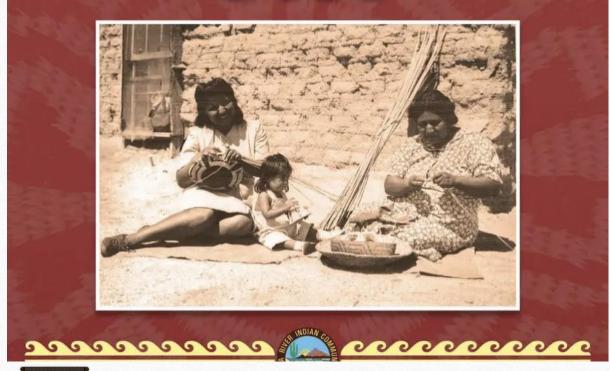
Arizona Water Settlement Act of 2004

GILA RIVER FARMS



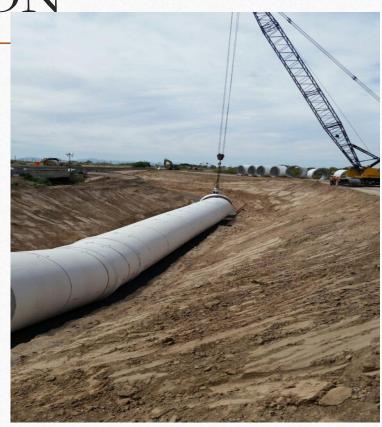
Our Traditions as Women





RESILIENCY CONTINUES PARTNERSHIP – PIMA IRRIGATION PROJECTS-WATER CONSERVATION





FIRST SHOVEL USED FOR THE PMIP CANALS- GRIC FORM OF WATER CONSERVATION





Shu dag –WATER IS LIFE FOR US ALL





Rosa Long

Cocopah Indian Tribe Vice Chairwoman

Ouestions Answers

ADifferent Perspective

Ashton Redd

Arizona FFA

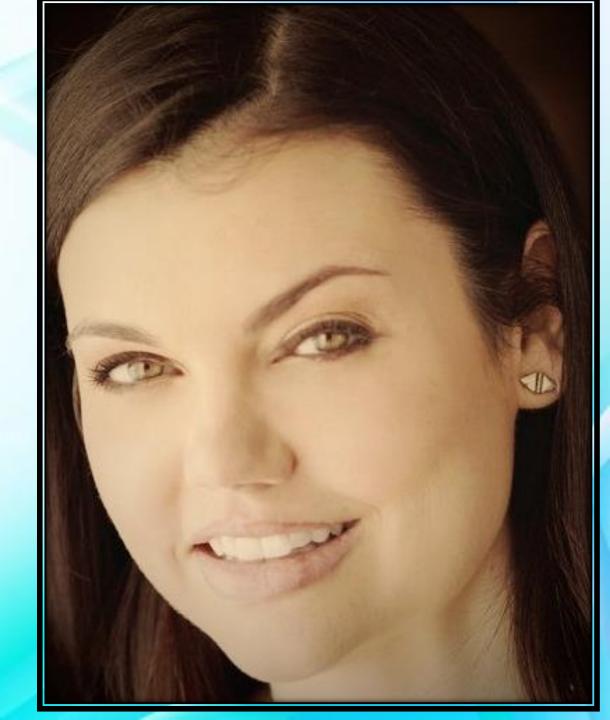


Ouestions Answers

Noble Law Office Attorney

Meghan Scott, Esq.

Delivering a Closing Message





On behalf of the Agribusiness & Water Council of Arizona

Thank you for joining us for today's meeting and we look forward to this year's activities of the Arizona Association of Women in Water & Agriculture!



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