Southern California Water Dialogue: Close Call on the Colorado

The Arizona Perspective

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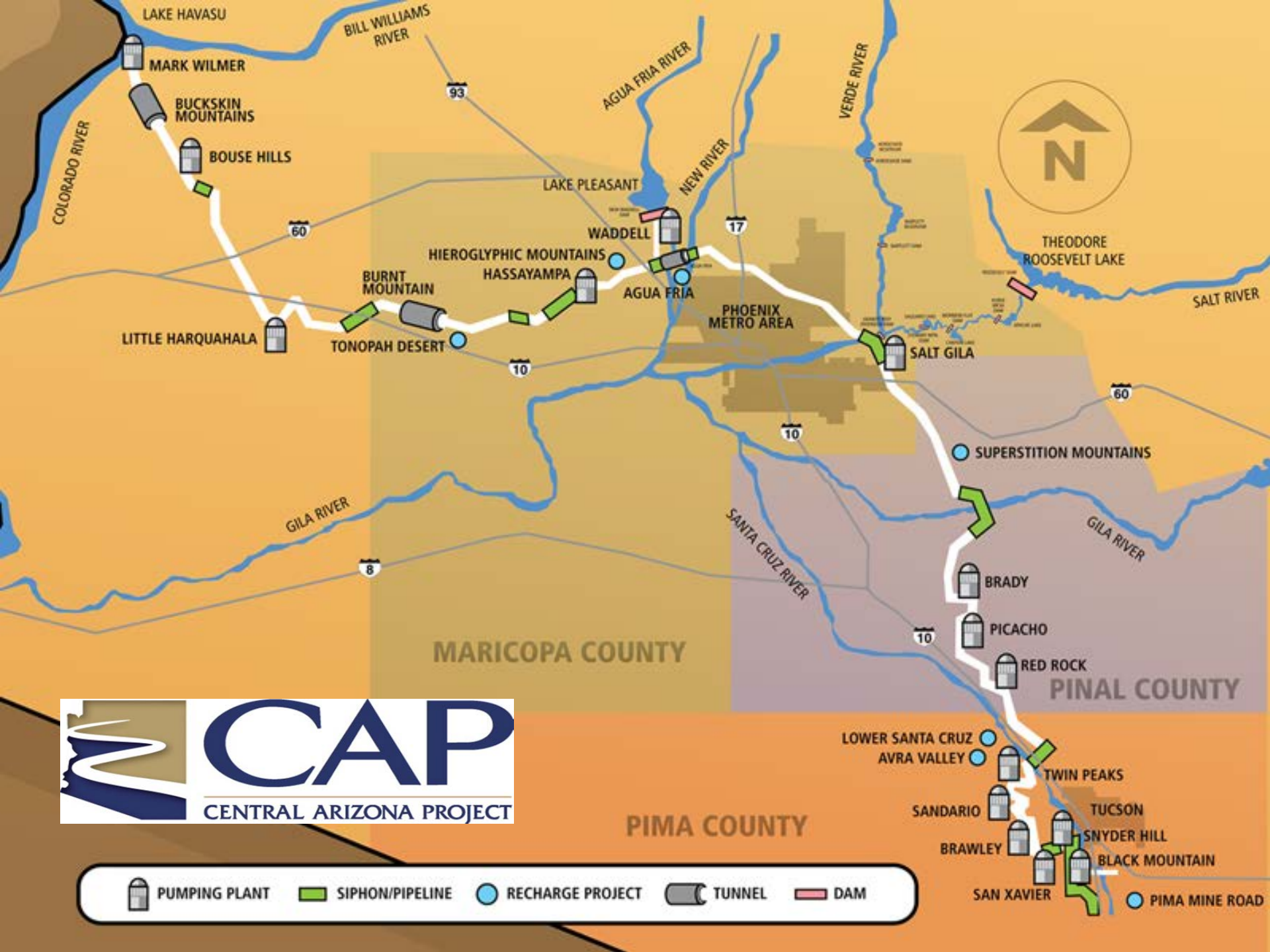
CAP
CENTRAL ARIZONA PROJECT
YOUR WATER. YOUR FUTURE.


LAKE HAVASU
BILL WILLIAMS RIVER
MARK WILMER
BUCKSKIN MOUNTAINS
BOUSE HILLS
COLORADO RIVER
93
AGUA FRIA RIVER
VERDE RIVER
N
LAKE PLEASANT
NEW RIVER
60
17
WADDELL
THEODORE ROOSEVELT LAKE
HIEROGLYPHIC MOUNTAINS
HASSAYAMPA
BURNT MOUNTAIN
AGUA FRIA
PHOENIX METRO AREA
SALT RIVER
LITTLE HARQUAHALA
TONOPAH DESERT
10
SALT GILA
60
10
SUPERSTITION MOUNTAINS
GILA RIVER
SANTA CRUZ RIVER
GILA RIVER
8
BRADY
PICACHO
10
RED ROCK
MARICOPA COUNTY
PINAL COUNTY
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LOWER SANTA CRUZ
AVRA VALLEY
TWIN PEAKS
SANDARIO
TUCSON
SNYDER HILL
BRAWLEY
BLACK MOUNTAIN
SAN XAVIER
PIMA MINE ROAD
PIMA COUNTY
PUMPING PLANT
SIPHON/PIPELINE
RECHARGE PROJECT
TUNNEL
DAM

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- Historical Information
  - Authorized by 1968 Basin Project Act
  - Substantially completed in 1993
  - Responsible for repaying reimbursable costs to the U.S.
- Physical Characteristics
  - 336 mile aqueduct
  - 15 pumping plants
  - Lake Pleasant (system storage/release)
  - Primarily powered through Navajo Generating Station (NGS)
  - Diverts remainder of Arizona's Colorado River Apportionment

Arizona Priorities for Colorado River Water

Priority Tier	Type of Contracts	Examples
P1	Pre-1928 Contracts (Present Perfected Rights)	City of Yuma
P2/P3	Equal Priority Contracts	Cibola NWR
P4	Post-1968 Contracts	CAP
P5/P6	Unused/Surplus Water	AZ State Land Dept.

CAP Service Area Priorities

Priority Tier/ Type of Use	Major Uses
On-River P3	Indian Agriculture, PHX-Metro Cities
CAP M&I and Indian	Indian Agriculture, Tucson/PHX-Metro Cities
CAP Non-Indian Ag	Indian Agriculture, PHX-Metro Cities
Ag Pool (excess)	Central Arizona Irrigation
Other Excess	Water Storage, Groundwater Replenishment

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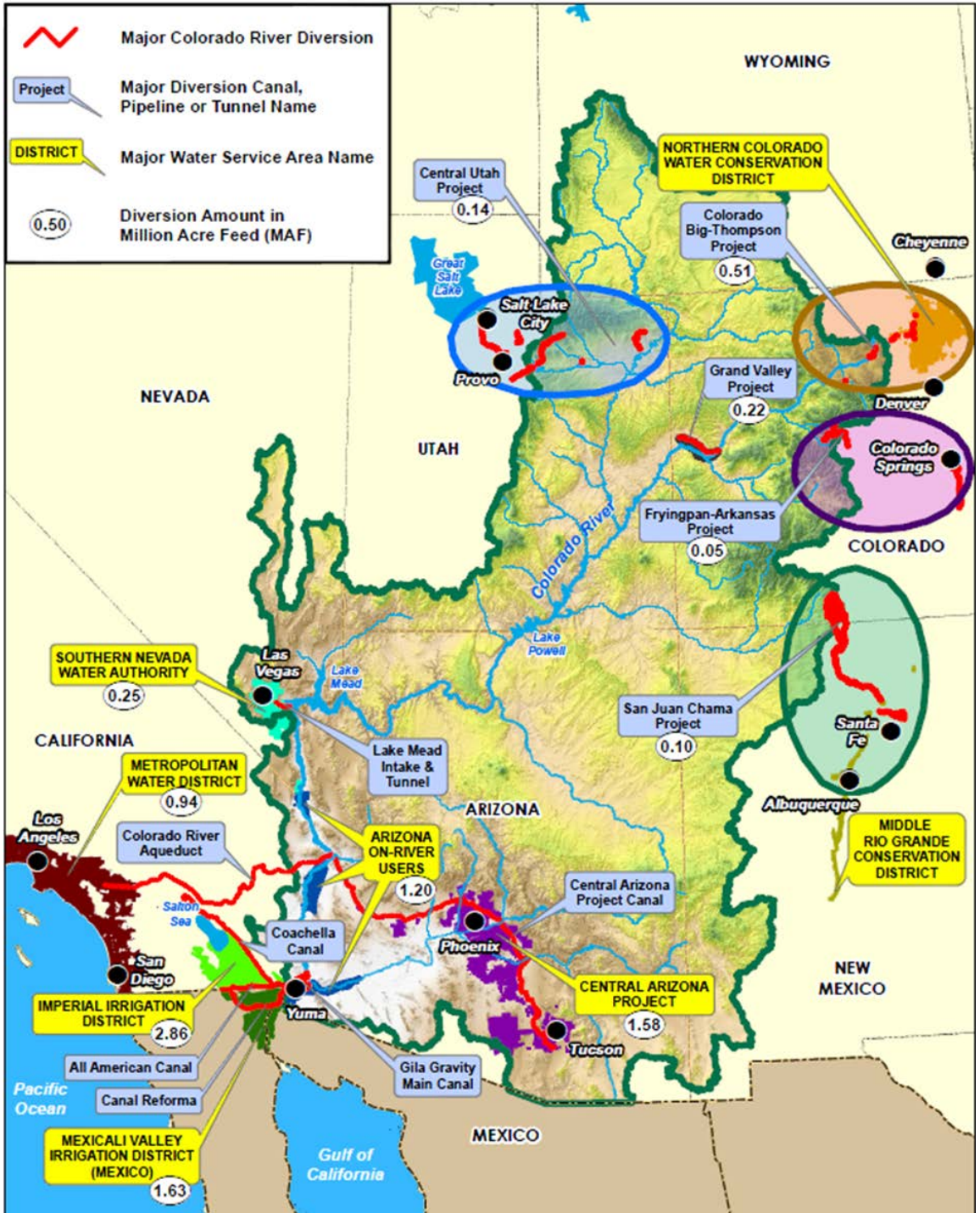

Upper Colorado River Basin	
Colorado	51.75%
New Mexico	11.25%
Utah	23.00%
Wyoming	14.00%

Lower Colorado River Basin	
Arizona	2,800,000 AF
California	4,400,000 AF
Nevada	300,000 AF
Mexico	1,500,000 AF

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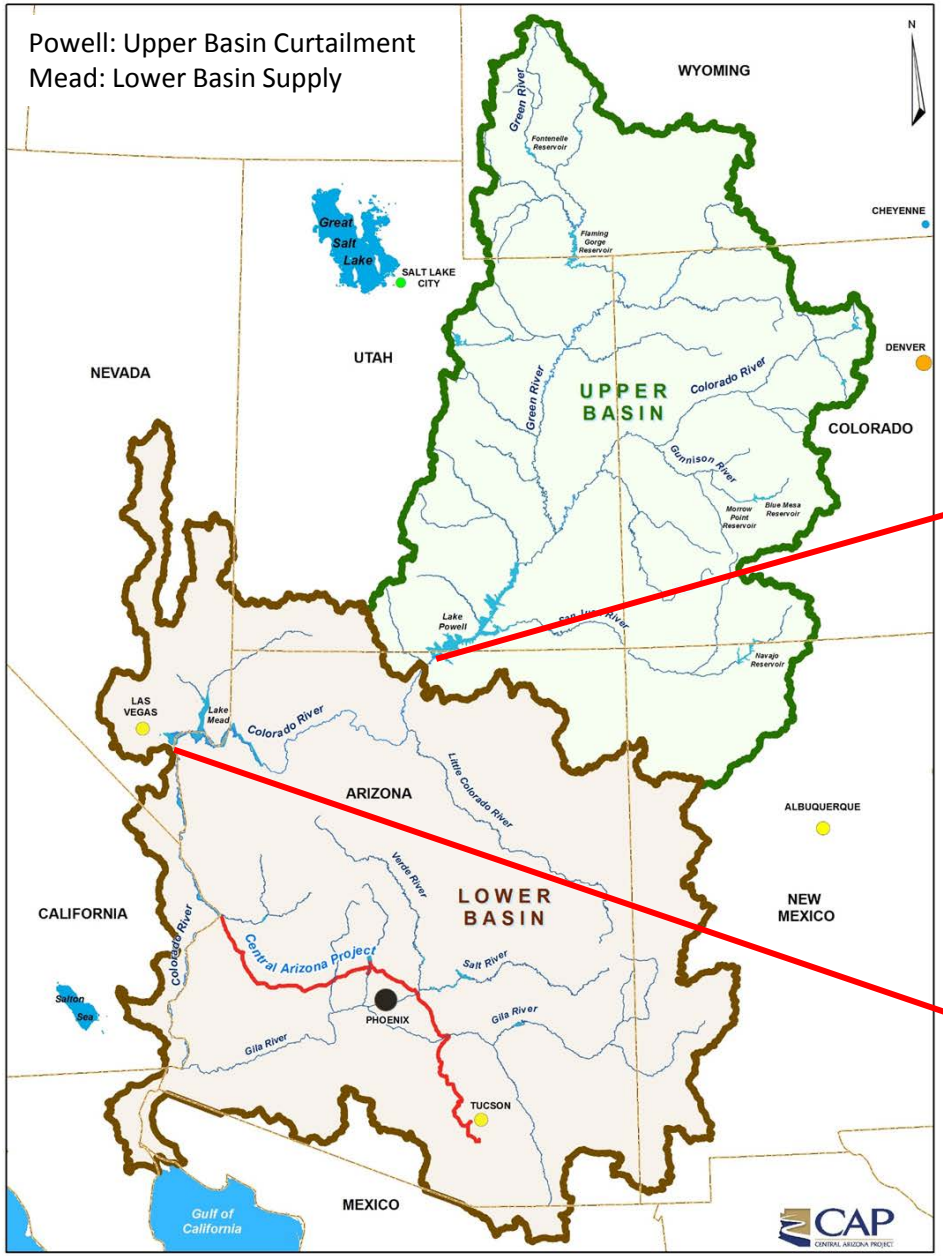
Significant Reservoirs



Lake Powell (Glen Canyon Dam)

Lake Mead (Hoover Dam)

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2007 Interim Guidelines: Shortage Sharing

- Arizona and Nevada share Lower Basin shortages under the 2007 Guidelines (through 2026)

- Mexico voluntarily agreed in Minute 319 to accept reductions in its deliveries at the same elevations

Lake Mead Elevation	Arizona Reduction	Nevada Reduction	Mexico Reduction
1075’	320,000 AF	13,000 AF	50,000 AF
1050’	400,000 AF	17,000 AF	70,000 AF
1025’	480,000 AF	20,000 AF	125,000 AF

- No reductions to California under 2007 Guidelines

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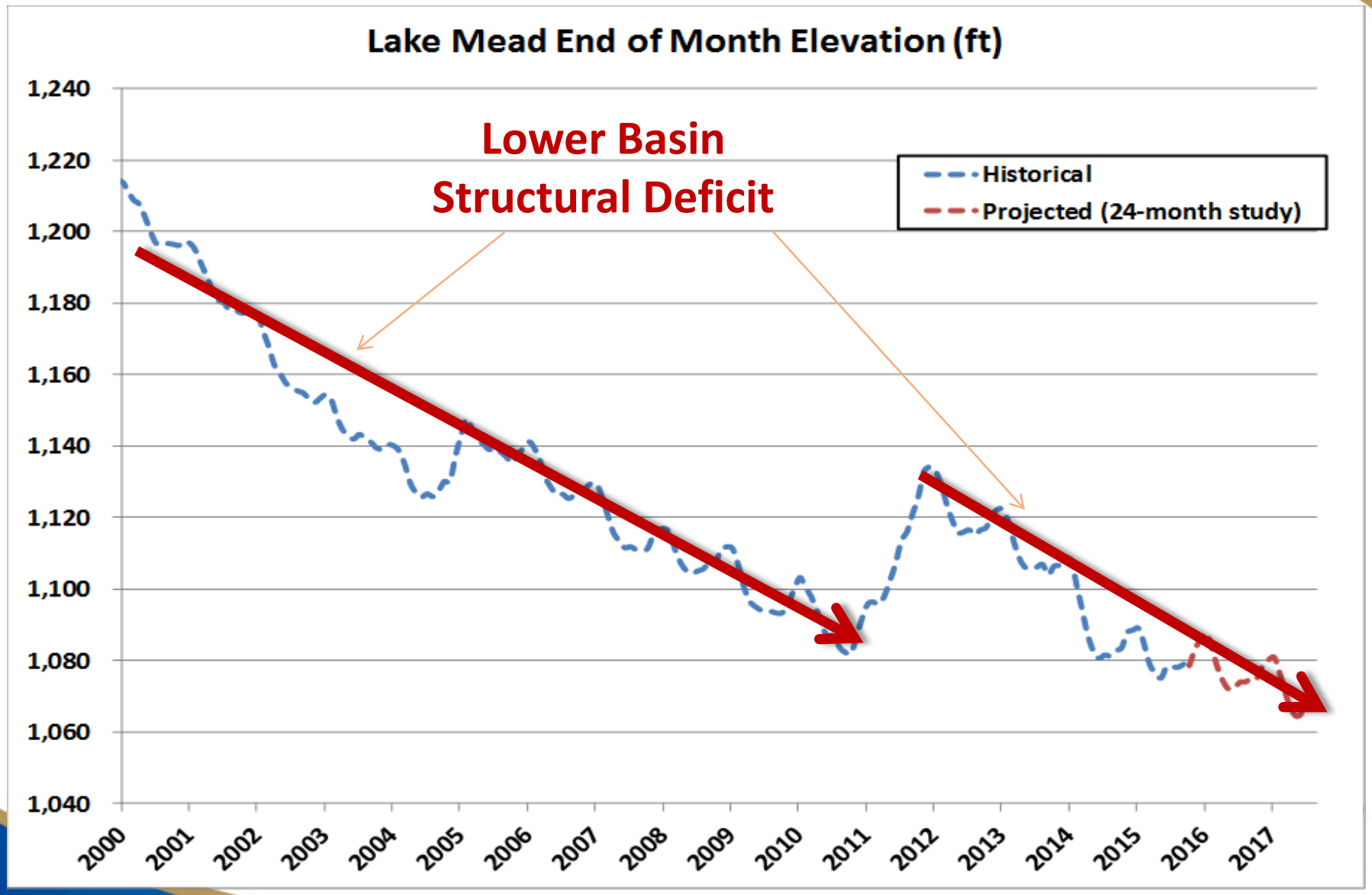
Water Budget at Lake Mead

- Inflow = 9.0 maf
  (release from Powell + side inflows)
- Outflow = - 9.6 maf
  (AZ, CA, NV, and Mexico delivery
  + downstream regulation and gains/losses)
- Mead evaporation losses = - 0.6 maf
- Balance = - 1.2 maf

Given basic apportionments in the Lower Basin, the allotment to Mexico, and an 8.23 maf release from Lake Powell, Lake Mead storage declines about 12 feet each year

RECLAMATION

Lake Mead Elevation



Risk to All Colorado River Users

Without equalization or corrective action, Lake Mead could potentially fall below elevation 1000'…

If Lake Mead is below elevation 1000':

- Impacts quality of water that SNWA withdraws (new intake)
- Reduced power generation and efficiency at Hoover Dam, potential cavitation or vibration damage
- Secretary can take additional measures (below 1025')

BAD THINGS CAN HAPPEN !

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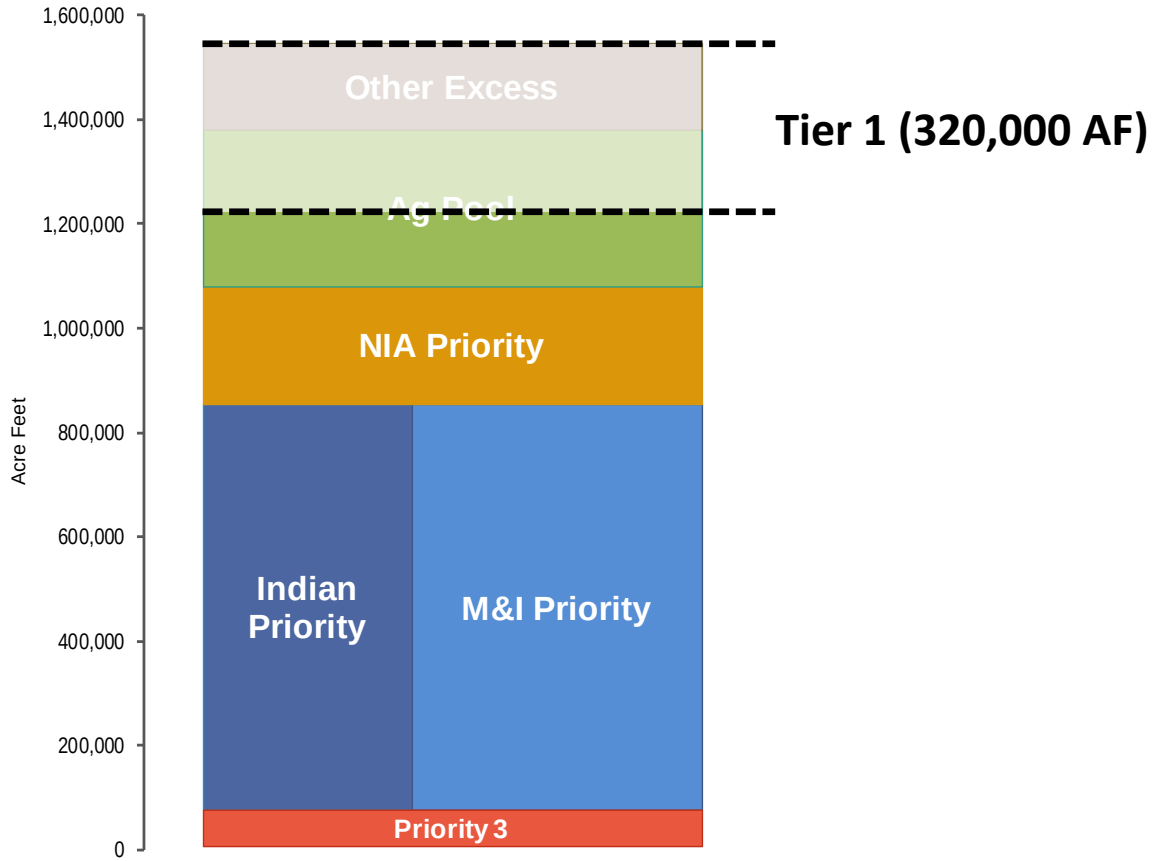
Impact of Tier 1 Shortage to CAP Priority Pools



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Adaptation Strategies: Augmentation and Storage

- Water Banking
  - CAP and the Arizona Water Banking Authority (AWBA) have stored water underground for future recovery during shortages (Just over 4 MAF – over twice CAP's annual diversions from the Colorado River)

- Weather Modification
  - CAP partially co-funds with Lower Basin partners cloud seeding projects in Wyoming, Colorado, and Utah to augment Colorado River snowpack

Pilot Drought Response Action MOU

- Voluntary development of water in Lake Mead
- Reduce risks of reaching critically low elevations in Lake Mead
- Creation of Protection Volumes in 2014-2019 by CAP, USBR, SNWA, MWD (740 KAF)

12 Ag Participants

Tonopah IDD
Roosevelt WCD
Queen Creek IDD
New Magma IDD
Hohokam IDD
Maricopa-Stanfield IDD
Central Arizona IDD
Kai Farms
BKW Farms
Maricopa Water District
Salt River Project
Yuma Mesa IDD (on-River)

4 Cities

Glendale
Peoria
Phoenix
Scottsdale

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CAP Cooperative MOU Programs

CAP Agricultural customers in Central Arizona

- Ag Forbearance for reduced rate/charge
- Flexibility in using other water supply sources

Yuma Mesa Irrigation and Drainage District

- Pilot program with CAGRD
- Compensation for fallowing of irrigation acres

CAP Municipal Customers

- Received local supply in lieu of CAP delivery (CAP credits with SRP)
- No cost to CAP

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Pilot System Conservation Program

- System conservation programs effective in partially mitigating drought impacts
- Provided opportunities to test new and innovative conservation approaches
- Program considered conservation in different water sectors: agricultural, municipal, industrial, etc.
- Water users compensated for voluntary reductions in water use
- Funding provided by CAP, USBR, SNWA, MWD, Denver Water ($17 M – $3M from CAP)
- Funding supported Upper and Lower Basin projects in all Basin States
- Target total conservation of just over 100 KAF

SOUTHERN NEVADA WATER AUTHORITY

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

DENVER WATER

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

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Reduction Schemes: *Lower Basin Drought Contingency Plan (LBDCP)*

Lake Mead Elevation (Feet)	AZ Reduction (AF)	NV Reduction (AF)	CA Reduction (AF)	USBR Reduction (AF)	Total (AF)
1,090 - 1,075	192,000	8,000	0	100,000	300,000
1,075 - 1,050	192,000	8,000	0	100,000	300,000
1,050 - 1,045	192,000	8,000	0	100,000	300,000
1,045 - 1,040	240,000	10,000	200,000	100,000	550,000
1,040 - 1,035	240,000	10,000	250,000	100,000	600,000
1,035 - 1,030	240,000	10,000	300,000	100,000	650,000
1,030 - 1,025	240,000	10,000	350,000	100,000	700,000
< 1,025	240,000	10,000	350,000	100,000	700,000

The LBDCP:

- Proposal developed by USBR and the LB states
- Aims to minimize the decline in Lake Mead
- Earlier, deeper, and pro-active reductions
- Provides more certainty and protection of Colorado River supplies

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CAP Colorado River Partnerships

Arizona

CAP Customers

Arizona Water Bank

Arizona On-River Water Users

Arizona Department of Water Resources

Colorado River

Basin States

Indian Tribes

NGOs

Mexico

Secretary of the Interior/
Bureau of Reclamation

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Final Thoughts…

- The structural deficit creates a long-term risk to all Lower Basin Colorado River water users
- CAP is prepared for future shortage in the Colorado River
- Cooperative programs funded by CAP, MWD, SNWA, BOR are addressing near-term risks
- All Colorado River water users need to participate in efforts to sustain the River's water supply
- Collaboration is a more effective and efficient approach to address drought impacts

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