



The Pursuit of Sustainable & Reliable Water Supplies in the Desert

The Las Vegas Story

**Richard B. Holmes
Southern Nevada Water Authority
February 16, 2010**

SOUTHERN NEVADA



Presentation Outline

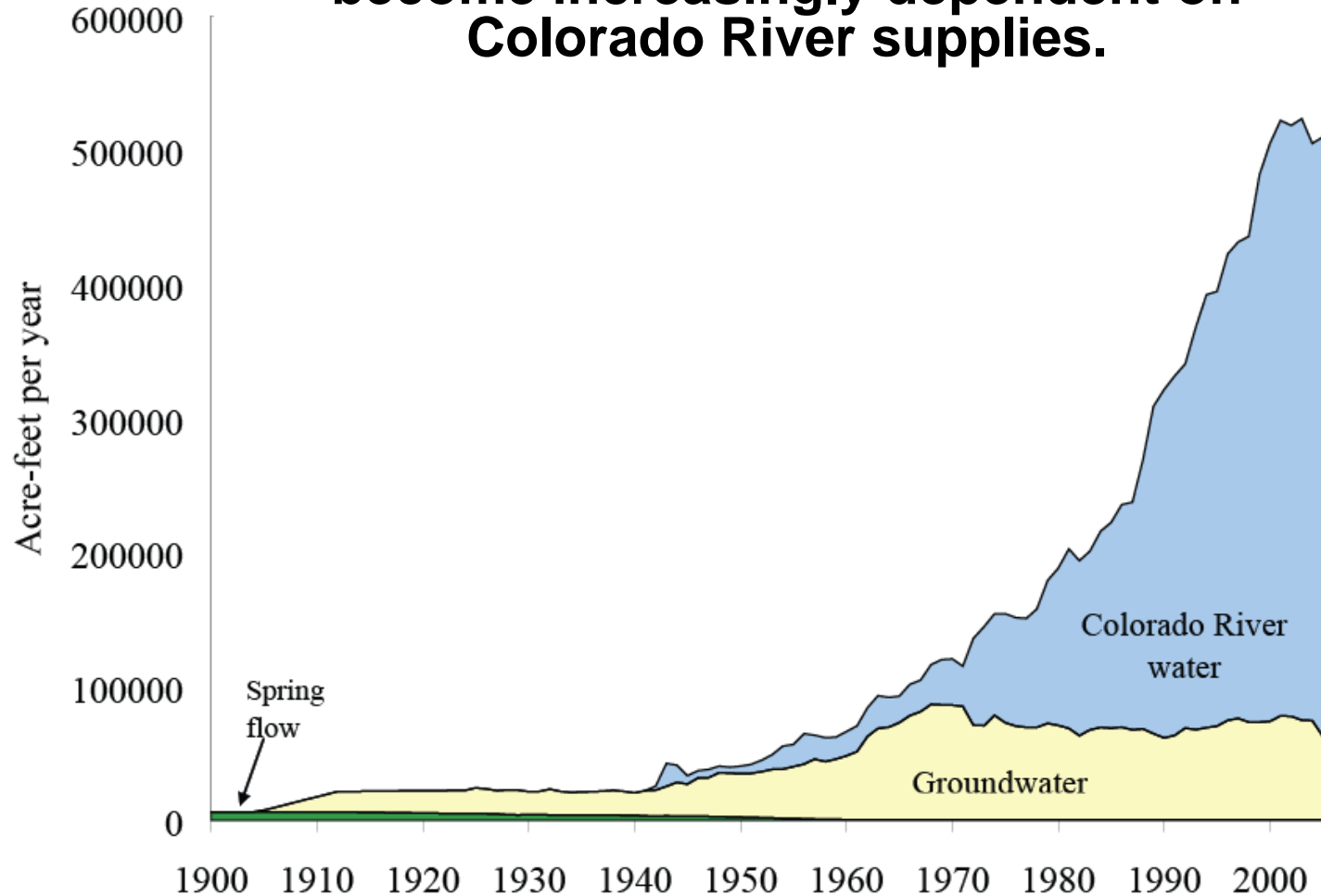
- **Early Las Vegas Valley: Water Resources**
- **Formation of the Southern Nevada Water Authority**
- **Water Resource Plans in the 1990's and early 2000's**
- **Current Realities: Drought, Climate Change, and Sustainability**
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“The Rush is Only Just Commencing.”

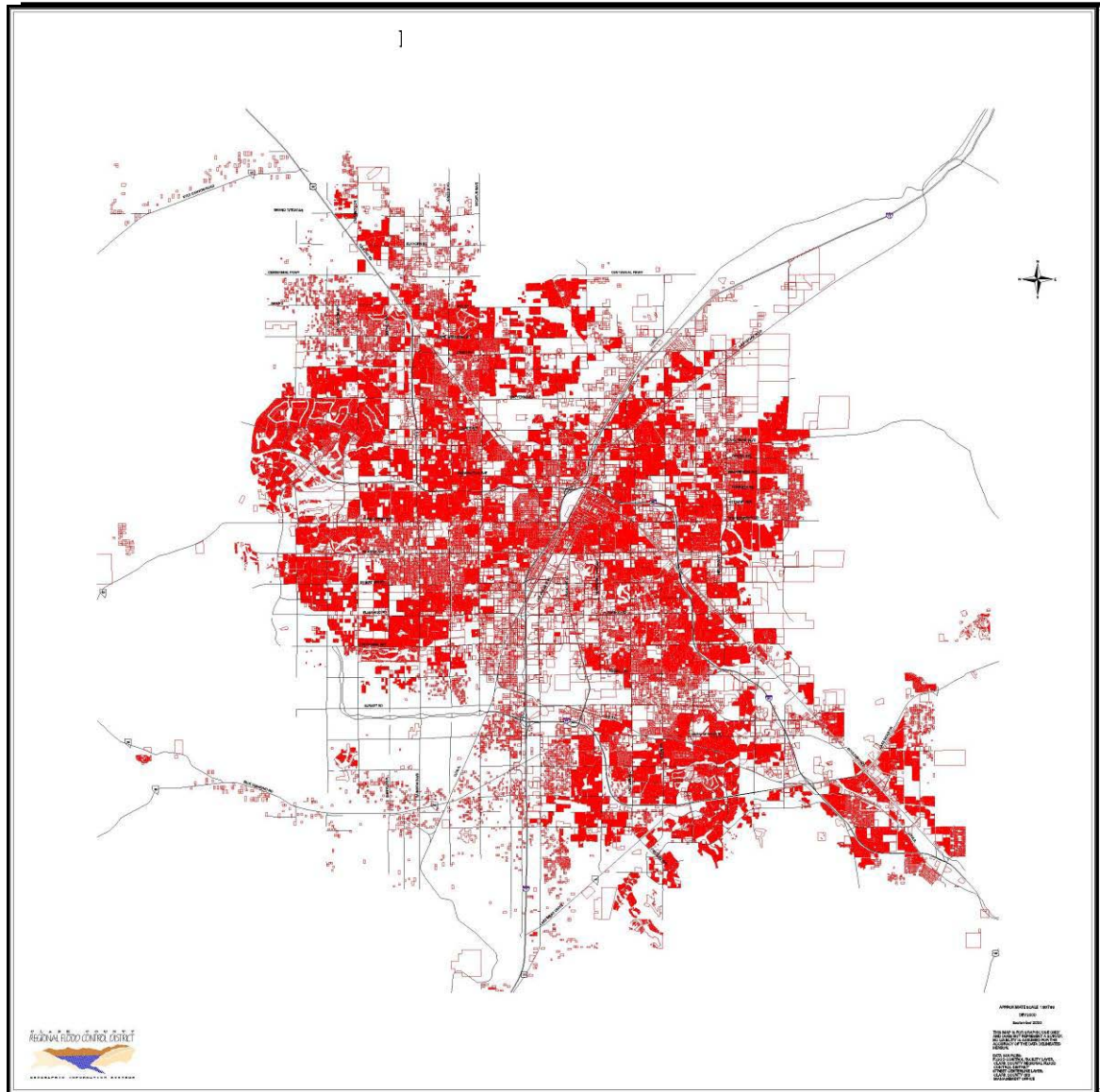
Las Vegas Age, May 1905

Water Use 1905 – Present

Over the years, Southern Nevada has become increasingly dependent on Colorado River supplies.



Development History



Population

1950 – 47,000

1960 – 116,000

1970 – 270,000

1980 – 444,000

1990 – 800,000

2000 – 1.3 million

2008 – 2.0 million

Las Vegas – Early Settlement

Early inhabitants came to Las Vegas because of its abundant water supplies.



Pre-1905 1905 1920 1950 1960 1970 1980 1990 2000 2008

Las Vegas – Early Settlement

Even early settlers recognized the value of conservation.



Photo courtesy of UNLV Special Collections.

Pre-1905 1905 1920 1950 1960 1970 1980 1990 2000 2008

Las Vegas - 1905

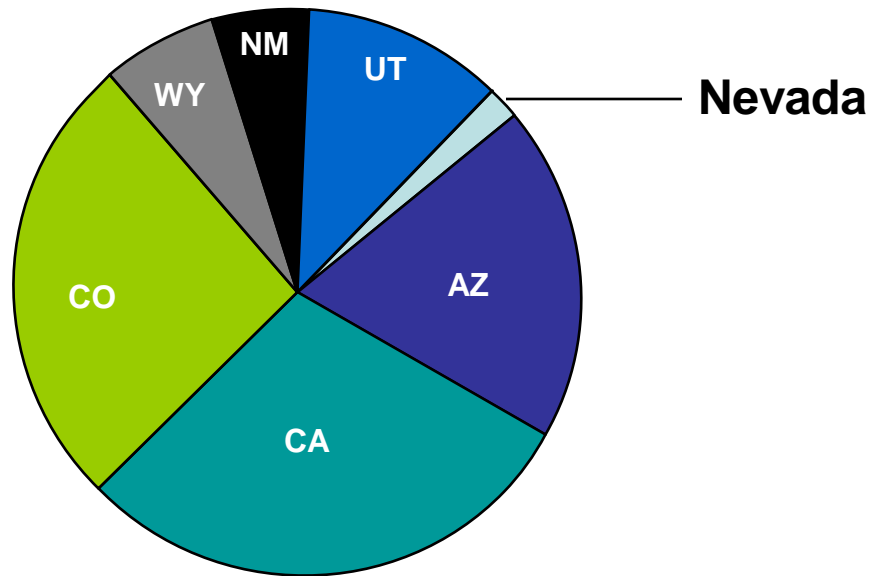
A railroad resulted in the formation of the privately owned Las Vegas Land and Water Company.



Pre-1905 1905 1920 1950 1960 1970 1980 1990 2000 2008

Las Vegas – 1920s

Nevada received its Colorado River allocation; there was no projected use for this water at the time.



Pre-1905 1905 1920 1950 1960 1970 1980 1990 2000 2008

Las Vegas – 1950s

Las Vegas gained popularity as a tourist destination.



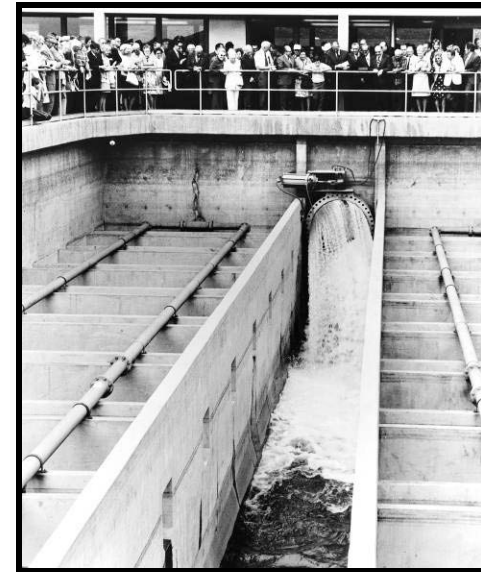
Pre-1905 1905 1920 1950 1960 1970 1980 1990 2000 2008

90 % of all water comes from local groundwater supplies.

Las Vegas – 1970s

Colorado River water delivery facilities became operational.

The Colorado River is expected to provide Las Vegas an ample water supply until the middle of the 21st century.



Pre-1905 1905 1920 1950 1960 1970 1980 1990 2000 2008

Las Vegas – 1990s

The Colorado River was estimated to be fully used by the early 2000s.



Pre-1905 1905 1920 1950 1960 1970 1980 1990 2000 2008

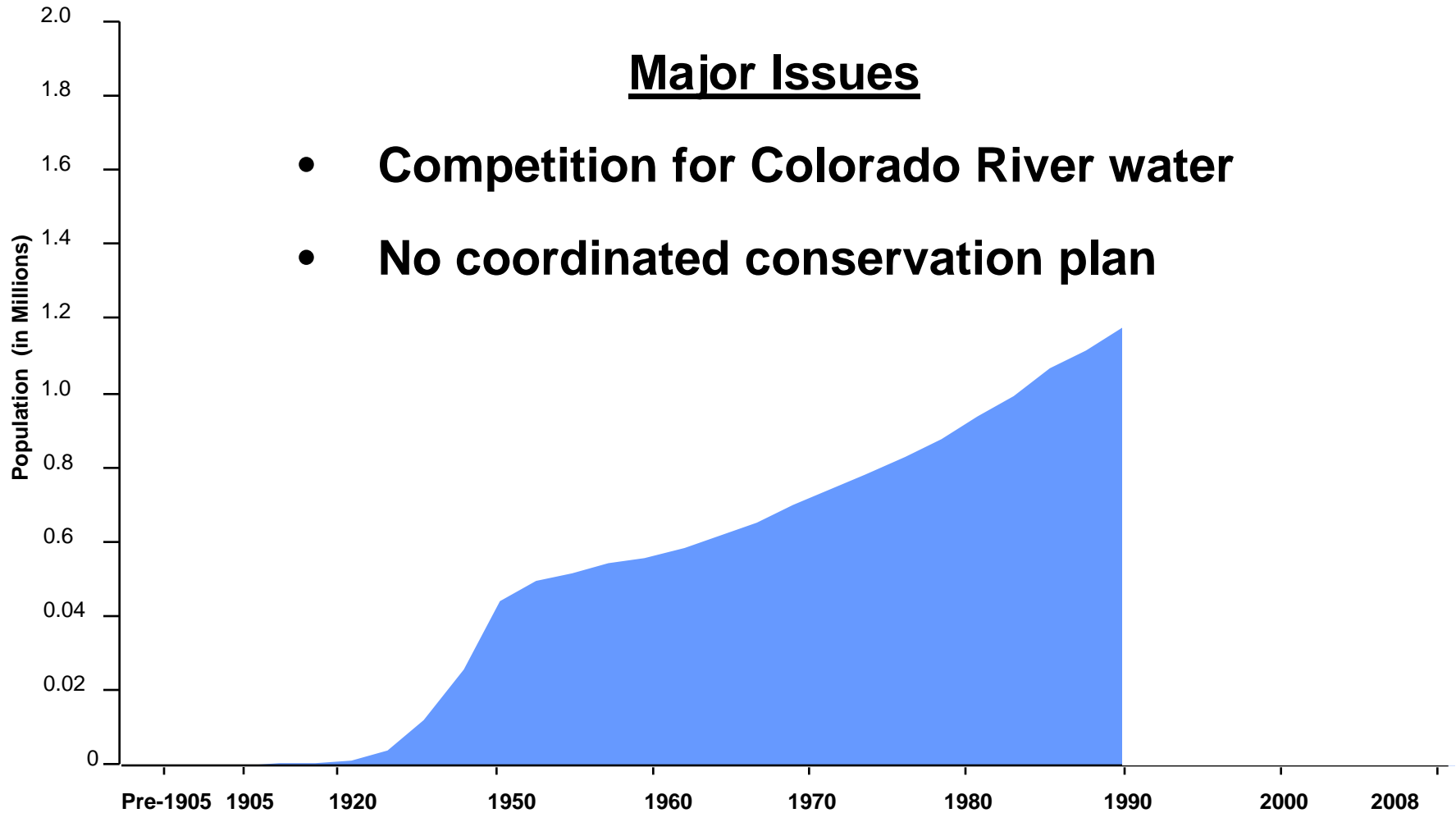
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Las Vegas – 1990s

Major Issues

- **Competition for Colorado River water**
- **No coordinated conservation plan**

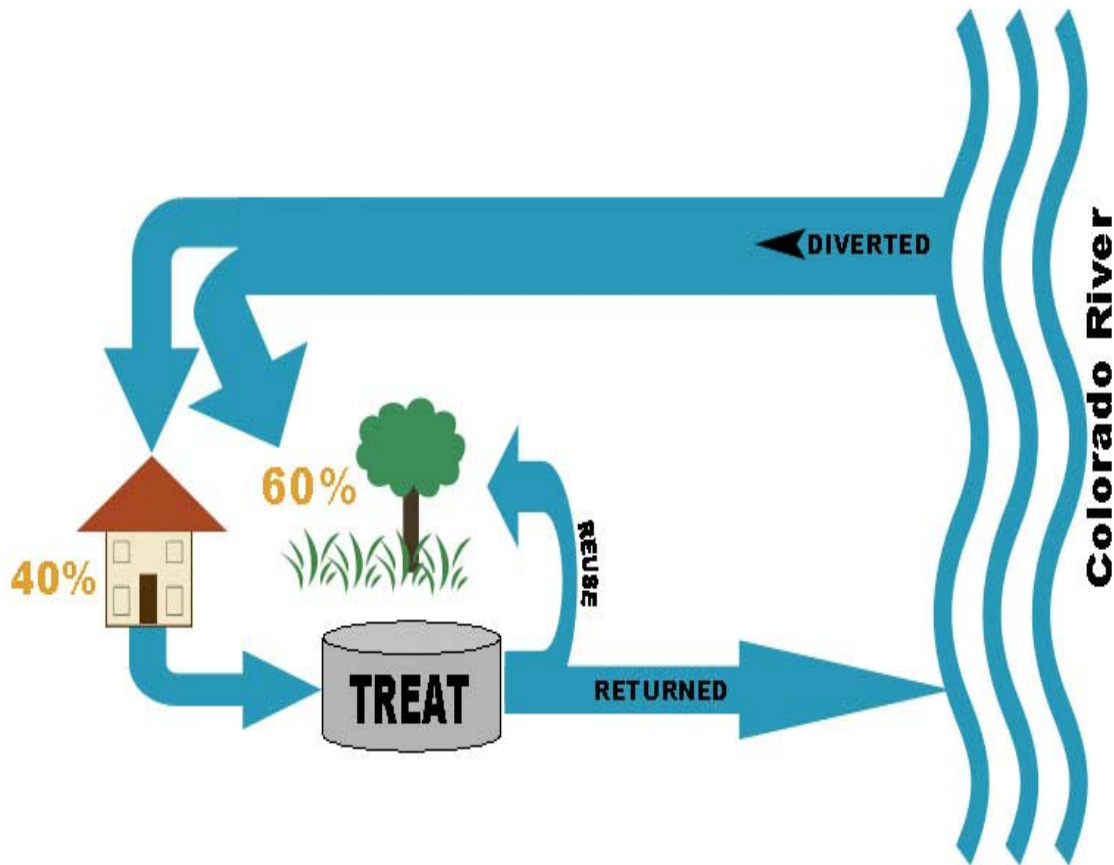


“Super water agency taking shape.”

Las Vegas Sun, May 1991

Southern Nevada Water Authority

Return-Flow Credits

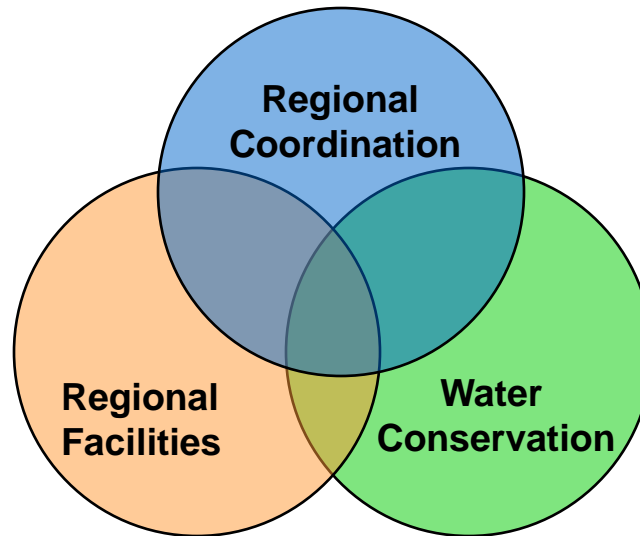


Southern Nevada's water resources are consumed primarily by landscape and cooling

Indoor water use has negligible impact

Las Vegas – 1990s

The Southern Nevada Water Authority (SNWA) was formed by cooperative agreement (NRS 277) in 1991 to address Southern Nevada's unique water needs on a regional basis



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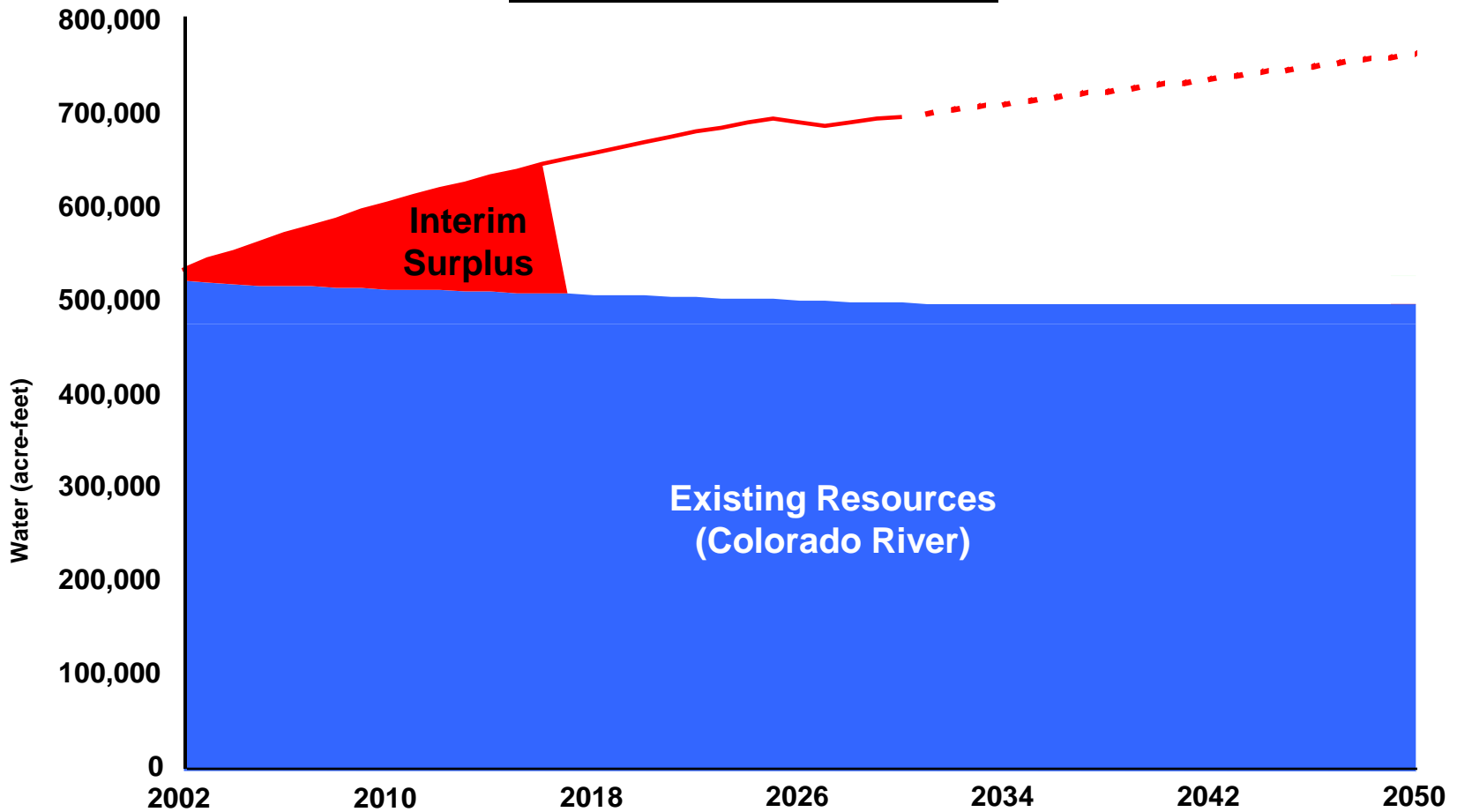
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“Nevada to be granted surplus river water.”

Las Vegas Sun, December 2000

Las Vegas – Early 2000s

2000 Resource Plan



Las Vegas – Early 2000s

Interim Surplus

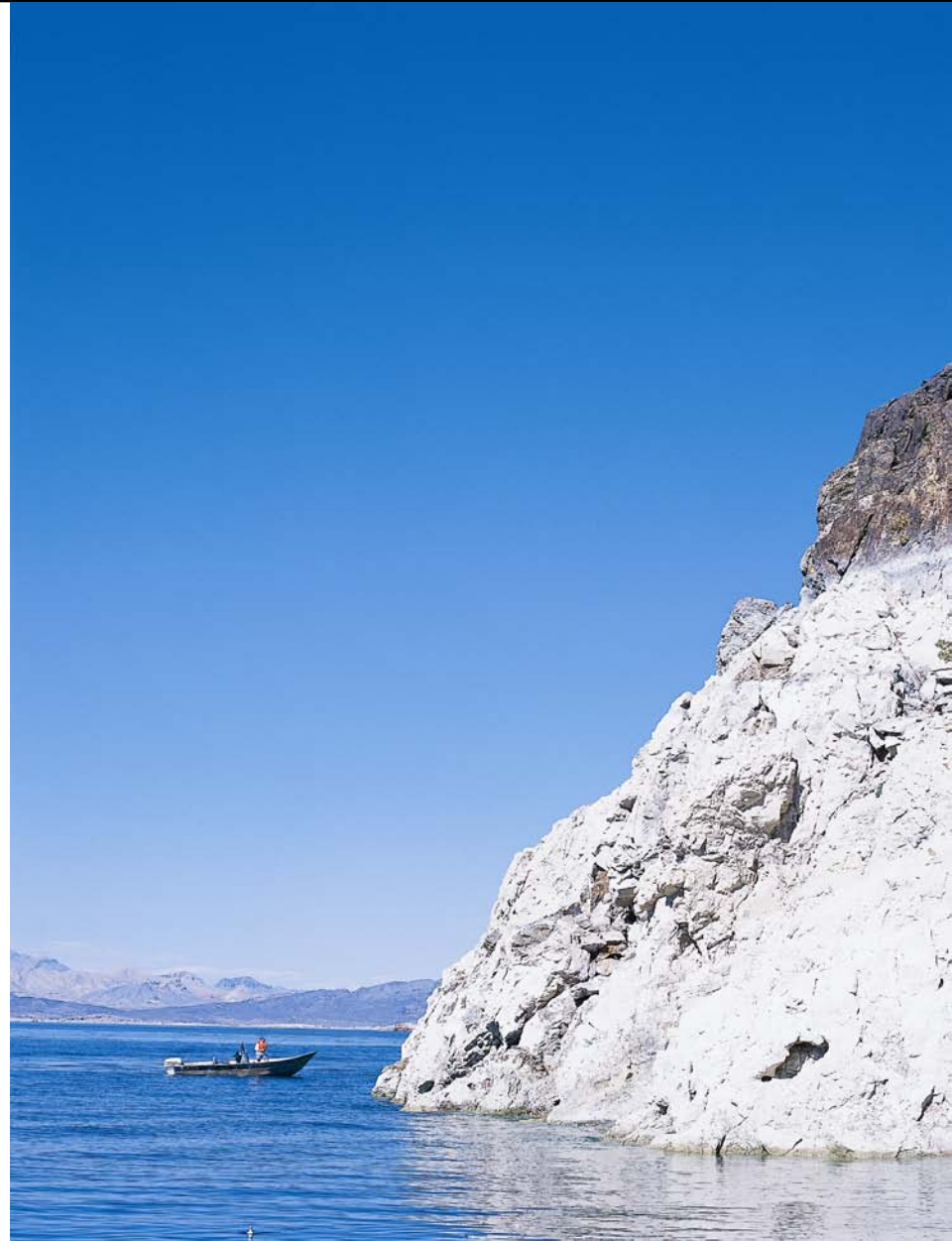
- **Intended as a bridge until other long-term resources could be developed.**
- **Surplus volumes available based on Lake Mead water levels.**
- **Meanwhile, SNWA aggressively pursues other resources:**
 - Conservation
 - Water banking
 - Exchanges with other states
 - Desalination

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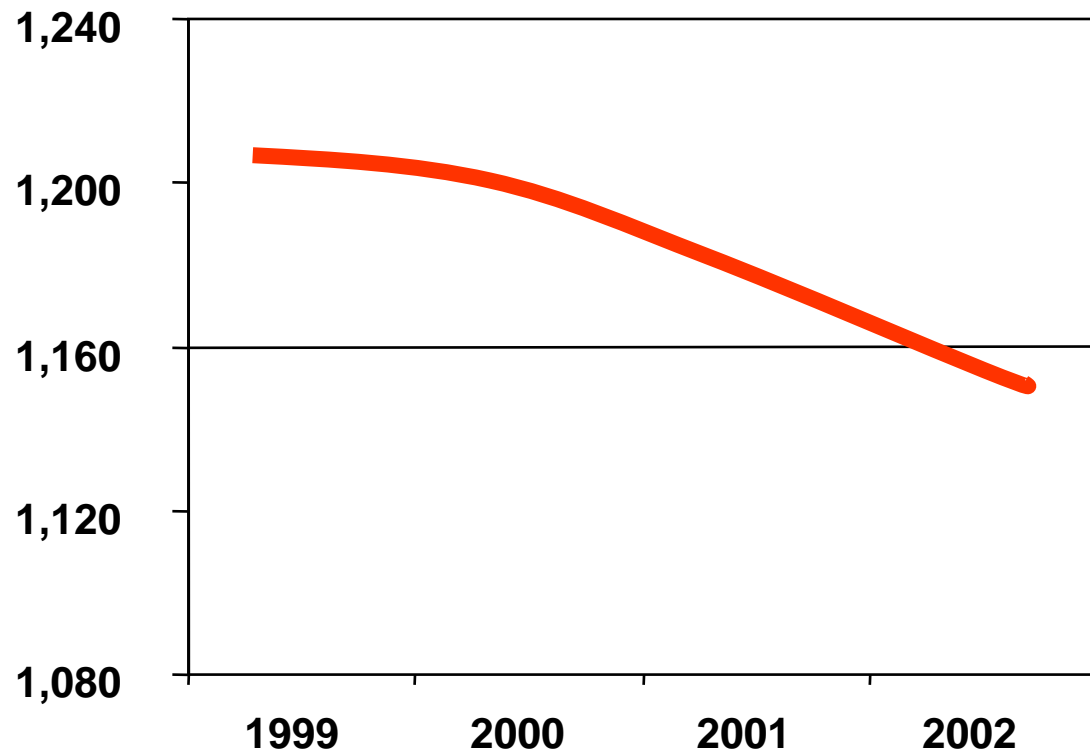
Las Vegas – Early 2000s

**Drought takes hold
on the Colorado River...**



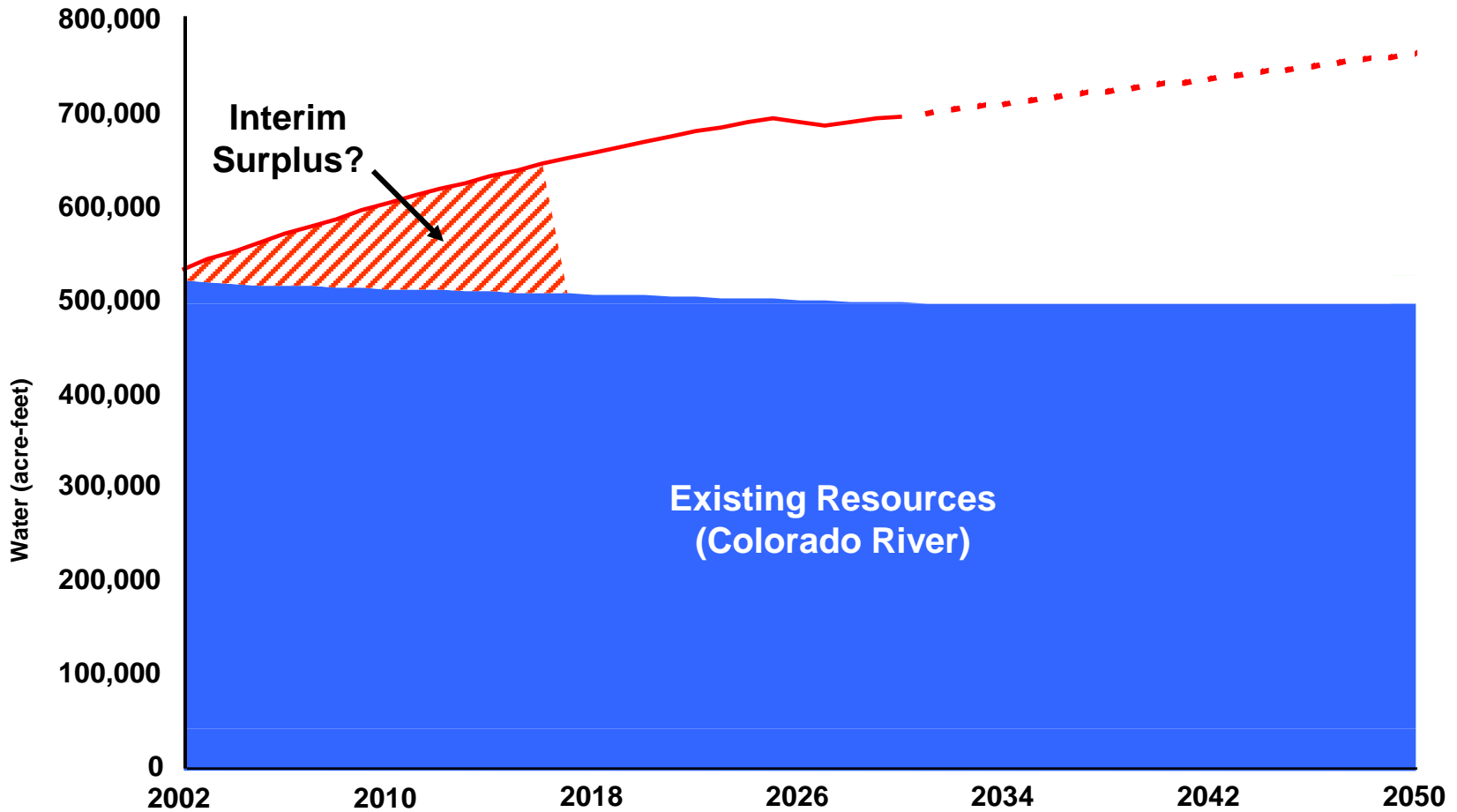
Las Vegas – Early 2000s

Lake Mead water level plunges...



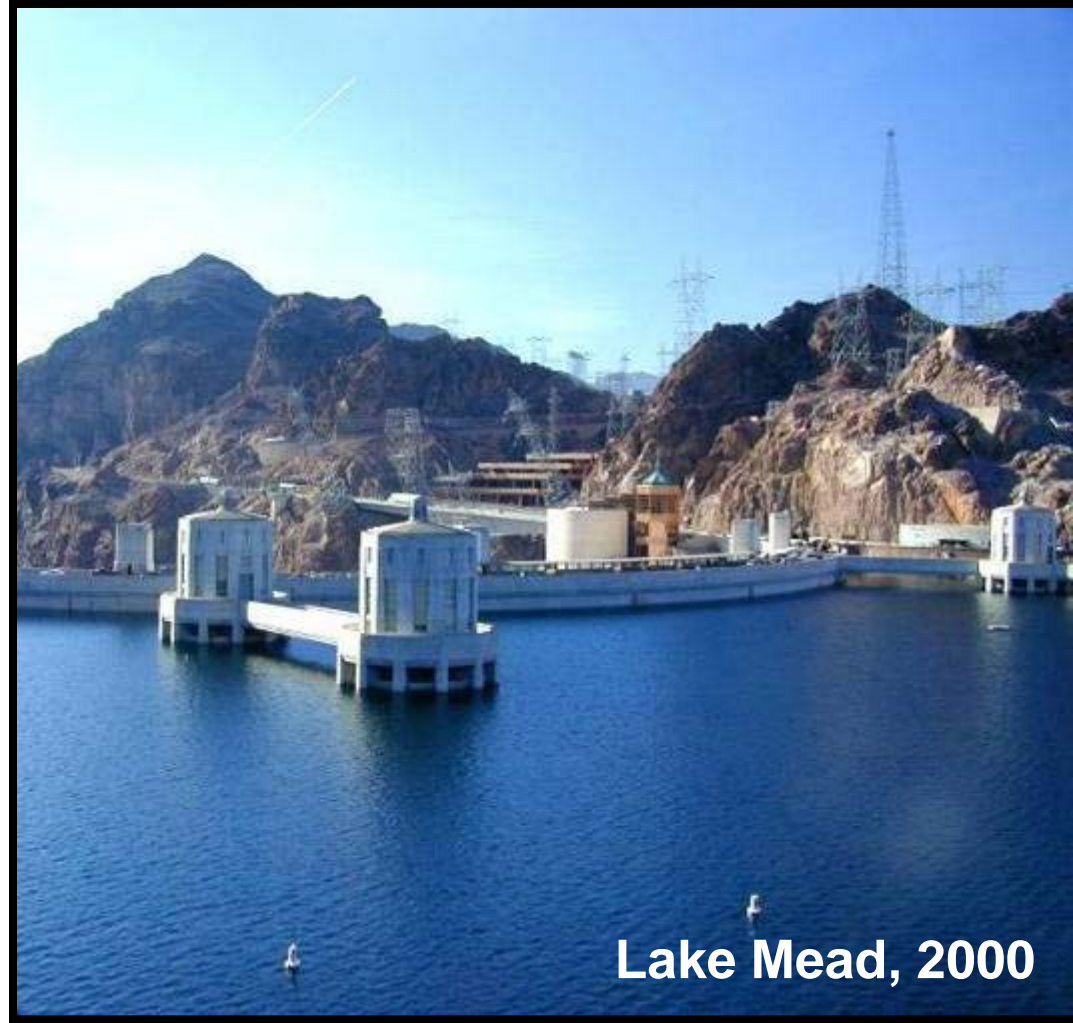
Las Vegas – Early 2000s

Interim Surplus availability becomes uncertain...

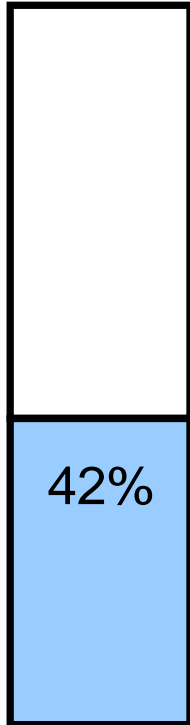


COLORADO RIVER DROUGHT

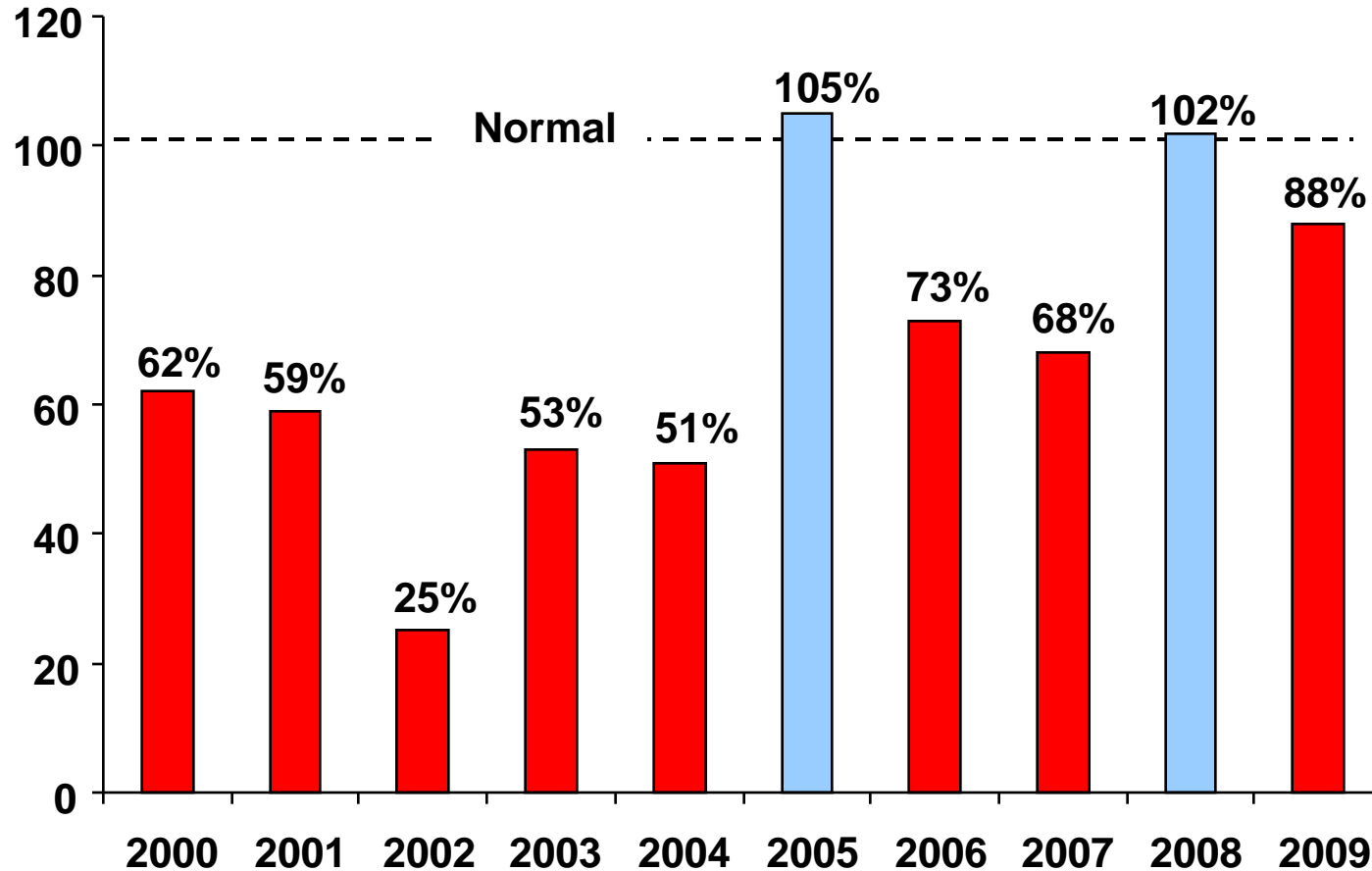
96%



COLORADO RIVER DROUGHT



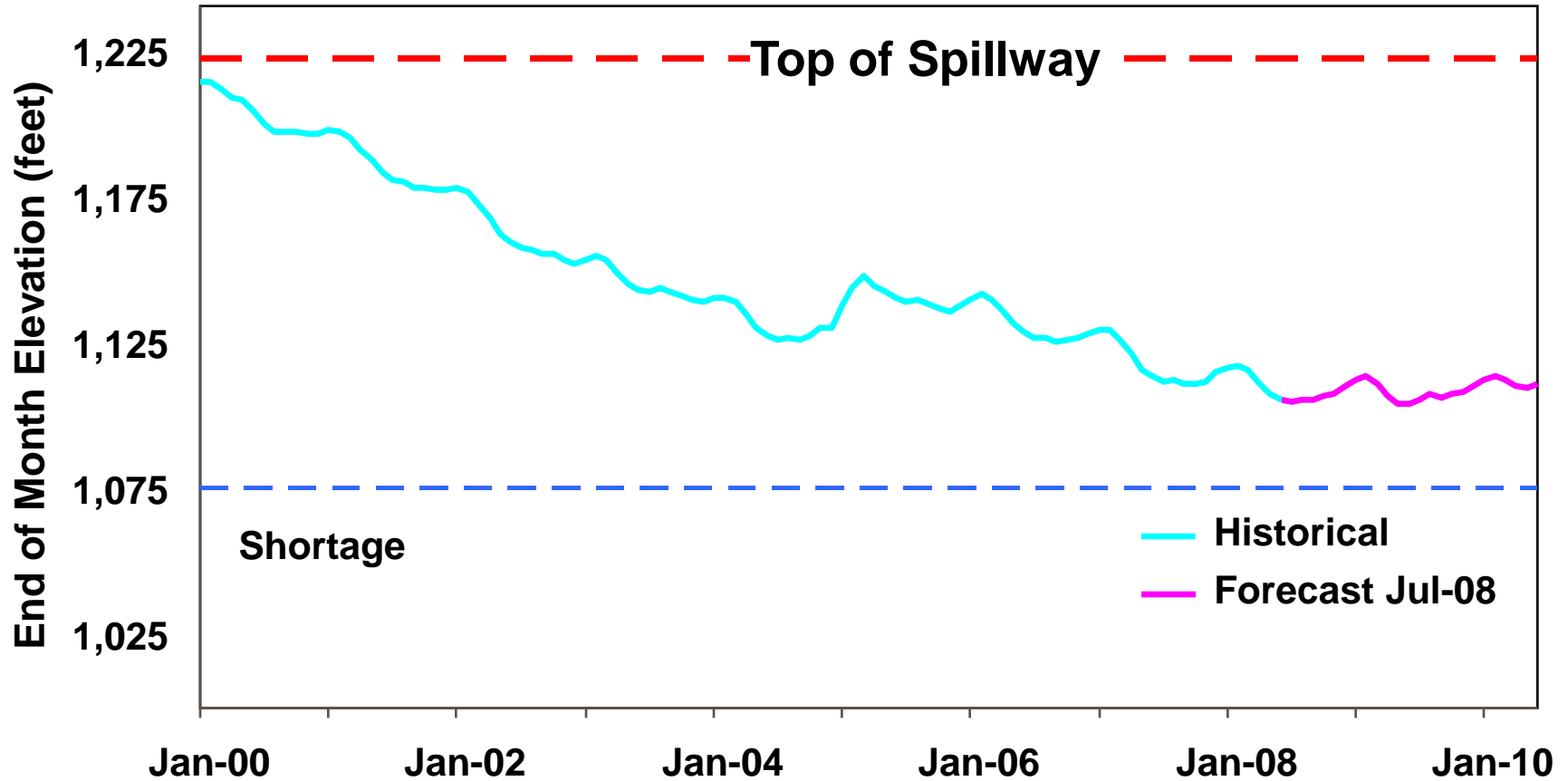
COLORADO RIVER DROUGHT



The 10-year historical average inflow to the Colorado River system was 69% of normal.

Las Vegas – Current

Historical and Forecast Lake Mead Elevation



Climate Change in the Colorado River Basin

“Imminent transition to a more arid climate in southwestern North America” *Seager et al (April 2007)*

“Climate variability and change, together with increasing development pressures, will result in drought impacts that are beyond the institutional experience in the region”

Intergovernmental Panel on Climate Change (August 2008)

CLIMATE CHANGE

The uncertainties posed by climate change will require us to use many of the same tools that have allowed us to successfully address water resource challenges over the last decade.

- **Conservation**
- **Innovation**
- **Partnerships**



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LOCAL RESPONSE - CONSERVATION

Conservation was Southern Nevada's first response to drought.

2003: Implemented drought plan

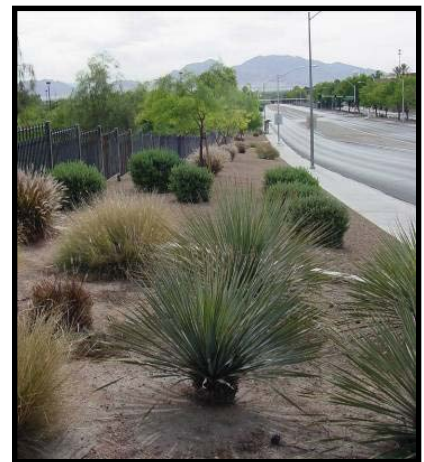
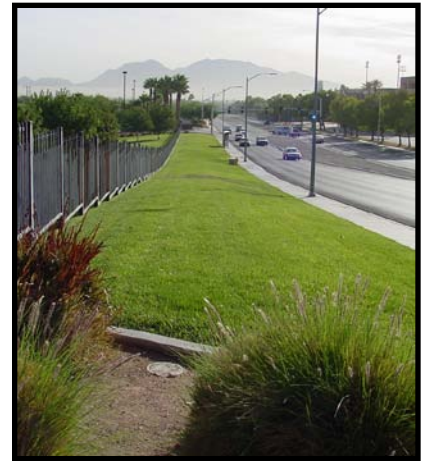
2004: Realized 25% conservation goal

2005: Adopted new conservation goal

2008: Realized 250 GPCD goal

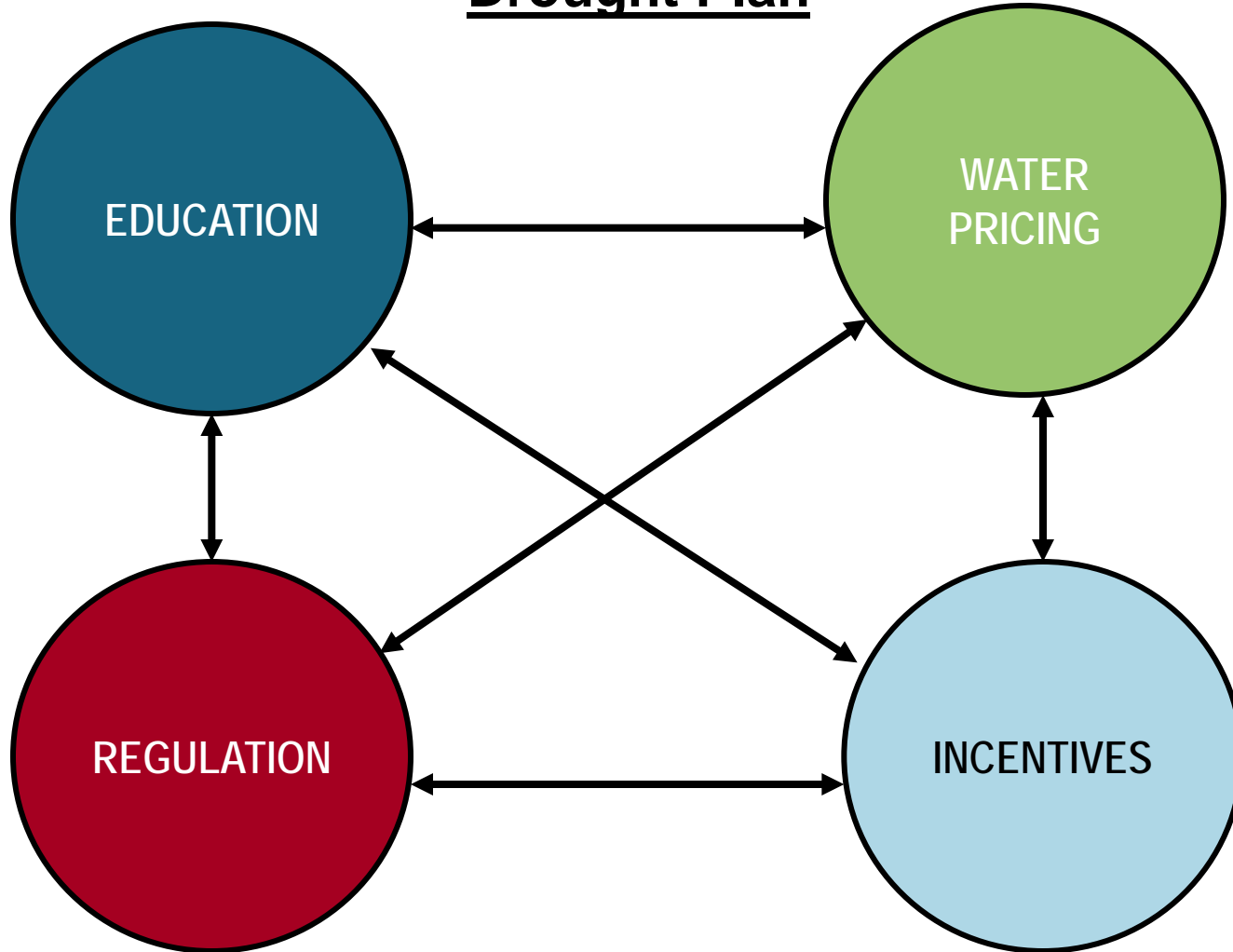
2009: Adopted new goal (199 GPCD by 2035)

Water consumption decreased by nearly 21 billion gallons between 2002 & 2008, despite a population increase of 400,000 during that span.



Las Vegas – Early 2000s

Drought Plan



Las Vegas – Early 2000s

Conservation Policies and Programs

- **Year-round watering schedules**
- **Turf limitations**
- **Golf course water budgets**
- **Water waste enforcement**
- **Conservation rates**
- **Education and outreach**



Las Vegas – Early 2000s

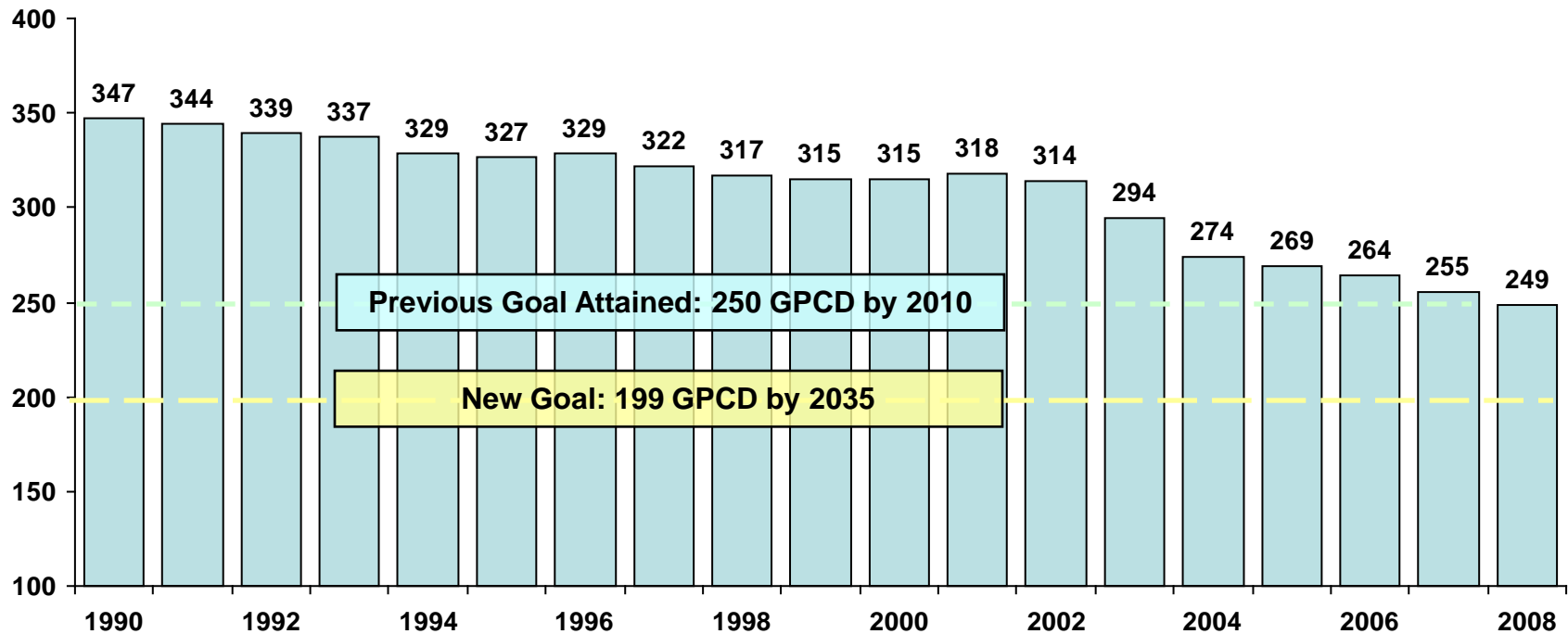
Conservation Policies and Programs

- Provides rebates to customers that replace turf with water-smart landscaping
- Nearly 142 million square-feet converted since program inception
- Over 7.9 billion gallons being saved annually

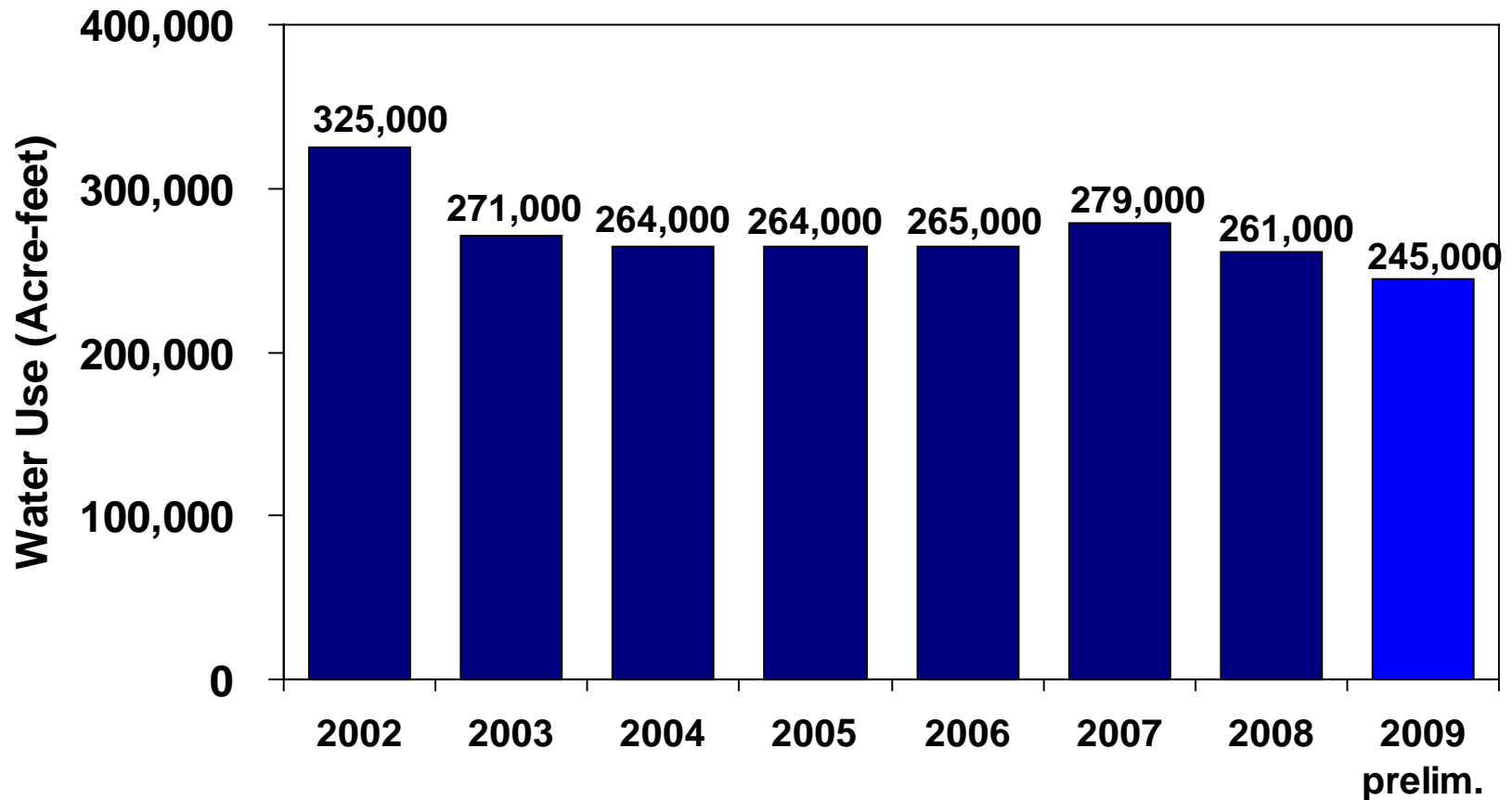


Water Conservation Achievements

1990 - 2008 Gallons Per Capita Per Day (GPCD) Water Usage



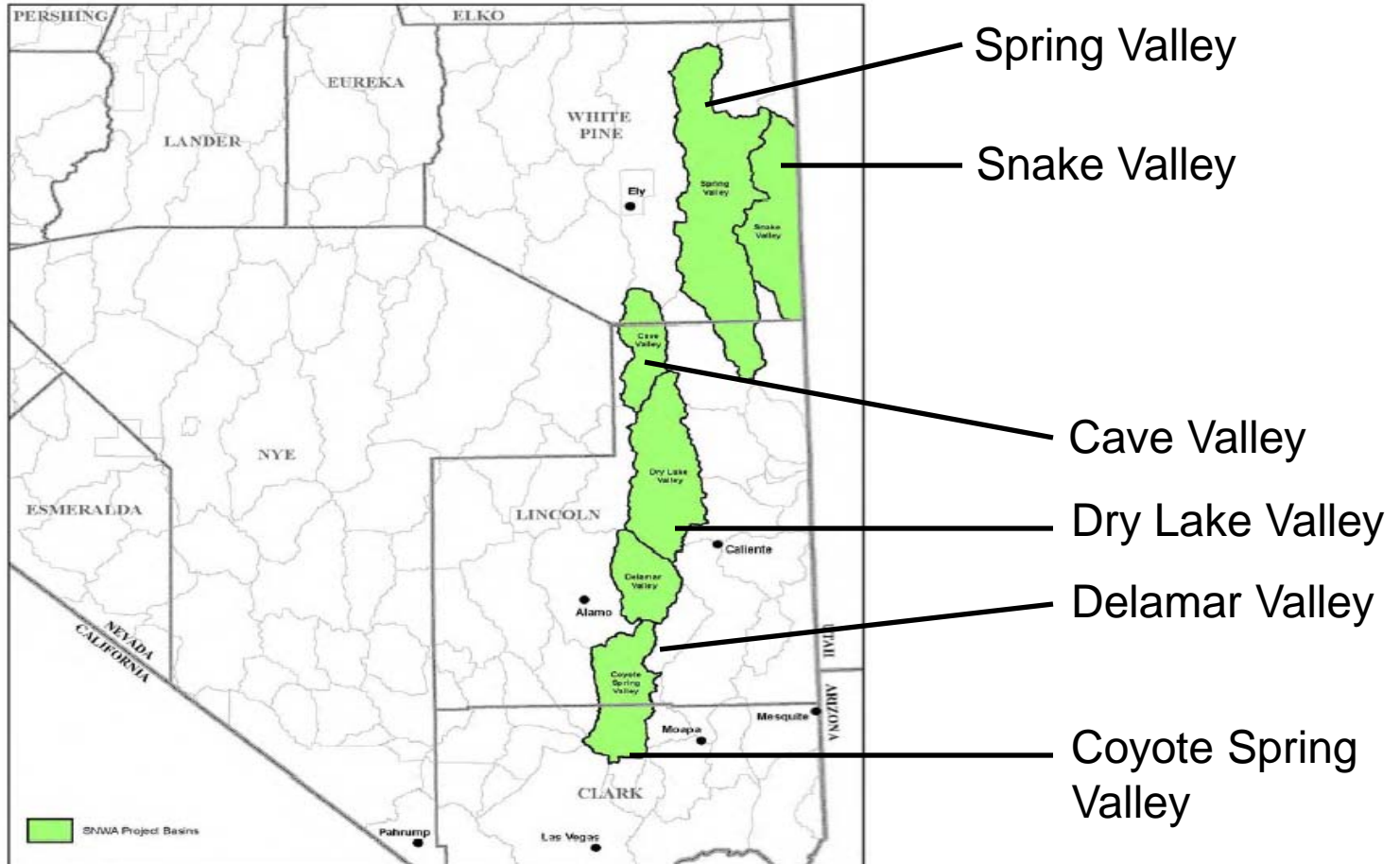
Nevada Consumptive Use without Recharge



Southern Nevada's consumptive water use declined about 26 billion gallons between 2002 and 2009, despite the fact that there were about 400,000 new residents.

Current Priorities

Resource Diversification



REGIONAL RESPONSE - INNOVATION

The Seven Basin states have worked over the last decade to implement innovative water solutions for the Colorado River.

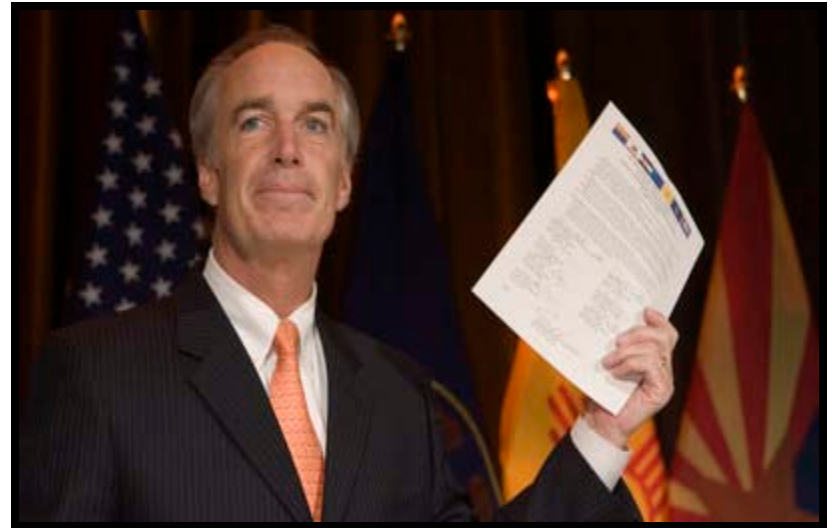
- Rules for Surplus
- Shortage sharing
- Coordinated management



Current Priorities

Regional Partnerships

- **Arizona water bank**
- **California water bank**
- **Augmentation Study**
- **System conservation**
- **Tri-state desalination projects**
- **Bi-National environmental resource management and desalination projects**

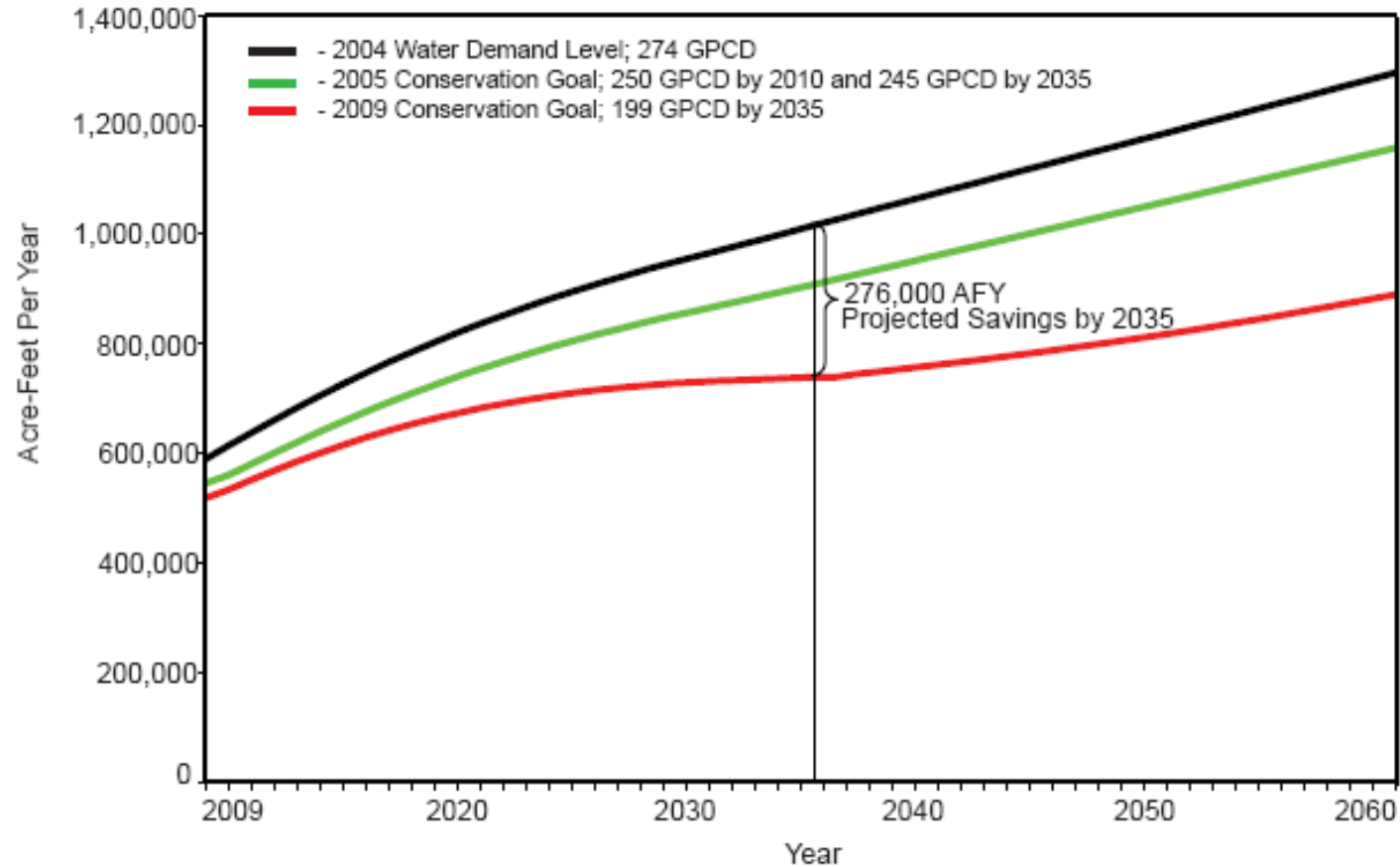


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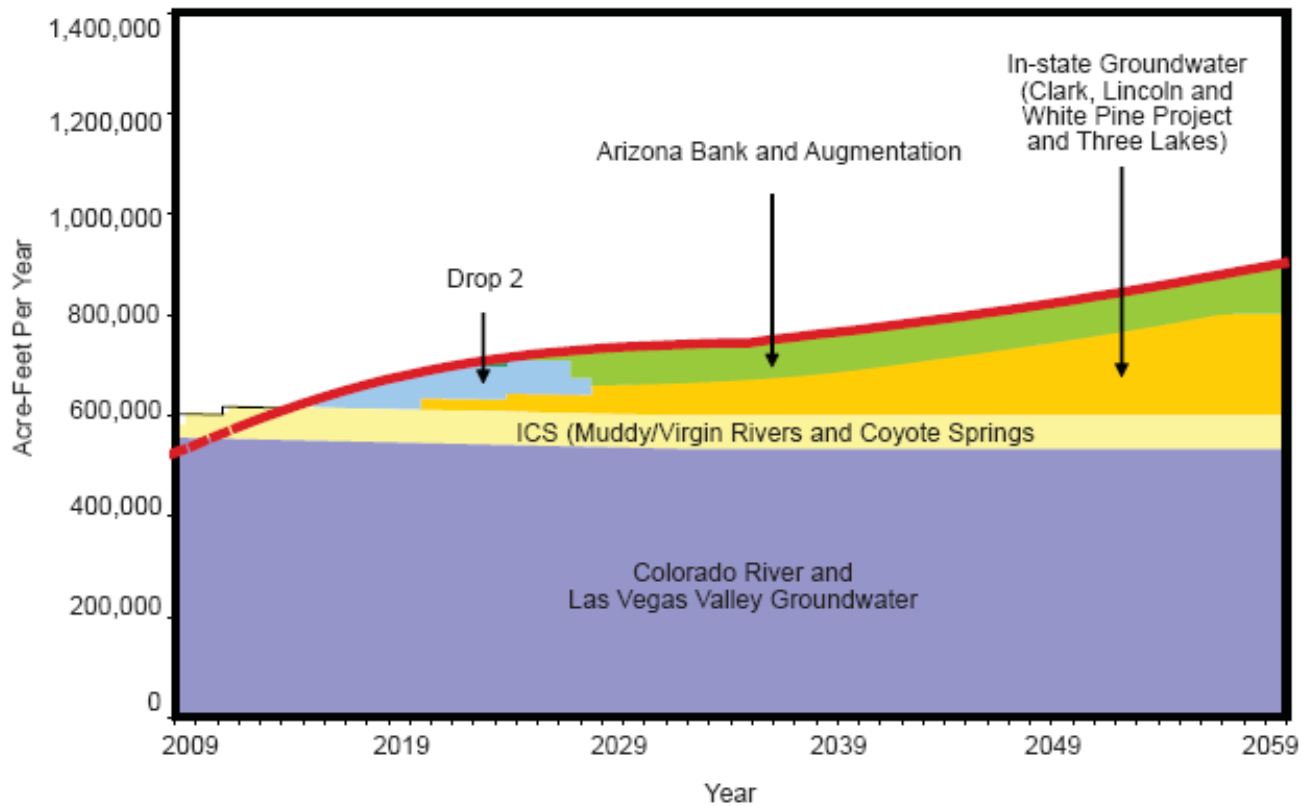
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Water Resource Planning

Projected Water Demands



Water Resource Planning



The face of the new Southwest...





SOUTHERN NEVADA
WATER AUTHORITY®