6-9-2005

SLIDES: "Tightening Water Supplies": Arizona and the Lower Basin States

Herb Guenther

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“Tightening Water Supplies”
Arizona & the Lower Basin States

Herb Guenther
Director
ADWR
June 9, 2005
## Arizona Water Supply
### Annual Water Budget

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Million Acre-Feet</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SURFACE WATER</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorado River</td>
<td>2.8</td>
<td>35.6%</td>
</tr>
<tr>
<td><em>CAP</em></td>
<td>1.6</td>
<td>21%</td>
</tr>
<tr>
<td><em>On-River</em></td>
<td>1.2</td>
<td>16%</td>
</tr>
<tr>
<td>In-State Rivers</td>
<td>1.4</td>
<td>17.8%</td>
</tr>
<tr>
<td><em>Salt-Verde</em></td>
<td>1.0</td>
<td>13%</td>
</tr>
<tr>
<td><em>Gila &amp; others</em></td>
<td>0.4</td>
<td>5%</td>
</tr>
<tr>
<td><strong>GROUNDWATER</strong></td>
<td>2.9</td>
<td>36.8%</td>
</tr>
<tr>
<td><strong>RECLAIMED WATER</strong></td>
<td>0.77</td>
<td>9.8%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>7.87 maf</td>
<td></td>
</tr>
</tbody>
</table>
Consumption

Municipal
20%
(1.53 maf)

Industrial
6%
(0.46 maf)

Agriculture
74%
(5.64 maf)
<table>
<thead>
<tr>
<th>Facilities (18)</th>
<th>Annual Capacity</th>
<th>Recharge ’03</th>
<th>Recharge ’04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underground Storage (7) (including banking)</td>
<td></td>
<td>98,712 af</td>
<td>173,454 af</td>
</tr>
<tr>
<td>Groundwater Savings (11) (“in-lieu” of pumping)</td>
<td></td>
<td>110,704 af</td>
<td>131,353 af</td>
</tr>
<tr>
<td>TOTALS</td>
<td>1,082,231 af</td>
<td>209,416 af</td>
<td>304,807 af</td>
</tr>
</tbody>
</table>
Central Arizona Project – Recharge & Storage Sites
Underground Reservoirs - Benefits

- Long-term storage
- Large capacity
- No loss to evaporation
- Reduced risk of subsidence
8.23
Colorado River Compact & Treaty
Allocations

Upper Basin (7.5 maf)

Lower Basin (7.5 maf)
   CA – 4.4 maf
   AZ – 2.8 maf
   NV – 0.3 maf

Mexico 1.5 maf

Lee Ferry

Arizona
Upper Basin – 50 kaf
# Colorado River

## Critical Periods with Low Yield

<table>
<thead>
<tr>
<th>Years</th>
<th>Duration</th>
<th>Avg. Ann. Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>1930 – 1940</td>
<td>11 years</td>
<td>12.7 maf</td>
</tr>
<tr>
<td>1953 – 1964</td>
<td>12 years</td>
<td>11.6 maf</td>
</tr>
<tr>
<td>1974 – 1977</td>
<td>4 years</td>
<td>11.2 maf</td>
</tr>
<tr>
<td>1988 – 1992</td>
<td>5 years</td>
<td>10.2 maf</td>
</tr>
<tr>
<td>2000 – 2004*</td>
<td>5 years</td>
<td>10.2 maf</td>
</tr>
</tbody>
</table>

* 2004 projected
COLORADO FLOWS

Historic Data
Estimated past flow averages:
- Legally Allocated 16.5 maf
- Tree rings, Upper Basin, 1512-1961 13.5 maf
- Tree rings, Upper Basin, 1512-2000 14.7 maf
- Isotopes, Delta clams, 1500-1950 12.5 maf
- Lowest 20-year average, 1579-1598 10.95 maf
Projected Inflow to Lake Powell
Apr–Jul: 9 maf
113 % of Normal

Colorado River
Powell & Mead 64.5 maf
Currently - 57% 34 maf
06/04 53% - 31.6 maf
Colorado River Yield

Chart showing the annual yield of the Colorado River (in million acre feet) from 1906 to 1986. The chart indicates the average yield as 15.1 maf, with a high of 23.6 maf in 1986 and a low of 5.0 maf.
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LAKE POWELL

Capacity  27 maf
24.5 maf (useable)

03-Jun-05:  
44% full  10.7 maf

Elevation  3,592’
Lake Powell Elevations (feet) 1963-2005

Current 3,592'
LAKE MEAD
Capacity - 28.5 maf
25.9 (useable)
03-Jun-05:
60% full
15.6 maf

Elevation 1,142’
Lake Mead Elevations (feet) 1935 - 2003

Current 1,142'}
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lake Powell</td>
<td>38%</td>
<td>48%</td>
<td>56%</td>
</tr>
<tr>
<td>Lake Mead</td>
<td>54%</td>
<td>58%</td>
<td>52%</td>
</tr>
</tbody>
</table>
8.23
Why Keep More Water In Lake Powell?

• No beneficial consumptive use to UB
• No significant evaporation savings
• No demonstrable power advantage
• Who’s water is it?
What are the Real Issues?

- Lower Basin Tributaries?
- Upper Basin Share of Mexico’s Water?
- Power?
- Recreation?
- Inadequate Storage in Upper Basin?
- Drought?
- Lower Basin Wasting Water?
At The End of the Day

- Colorado River Over Appropriated
- Inability of Upper Basin To Use Full Apportionment
- 75 maf Average Ten Year Average
- Potential for a “Compact Call”
THREAT OF “COMPACT CALL”!!!
Shortage Guidelines

- Primarily Lower Basin Issue
- Will Need Mead Inflow Numbers Long Range
- Need Review Every 10 to 15 Years
- All Alternatives Must Meet Compact and Law Of River Requirements
- Arizona Primary in Determining Frequency and Duration
Conjunctive Management

- **All** 7 Basin States Must Agree (ISG)
- Must be Kept Separate From Outstanding Compact and Other Legal Issues
- Needs to Have Distinct Mutual Benefits to Both Basins
- Needs to be Separate from Shortage Guidelines
Lake Mead
Northern Command

‘Securing Arizona’s Water Future’

ADWR mission
GLEN CANYON
Special OPS Training
Arizona Gov. B.B. Moeur: Stop Parker Dam!

ISSUE:
- California had wealth to build huge water delivery systems to farmers and LA
- Arizona feared it would never get its full Colorado River entitlement

ACTION:
- Moeur dispatched 100 fully armed AZ National Guardsmen
- Soldiers commandeer “Julia B” paddlewheel from Parker

RESULT:
- Work on Parker Dam halted until issue settled
2025

Flaming Gorge Dam - Colorado