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
<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></td>
<td><strong>CAP</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6</td>
<td>21%</td>
</tr>
<tr>
<td></td>
<td><strong>On-River</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td><strong>In-State Rivers</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4</td>
<td>17.8%</td>
</tr>
<tr>
<td></td>
<td><strong>Salt-Verde</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td><strong>Gila &amp; others</strong></td>
<td></td>
</tr>
<tr>
<td></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)
8.23
# Arizona Recharge

<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><strong>TOTALS</strong></td>
<td><strong>1,082,231 af</strong></td>
<td><strong>209,416 af</strong></td>
<td><strong>304,807 af</strong></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
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

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>
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</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

- Average: 15.1 maf
- High: 23.6 maf
- Low: 5.0 maf
8.23
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>
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<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 commandeered “Julia B” paddlewheel from Parker

RESULT:
- Work on Parker Dam halted until issue settled