As Goes Grand County, So Goes the Colorado River

Grand County – State of the River
May 17, 2017

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Colorado River Basin

From Grand County to the Sea of Cortez

Source: US Bureau of Reclamation
Recent Developments Shaped by Drought

Lake Powell Unregulated Inflow
April - July 2017 Forecast
Issued May 1st
Comparison with History

April - July 2017 Forecast
May Most Prob: 8.8 maf (123%)
May Min Prob: 7.2 maf (101%)
May Max Prob: 11.0 maf (154%)
Average: 7.16 maf (1981-2010)

Source: Bureau of Reclamation
Lake Mead Annual Water Budget

Inflow = 9.0 MAF
Outflow = 9.6 MAF
Mead Evap = 0.6 MAF
Deficit = 1.2 MAF

Source: US Bureau of Reclamation
So What’s Being Done?

• 2007 Interim Guidelines
• 7 State Drought Contingency Planning
• Minute 319 with Mexico
2007 Interim Guidelines

- Sharing of shortage and surplus
- Equalization of lake levels
- Banking of water - Intentionally Created Surplus
# 2007 Interim Guidelines
## Lower Basin Shortage Sharing
*(in acre feet)*

<table>
<thead>
<tr>
<th>Lake Mead Elevation</th>
<th>California (4.4 MAF)</th>
<th>Arizona (2.8 MAF)</th>
<th>Nevada (0.3 MAF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1075’ – 1050’</td>
<td>0</td>
<td>320,000</td>
<td>13,000</td>
</tr>
<tr>
<td>1050’ – 1025’</td>
<td>0</td>
<td>400,000</td>
<td>17,000</td>
</tr>
<tr>
<td>Below 1025’</td>
<td>0</td>
<td>480,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>
Drought Contingency Planning

• Upper and Lower Basins proceeding independently
• Some components locked in, others still being worked on
• Efforts include major municipal suppliers
• Feds have cooperated, but haven’t intervened
Upper Basin 3-Prong Approach

• Weather Modification (cloud seeding)
• Extended Operations of Upper Basin Reservoirs
  – Flaming Gorge in particular
• Demand Reduction
  – Irrigation efficiency
  – Voluntary Fallowing
• 5-Year Goal
  • 1.5 – 3.0 MAF
  • ½ over next 3 years

• 3-Year “best efforts” commitments
  • MWD – 300,000 af
  • SNWA – 45,000 af
  • CAWCD – 345,000 af
  • USBR – 50,000 af
System Conservation Agreement

• Leadership by major municipalities

• Demonstrate the capabilities of voluntary water conservation measures

• $11 million initially
  – Additional $5 M in 2016
Minute 319

• Signed November 2012
• Effective for 5 years, expires at end of 2017
• Addresses shortage sharing, but much more
Minute 319 Components

• Operational
  – Sharing of shortage and surplus
  – Extension of Mexico’s ability to defer deliveries and store in US reservoirs

• Infrastructure
  – $21M in US investment in efficiency in Mexico

• Environmental
  – Pulse and base flows
### New Shortage Sharing Schedule

<table>
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<tr>
<th>Lake Mead Elevation</th>
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<th>Arizona (2.8 MAF)</th>
<th>Nevada (0.3 MAF)</th>
<th>Mexico (1.5 MAF)</th>
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</thead>
<tbody>
<tr>
<td>1075’ – 1050’</td>
<td>0</td>
<td>320,000</td>
<td>13,000</td>
<td>50,000</td>
</tr>
<tr>
<td>1050’ – 1025’</td>
<td>0</td>
<td>400,000</td>
<td>17,000</td>
<td>70,000</td>
</tr>
<tr>
<td>Below 1025’</td>
<td>0</td>
<td>480,000</td>
<td>20,000</td>
<td>125,000</td>
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</table>
Environmental

• Base flow – 52,696 af
  – Water to be developed by environmental NGOs
  – Raised $10 million to purchase rights

• Pulse flow – 105,392 af
  – Just once during 5-year term
  – ½ of pulse flow water generated by $21M infrastructure investment
Colorado River Delta in 1948

Aldo Leopold, Sand County Almanac, The Green Lagoons:
“the river was nowhere and everywhere, for he could not decide which of a hundred green lagoons offered the most pleasant and least speedy path to the Gulf.”
Morelos Dam – the River disappears
Opening the Gate
The leading edge
Progress of the Pulse Flow

March – May 2014
May 12, 2014

Almost there
May 15, 2014

The river and the sea meet once again
Lessons Learned

• Front of Pulse – Slower, Deeper, Wider

• Turbidity – Virtually None

• The human element – reconnection of the communities to the River
SAN LUIS RIO COLORADO, SONORA, MEXICO
SAN LUIS BRIDGE OVER THE COLORADO
New and Ongoing Efforts

• Lower Basin
  – Proposed new shortage sharing schedule
  – DCP+ in Arizona

• Upper Basin
  – Risk study
  – Upper Basin water bank

• Minute 32X
  – Ongoing discussions with Mexico, states
## Proposed New Lower Basin Shortage Sharing Schedule

<table>
<thead>
<tr>
<th>Lake Mead Elevation</th>
<th>California (4.4 MAF)</th>
<th>Arizona (2.8 MAF)</th>
<th>Nevada (0.3 MAF)</th>
<th>USBR</th>
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<tbody>
<tr>
<td>1090’ – 1075’</td>
<td>0</td>
<td>192,000</td>
<td>8,000</td>
<td>100,000</td>
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<tr>
<td>1075’ – 1050’</td>
<td>0</td>
<td>512,000</td>
<td>21,000</td>
<td>100,000</td>
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<tr>
<td>1050’ – 1045’</td>
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<td>592,000</td>
<td>25,000</td>
<td>100,000</td>
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<tr>
<td>1045’ – 1040’</td>
<td>200,000</td>
<td>640,000</td>
<td>27,000</td>
<td>100,000</td>
</tr>
<tr>
<td>1040’ – 1035’</td>
<td>250,000</td>
<td>640,000</td>
<td>27,000</td>
<td>100,000</td>
</tr>
<tr>
<td>1035’ – 1030’</td>
<td>300,000</td>
<td>640,000</td>
<td>27,000</td>
<td>100,000</td>
</tr>
<tr>
<td>1030’ – 1025’</td>
<td>350,000</td>
<td>640,000</td>
<td>27,000</td>
<td>100,000</td>
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<tr>
<td>Below 1025’</td>
<td>350,000</td>
<td>720,000</td>
<td>30,000</td>
<td>100,000</td>
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Minute 32X

- Extend Minute 319 provisions
- Longer term – end in 2026
- Add Mexico to new shortage sharing schedule
- Study binational desalination
- Environment flows (but no pulse flow)
- Improved salinity management
Minute 32X

• Timing
  – Big push to finish before end of Obama Administration but didn’t happen
  – Minute 319 expires Dec. 31, 2017
  – US wants Mexico to agree to new Lower Basin shortage sharing schedule – but not done yet

• Politics???
Significant Achievements

- Voluntary reductions in demand, triggered by falling reservoir levels
- Federal government, 7 States, water agencies, NGOs and Mexico all involved in Colorado River discussions
- Little (not zero) major litigation over the last 15 years
As Goes Grand County

- Voluntary, multi-partner agreements
- Little (not zero) major litigation
- Provision for both municipal needs and environmental flows
- More to be done
QUESTIONS?