



Late to the Game but not Forgotten

The Role of Science , the Colorado River and our Relationship with Water

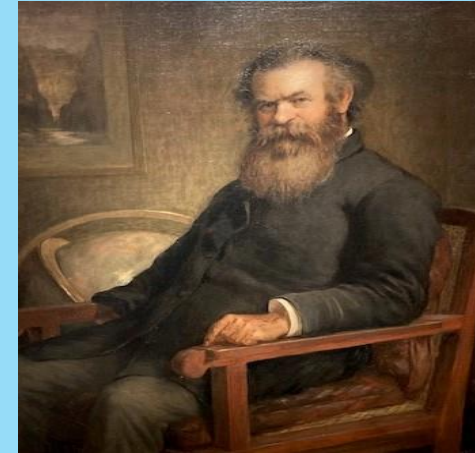
In the Beginning



VS



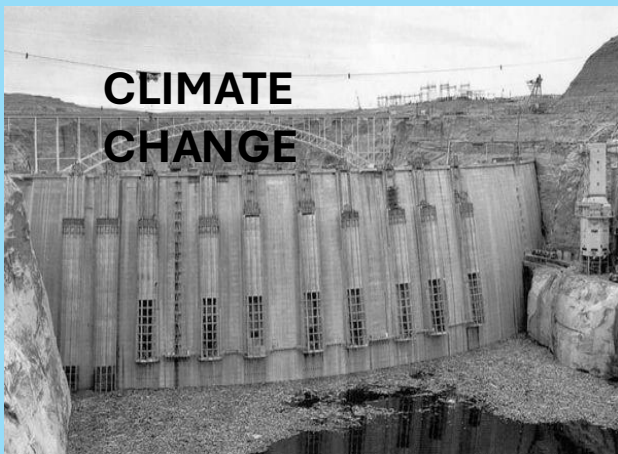
E.C. LaRue



J.W. Powell

Result =
Science &
Data lost

Today



+



+



Result =
Need for
Science and
Informed
Decisions



Three Eras of Science in the Colorado River Basin

Era One – *1922 until 1970*

Defined by: Development and Building with no science but some “salvage”

Era Two – *1970 to 2007*

Defined by: Legal requirements, endangered species, engaged scientists, and adaptive management goals

Era Three – *2007 to Today*

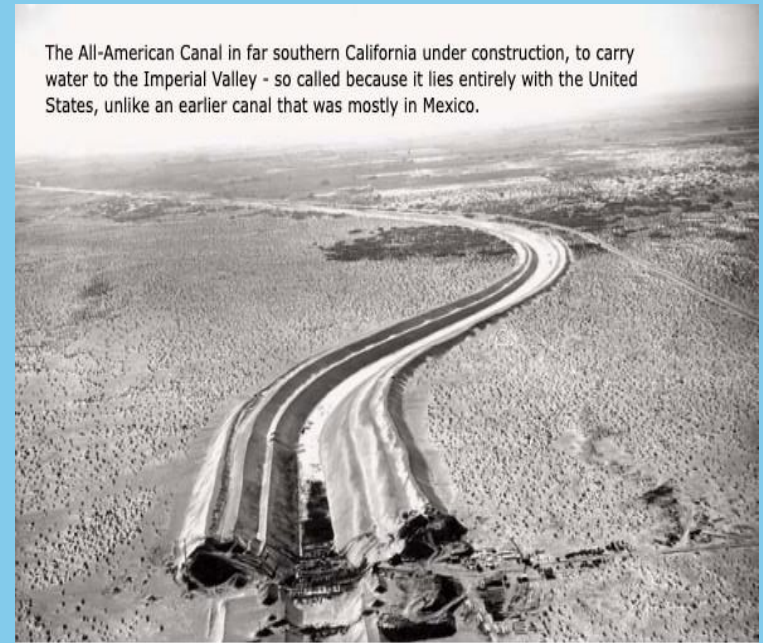
Defined by: Narrowing of science, pulling back on adaptive management, some success, increased demands battling reality of climate change



Era One – 1922 to 1970

Mantra: *Develop and Populate the West*

- **1922 Compact**
- **1928 Boulder Canyon Project Act**
- **1931 Boulder Canyon Project Act Agreement**
- **1944 Mexican Water Treaty**
- **1946 Upper Colorado River Basin Compact**
- **1956 Colorado River Storage Project Act**
- **1963 Tribal water rights – Building on the 1908 Winters Doctrine**
- **1964 AZ v. CA Supreme Court Decision**
- **1968 Colorado River Basin Project Act**
- **1970 Long Range Operating Criteria**



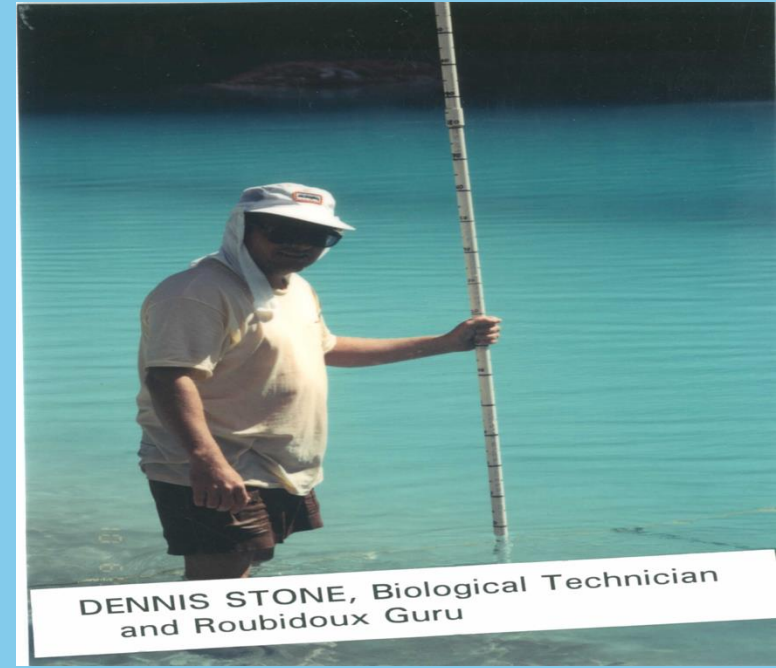
The All-American Canal in far southern California under construction, to carry water to the Imperial Valley - so called because it lies entirely with the United States, unlike an earlier canal that was mostly in Mexico.



Era Two: 1970 to 2007

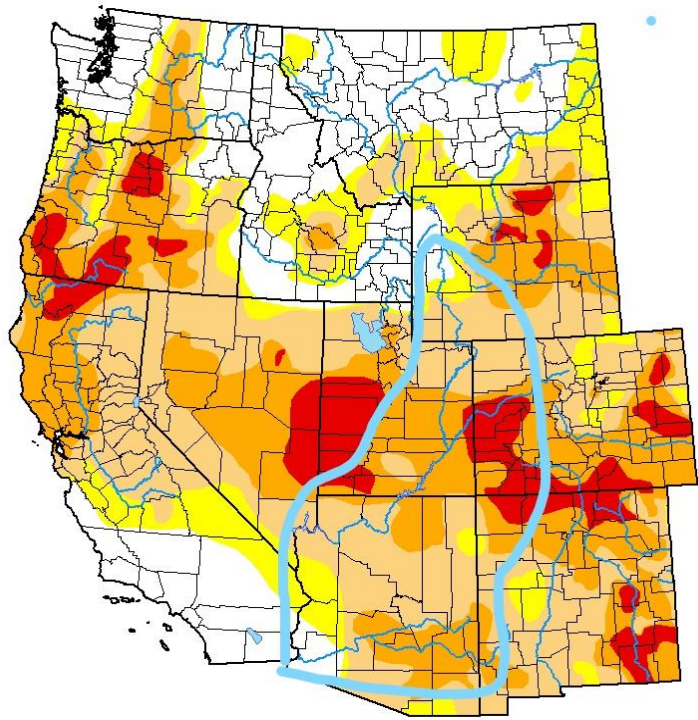
Mantra: Fill baby fill, environmental concerns, science emerges

- Environmental laws instituted
- Lake Powell Studies 1971-1975
- 1978 Flaming Gorge temperature
- 1978 – 1981 Upper Colorado River endangered fish instream flows
- June 6, 1980 Lake Powell fills for first time
- 1980 hydropower studies for Glen Canyon Dam
- 1982 Glen Canyon Environmental Studies
- 1983 High flows on Colorado River
- 1986 National Academy of Sciences
- 1987 Colorado River Fish Recovery Program
- 1989 GCD EIS initiated
- San Juan River Fish Recovery Program
- 1992 Grand Canyon Protection Act
- 1996 ROD – formalize adaptive mgmt.
- 2000 Aridification begins in the basin
- 2007 Long Term Operating Criteria reset



DENNIS STONE, Biological Technician and Roubidoux Guru

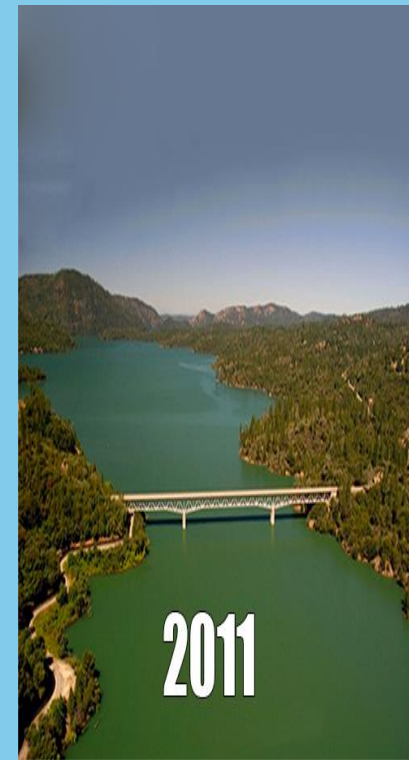




Era Three: 2007 to Today

Mantra: Climate change finds the basin, lines being drawn, tribes emerge, science adapts (maybe).

- 2005 – Lower Colorado River Multi Species Conservation
- 2007 Interim Guidelines
- 2003-ongoing: Climate studies
- 2016 – Glen Canyon Dam LTEMP EIS and Record of Decision
- 2019 Drought Contingency Plan
- 2022 – Supplemental EIS on drought issues
- 2024 – Record of Decision for SEIS
- 2024 – Near Term Colorado River operation ROD SEIS
- 2024 – LTEMP SEIS for GCD
- 2025 – oh boy are we in for it



Today's Role of Science in the Colorado River Basin

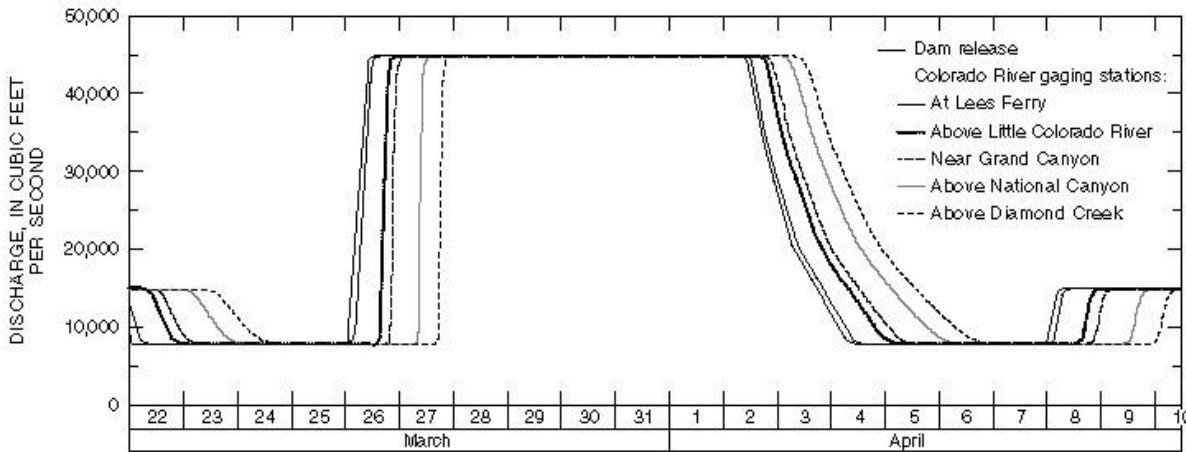


Figure 1. Hydrograph of proposed experimental flow release and calculated hydrographs for gaging stations.

NEWS
TO SHARE
FROM THE
COLORADO RIVER
BASIN



Optimistic that Science will play a significant role in future decisions, but it depends on us