

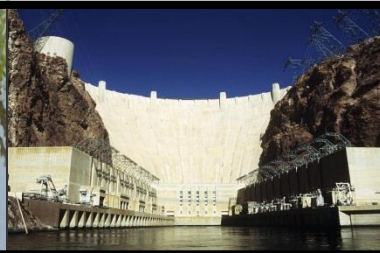
Colorado River Commission of Nevada

Presentation for Water Education Foundation March 11, 2015



Colorado River Commission of NV

- State agency established to manage Nevada's allocation of Colorado River water resources and hydroelectric power generation.
- In 1920, an informal Commission was appointed to negotiate Nevada's interests on the Colorado River.
- In 1935, The Colorado River Commission was formalized by Nevada Legislature with the responsibility for securing and protecting Nevada's rights and interests to Colorado River resources and hydropower generation.



Water Rights

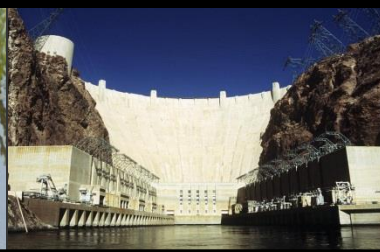
In 1928, the Boulder Canyon Project Act authorized the construction of Hoover Dam and the division of Lower Basin water apportionment:

California = 4.4 maf

Arizona = 2.8 maf

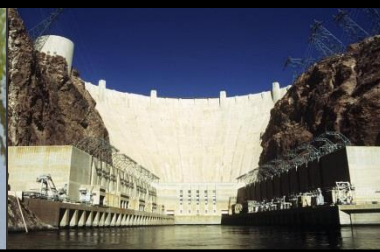
Nevada = 0.30 maf

Nevada gets about 4% of lower basin allocation and less than 2% of entire Colorado River water resources.



Water Rights

- During negotiations 300,000 af/year seemed like an adequate amount of water for an area with no agriculture, few industries, plenty of ground water and small population.
- Today Las Vegas has a population over 2 million people that rely on Colorado River water for 90% of their water supply.
- Located in the desert with less than 4 inches of rain per year and very few other water resources.
- Southern Nevada's population is predicted to increase to over 3.6 million people by 2035.



Future Water Needs

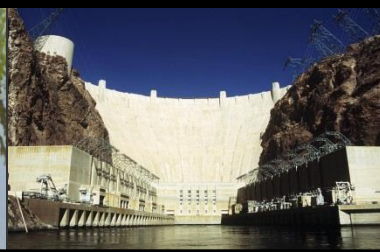
Conservation has been a priority in Southern Nevada! CRC has and continues to work with SNWA, Reclamation, other basin states and Mexico to manage Colorado River resources and expand in-state resources.

- a.) Water banking
- b.) ICS creation (SNWA)
- c.) Drought contingency planning
- d.) Mexican negotiations
- e.) 2007 Interim Guidelines



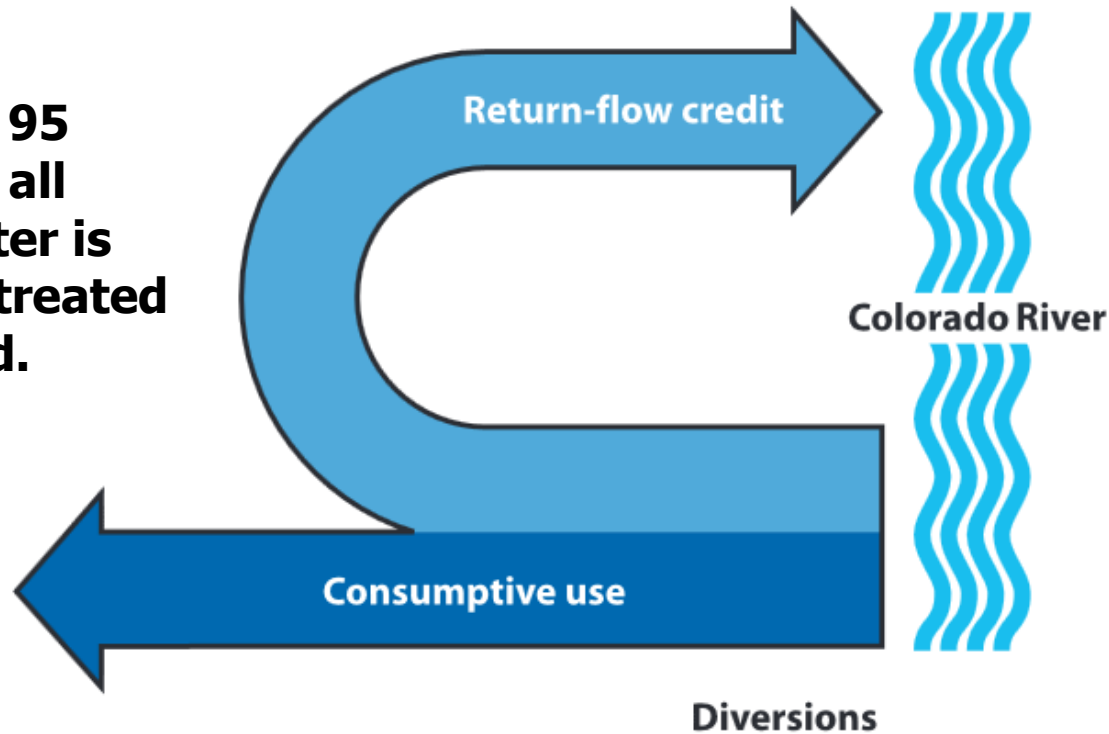
Water Customers

- Southern Nevada Water Authority
- Basic Water Company
- Big Bend Water District
- Boulder City
- Fort Mojave Indian Tribe
- Park Service
- Department of Wildlife



Consumptive Use and Return Flow Credits

More than 95 percent of all indoor water is captured, treated and reused.



Consumptive Use = Diversions – Return Flow Credits

***223,563 af = 433,559 af – 209,996 af**

Power Rights

The negotiations in water rights were not seen as a priority due to small population. 1/4 of Hoover's hydropower is delivered to Nevada. Power is also acquired from Parker, Davis and Glen Canyon Dams.

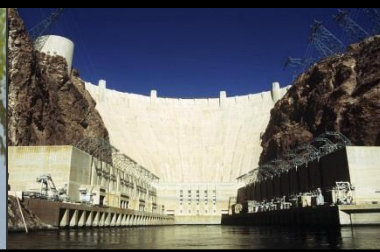
On behalf of the State of Nevada, the CRC owns, operates and maintains:

- 17 high-voltage substations
- 32 miles of 230-kV overhead transmission lines
- 4 miles of 69-kV overhead transmission lines
- 11 miles of 69-kV underground transmission lines



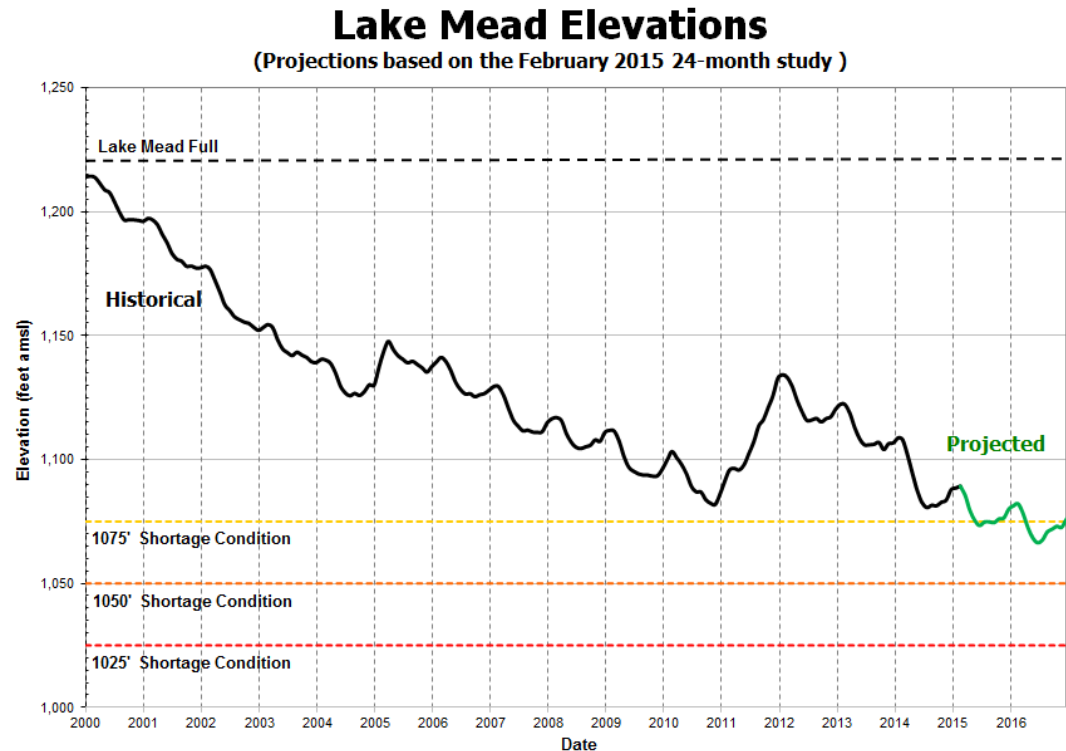
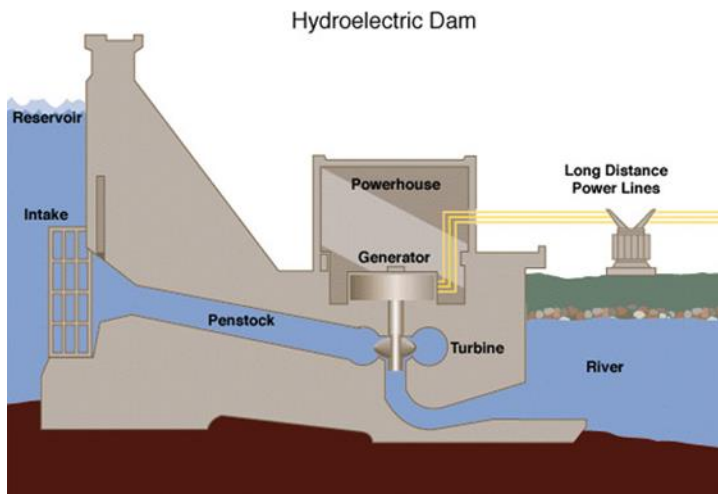
Power Customers

- NV Energy
- Southern Nevada Water Authority
- City of Boulder City
- Lincoln County Power District
- Overton Power District
- Valley Electric Association
- Basic Management Industrial Complex



Drought & Hydropower Generation

When water is released from Hoover Dam the water pushes turbines to generate hydropower. Higher lake elevations generates electricity more efficiently. Hydropower generation has decreased as elevations in Lake Mead have dropped.



Drought Impacts to Hydropower

- Decreasing elevation reduces amount generated for customers.
- If energy is not available, purchases from open market are costly.
- Uncertainty to power generation at lowering lake levels.
- Reclamation is installing wide head turbines to improve generation at lowering elevations.
- Reduced funding for the Salinity Control Forum that funds projects that reduces the salt loading from agriculture along the Colorado River. Less salt = less damages.



Quagga Mussels

- Invasive species.
- bivalve Shell. Up to 4 cm.
- Lifespan - 3 to 5 years.
- Reproduction – Fast.
- Quagga Mussels originally from the Dneiper River Drainage in Ukraine. Transported by ballast waters in oceanic ships.
- Transported in America by recreational boaters.



Potential Ecosystem Impacts

- Filter feeders = Large populations can remove particles from water column creating clearer water.
- Reduction in algae and zooplankton can reduce fish populations.
- Clog pipes, damage infrastructure in water, increase rooted plants, leave hazardous shells and increases in cyanobacteria.



<http://wilsonlab.com/photos.html>



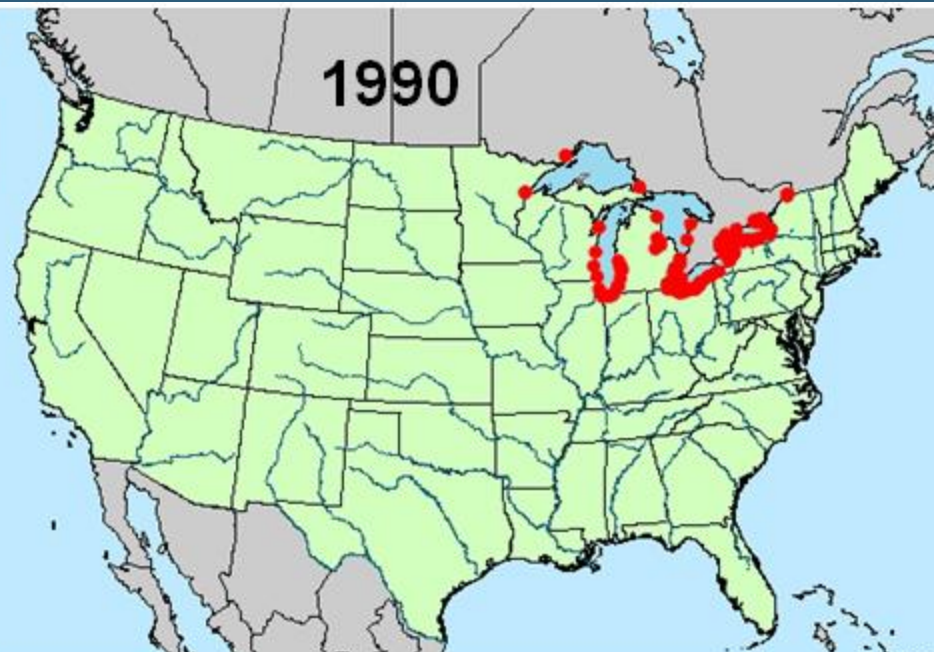
<http://www.ecologicalhope.org/wp-content/uploads/2008/07/quagga-mussels-coat-michigan-lake-bed.png>



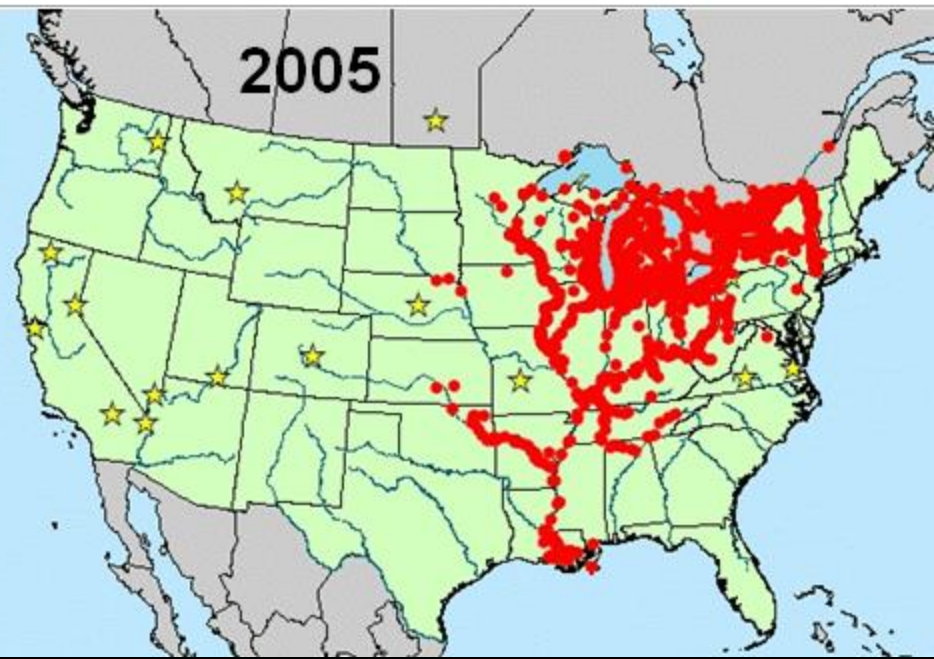
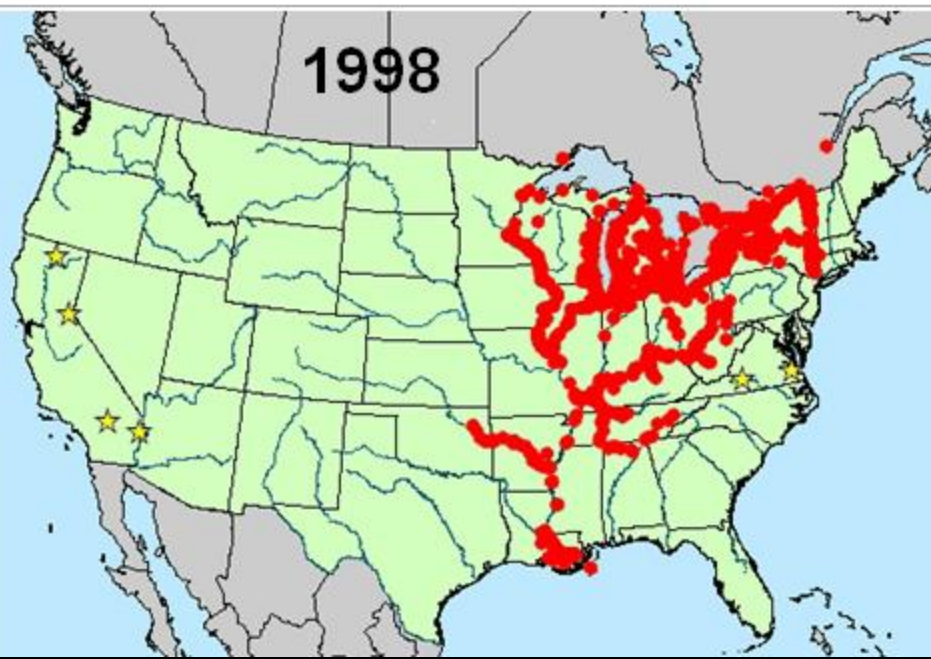
<http://www.activistangler.com/journal/tag/quagga-mussels?currentPage=6>



<http://www.saveoursodus.com/2012/04/>



- Red dots represent confirmed collections or observations of adults, juveniles, or veligers.
- ★ Yellow stars represent the discovery of the overland transport of zebra mussels on trailered boats





Zebra and Quagga Mussel Sightings Distribution *Dreissena polymorpha* and *D. rostriformis bugensis*




- Zebra mussel occurrences
- Quagga mussel occurrences
- Both species occurrences
- Zebra/Quagga mussels eradicated
- Zebra/Quagga mussels failed

Map produced by the U.S. Geological Survey, Nonindigenous Aquatic Species Database, October 23, 2014.

Quagga Mussels in Lake Mead

- Adult mussels discovered January, 2007.
- Veligers discovered in every major basin of Lake Mead by May, 2008.
- No effective way to eradicate all mussels in such a large lake.
- Have cost millions in treatment plant operations and cleaning.
- Lake Mead has boats from all over the country, so containment is important.
- Concerns that fishing and recreation could be impacted.
- There have not been any studies published that document any significant impacts to Lake Mead.

A photograph of a rocky coastline. The rocks are grey and jagged, with a dark, horizontal band of quagga mussels running along the water's edge. A yellow arrow points from a label 'quagga mussels' to this band. Another yellow arrow points from a label 'high water mark' to a horizontal line on the rock face above the water level. The water in the foreground is a deep teal color.

quagga mussels

high water mark

Boulder Basin

Photo courtesy of USBR/Becky Blasius and Janet Kirsch

Mussels on Lake Bottom



Photo by Bryan Moore, NPS

Hoover Dam Intakes



Photo by Bryan Moore, NPS

Quagga Mussels Prevention

- Agencies working together to share information and data.
- Reclamation experimenting with UV light disinfections and coating materials.
- Drinking water Intakes retrofitted with chemical feeds to reduce colonization.
- Park service performing boat inspection, decontaminations and boater education.
- Read more about Quagga Mussels at links below!

<http://www.100thmeridian.org/>

<http://www.usbr.gov/lc/region/programs/quagga.html>

<http://www.nps.gov/lake/learn/nature/quaggamussels.htm>



Before you transport your boat or equipment



**STOP AQUATIC
HITCHHIKERS!**

Prevent the transport of nuisance species.
Clean all recreational equipment.
www.ProtectYourWaters.net



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Questions?

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