

# RECLAMATION

*Managing Water in the West*

## Update on Reclamation Operations and Basin Hydrology

Conference Call with CAP and ADWR  
September 11, 2014



U.S. Department of the Interior  
Bureau of Reclamation

# Reclamation Operational Update

- Status of the Colorado River Basin
  - System Storage
  - UC Basin Precipitation and Snowpack
  - Unregulated Inflow Forecast
  - Mead Tributary Forecast and Side Inflow Update
- August 24 Month Study
- August CRSS Run

RECLAMATION

# Colorado River Basin Storage

(as of September 9, 2014)

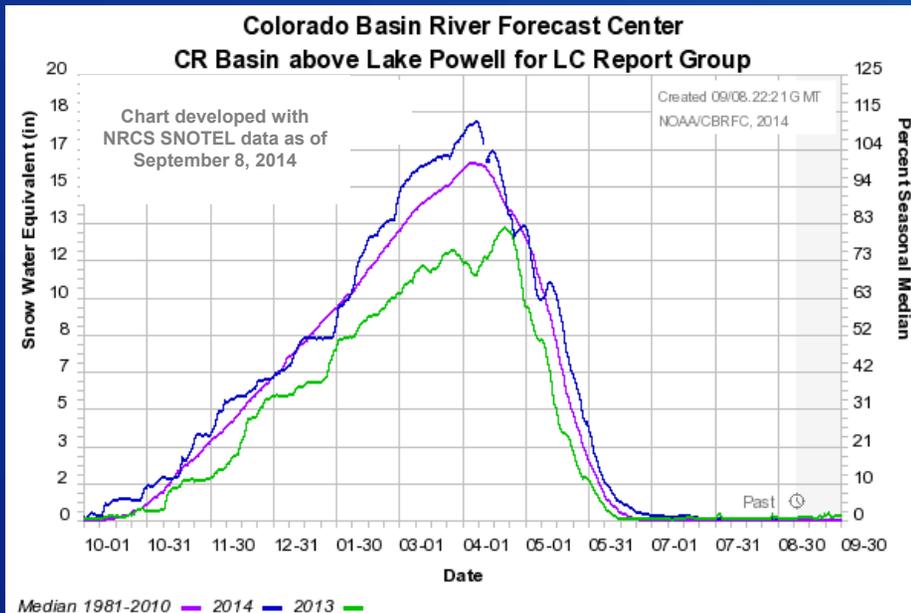
Current Storage	Percent Full	Storage (MAF)	Elevation (Feet)
Lake Powell	51	12.31	3,605.8
Lake Mead	39	10.13	1,081.4
Lake Mohave	93	1.69	642.8
Lake Havasu	95	0.59	448.3
Total System Storage	51	30.15	N/A

\*Total system storage was 29.79 maf or 50% this time last year

RECLAMATION

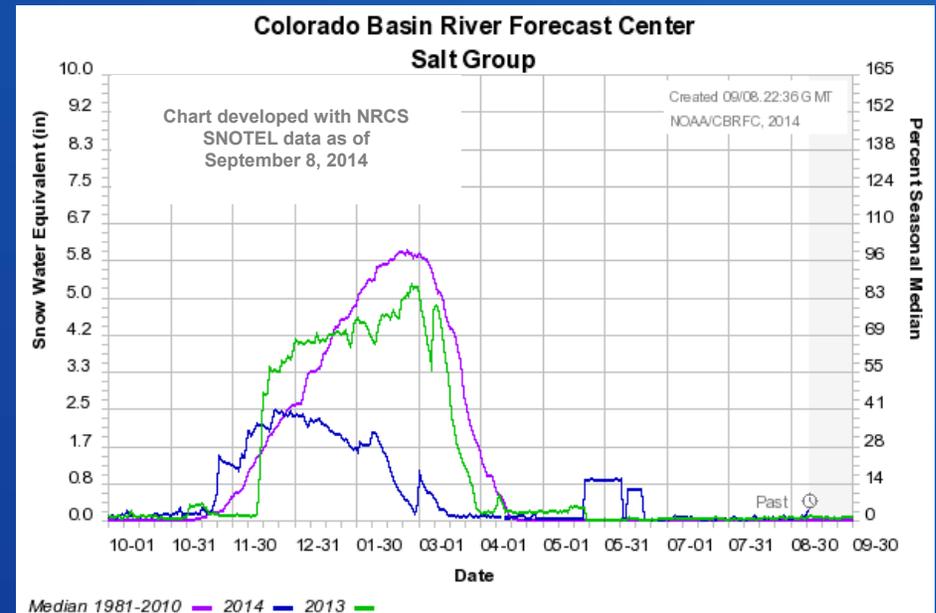
# Water Year 2014 Precipitation & Snowpack<sup>1</sup> as of September 10, 2014

## Upper Colorado River Basin



**WY Precipitation – 103%**  
**Basin Snowpack – NA**

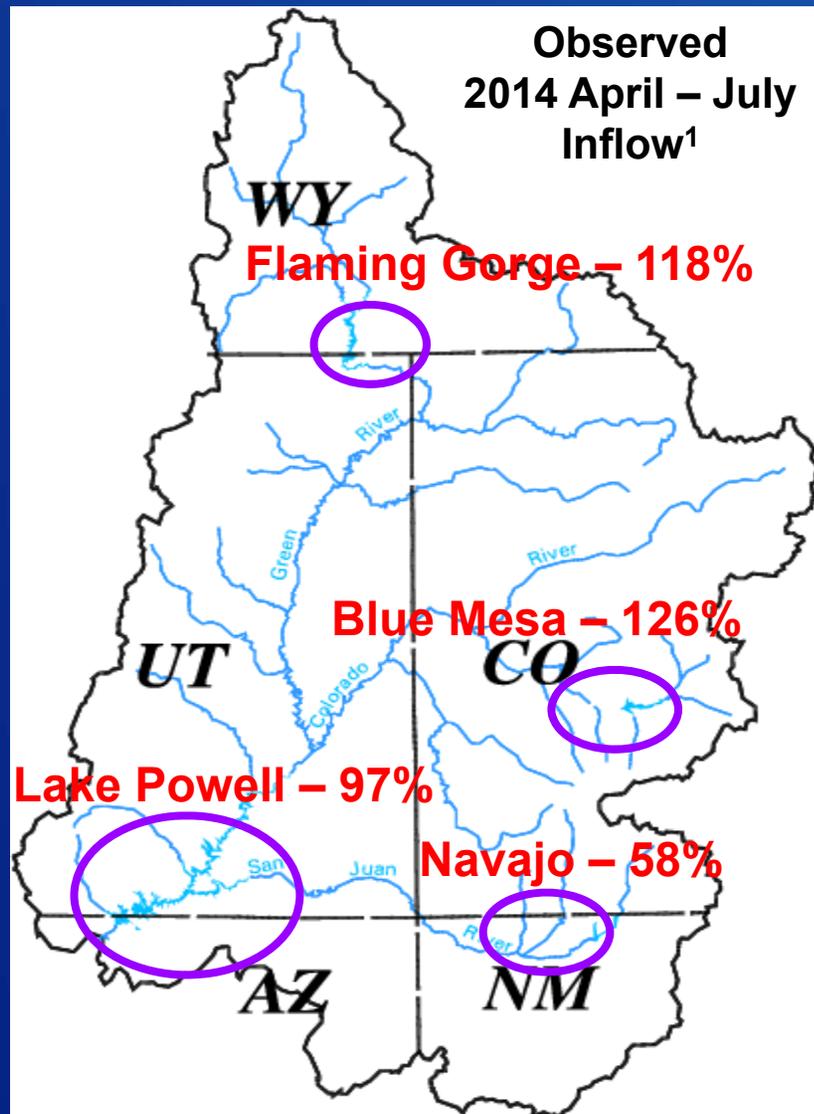
## Salt - Verde River Basin



**WY Precipitation – 73%**  
**Basin Snowpack – NA**

<sup>1</sup> Percent of normal precipitation is based on an arithmetic mean, or average; percent of normal snowpack is based on the median value for a given date

# CBRFC Unregulated Inflow Forecasts dated September 2, 2014



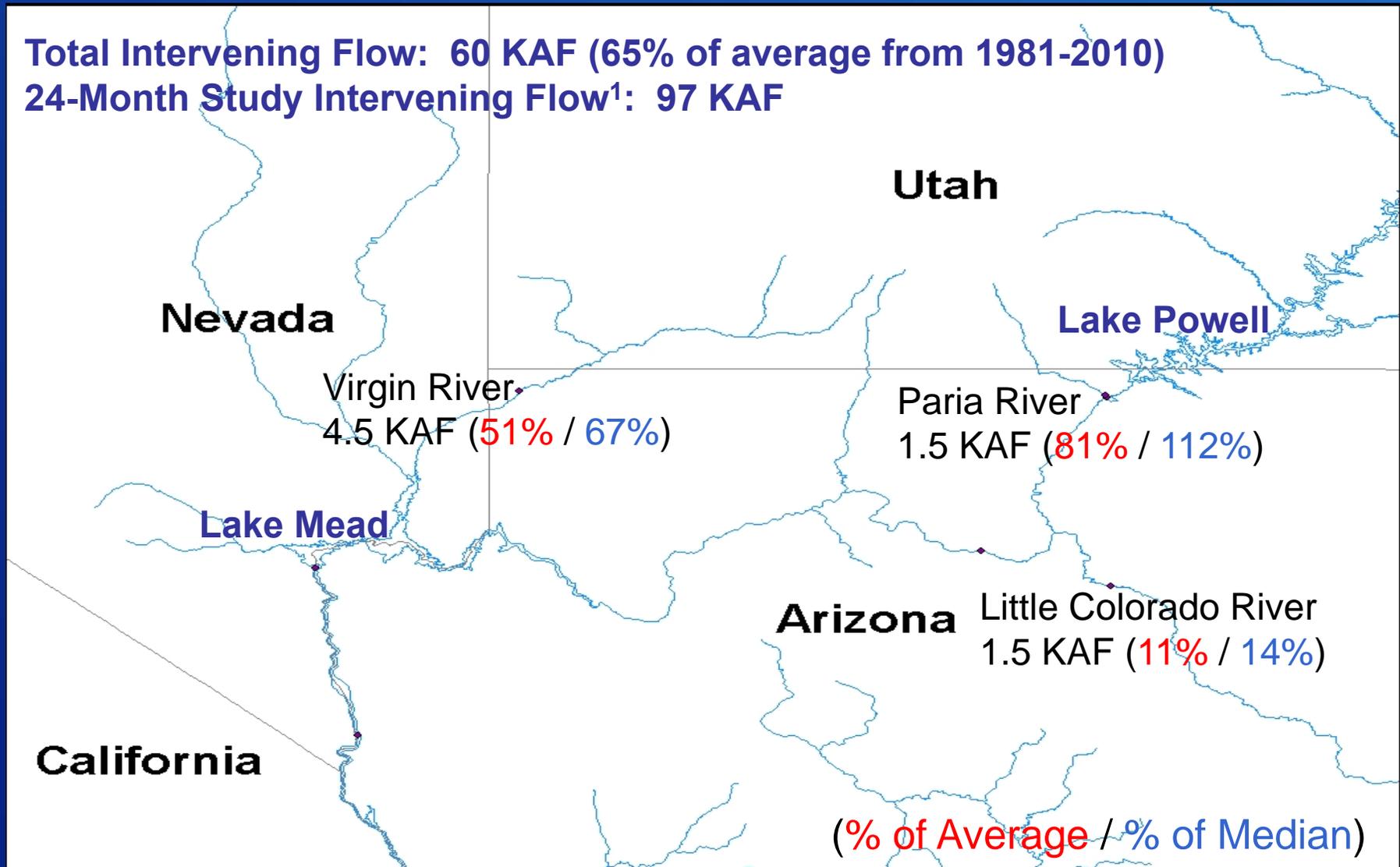
Month/Period	Inflow (KAF)	Percent of Average <sup>1</sup>
Aug 2014 (observed)	517	103
Sep 2014	400	98
Oct 2014	480	94
Nov 2014	420	89
2014 April-July (observed)	6,923	97
WY 2014	10,269	95

<sup>1</sup> Percentages and percent of average based on period of record from 1981-2010

# Lake Mead Intervening Flow Forecast – September 2014

Based on CBRFC Forecast dated September 2, 2014

**Total Intervening Flow: 60 KAF (65% of average from 1981-2010)**  
**24-Month Study Intervening Flow<sup>1</sup>: 97 KAF**



<sup>1</sup> This value is based on the 5-year average from 2009-2013. The 24-month study uses a 5-year average to model intervening flows between Glen Canyon Dam and Lake Mead.

RECLAMATION

# Lower Basin Side Inflows – WY/CY 2014<sup>1,2</sup>

## Intervening Flow from Glen Canyon to Hoover Dam

Month in WY/CY 2014		5-Year Average Intervening Flow (KAF)	Observed Intervening Flow (KAF)	Observed Intervening Flow (% of Average)	Difference From 5-Year Average (KAF)
HISTORICAL	October 2013	52	38	73%	-14
	November 2013	52	101	194%	49
	December 2013	95	43	45%	-52
	January 2014	75	45	60%	-30
	February 2014	78	76	97%	-2
	March 2014	68	29	43%	-39
	April 2014	80	17	21%	-63
	May 2014	60	13	22%	-47
	June 2014	23	12	52%	-11
	July 2014	64	55	86%	-9
August 2014	116	112	97%	-4	
FUTURE	September 2014	97			
	October 2014	52			
	November 2014	52			
	December 2014	95			
<b>WY 2014 Totals</b>		<b>860</b>	<b>638</b>	<b>74%</b>	<b>-222</b>
<b>CY 2014 Totals</b>		<b>860</b>	<b>655</b>	<b>76%</b>	<b>-205</b>

<sup>1</sup> Values were computed with the LC's gain-loss model for the most recent 24-month study.

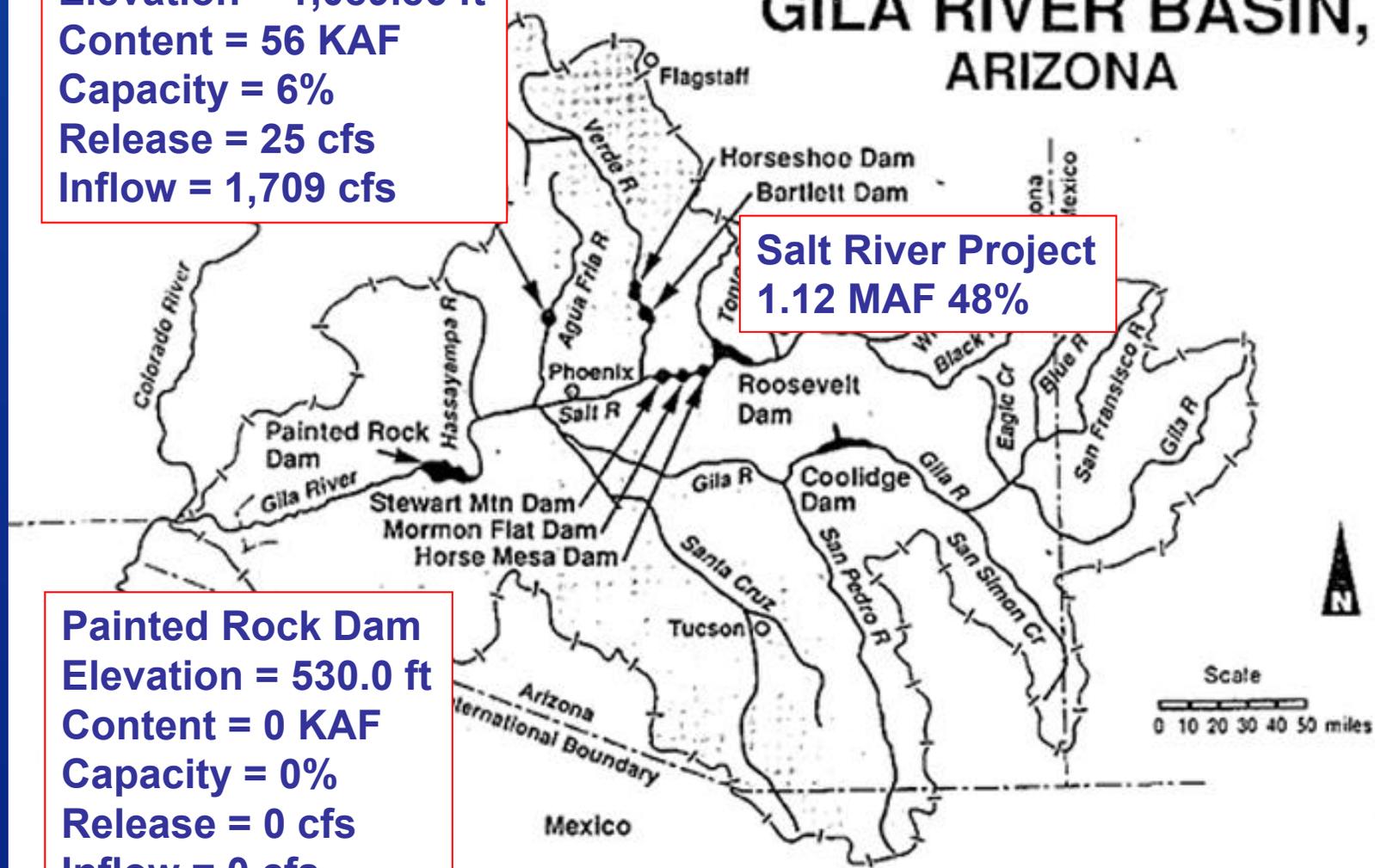
<sup>2</sup> Percents of average are based on the 5-year mean from 2009-2013.

# GILA RIVER BASIN,<sup>1</sup> ARIZONA

**Alamo Dam**  
Elevation = 1,089.86 ft  
Content = 56 KAF  
Capacity = 6%  
Release = 25 cfs  
Inflow = 1,709 cfs

**Salt River Project**  
1.12 MAF 48%

**Painted Rock Dam**  
Elevation = 530.0 ft  
Content = 0 KAF  
Capacity = 0%  
Release = 0 cfs  
Inflow = 0 cfs

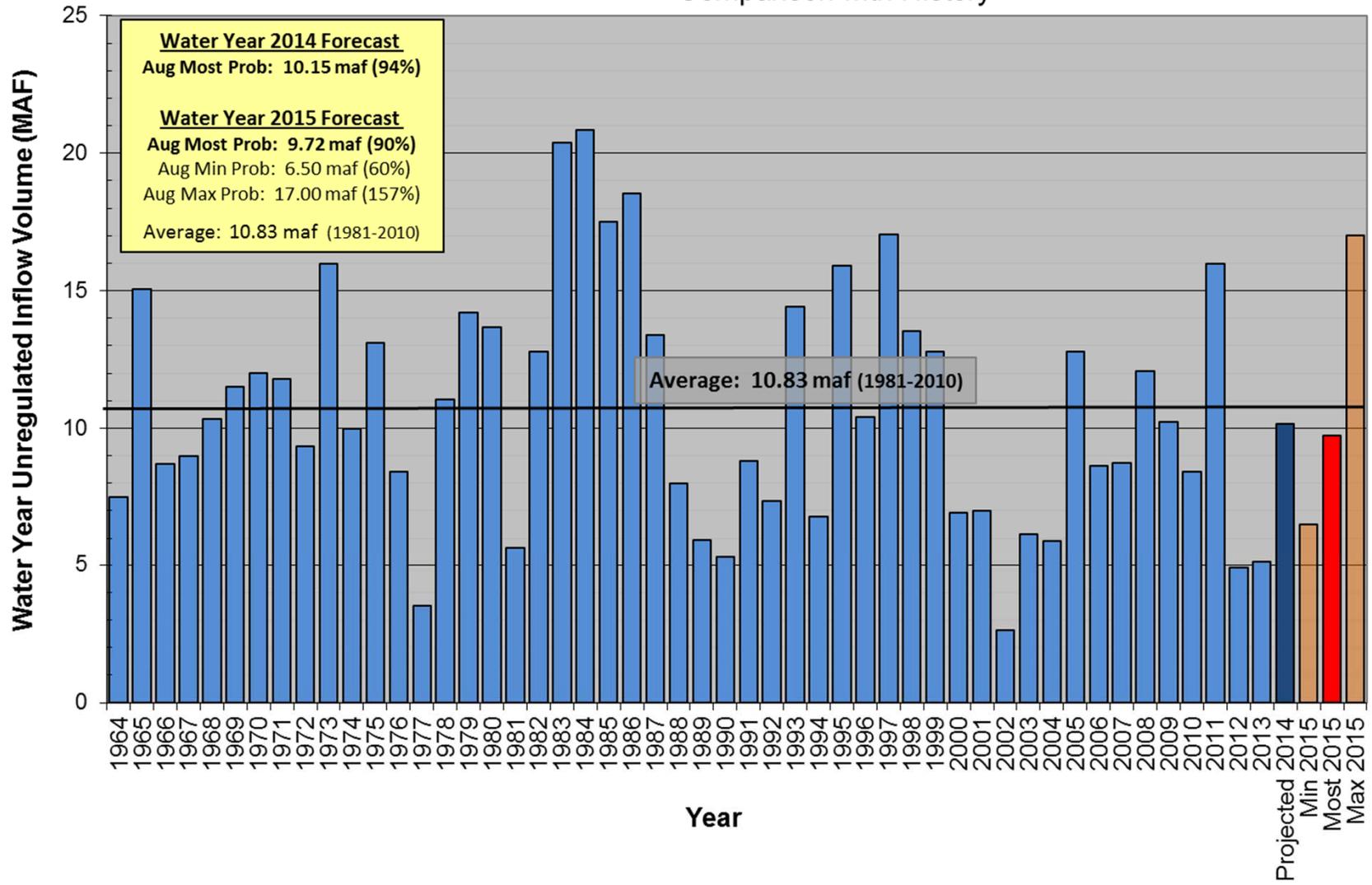


<sup>1</sup> Dated September 10, 2014.

## Lake Powell Unregulated Inflow

### Water Years 2014 and 2015 Forecast *(issued Aug 1)*

Comparison with History



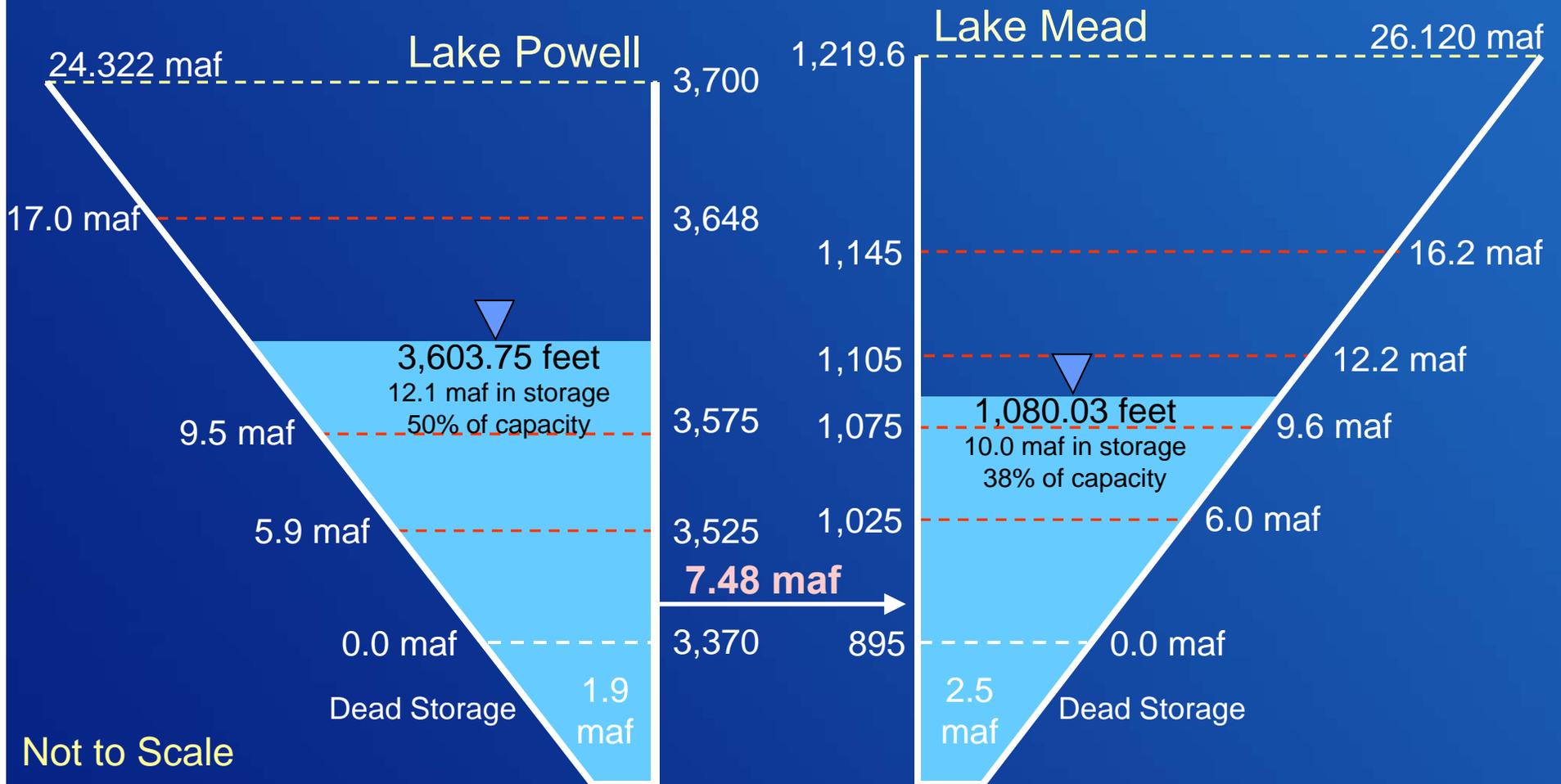
Observed April-July 2014: 6.92 maf (97%)

# RECLAMATION

# End of Water Year 2014 Projections

## August 2014 24-Month Study Most Probable Inflow Scenario<sup>1</sup>

Projected Unregulated Inflow into Powell = 10.15 maf (94% of average)

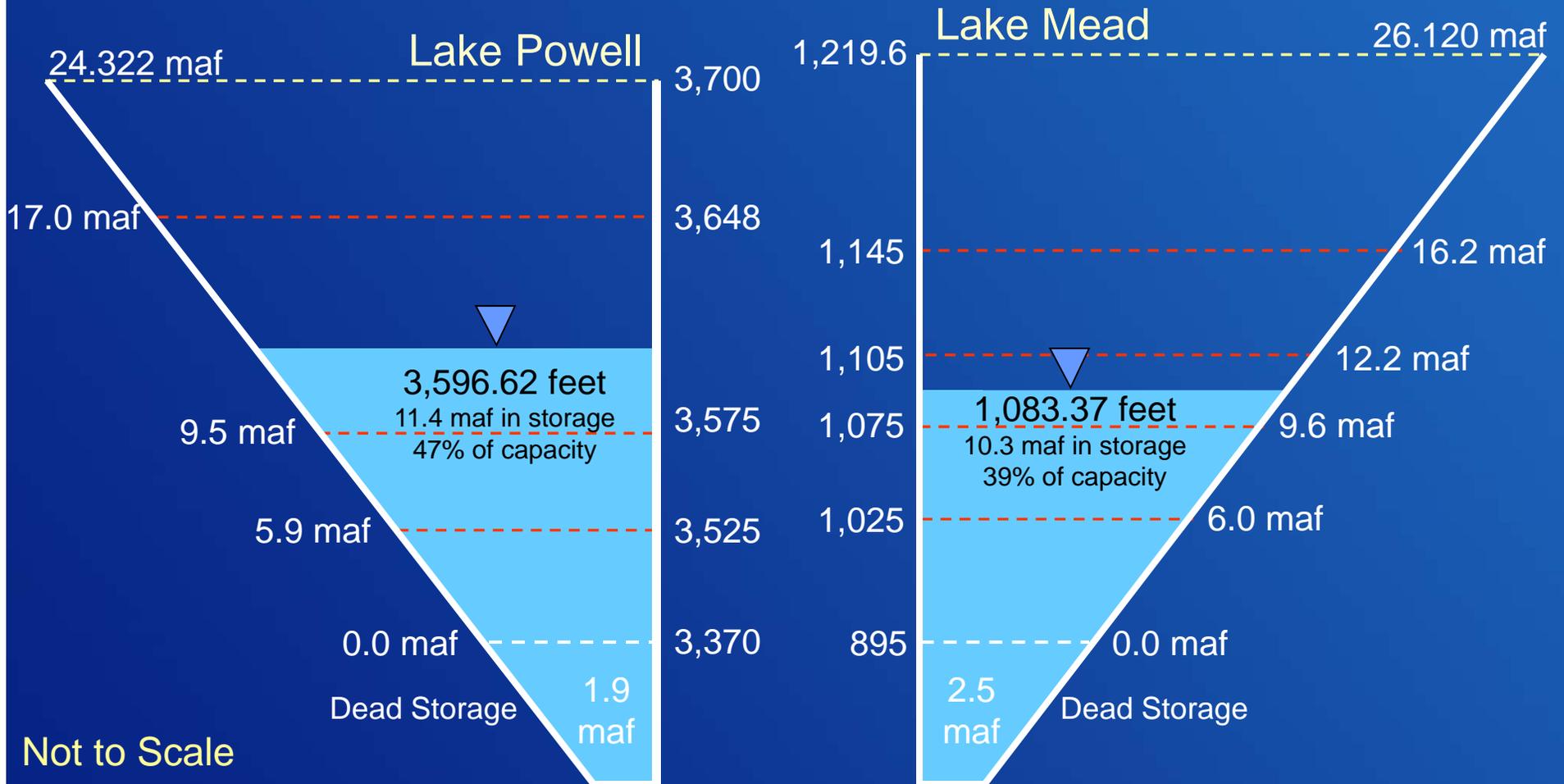


Not to Scale

<sup>1</sup> WY 2014 unregulated inflow into Lake Powell is based on the CBRFC outlook dated 8/1/14.

# End of Calendar Year 2014 Projections

## August 2014 24-Month Study Most Probable Inflow Scenario<sup>1</sup>

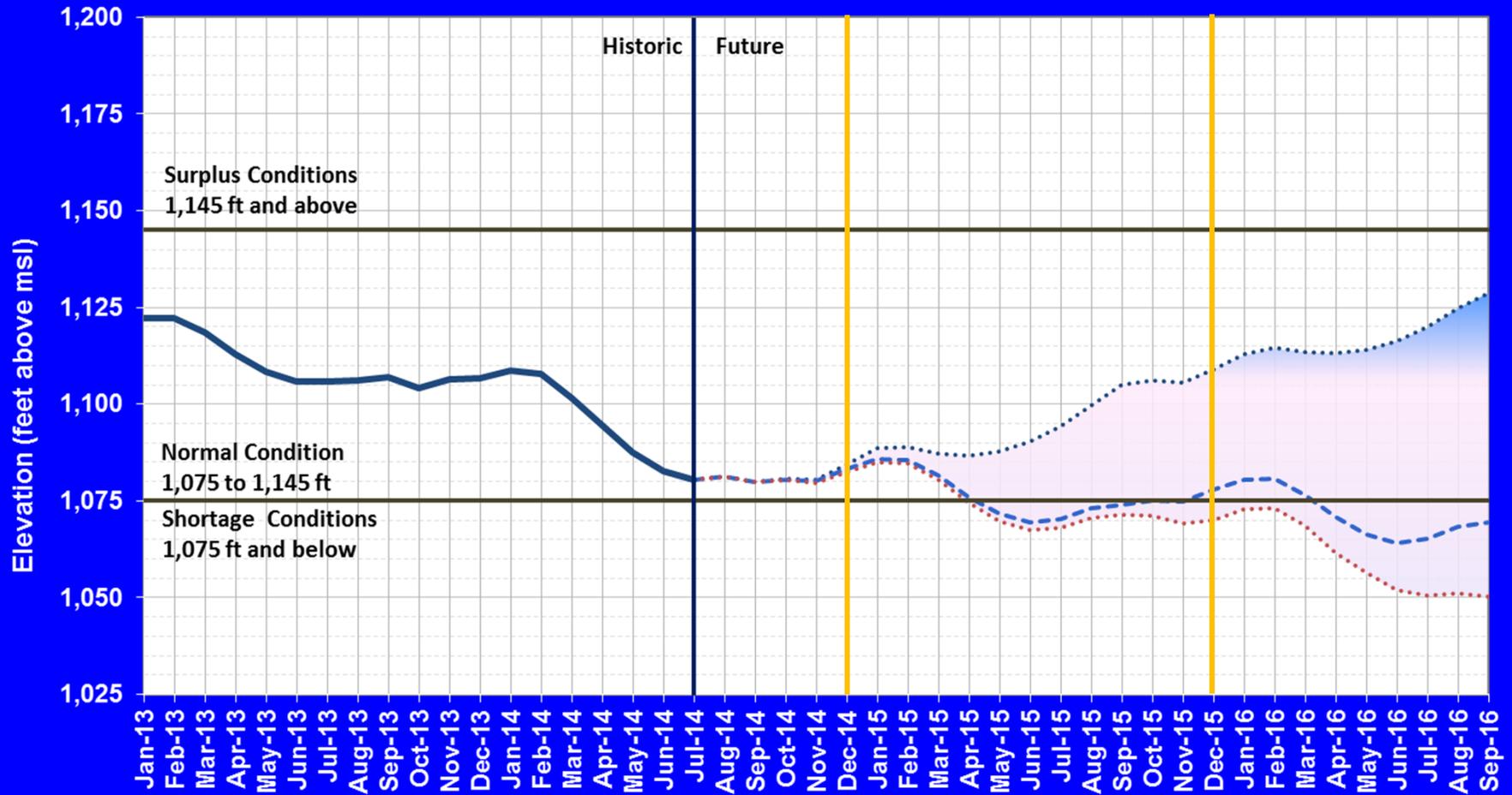


Not to Scale

<sup>1</sup> WY 2014 unregulated inflow into Lake Powell is based on the CBRFC outlook dated 8/1/14.

## Lake Mead End of Month Elevations

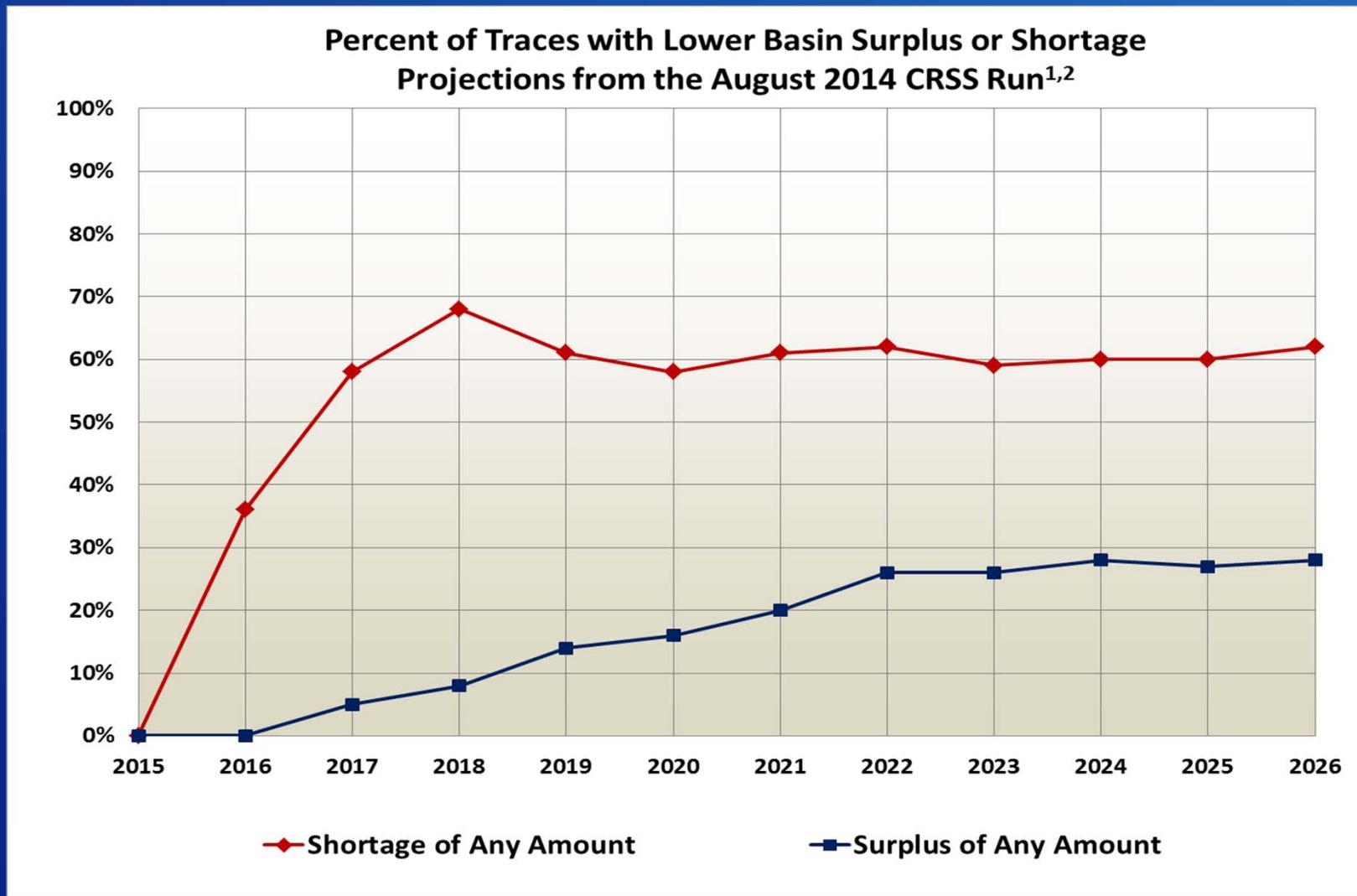
### Projections from August 2014 24-Month Study Inflow Scenarios



- ..... August 2014 Probable Maximum Inflow with Lake Powell Release of 11.63 maf Water Year 2015 and 11.74 maf in Water Year 2016
- - - August 2014 Most Probable Inflow with Lake Powell Release of 9.00 maf in Water Year 2015 and Water Year 2016
- ..... August 2014 Probable Minimum Inflow with Lake Powell Release of 9.00 maf in Water Year 2015 and 7.48 maf in Water Year 2016
- Historical Elevations

# RECLAMATION

# Longer Term Projections: Lower Basin Surplus & Shortage through 2026



<sup>1</sup> Reservoir initial conditions based on the most probable August 24-month Study projected levels for December 31, 2014.

<sup>2</sup> Hydrologic inflow traces based on resampling of the observed natural flow record from 1906-2010.

# Percent of Traces with Event or System Condition

## Results from August 2014 CRSS<sup>1,2,3</sup> (values in percent)

	Event or System Condition	2015	2016	2017	2018	2019
<b>Upper Basin – Lake Powell</b>	<b>Equalization Tier</b>	5	20	24	24	32
	<i>Equalization – annual release &gt; 8.23 maf</i>	5	20	24	24	31
	<i>Equalization – annual release = 8.23 maf</i>	0	0	0	0	1
	<b>Upper Elevation Balancing Tier</b>	95	51	53	53	43
	<i>Upper Elevation Balancing – annual release &gt; 8.23 maf</i>	58	43	41	41	34
	<i>Upper Elevation Balancing – annual release = 8.23 maf</i>	37	7	11	12	9
	<i>Upper Elevation Balancing – annual release &lt; 8.23 maf</i>	0	1	1	0	0
	<b>Mid-Elevation Release Tier</b>	0	29	19	14	15
	<i>Mid-Elevation Release – annual release = 8.23 maf</i>	0	0	0	1	2
	<i>Mid-Elevation Release – annual release = 7.48 maf</i>	0	29	19	13	13
<b>Lower Elevation Balancing Tier</b>	0	0	4	9	10	
<b>Lower Basin – Lake Mead</b>	<b>Shortage Condition – any amount (Mead ≤ 1,075 ft)</b>	0	36	58	68	61
	<i>Shortage – 1<sup>st</sup> level (Mead ≤ 1,075 and ≥ 1,050)</i>	0	36	43	46	34
	<i>Shortage – 2<sup>nd</sup> level (Mead &lt; 1,050 and ≥ 1,025)</i>	0	0	15	18	17
	<i>Shortage – 3<sup>rd</sup> level (Mead &lt; 1,025)</i>	0	0	0	4	10
	<b>Surplus Condition – any amount (Mead ≥ 1,145 ft)</b>	0	0	5	7	14
	<i>Surplus – Flood Control</i>	0	0	0	1	2
	<b>Normal or ICS Surplus Condition</b>	100	64	37	25	25

<sup>1</sup> Reservoir initial conditions based on the most probable August 24-month Study projected levels for December 31, 2014.

<sup>2</sup> Hydrologic inflow traces based on resampling of the observed natural flow record from 1906-2010.

<sup>3</sup> Percentages shown may not be representative of the full range of future possibilities that could occur with different modeling assumptions.

An aerial photograph of a large concrete dam and reservoir. The reservoir is filled with clear blue water and is surrounded by rugged, brown mountains. The dam is a curved structure with several spillways. A road with a few cars is visible on the dam's crest. The sky is clear and blue.

# The Colorado River: Operations and Current Conditions

For further information:  
<http://www.usbr.gov/lc/region>

RECLAMATION