RECLAMATION

Managing Water in the West

2013 Colorado River Annual Operating Plan

Colorado River Management Work Group (CRMWG)

Final Consultation

September 12, 2012

U.S. Department of the Interior
Bureau of Reclamation

2013 Colorado River AOP
Final Consultation Meeting

- Welcome and Introductions – *Larry Walkoviak / Terry Fulp*
- Upper Basin Hydrology and Operations – *Katrina Grantz*
- Lower Basin Hydrology and Operations – *Dan Bunk*
- 2013 AOP Review Process – *Malcolm Wilson / Steve Hvinden*
- Review of Draft 2013 AOP - *CRMWG*
- Conclusion and Wrap-up

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Upper Colorado River Basin

Hydrology and Operations

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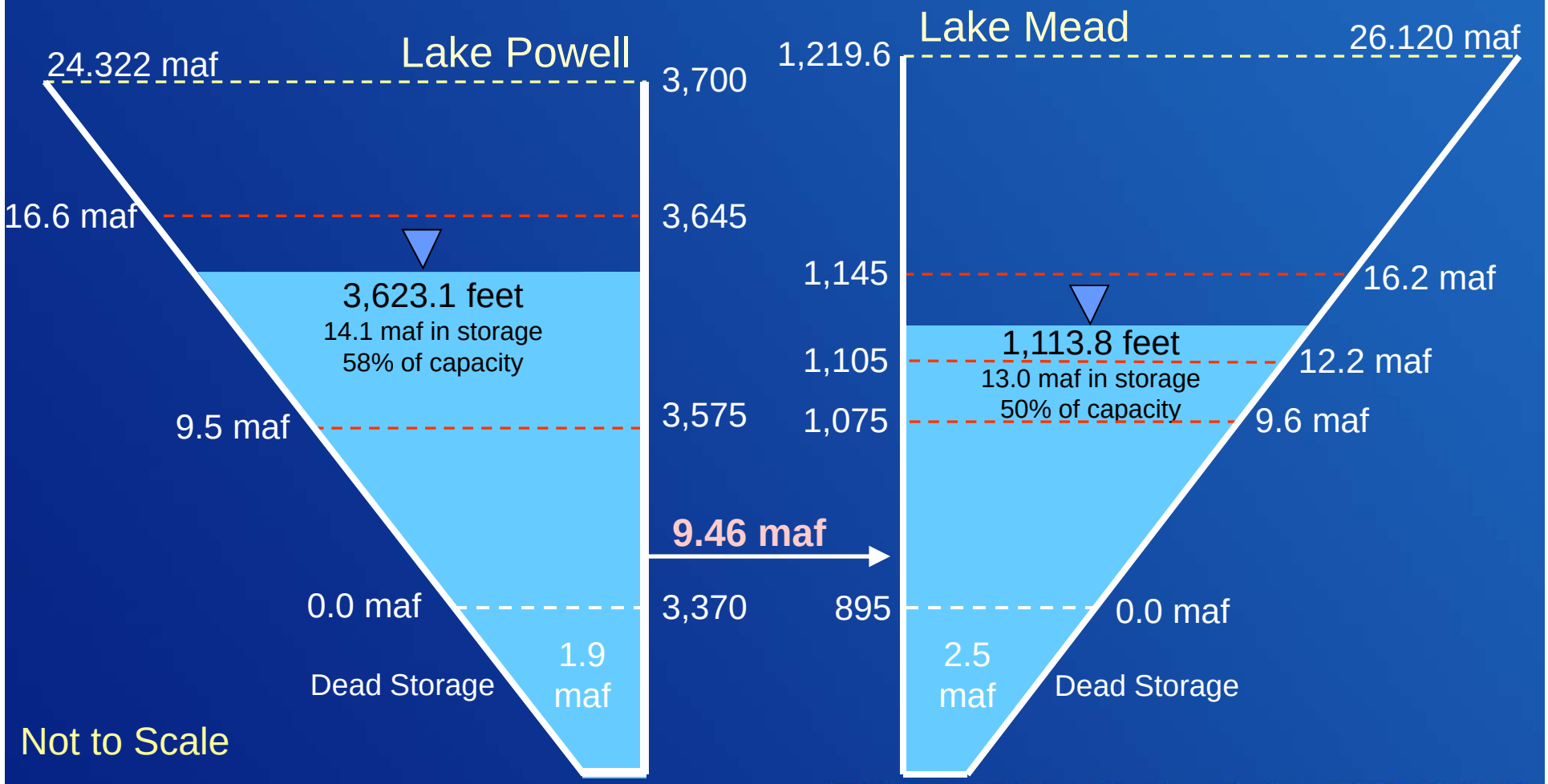
Water Year 2012 Projections

August 2012 24-Month Study Most Probable Inflow Scenario

Projected Unregulated Inflow into Powell[1] = 5.15 maf (48% of average)



[1] WY 2012 unregulated inflow volume is based on the CBRFC forecast dated 8/1/2012. Percent of average inflow is based on the 30-year period of record from 1981-2010.

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Lake Powell Unregulated Inflow Scenarios
As presented in Annual Operating Plan

Scenario	2012 AOP WY 2012 Developed August 2011	2013 AOP WY 2013 Developed August 2012
Minimum Probable	7.00 maf (65 %*)	5.00 maf (46 %)
Most Probable	12.60 maf (116 %)	8.85 maf (82 %)
Maximum Probable	19.50 maf (180 %)	16.00 maf (148 %)

* Percent of average water year unregulated inflow 1981-2012 (10.83 maf)

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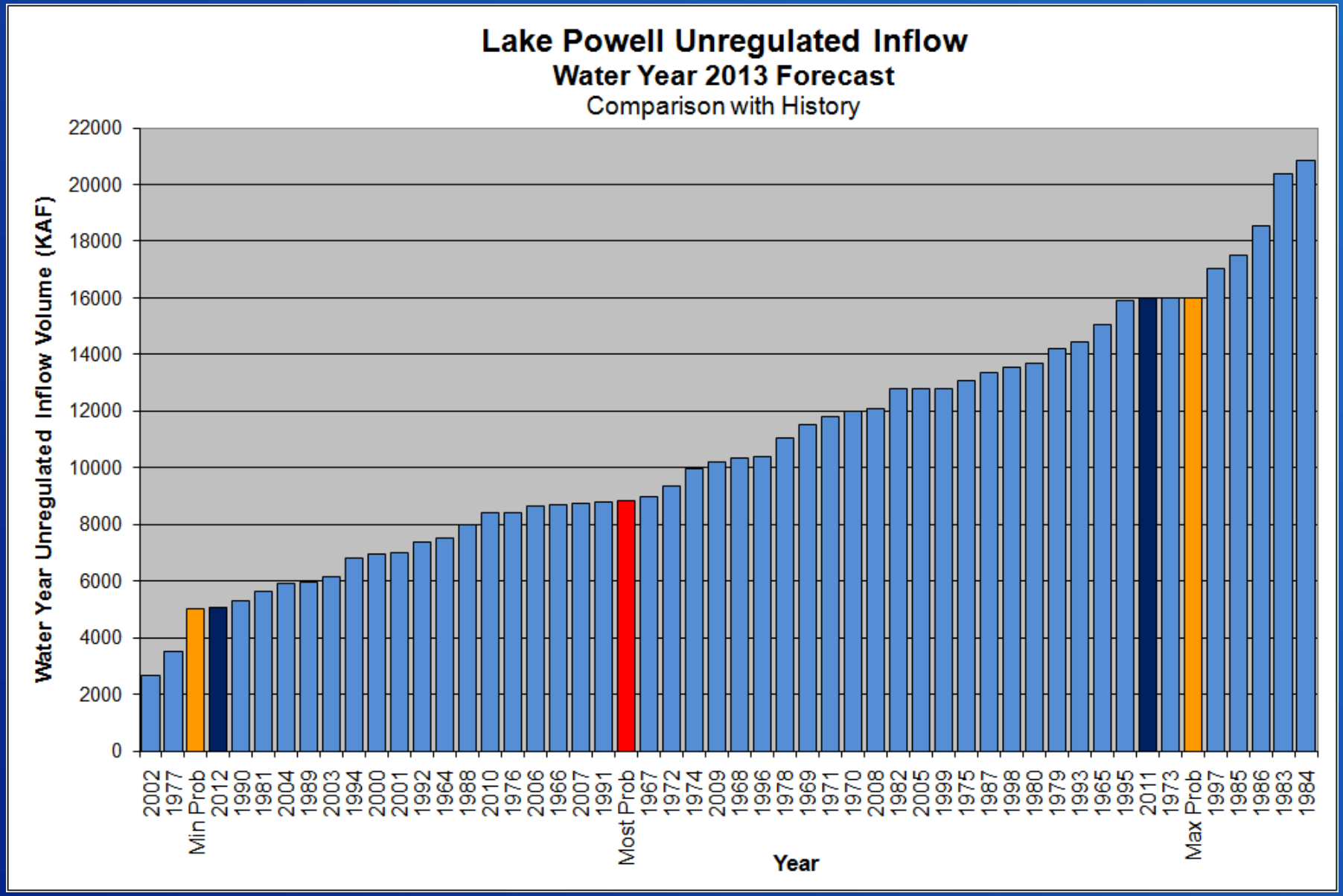

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Lake Powell & Lake Mead Operational Table

Operational Tiers for 2013 based on August 2012 Projections[1]

Lake Powell			Lake Mead		
Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf)[1]	Elevation (feet)	Operation According to the Interim Guidelines	Live Storage (maf)[1]
3,700	**Equalization Tier** Equalize, avoid spills or release 8.23 maf	24.3	1,220	**Flood Control Surplus or Quantified Surplus Condition** Deliver > 7.5 maf	25.9
3,636 - 3,666 (2008-2026)		15.5 - 19.3 (2008-2026)	1,200 (approx.)[2]		22.9 (approx.)[2]
3,614.89	**Upper Elevation Balancing Tier**[3]	13.23		**Domestic Surplus or ICS Surplus Condition** Deliver > 7.5 maf	
1/1/13 Projection	Release 8.23 maf; if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 maf	1/1/13 Projection	1,145		15.9
			1,119.14	**Normal or ICS Surplus Condition** Deliver ≥ 7.5 maf	13.52
			1/1/13 Projection		1/1/13 Projection
3,575		9.5	1,075		9.4
	Mid-Elevation Release Tier Release 7.48 maf; if Lake Mead < 1,025 feet, release 8.23 maf			**Shortage Condition** Deliver 7.167[4] maf	
			1,050		7.5
3,525		5.9		**Shortage Condition** Deliver 7.083[5] maf	
			1,025		5.8
	Lower Elevation Balancing Tier Balance contents with a min/max release of 7.0 and 9.5 maf			**Shortage Condition** Deliver 7.0[6] maf Further measures may be undertaken[7]	
3,490		4.0	1,000		4.3
3,370		0	895		0

Diagram not to scale

[1] Acronym for million acre-feet

[2] This elevation is shown as approximate as it is determined each year by considering several factors including Lake Powell and Lake Mead storage, projected Upper Basin and Lower Basin demands, and an assumed inflow.

[3] Subject to April adjustments which may result in a release according to the Equalization Tier

[4] Of which 2.48 maf is apportioned to Arizona, 4.4 maf to California, and 0.287 maf to Nevada

[5] Of which 2.40 maf is apportioned to Arizona, 4.4 maf to California, and 0.283 maf to Nevada

[6] Of which 2.32 maf is apportioned to Arizona, 4.4 maf to California, and 0.280 maf to Nevada

[7] Whenever Lake Mead is below elevation 1,025 feet, the Secretary shall consider whether hydrologic conditions together with anticipated deliveries to the Lower Division States and Mexico is likely to cause the elevation at Lake Mead to fall below 1,000 feet. Such consideration, in consultation with the Basin States, may result in the undertaking of further measures, consistent with applicable Federal law.

[1] January 1, 2013, projections are based on the August 2012 24-Month Study.

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Water Year	Powell Elevation (feet)
2008	3,636
2009	3,639
2010	3,642
2011	3,643
2012	3,645
2013	3,646
2014	3,648
2015	3,649
2016	3,651
2017	3,652
2018	3,654
2019	3,655
2020	3,657
2021	3,659
2022	3,660
2023	3,662
2024	3,663
2025	3,664
2026	3,666

Lake Powell Equalization Elevation Table

2013 Level – 3,646 feet

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WY2013 Lake Powell Operations

as projected in August 2012 24-Month Study

Scenario	Initial Operational Tier	Projected Annual Release Volume
Minimum Probable	Upper Elevation Balancing	8.23 maf
Most Probable	Upper Elevation Balancing	8.23 maf
Maximum Probable	Upper Elevation Balancing*	11.21 maf

* Upper Elevation Balancing with a projected April adjustment to equalization with Lake Powell September 30, 2013 elevation governing.

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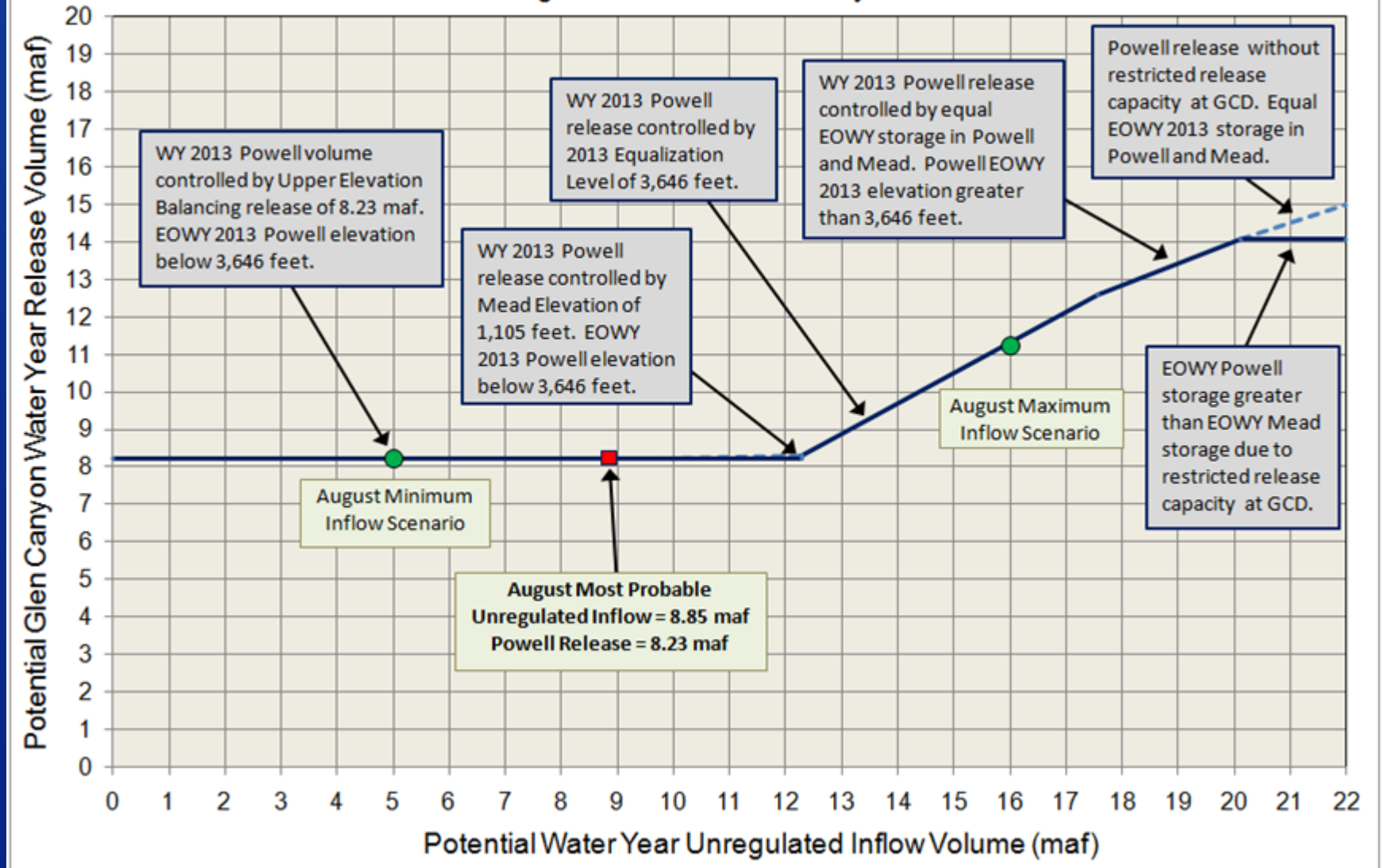
Coordinated Operations of Lake Powell and Lake Mead

Water Year 2013 Release Volume as a Function of Unregulated Inflow Volume
based on August 2012 24-Month Study Conditions



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Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2013

(updated 9-10-2012)

Unit Number	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013
1												
2												
3												
4												
5												
6 (3/4 Unit)												
7												
8												
Units Available	5	8 / 7	7	7	5	6 / 7	7	7	7	7	7	4
Capacity (cfs)	19,500	26,200 / 22,600	22,600	22,600	15,500	18,800 / 22,600	22,600	22,600	22,600	22,600	22,600	11,800
Capacity (kaf/month)	1310	1530	1390	1390	960	1280	1340	1390	1340	1390	1390	810
Max (kaf)	491	600	800	800	800	900	900	1142	1300	1350	1350	780
Most (kaf)	491	600	800	800	675	600	600	600	800	840	824	600
Min (kaf)	491	600	800	800	675	600	600	600	800	840	824	600

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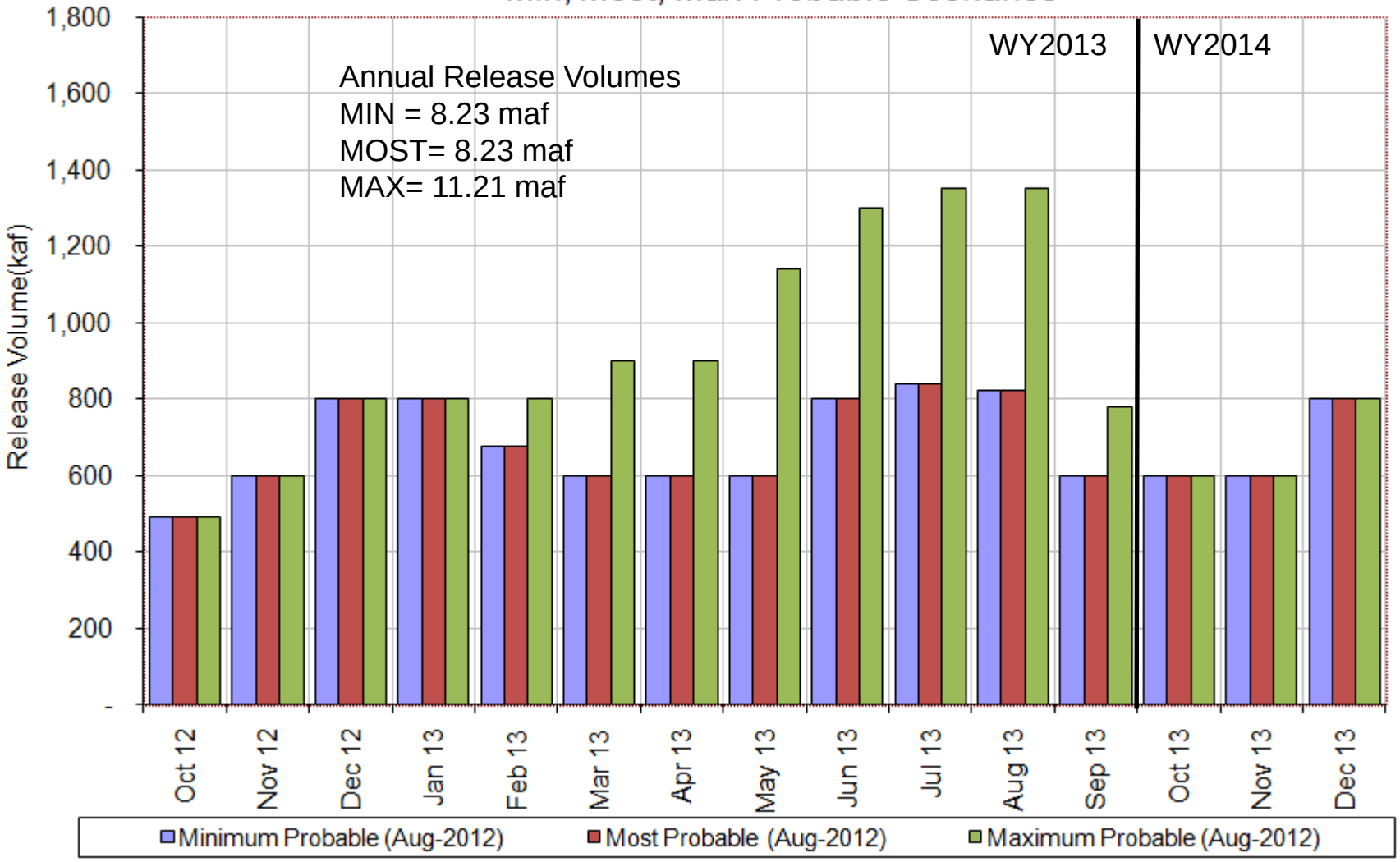
Lake Powell Monthly Release Volume Distribution

August 2012 24-Month Study
Min, Most, Max Probable Scenarios



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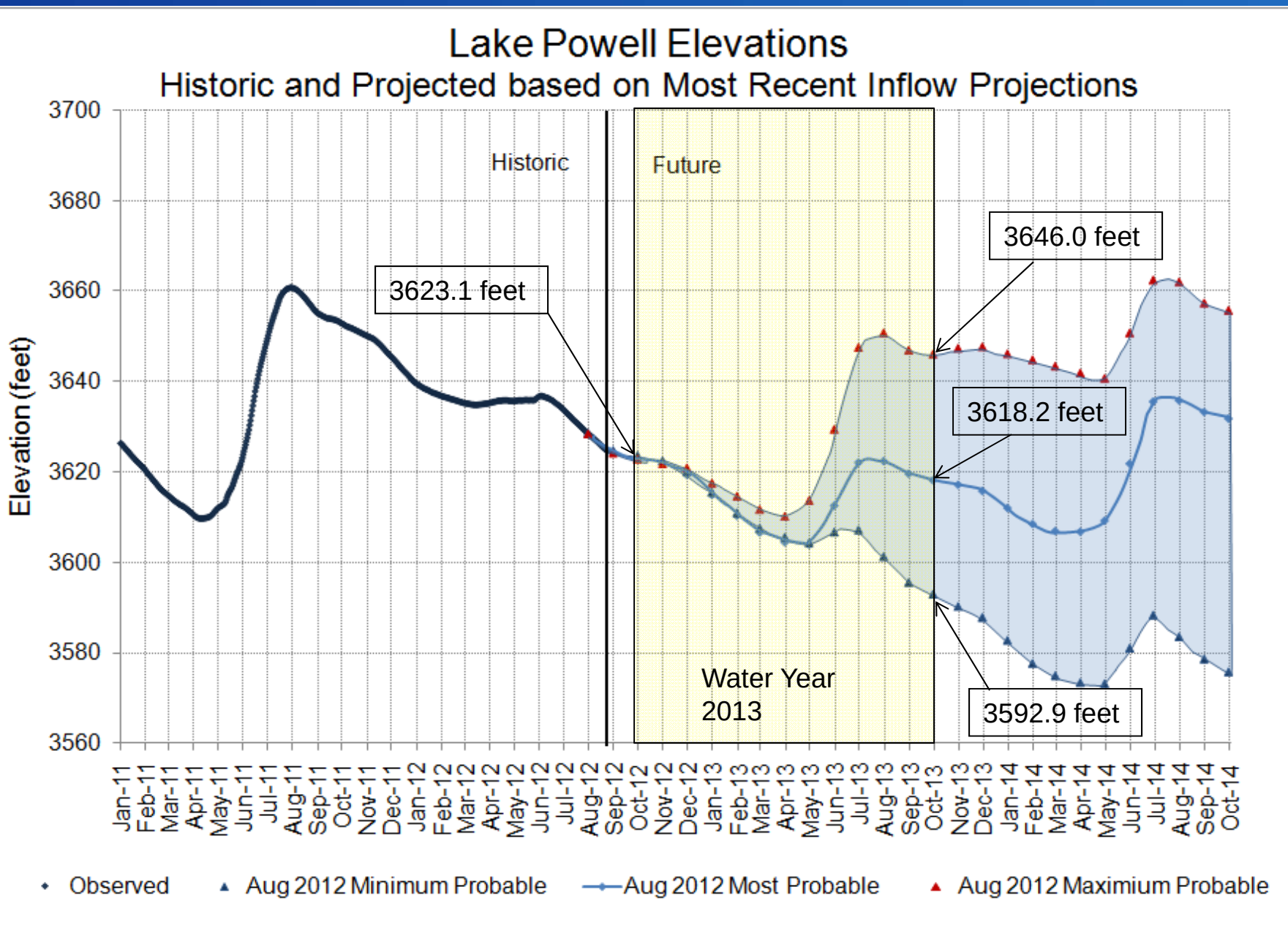

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Lower Colorado River Basin

Hydrology and Operations

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Projected Lake Mead Elevations

Based on August 2012 24-Month Study Inflow Scenarios

Scenario	CY 2013 (on January 1, 2013)	CY 2014 (on January 1, 2014)
Probable Minimum	1,118.2 feet	1,106.2 feet
Most Probable	1,119.1 feet	1,110.4 feet
Probable Maximum	1,120.4 feet	1,141.9 feet

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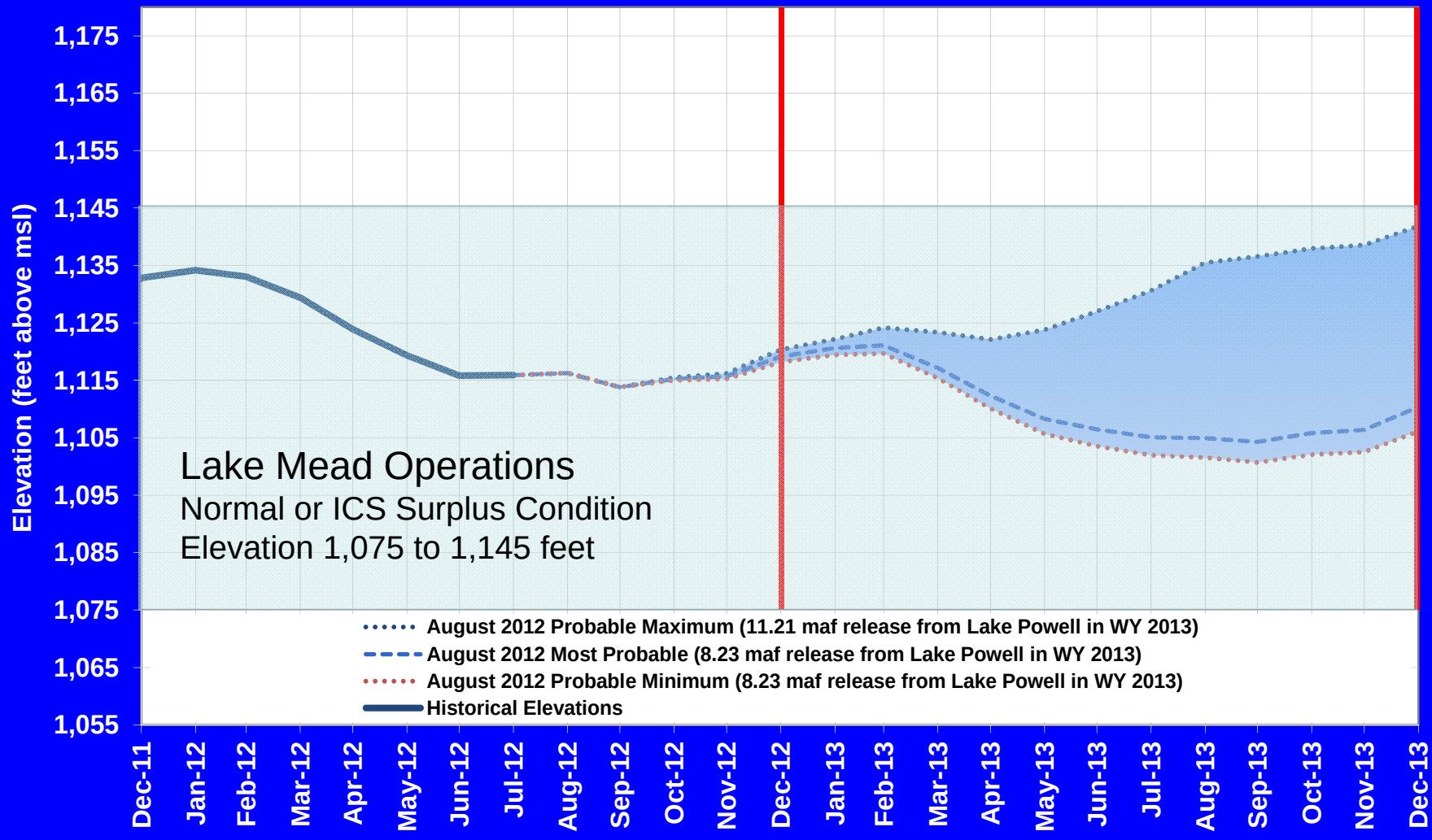
Lake Mead End of Month Elevation

Projections from August 2012 24-Month Study Inflow Scenarios*



* See attached page for an explanation of the three hydrologic scenarios displayed in this chart and discussions on how the projected water year 2012 release volumes from Lake Powell were determined.

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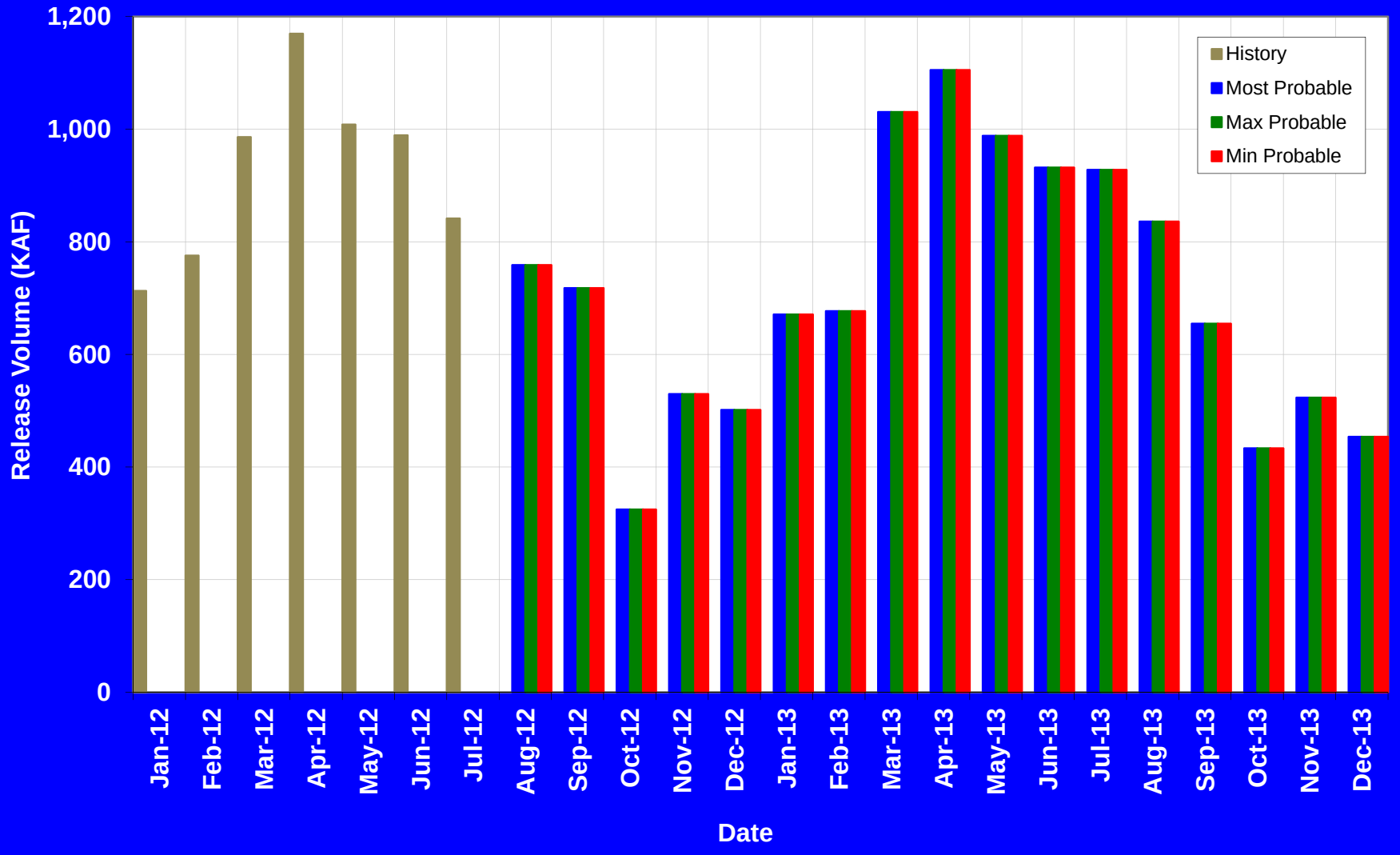
Lake Mead Monthly Release Volumes
Projections from August 2012 24-Month Study Inflow Scenarios



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Lower Basin Side Inflows
Glen Canyon to Hoover in WY/CY 2012[1,2]

	Month in WY/CY 2012	Intervening Flow Glen Canyon to Hoover (KAF)	Intervening Flow Glen Canyon to Hoover (% of Average)	Difference From 5-Year Average (KAF)
HISTORY	October 2011	66	135%	+17
	November 2011	36	78%	-10
	December 2011	84	78%	-24
	January 2012	55	71%	-23
	February 2012	44	45%	-54
	March 2012	43	55%	-35
	April 2012	46	61%	-30
	May 2012	16	25%	-48
	June 2012	8	21%	-26
	July 2012	70	130%	+16
	August 2012	168	163%	+65
FUTURE	September 2012	74		
	October 2012	49		
	November 2012	46		
	December 2012	108		
	WY 2012 Totals	**709**	**82%**	**-152**
	CY 2012 Totals	**726**	**84%**	**-135**

[1] Values were computed with the LC's gain-loss model for the most recent 24-month study.

[2] Percents of average are based on the 5-year mean from 2007-2011.

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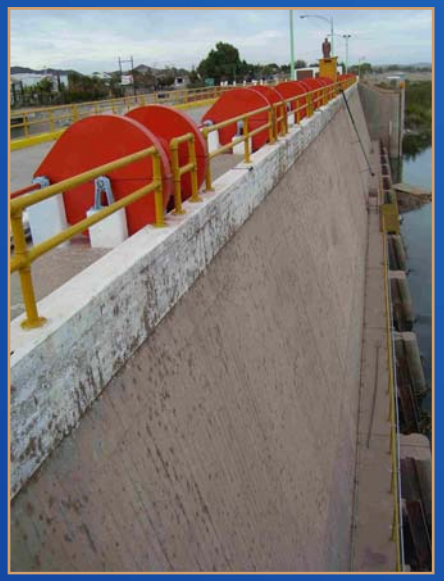
YAO Operations Update

- Brock and Senator Wash storage year-to-date[1]
  - Brock 96,770 AF
  - Senator Wash 65,880 AF
- Excess Flows to Mexico year-to-date[2] 34,750 AF



[1] Provisional values through September 6, 2012

[2] Provisional value through September 9, 2012

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