

RECLAMATION

Managing Water in the West

Basin Hydrology, Water Years 2018-2019 Operations

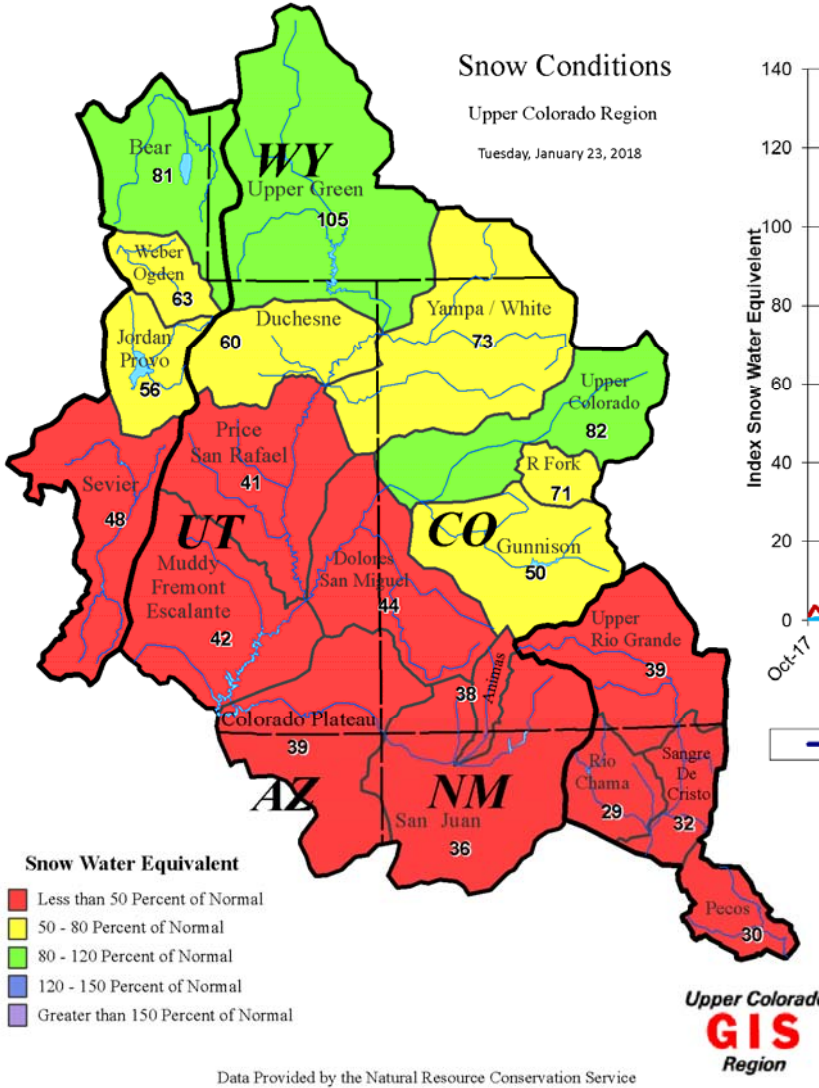
Glen Canyon Technical Work Group

January 25, 2018

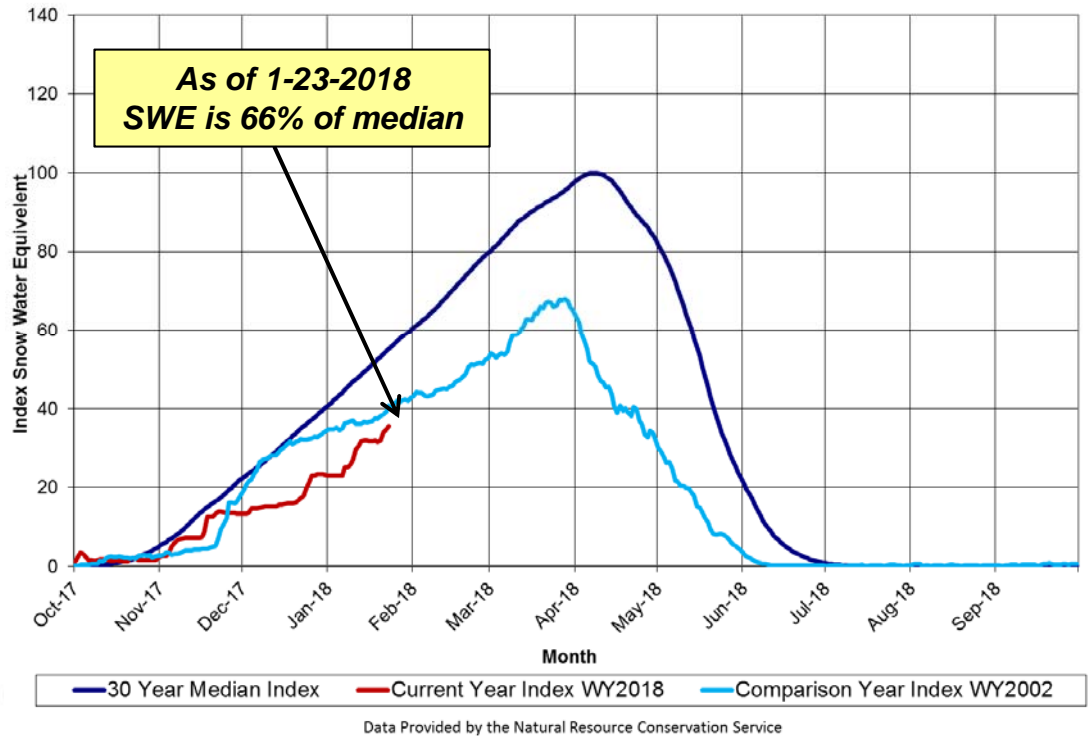


U.S. Department of the Interior
Bureau of Reclamation

Snow Conditions



Upper Colorado River Basin Snotel Tracking
Aggregate of 116 Snotel Sites above Lake Powell

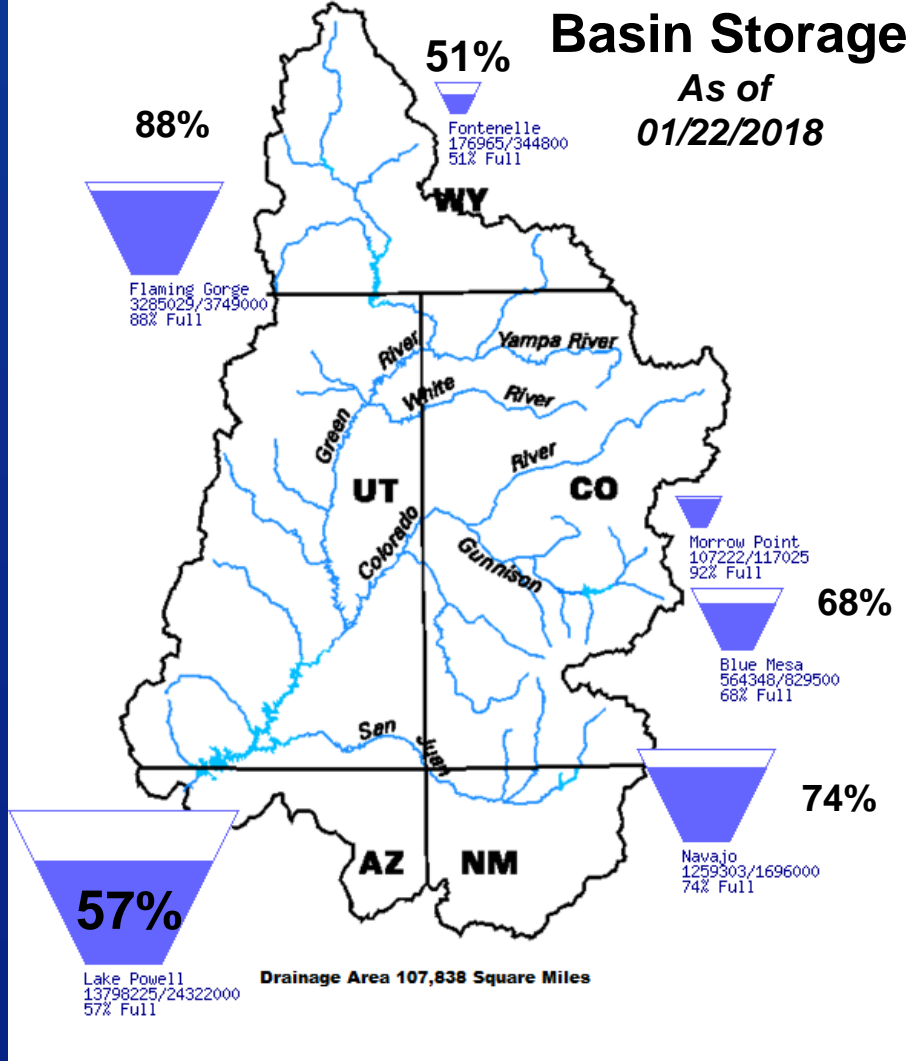


**36% of total average seasonal accumulation
And 61% through the snow accumulation season**

Upper Basin Storage

Data Current as of:
01/22/2018

Upper Colorado River Drainage Basin



April to July 2018 Forecasted Inflow Issued January 16, 2018

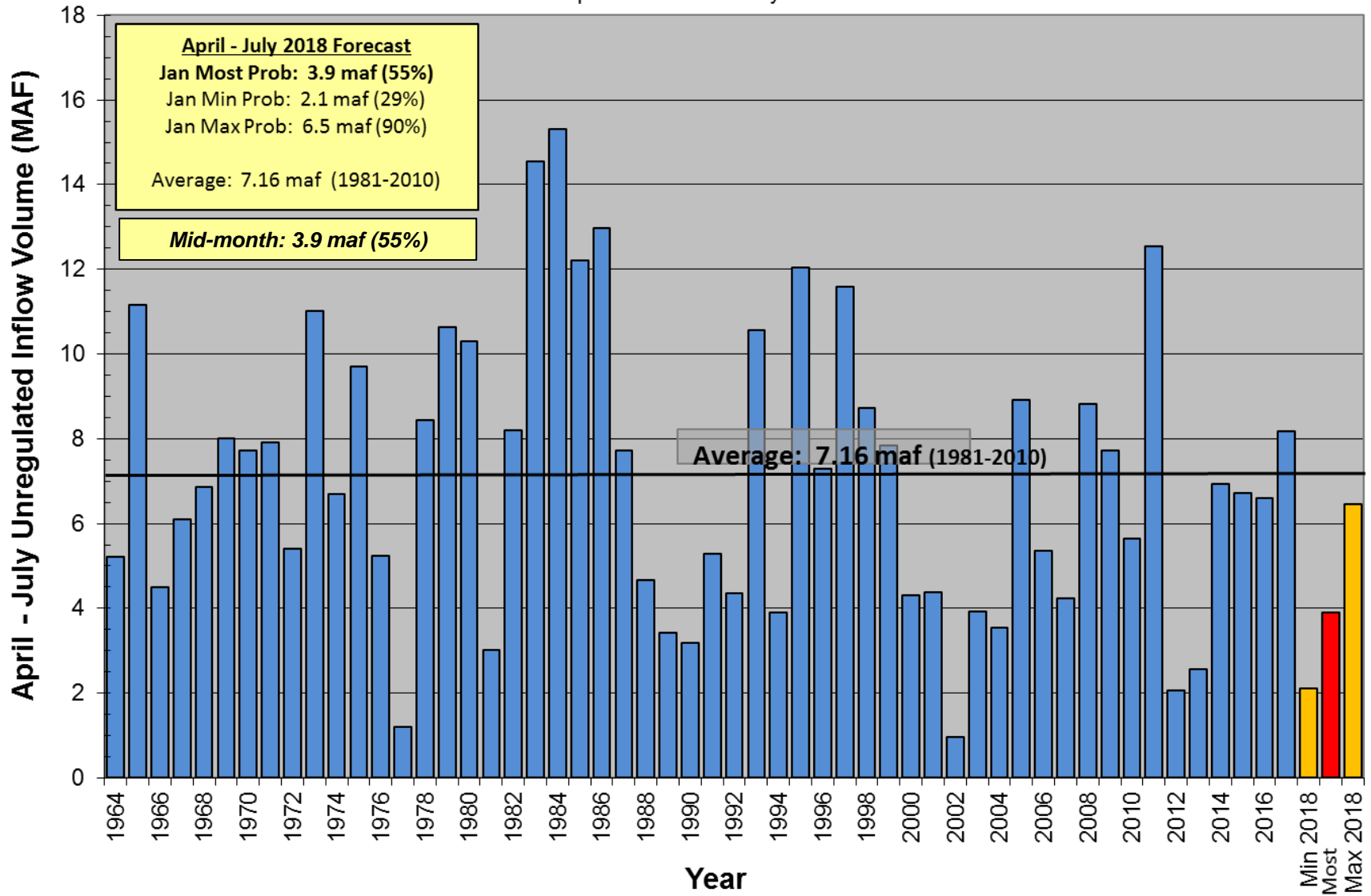
Reservoir	WY Forecast (KAF)	Percent of Average ¹
Fontenelle	780	108%
Flaming Gorge	1,000	102%
Blue Mesa	420	62%
Navajo	295	40%
Powell	3,900	54%

¹ Percent of average based on 1981-2010 period.

<https://www.usbr.gov/uc/water/basin/index.html>

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**Lake Powell Unregulated Inflow
April - July 2018 Forecast
Issued January 1st
Comparison with History**



Lake Powell 2018 Operating Tier

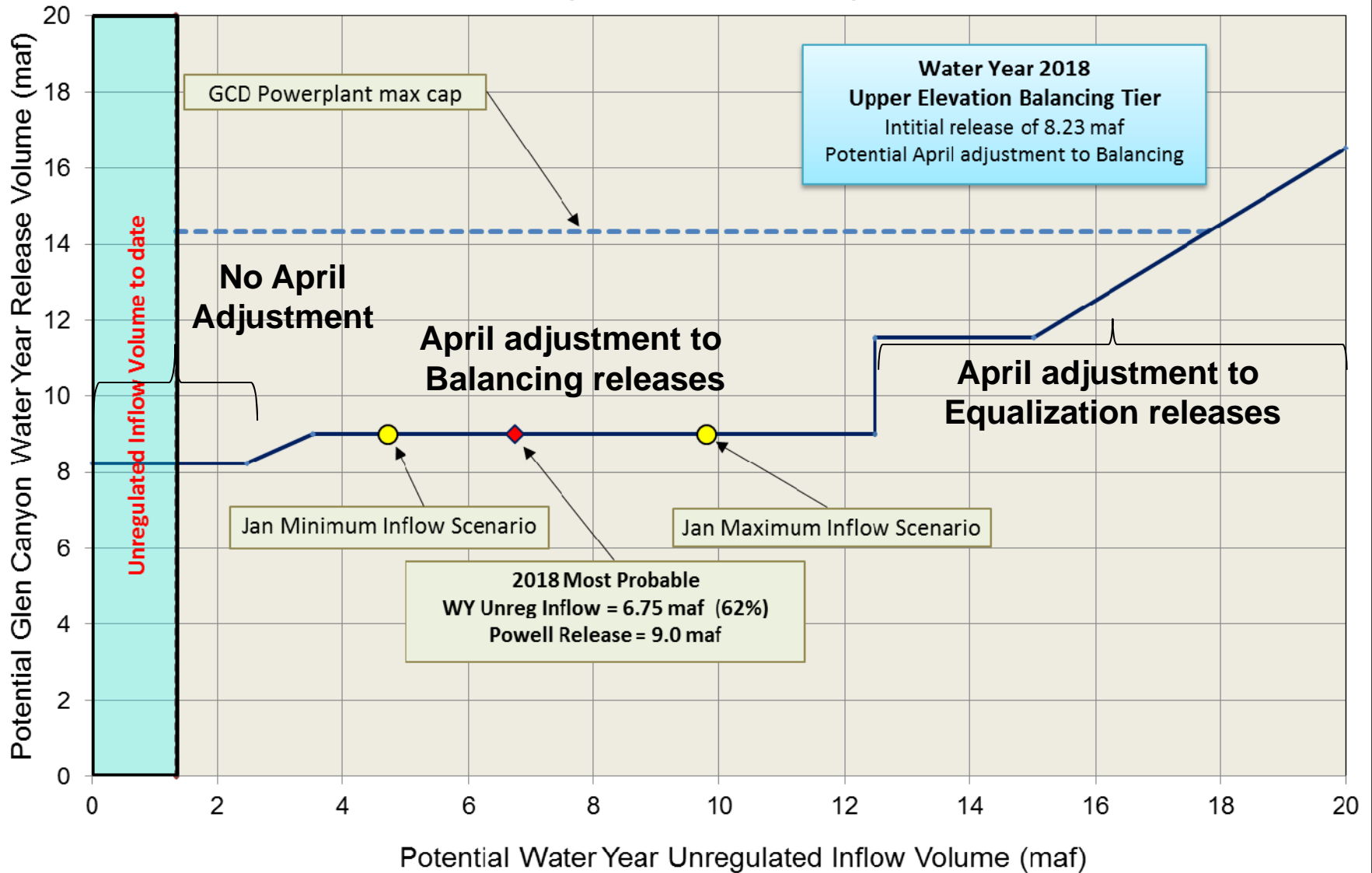
Upper Elevation Balancing

- Tier was set in August 2017
 - Start with 8.23 maf release
- Use April 24-Month Study projections of end of water year storage to potentially adjust
 1. Stay with 8.23 maf
 2. Balancing: 8.23 - 9.0 maf
 3. Equalization: > 8.23 maf

Lake Powell		
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
3,636 - 3,666 (2008-2026)	Upper Elevation Balancing Tier³ Release 8.23 maf; if Lake Mead < 1,075 feet, balance contents with a min/max release of 7.0 and 9.0 maf	15.5 - 19.3 (2008-2026)
3,575	Mid-Elevation Release Tier Release 7.48 maf; if Lake Mead < 1,025 feet, release 8.23 maf	9.5
3,525	Lower Elevation Balancing Tier Balance contents with a min/max release of 7.0 and 9.5 maf	5.9
3,490		4.0
3,370		0

Potential Lake Powell Release Scenarios

Water Year 2018 Release Volume as a Function of Unregulated Inflow Volume based on January 2018 24-Month Study Conditions



Lake Powell 2018 Operating Tier Scenarios

Based on January 2018 modeling

Inflow Scenario	Operating Tier Release Volume
Minimum Probable	Upper Elevation Balancing 9.0 maf
Most Probable	Upper Elevation Balancing 9.0 maf
Maximum Probable	Upper Elevation Balancing 9.0 maf

LTEMP Monthly Release Volumes

Month	7.00	7.48	8.23	9.00	9.50	10.50	11.00	12.00	13.00	14.00
OCT	480	480	640	640	640	640	640	640	640	640
NOV	500	500	640	640	640	640	640	640	640	640
DEC	600	600	720	720	720	720	720	720	720	720
JAN	660	720	760	860	920	1040	1100	1230	1350	1470
FEB	590	640	680	750	810	920	970	1080	1190	1300
MAR	620	675	710	800	860	970	1030	1150	1260	1370
APR	550	600	640	710	760	870	920	1020	1120	1220
MAY	550	600	630	710	760	860	910	1020	1120	1220
JUN	580	630	660	750	800	910	960	1060	1170	1280
JUL	650	710	750	850	900	1020	1080	1200	1320	1440
AUG	700	760	800	900	970	1090	1160	1280	1410	1540
SEP	520	565	600	670	720	820	870	960	1060	1160

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Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2018

Unit Number	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018	Jul 2018	Aug 2018	Sep 2018	
1	[Red bar]				[Red bar]	[Red bar]						[Red bar]	
2						[Red bar]		[Red bar]				[Red bar]	
3	[Red bar]				[Red bar]	[Red bar]						[Red bar]	
4							[Red bar]						
5		[Red bar]											
6		[Red bar]											
7					[Red bar]								
8					[Red bar]							[Red bar]	
Units Available	6	6/4	4/6	6	4/6	5/6	5/6	6/7	8	8	8	5	
Capacity (cfs)	21,000	13,200	13,200	20,600	13,100	13,100	13,100	20,600	28,100	28,100	28,100	13,000	
Capacity (kaf/month)	1,290	970	1,170	1,260	790	1,140	1,190	1,440	1,670	1,730	1,730	1,210	
Max (kaf) ¹	667	630	740	860	730	800	705	705	760	860	900	670	9.0
Most (kaf) ²	640	630	740	860	730	800	705	705	760	860	900	670	9.0
Min (kaf) ¹	630	630	740	860	730	800	705	705	760	860	900	670	9.0

(updated 1-16-2018)

1 Projected release, based on Jan 2018 Min and Max Probable Inflow Projections and 24-Month Study model runs

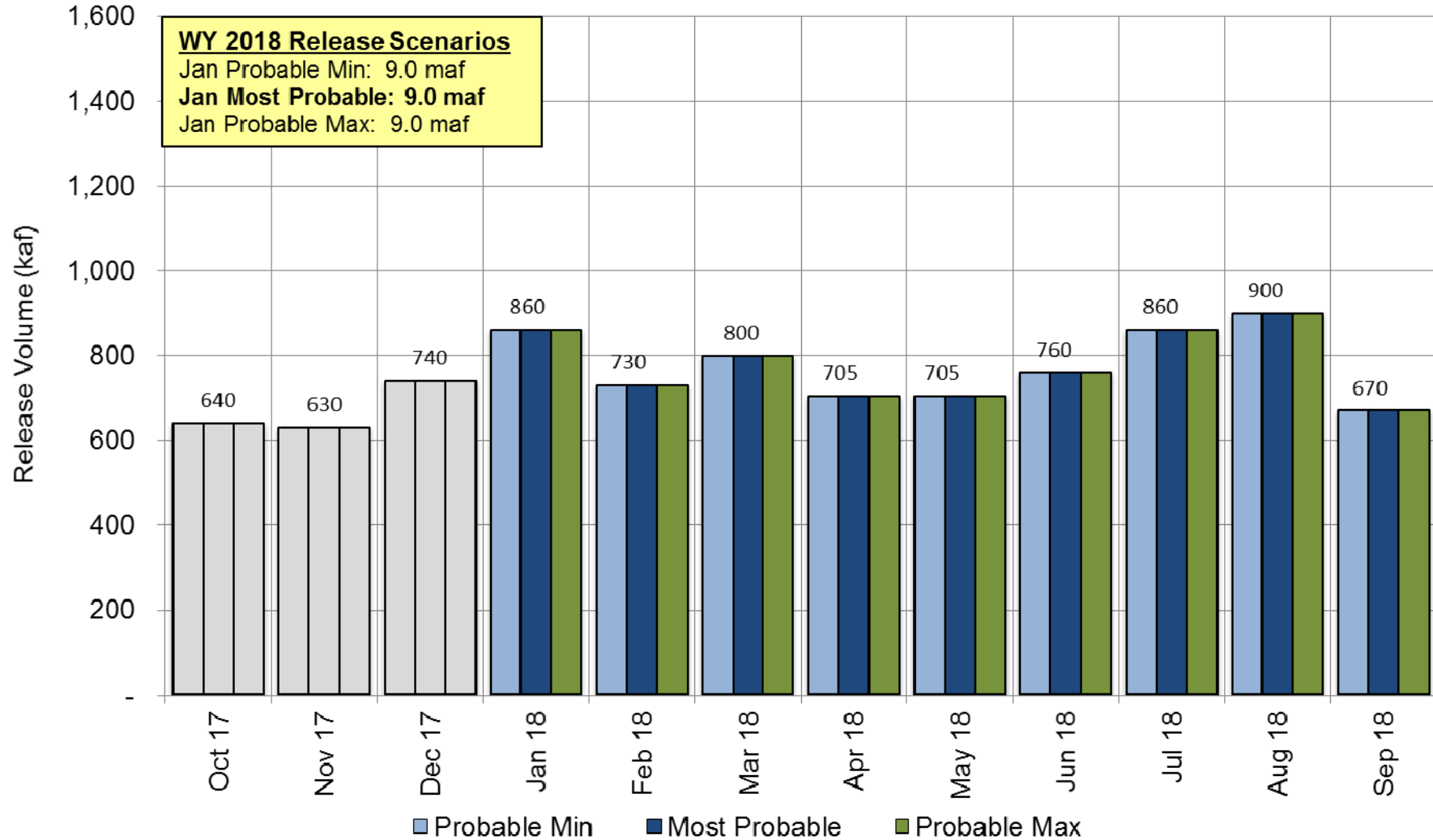
2 Projected release, based on Jan 2018 Most Probable Inflow Projections and 24-Month Study model runs

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Projected Lake Powell Monthly Release Volume Distribution

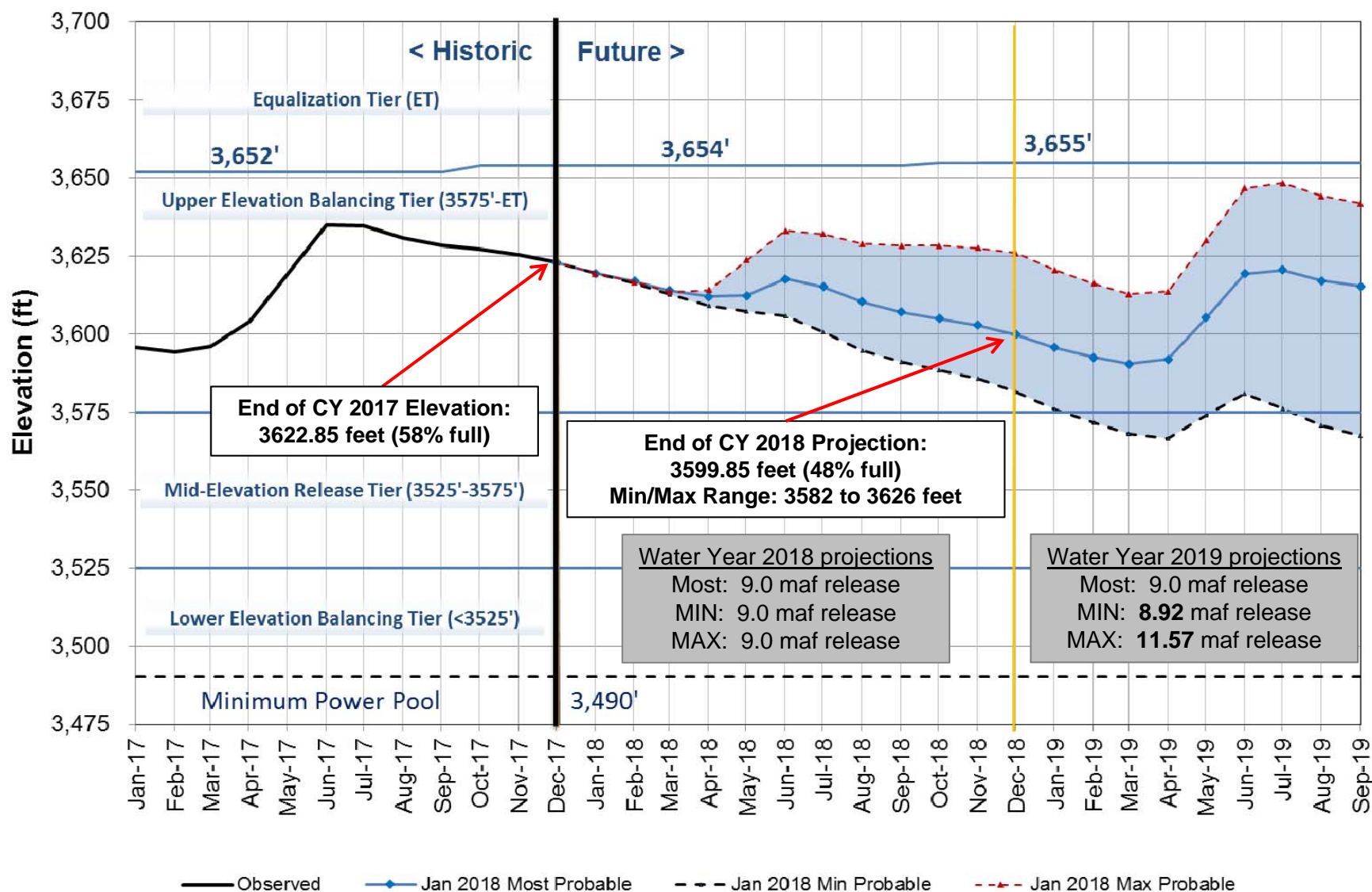
Release Scenarios for Water Year 2018

Based on January 2018 modeling



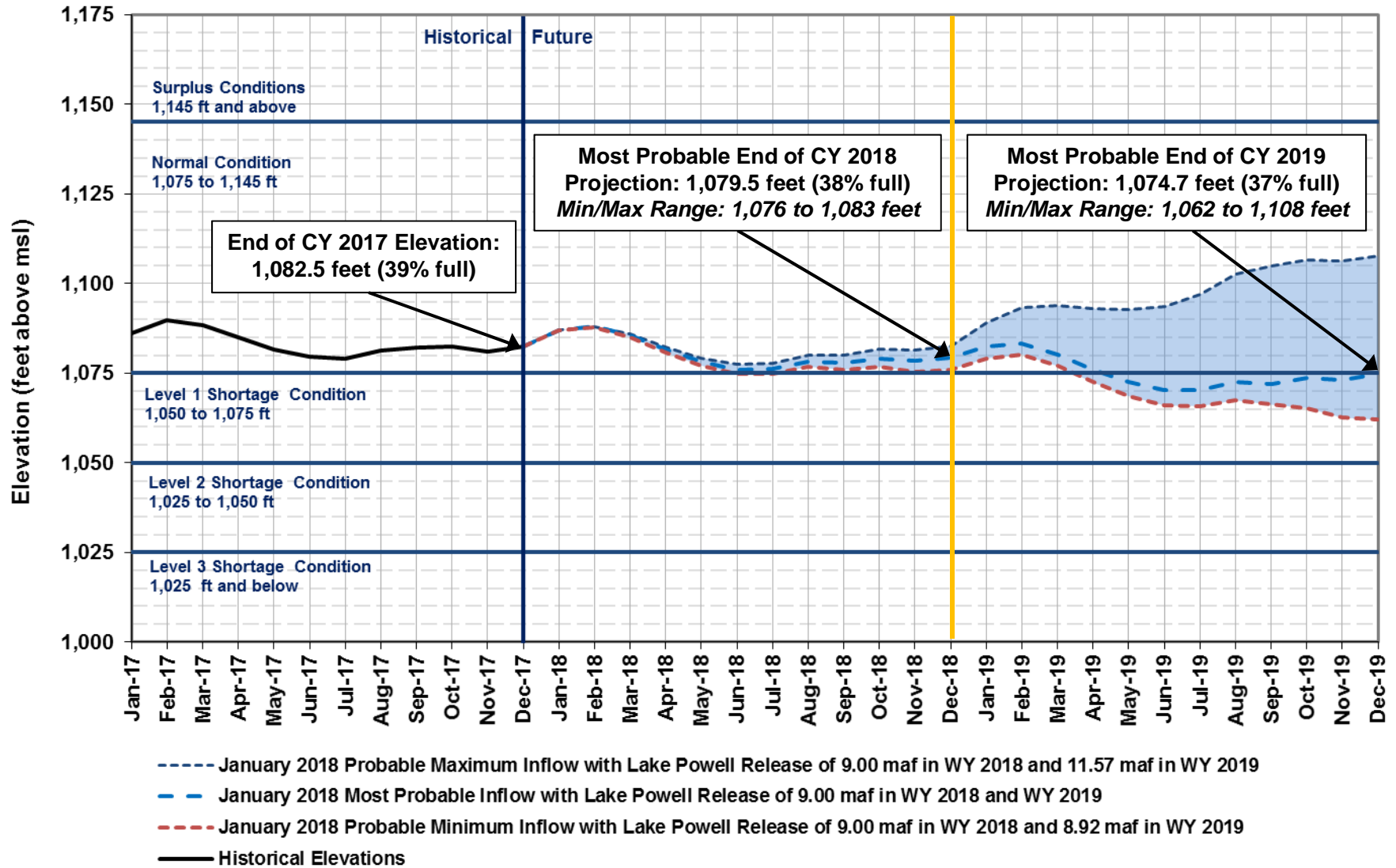
Lake Powell End of Month Elevations

Historic and Projected based on January 2018 Modeling



Lake Mead End of Month Elevations

Projections from January 2018 24-Month Study Inflow Scenarios





Water Year 2019 Projected Operations

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LTEMP Monthly Release Volumes 2019

Month	7.00	7.48	8.23	9.00	9.50	10.50	11.00	12.00	13.00	14.00
OCT	480	480	640	640	640	640	640	640	640	640
NOV	500	500	640	640	640	640	640	640	640	640
DEC	600	600	720	720	720	720	720	720	720	720
JAN	660	720	760	860	920	1040	1100	1230	1350	1470
FEB	590	640	680	750	810	920	970	1080	1190	1300
MAR	620	675	710	800	860	970	1030	1150	1260	1370
APR	550	600	640	710	760	870	920	1020	1120	1220
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JUN	580	630	660	750	800	910	960	1060	1170	1280
JUL	650	710	750	850	900	1020	1080	1200	1320	1440
AUG	700	760	800	900	970	1090	1160	1280	1410	1540
SEP	520	565	600	670	720	820	870	960	1060	1160

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Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2019

Unit Number	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	Jul 2019	Aug 2019	Sep 2019	
1		Possible HFE											
2													
3													
4													
5													
6													
7													
8													
Units Available	6	8	6	6	6	4/6	6	7	8	8	8	6	
Capacity (cfs)	20,600	28,100	20,500	20,500	20,500	13,100	20,600	24,400	28,100	28,100	28,100	20,500	
Capacity (kaf/month)	1,340	1,670	1,290	1,260	1,140	1,220	1,280	1,590	1,670	1,730	1,730	1,270	
Max (kaf) ¹	640	640	720	1,170	1,030	1,100	980	970	1,020	1,150	1,230	924	11.57
Most (kaf) ²	640	640	720	860	750	800	710	710	750	850	900	670	9.0
Min (kaf) ¹	640	640	720	860	750	800	710	710	750	850	850	639	8.92

¹ Projected release, based on Jan 2018 Min and Max Probable Inflow Projections and 24-Month Study model runs

² Projected release, based on Jan 2018 Most Probable Inflow Projections and 24-Month Study model runs

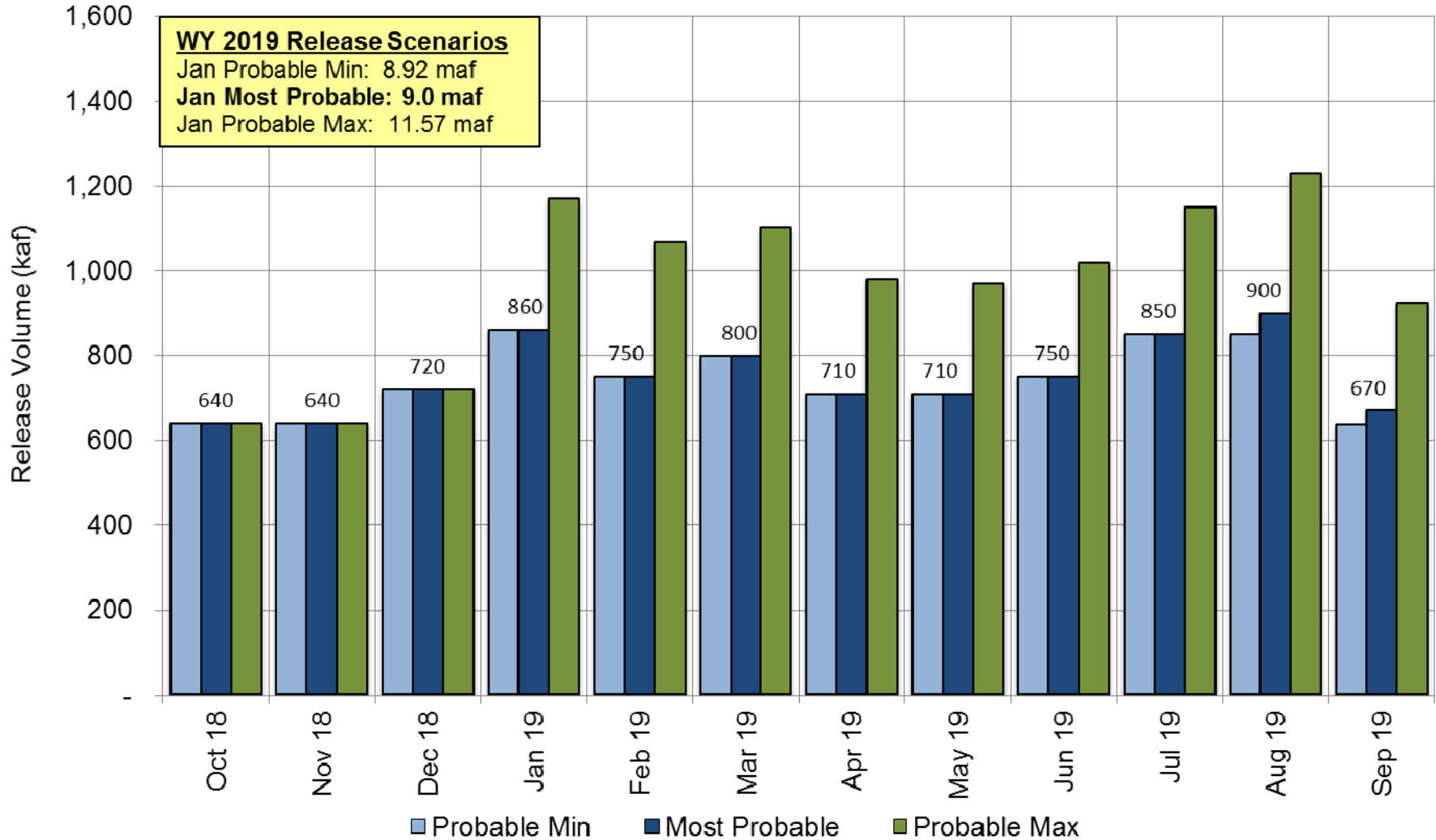
(updated 1-16-2018)

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Projected Lake Powell Monthly Release Volume Distribution

Release Scenarios for Water Year 2019

Based on January 2018 modeling



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Questions?

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Reclamation, Upper Colorado Region
Resource Management Division
Water Resources Group

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2018 Hydrograph (9.0 MAF)

Month	LTEMP Release, (kaf)	BOR/WAPA Planned Release, (kaf)
OCT	640	640
NOV	640	630
DEC	720	740
JAN	860	860
FEB	750	730
MAR	800	800
APR	710	705
MAY	710	705
JUN	750	760
JUL	850	860
AUG	900	900
SEP	670	670
TOTALS		

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