RECLAMATION

Managing Water in the West

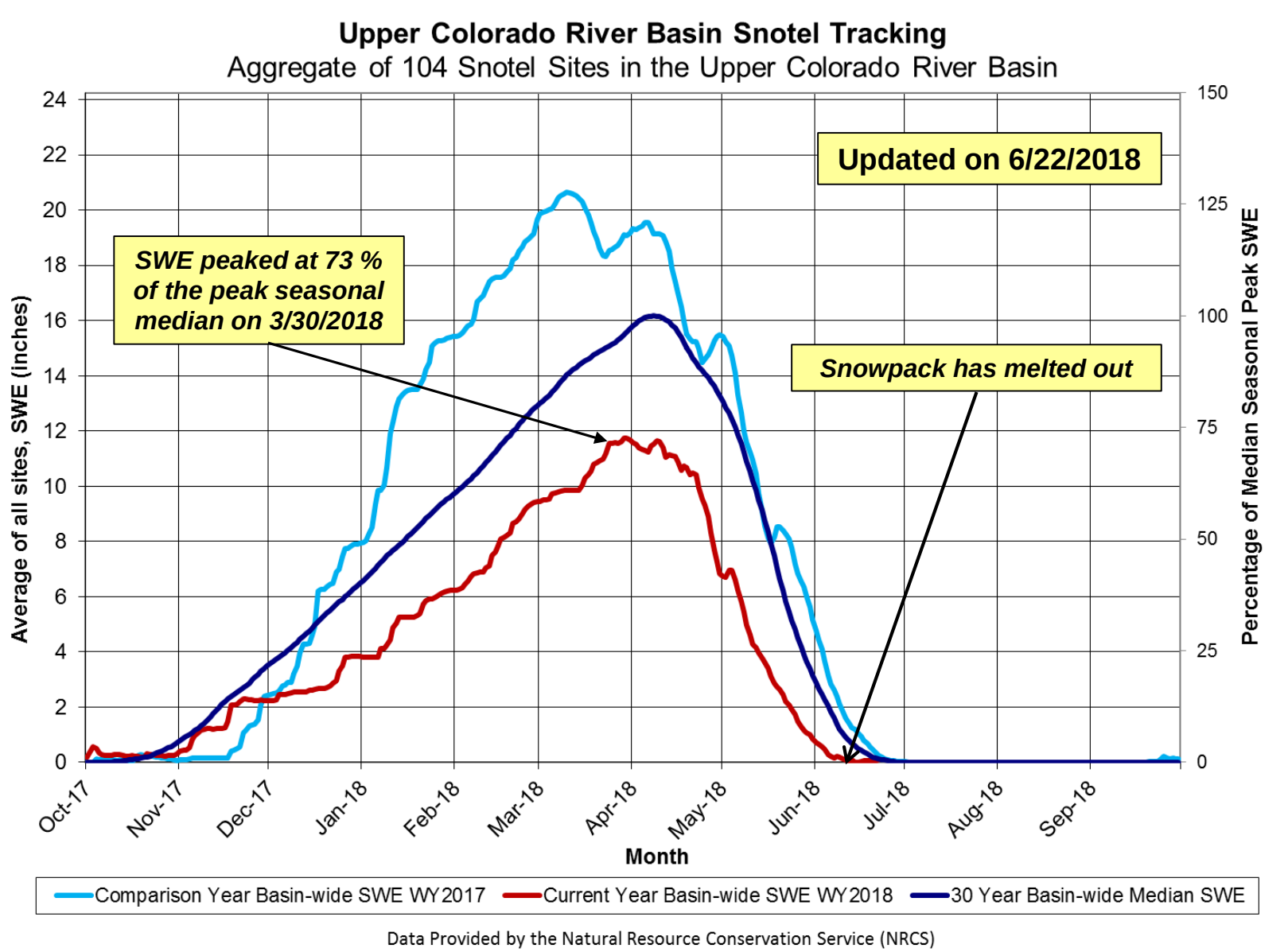
Basin Hydrology, Water Years 2018-2019 Operations

Glen Canyon Technical Work Group

June 25, 2018

U.S. Department of the Interior
Bureau of Reclamation

Snow Conditions



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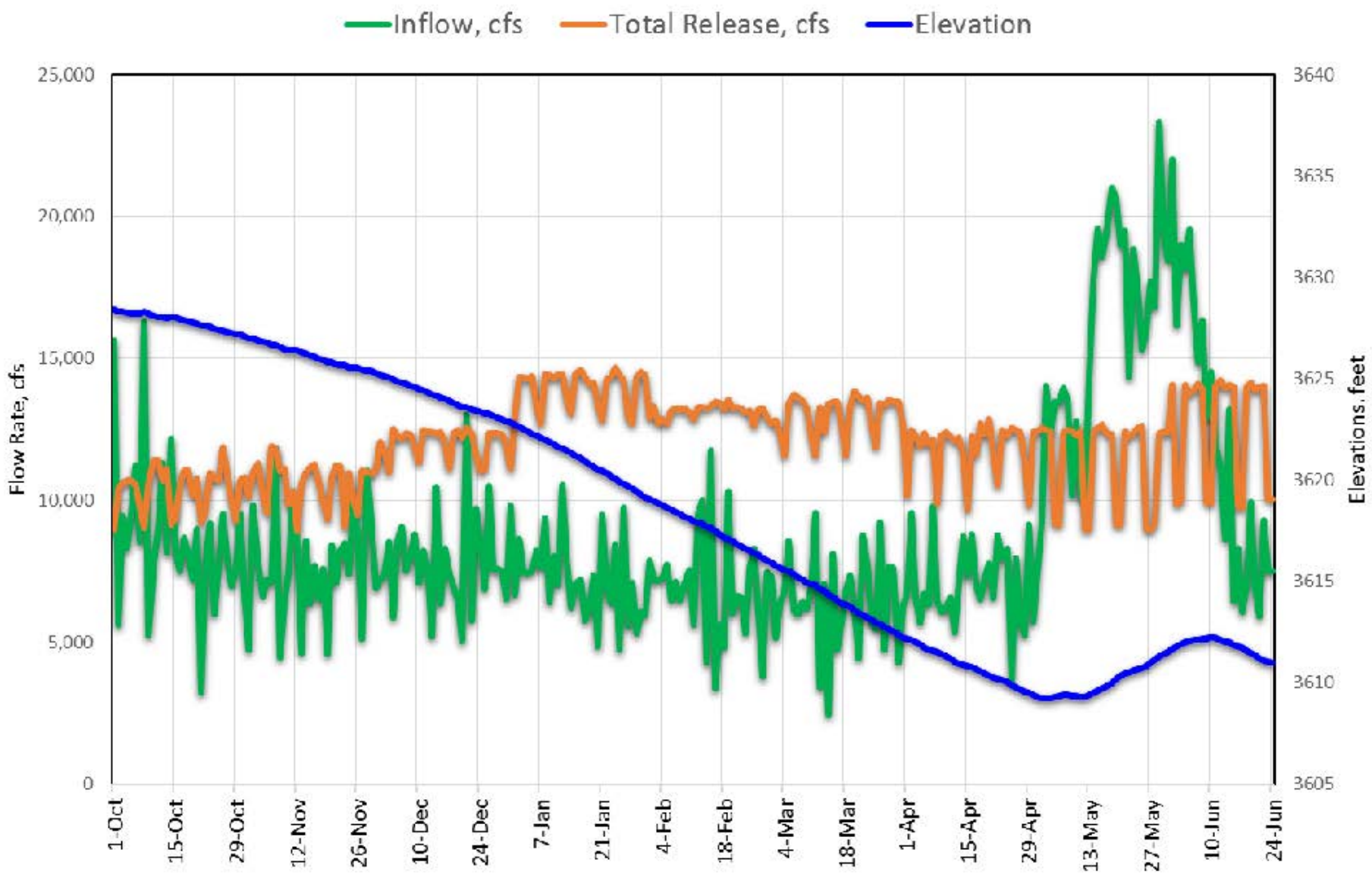

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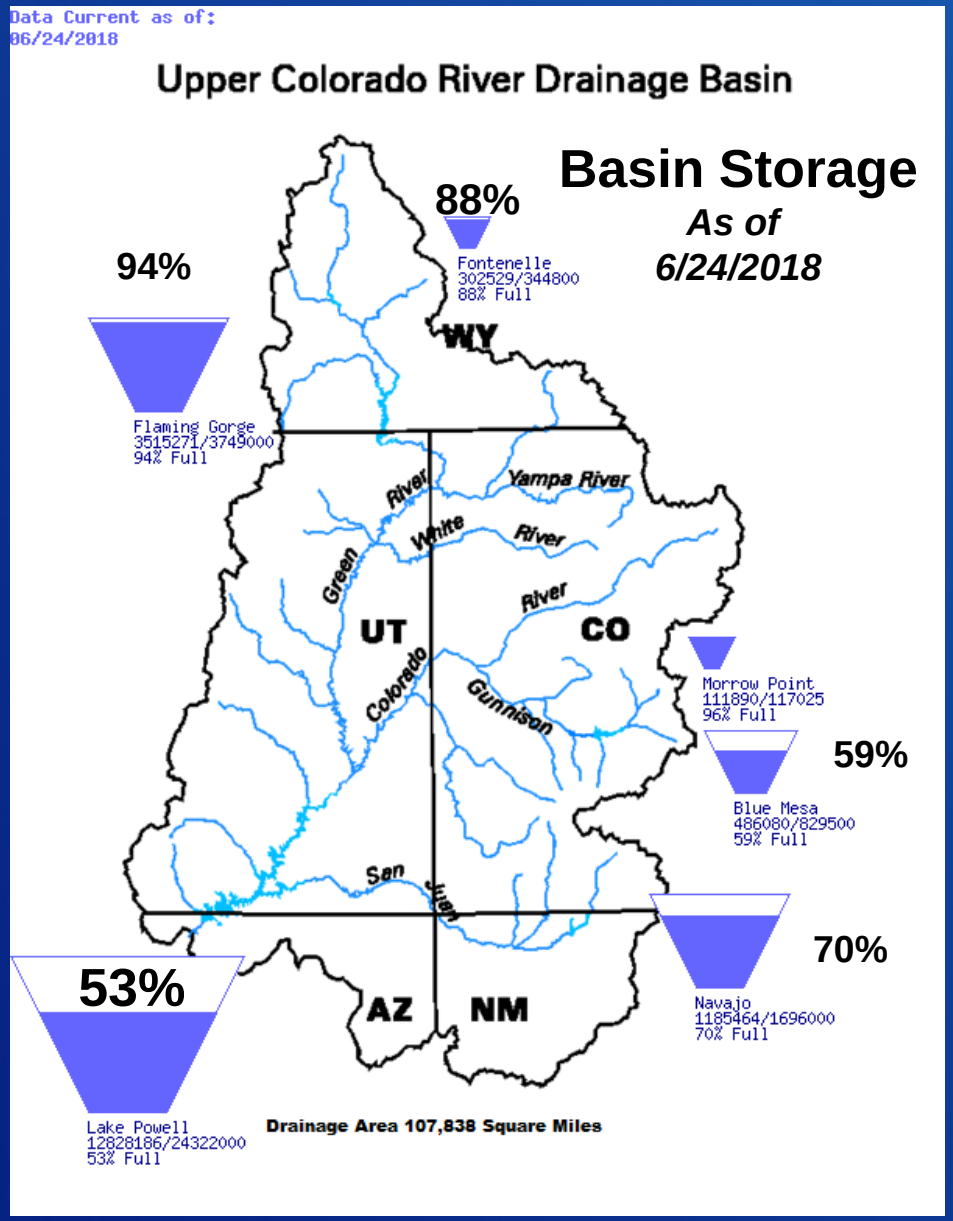
Upper Basin Storage



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

2018 April to July Inflow Forecast

Issued June 18, 2018

Reservoir	A-J Forecast (KAF)	Percent of Average[1]
Fontenelle	980	135%
Flaming Gorge	1,100	112%
Blue Mesa	260	39%
Navajo	174	24%
Powell	2,650	37%

[1] percent of average based on period 1981-2010.

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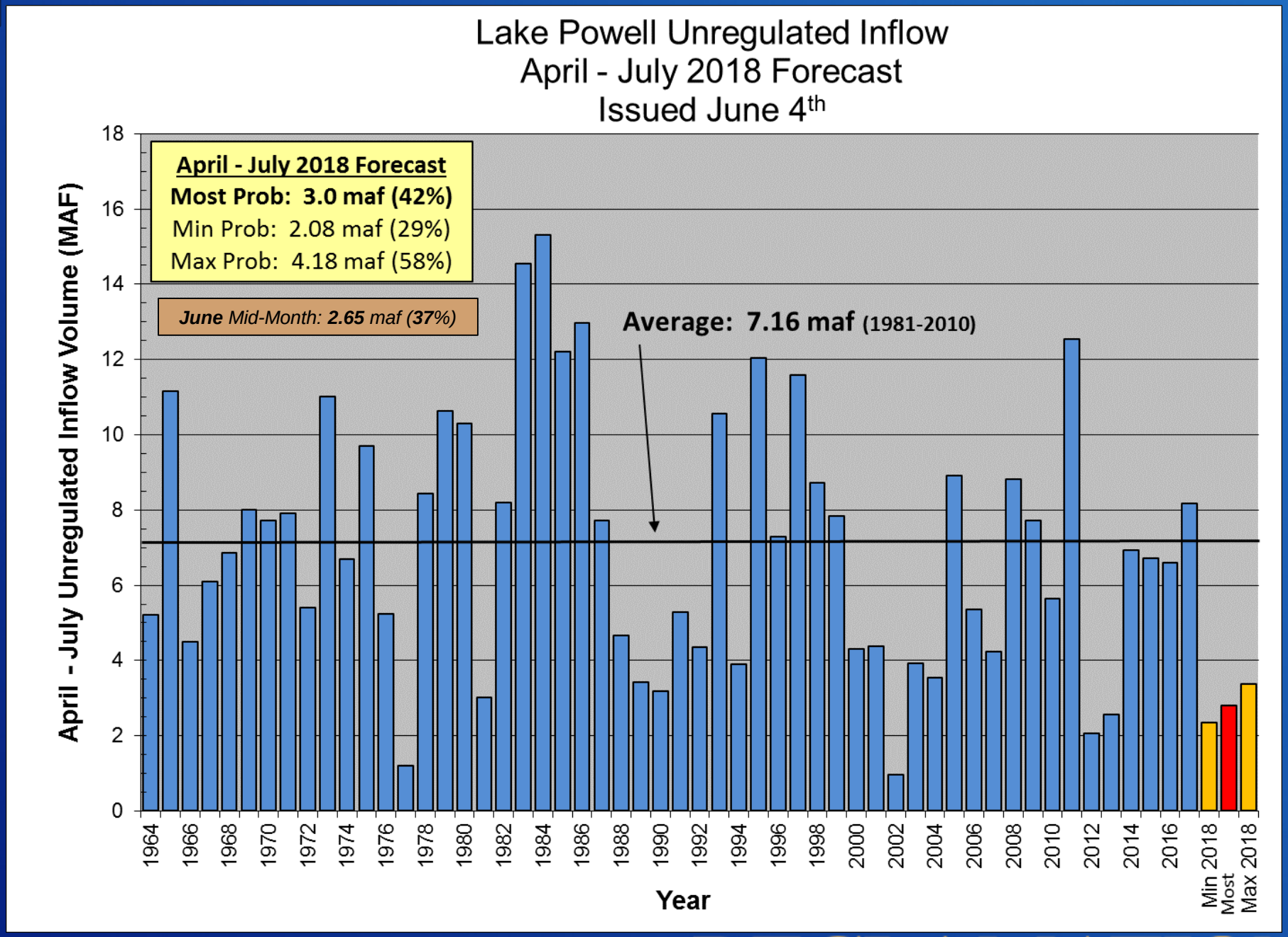

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Lake Powell 2018 Operating Tier
Upper Elevation Balancing

- 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

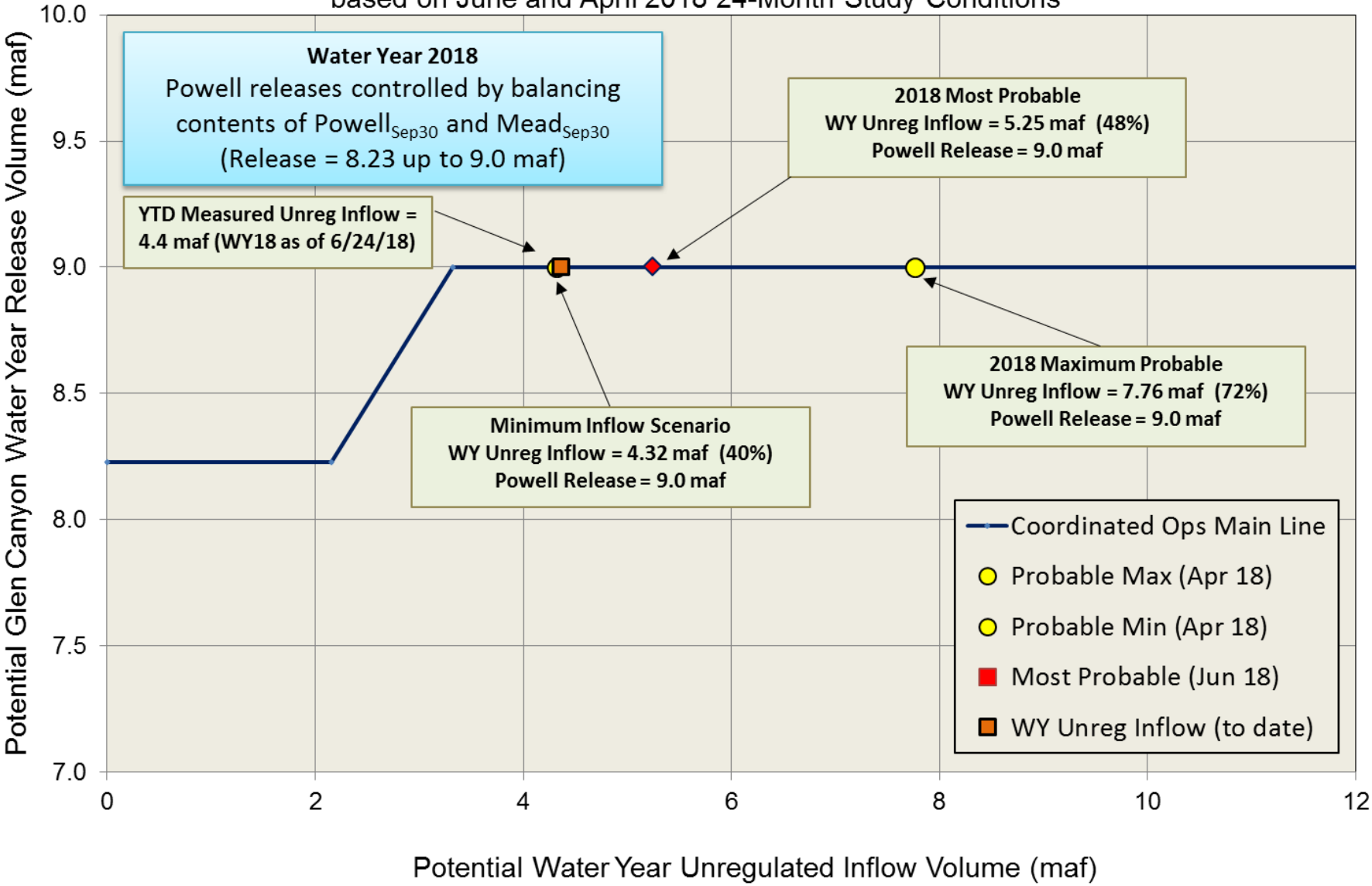
Lake Powell

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 Tier**[3] 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

RECLAMATION

Potential Lake Powell Release Scenarios

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



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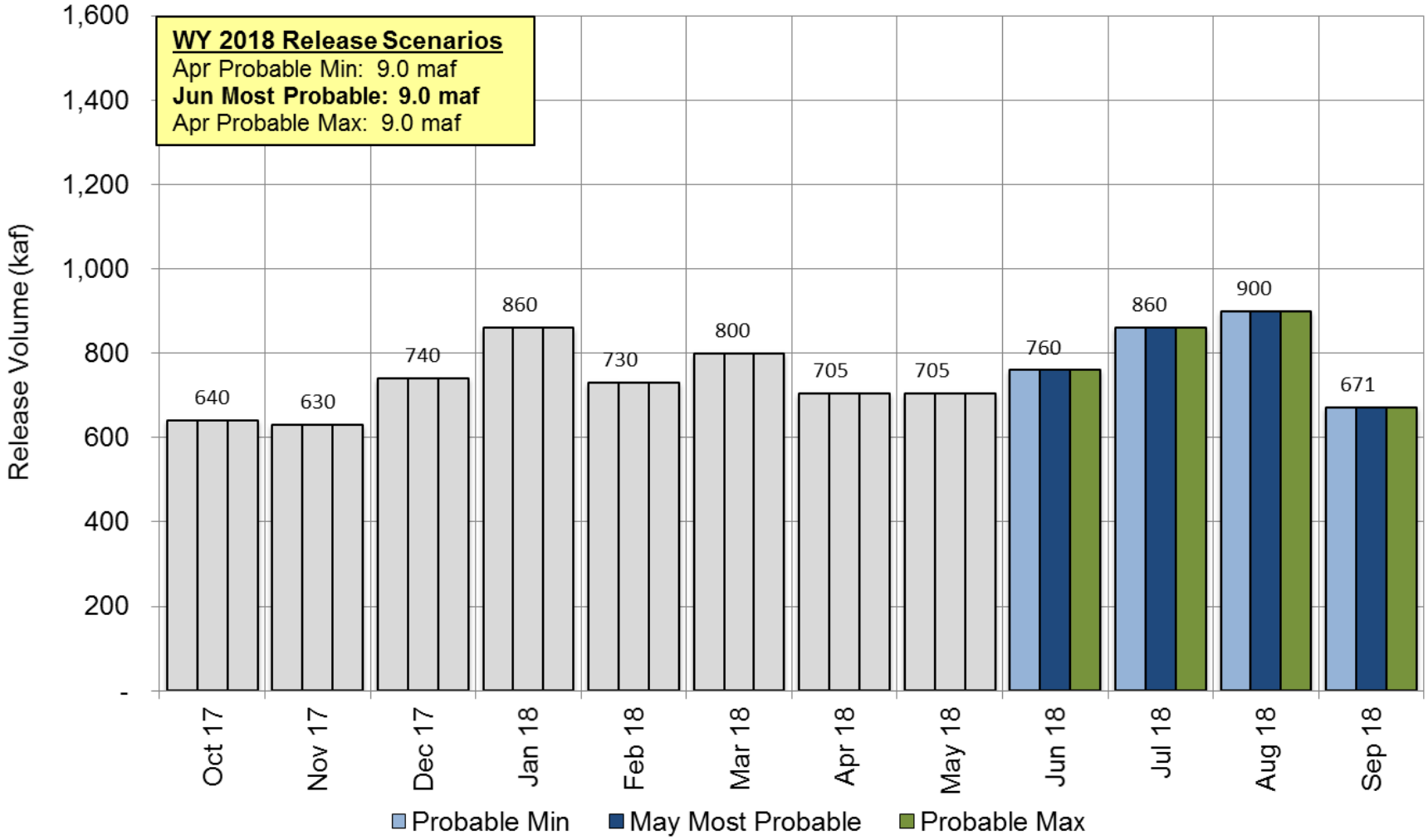
Projected Lake Powell Monthly Release Volume Distribution

Release Scenarios for Water Year 2018

Based on June and April 2018 modeling



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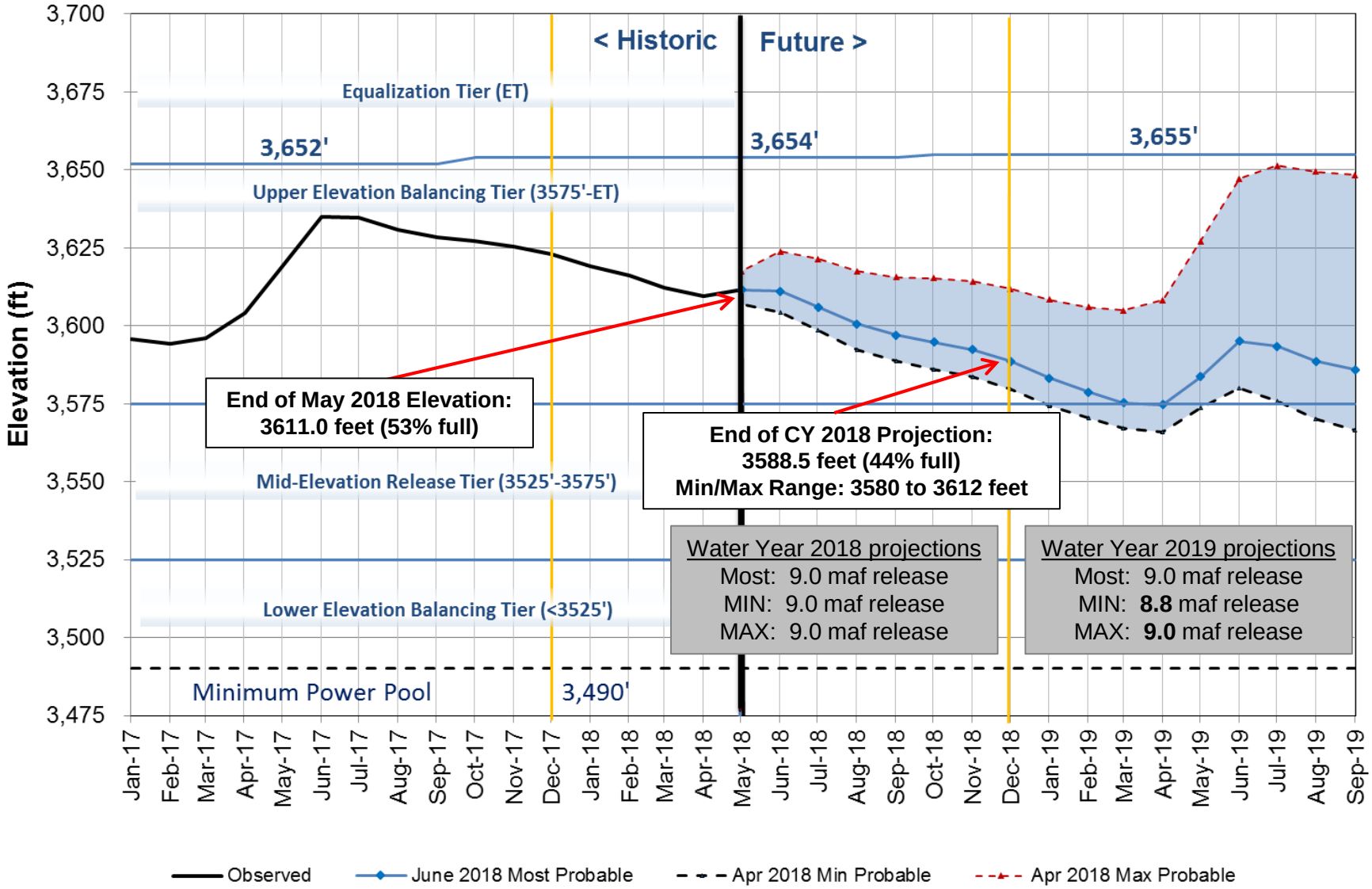
Lake Powell End of Month Elevations

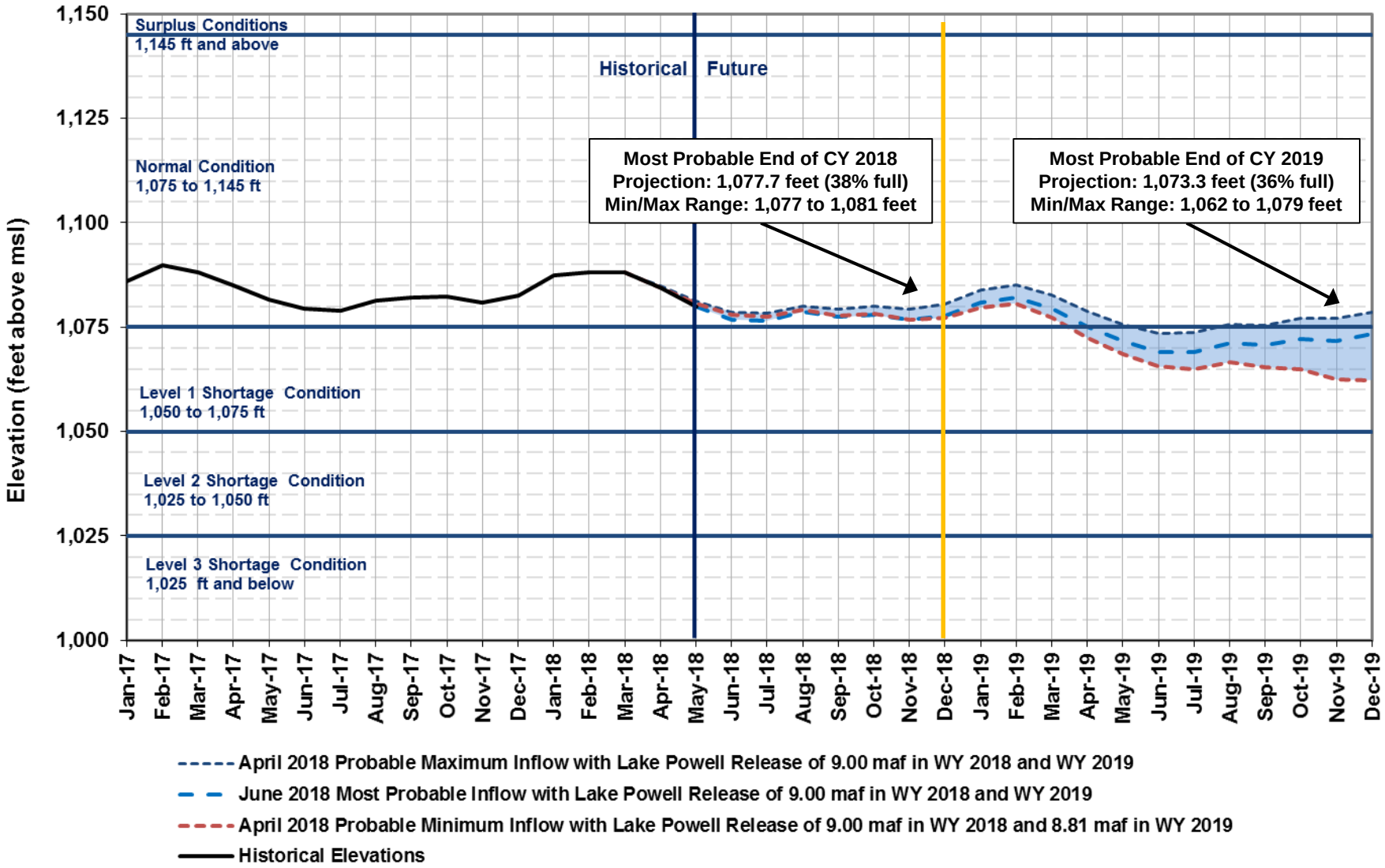
Historic and Projected based on June and April 2018 Modeling



RECLAMATION

Lake Mead End of Month Elevations

Projections from the April and June 2018 24-Month Study Inflow Scenarios



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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													
2													
3													
4													
5													
6													
7													
8													
Units Available	6	6/4	4/6	6	4/6	5/6	5/6	5	6/7	7	7	5	
Capacity (cfs)	**21,000**	**13,200**	**13,200**	**20,600**	**13,000**	**12,000**	**15,700**	**15,600**	**12,200**	**23,900**	**23,900**	**12,600**	
Capacity (kaf/month)	1,290	970	1,170	1,260	780	1,060	1,130	980	1,210	1,470	1,470	1,190	
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	750	780	683	700	760	860	900	670	**9.0**

(updated 6-11-2018)

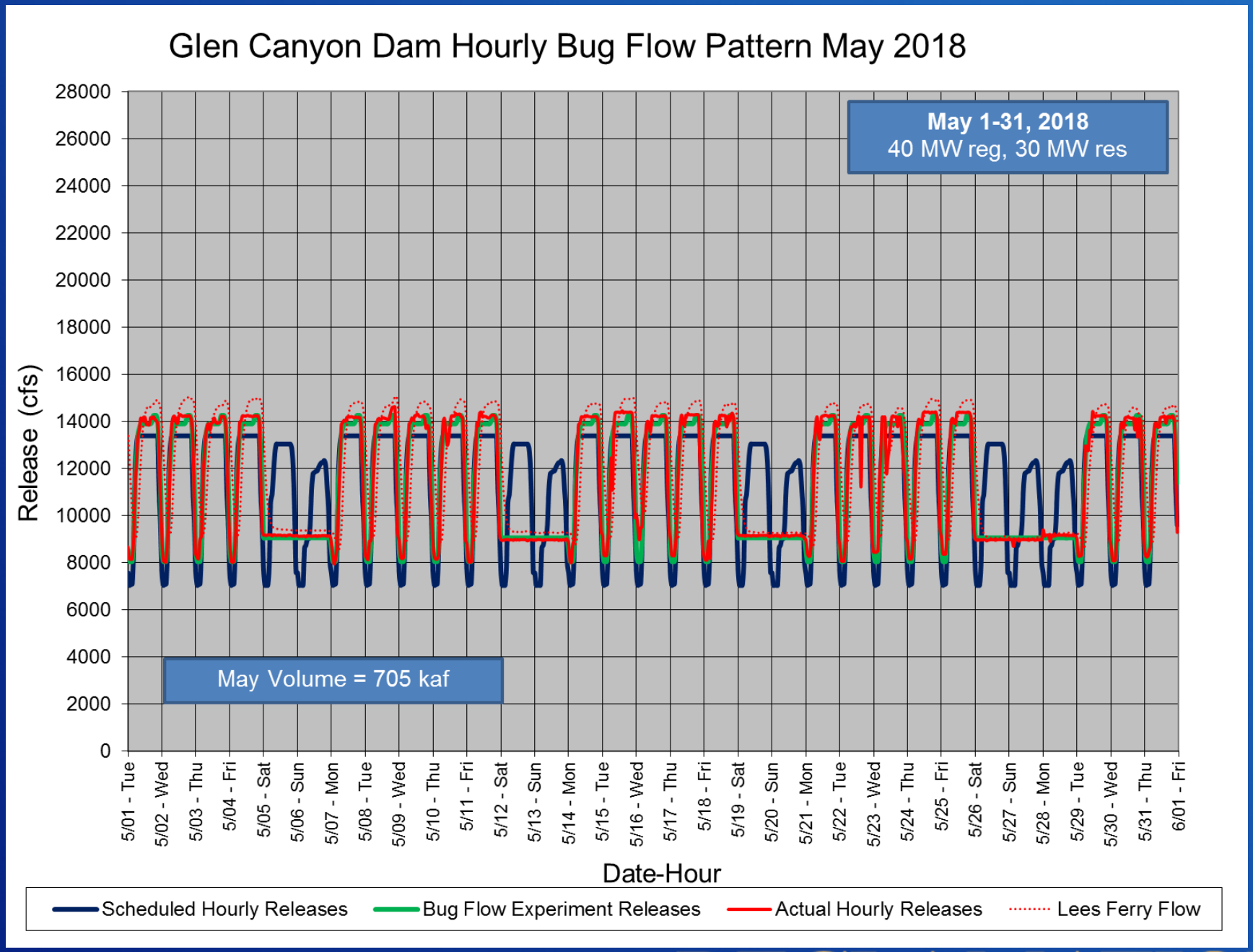
1 **Projected release, based on Apr 2018 Min and Max Probable Inflow Projections and 24-Month Study model runs**

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

RECLAMATION

Experimental Macroinvertebrate Production Flow (Bug Flow)

- Approved by Assistant Sec. Water & Science on April 13.
  - Experiment is for May through August
  - Steady weekend flows.
  - Normal hydropower production flows during week days.
  - No monthly or weekly volumes flow changes.
  - Week day fluctuating flows follow LTEMP guide lines.



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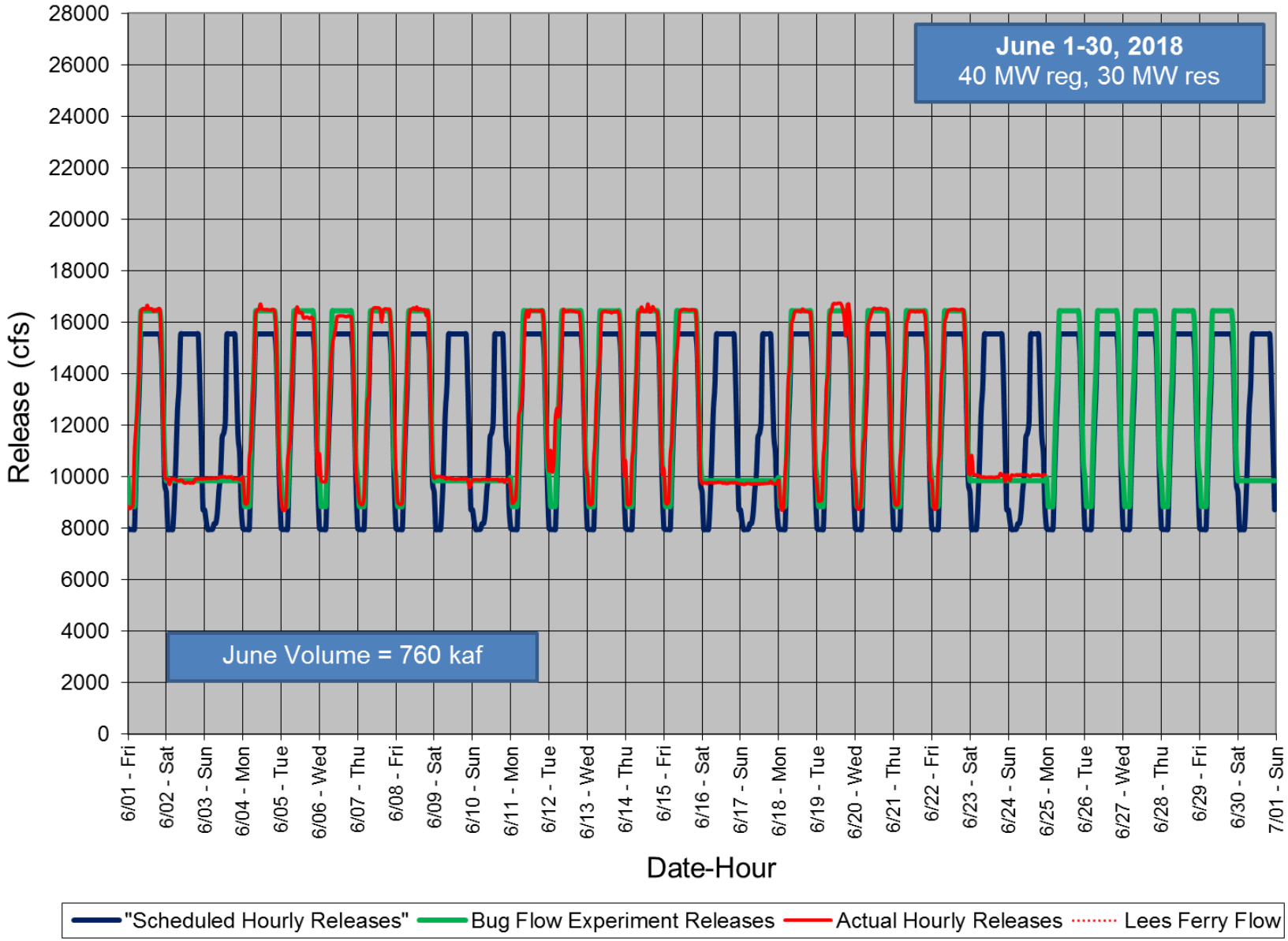
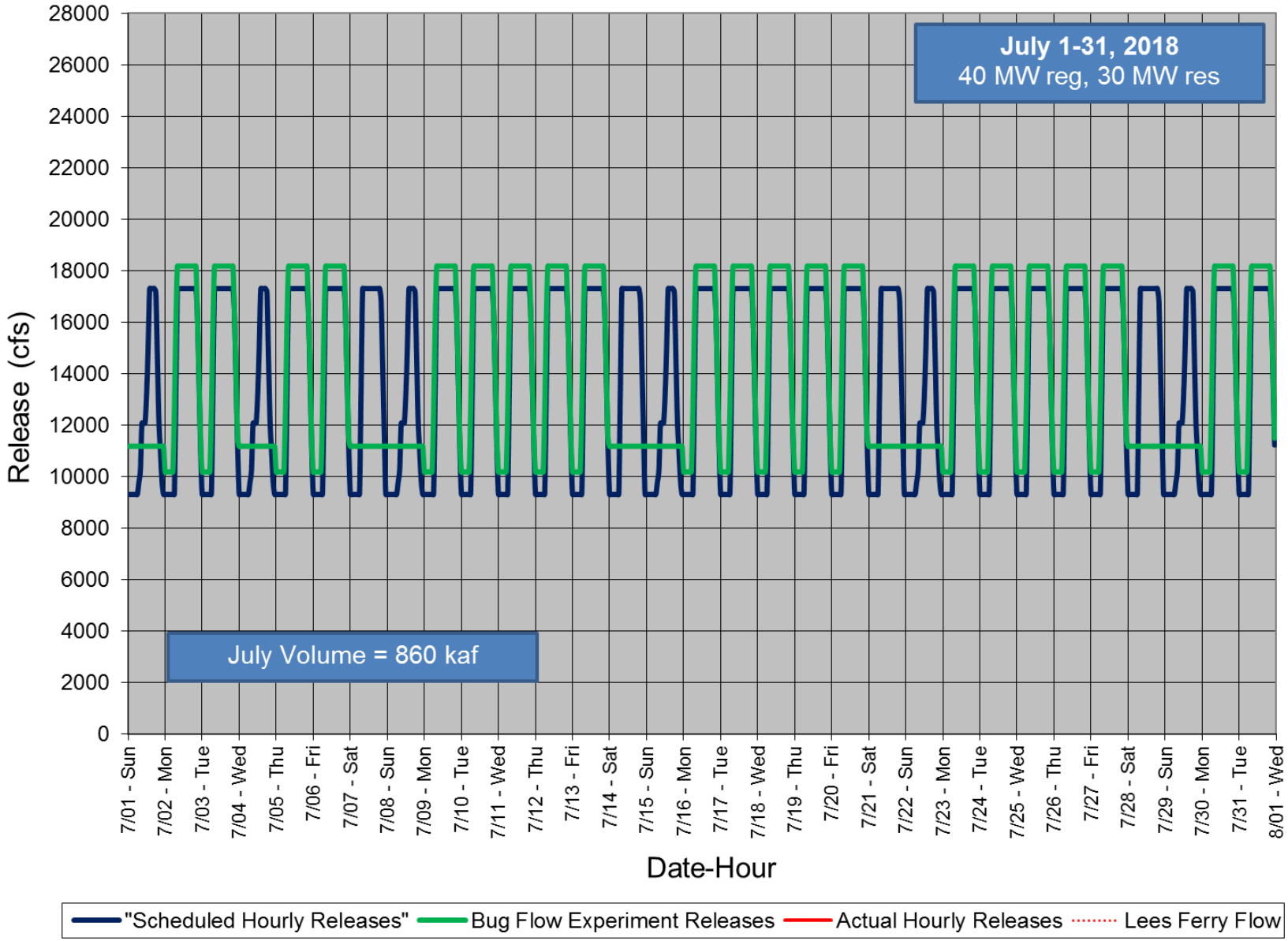
Potential Glen Canyon Dam Hourly Bug Flow Pattern June 2018



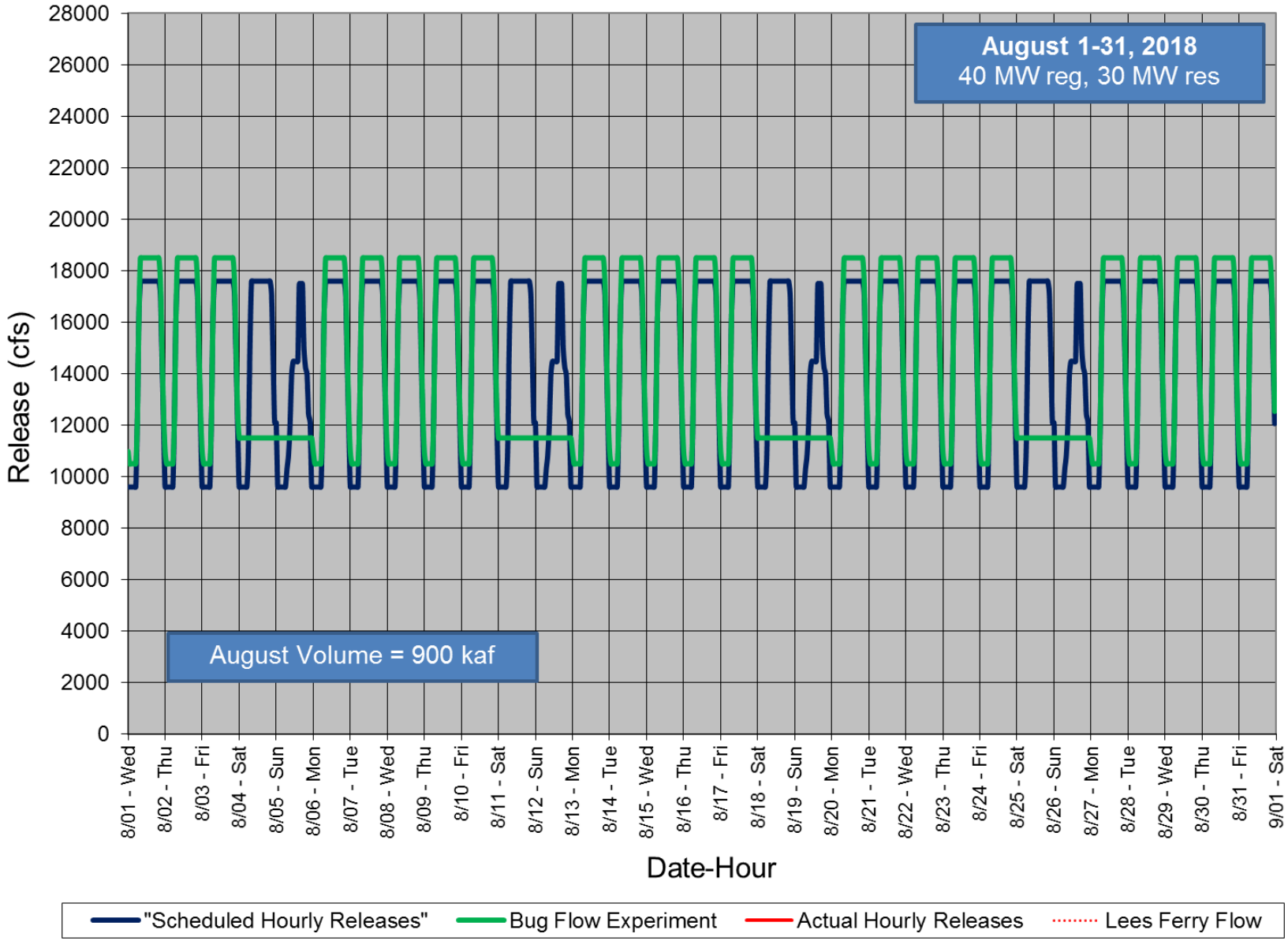
RECLAMATION

Potential Glen Canyon Dam Hourly Bug Flow Pattern July 2018



RECLAMATION

Potential Glen Canyon Dam Hourly Bug Flow Pattern August 2018



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Water Year 2019 Projected Operations

RECLAMATION

Lake Powell 2019 Operating Tier Scenarios

Based on June and April 2018 modeling

Inflow Scenario	Operating Tier Release Volume
Minimum Probable	Upper Elevation Balancing 8.8 maf
Most Probable	Upper Elevation Balancing 9.0 maf
Maximum Probable	Upper Elevation Balancing 9.0 maf

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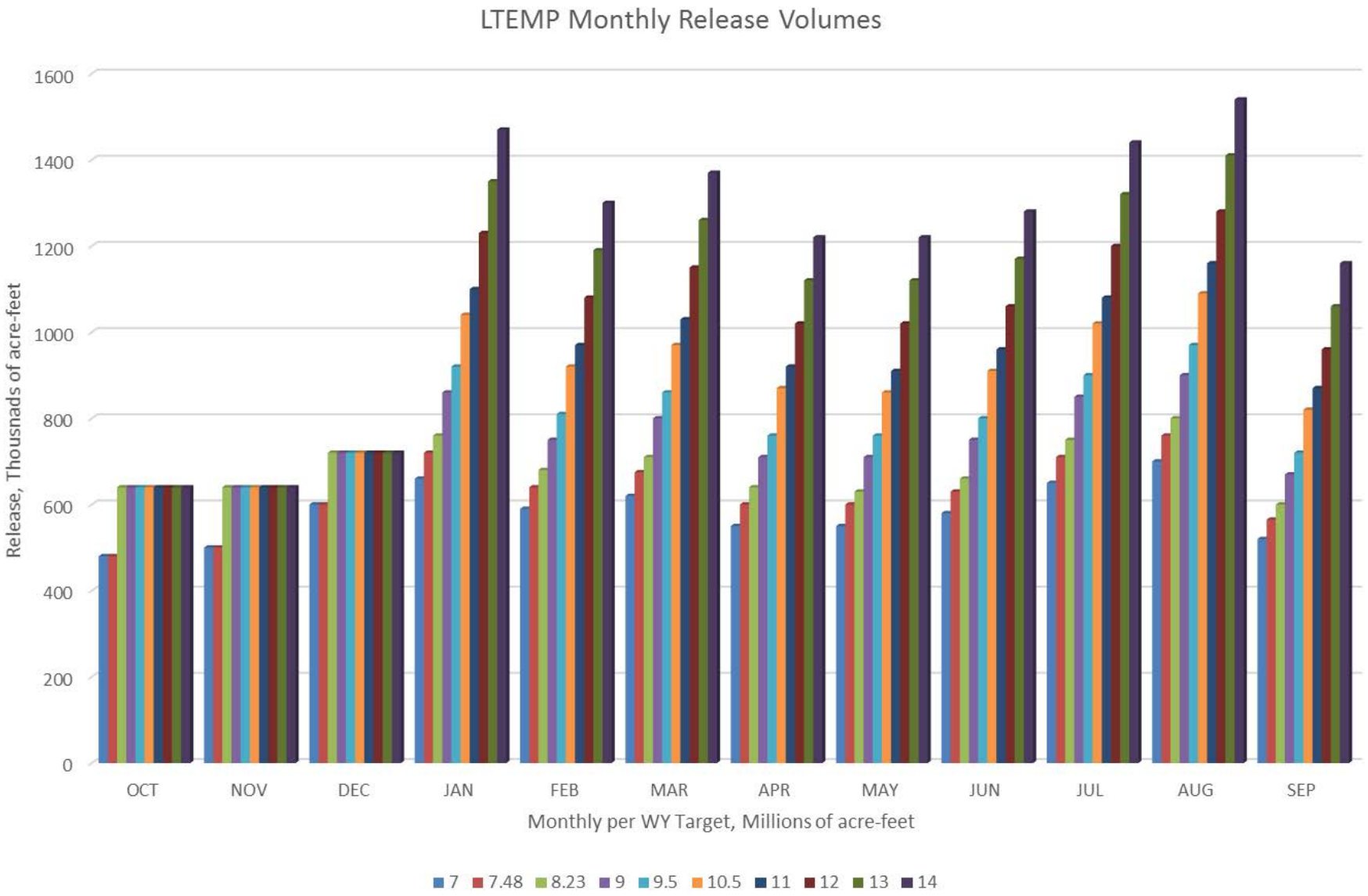

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LTEMP Monthly Release Volumes

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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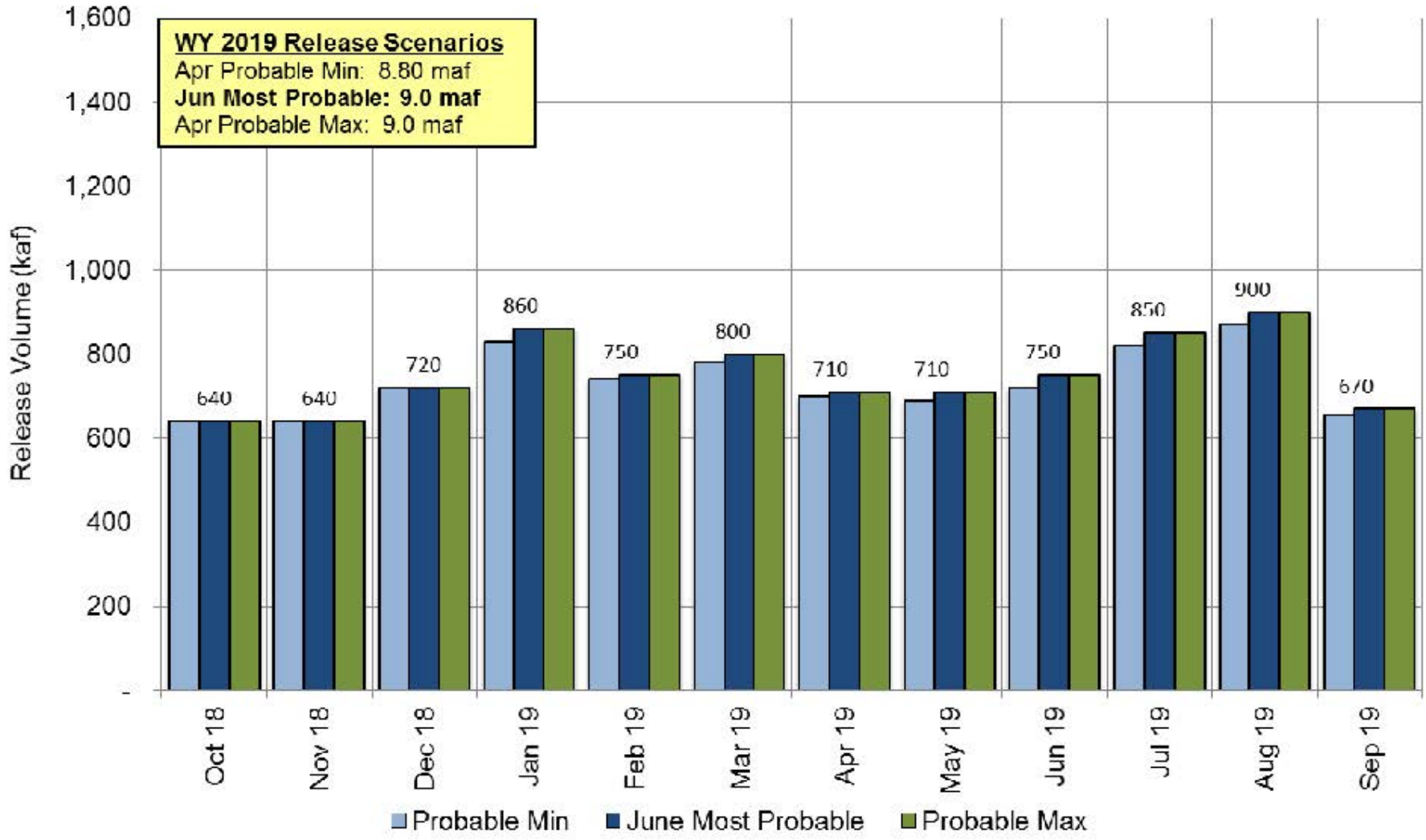
Projected Lake Powell Monthly Release Volume Distribution

Release Scenarios for Water Year 2019

Based on June and April 2018 modeling



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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	
Units Available	6	8	6	6	6	4/6	6	7	8	8	8	6	
Capacity (cfs)	**19,100**	**26,100**	**19,100**	**19,100**	**19,100**	**12,200**	**19,000**	**22,700**	**26,100**	**26.100**	**26,100**	**19,100**	
Capacity (kaf/month)	1,240	1,550	1,200	1,170	1,060	1,140	1,190	1,480	1,550	1,600	1,600	1,180	
Max (kaf) [1]	640	640	720	860	750	800	710	710	750	850	900	670	**9.0**
Most (kaf) [2]	640	640	720	860	750	800	710	710	750	850	900	670	**9.0**
Min (kaf) [1]	640	640	720	820	730	760	690	680	710	810	860	644	**8.7**

(updated 6-11-2018)

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

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

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Questions?

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Water Resources Group

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