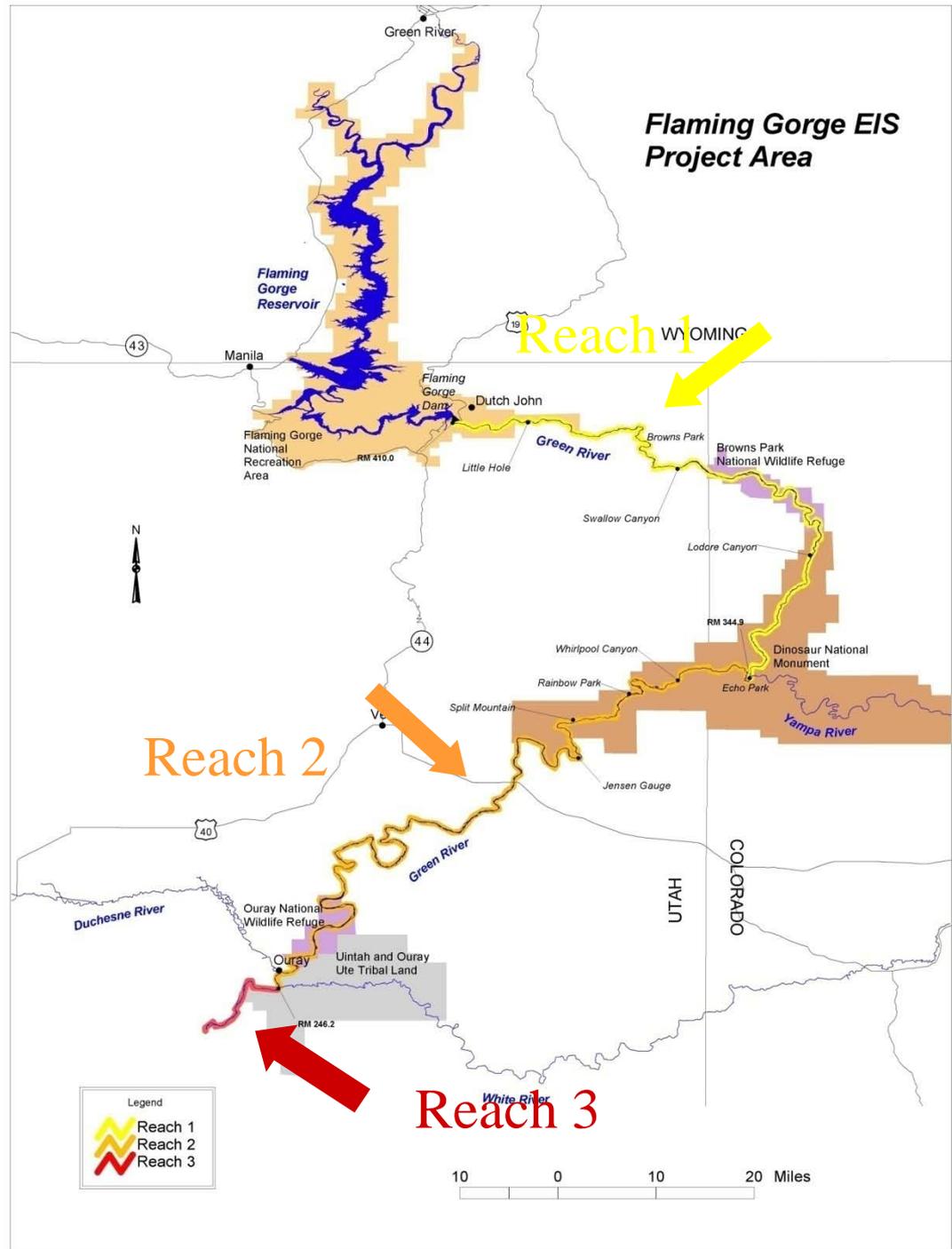




Flaming Gorge TWG Flow and Temperature Recommendations Spring 2011

**Bureau of Reclamation
Upper Colorado Region**

GEOGRAPHIC SCOPE



Percentage Exceedances and Hydrologic Classifications

Hydrologic Classification	Percentage Exceedance Range
Wet	<10
Moderately Wet	30 to 10.1
Average	70 to 30.1
Moderately Dry	90 to 70.1
Dry	>90

Recovery Program Research Request

1. Research-driven
2. Time Reach 1 flows with the initial appearance of larval suckers and meet 18,600 cfs in Reach 2 for at least 2 weeks, if possible based on hydrology
3. Maintain dam releases to achieve a minimum flow of 15,000 cfs for a minimum of 5 days in reach 2 (dry and moderately dry)

Moderately Wet Hydrologic Category

(May 1 inflow forecast 1320 – 1,761 KAF)

Reach	Magnitude (cfs)	Duration
Reach 1	$\geq 4,600$ cfs	That necessary to achieve duration target in Reach 2
Reach 2	$\geq 20,300$ cfs	One day
	$\geq 18,600$ cfs	2 weeks (i.e. 14 days)

FGTWG recommendation:

- Attempt to meet Recovery Program request to time Reach 1 flows with the initial appearance of larval suckers and meet 18,600 cfs in Reach 2 for at least 2 weeks, if possible based on hydrology
- Attempt to meet Recovery Program request to achieve 15,000 cfs in reach 2 for a minimum of 5 days
- Downramp at 1,000 cfs/day following peak flows

Wet Hydrologic Category

(May 1 inflow forecast > 1,761 KAF)

Reach	Magnitude (cfs)	Duration
Reach 1	$\geq 8,600$ cfs	That necessary to achieve duration target in Reach 2
Reach 2	$\geq 26,400$ cfs	One day
	$\geq 22,700$ cfs	2 weeks (i.e. 14 days)
	$\geq 18,600$ cfs	4 weeks (i.e. 28 days)

FGTWG recommendation:

- Attempt to meet Recovery Program request to time Reach 1 flows with the initial appearance of larval suckers and meet 18,600 cfs in Reach 2 for at least 2 weeks
- Attempt to meet Recovery Program request to achieve 15,000 cfs in reach 2 for a minimum of 5 days
- Downramp at 1,000 cfs/day following peak flows

Average Hydrologic Category

(May 1 inflow forecast 777 – 1,320 KAF)

Reach	Magnitude (cfs)	Duration
Reach 1	≥ 4,600 cfs	That necessary to achieve duration target in Reach 2
Reach 2	≥ 18,600 cfs in 50% of average years	Two weeks (i.e. 14 days) in 25% of all average years
	≥ 8,600 cfs in 50% of average years	One week (i.e. 7 days) in 50% of average years

FGTWG recommendation:

- Attempt to meet Recovery Program request to time Reach 1 flows with the initial appearance of larval suckers and meet 18,600 cfs in Reach 2 for at least 2 weeks, if possible based on hydrology
- Attempt to meet Recovery Program request to achieve 15,000 cfs in reach 2 for a minimum of 5 days
- Downramp at 500 cfs/day following peak flows

Base Flow Request

1. Prepared by USFWS field office, Salt Lake City, in cooperation with Recovery Program
2. Reclamation selects reach 1 target according to ROD base flow range
3. Base flow target is then augmented by as much as 40% according to ROD allowances through September 30th
 - a) maintain quality Colorado pikeminnow habitat and
 - b) disadvantage/research smallmouth bass

RECLAMATION

Managing Water in the West

Flaming Gorge Working Group Meeting

Hydrology and Forecasted
Operations

April 26, 2011



U.S. Department of the Interior
Bureau of Reclamation

Flaming Gorge Working Group Meeting April 2011

Live Capacity	3.752	MAF
<u>Capacity on 4/25/11</u>	<u>3.165</u>	<u>MAF</u>
Available Space	.587	MAF
Percentage of Full	85	%

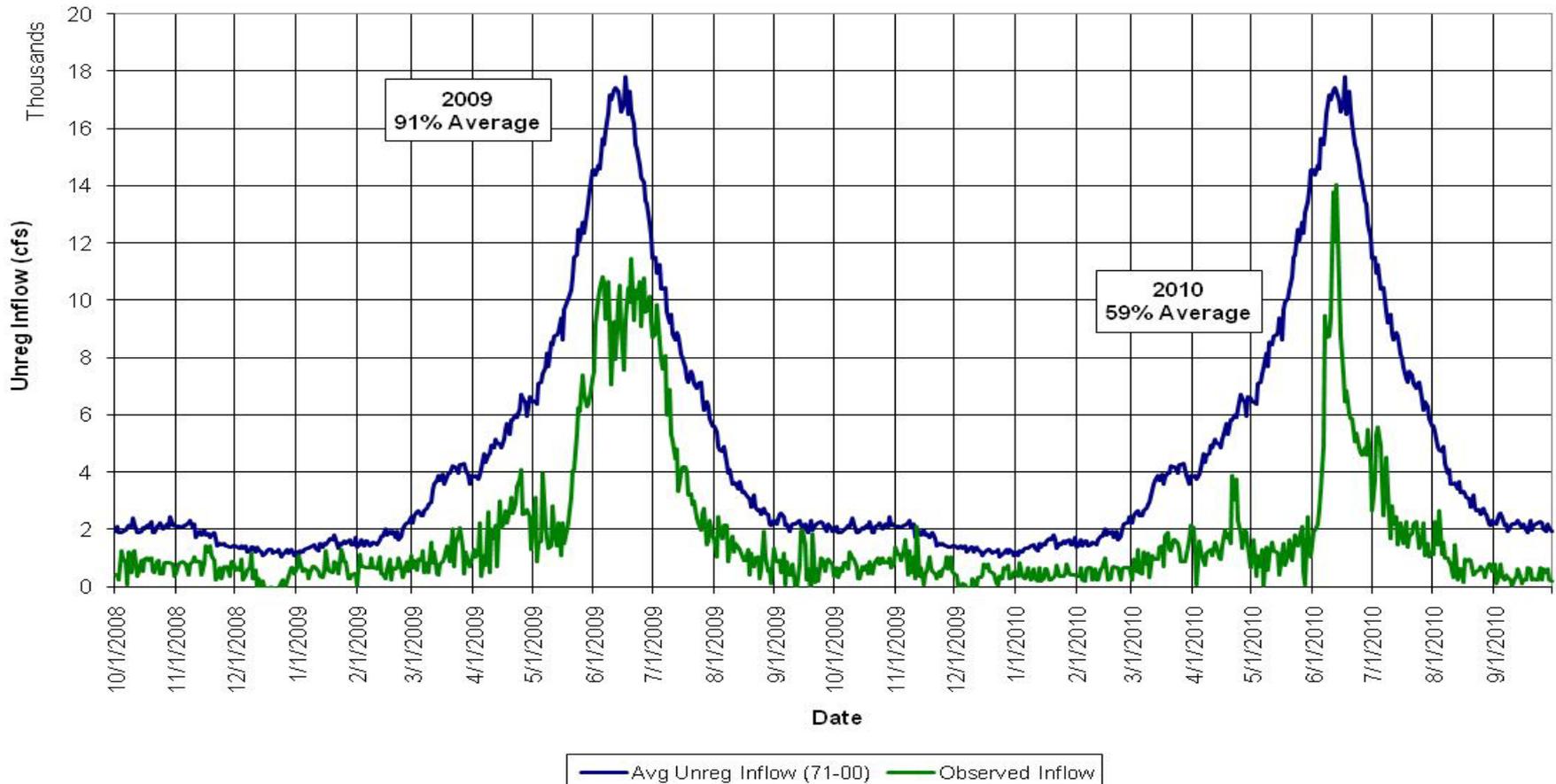
Reservoir Elev. (Min Power)	5908.00	feet
<u>Elevation on 4/25/11</u>	<u>6025.13</u>	<u>feet</u>
Elevation above (Min)	117.13	feet

Average Inflow	2,900	cfs
Average Release	3,600	cfs

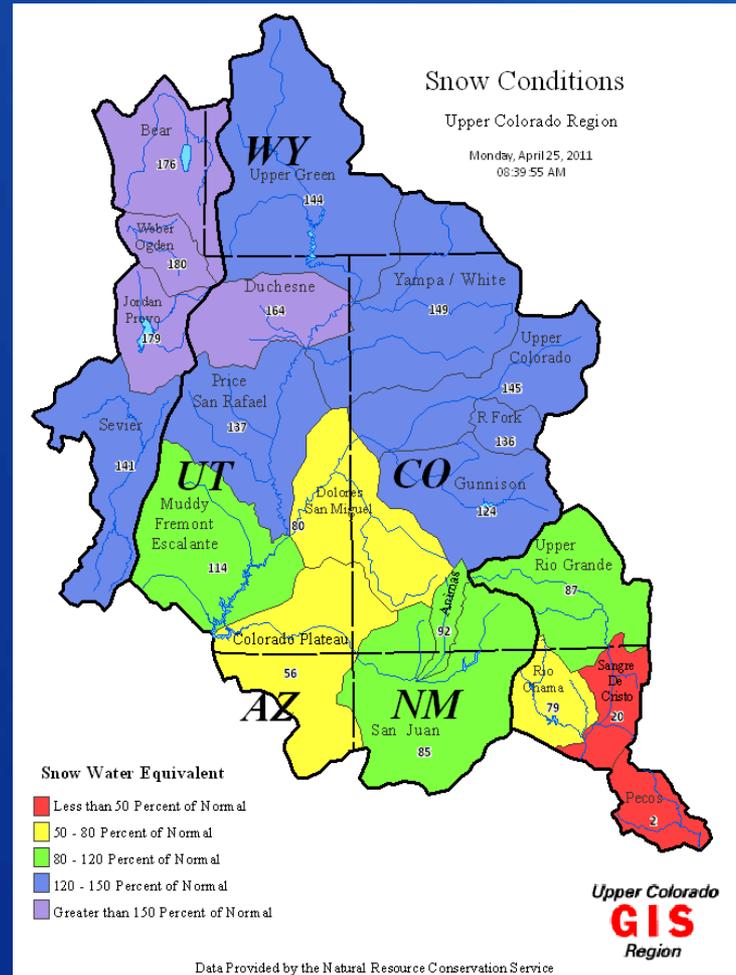
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Flaming Gorge Working Group

Flaming Gorge Unregulated Inflow
Water Year 2009 and 2010



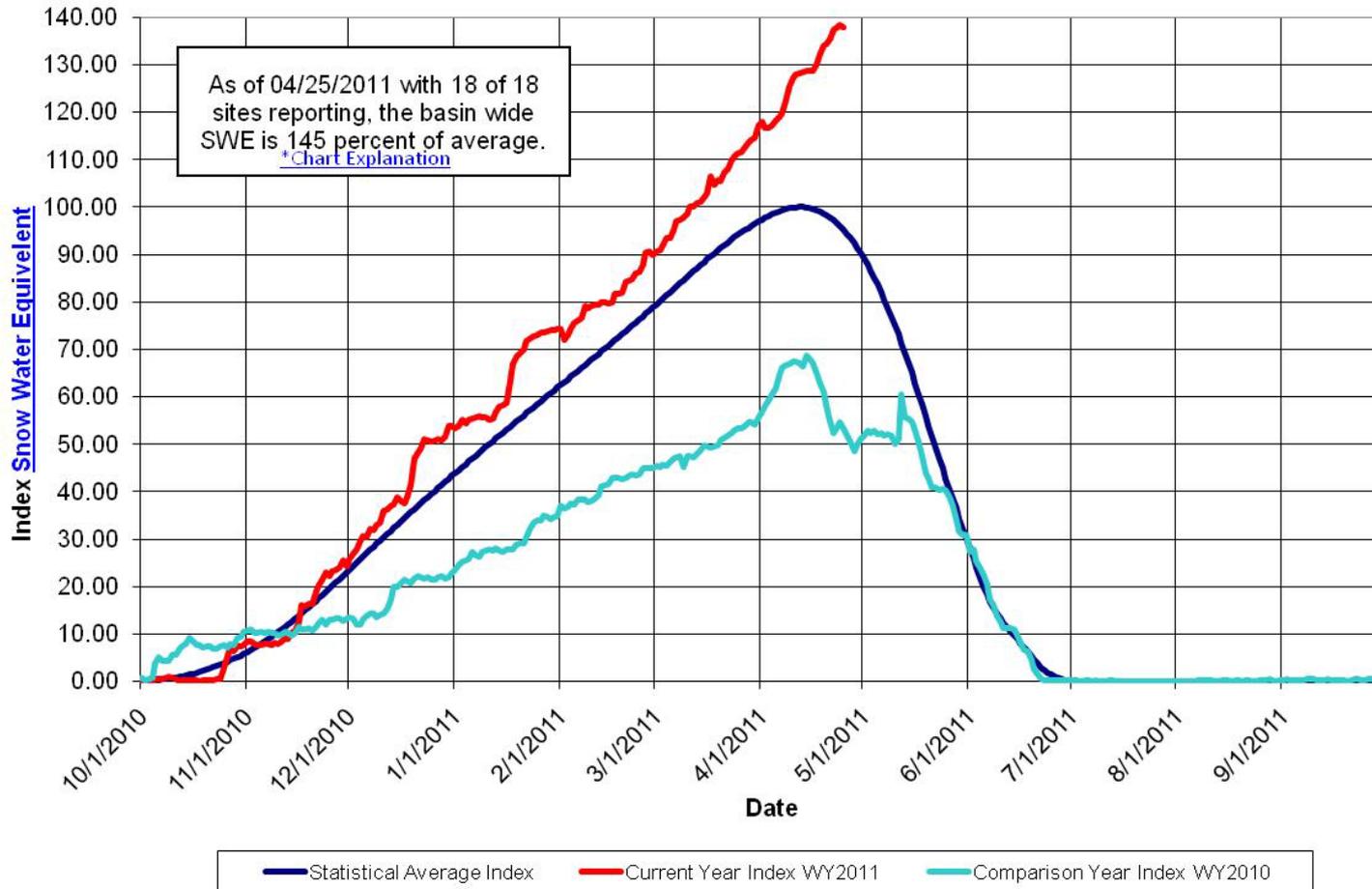
Flaming Gorge Working Group Meeting April 2011



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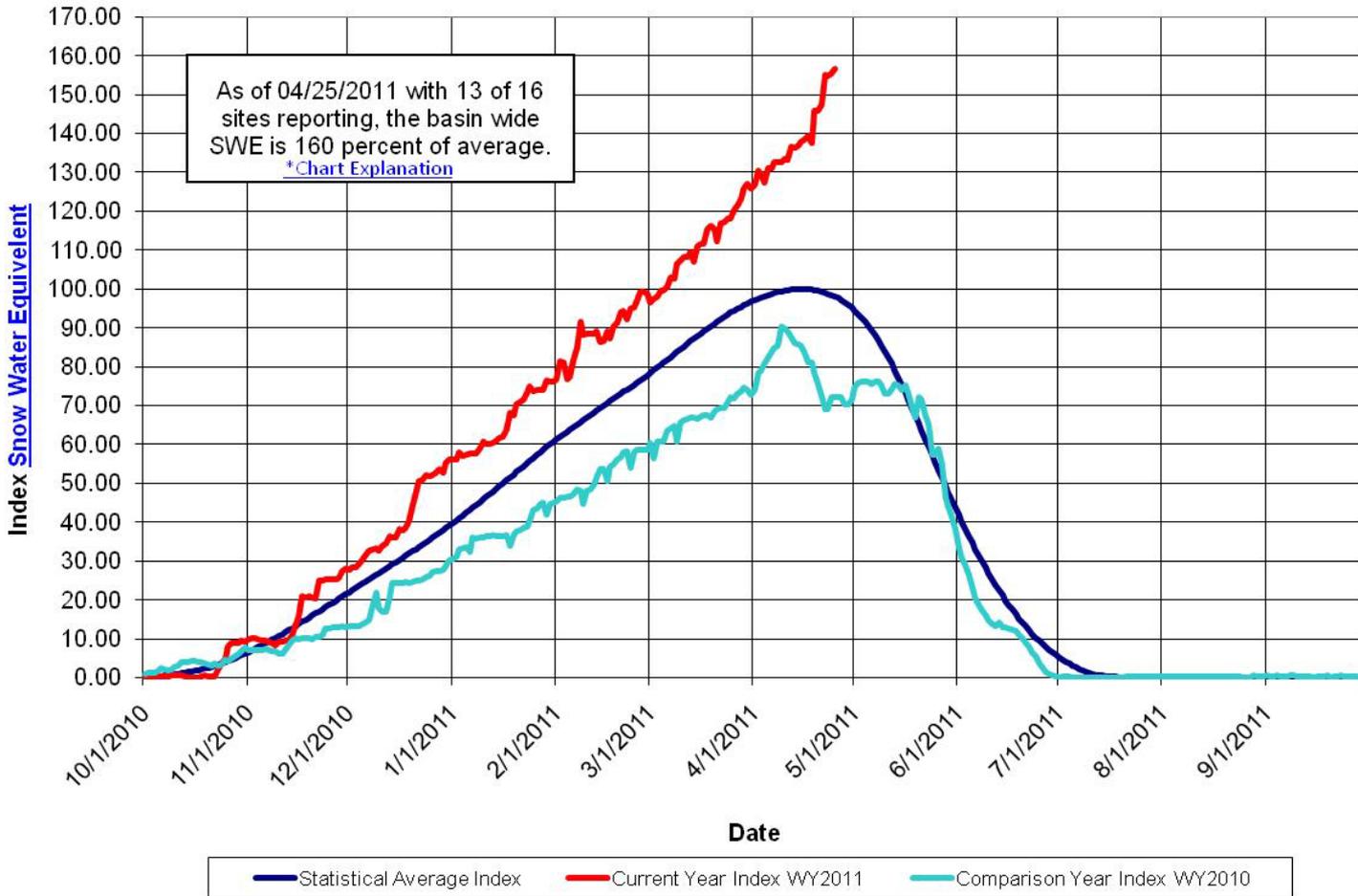
Upper Green River Basin Snotel Tracking
Aggregate of 18 Snotel Sites above Flaming Gorge Reservoir



Data Provided by the Natural Resource Conservation Service

Flaming Gorge Working Group

Upper Yampa River Basin Snotel Tracking
Aggregate of 16 Snotel Sites above Green River Confluence

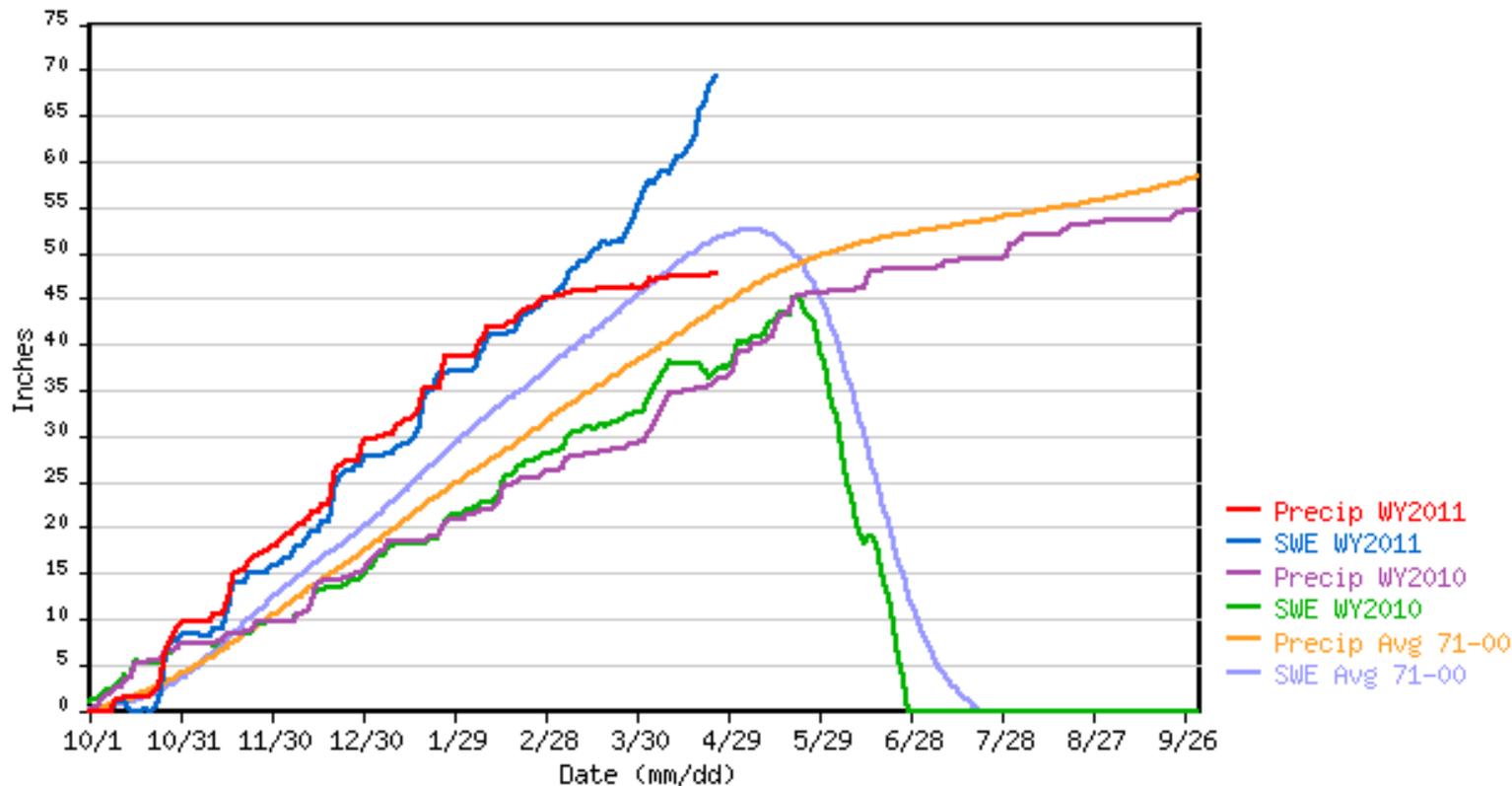


Data Provided by the Natural Resource Conservation Service

Flaming Gorge Working Group

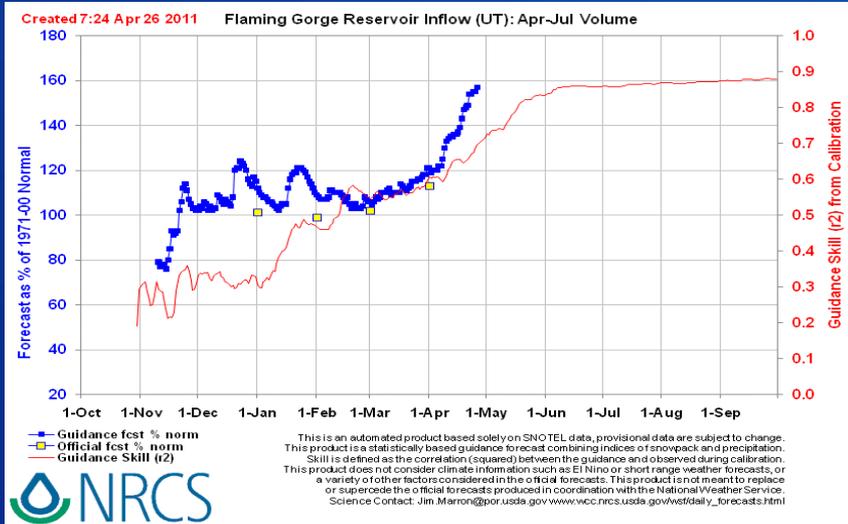
TOWER SNOTEL as of 04/25/2011

*** Provisional Data, Subject to Change ***

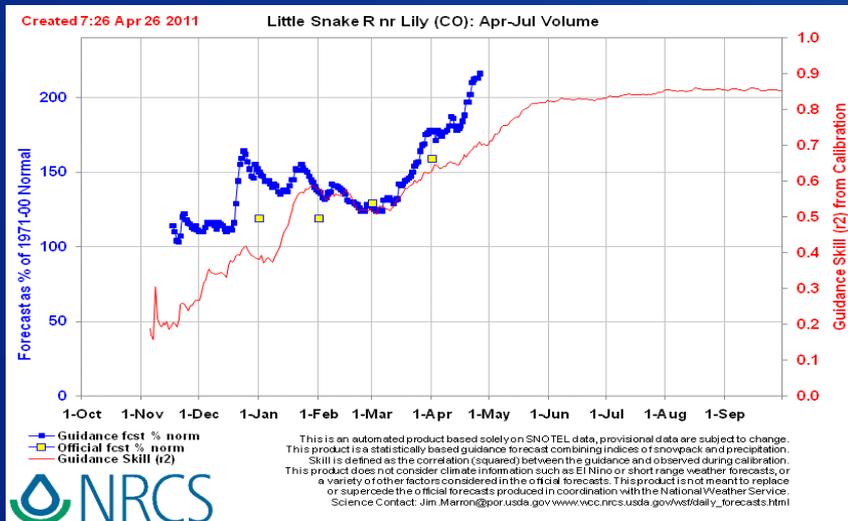


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Flaming Gorge Working Group

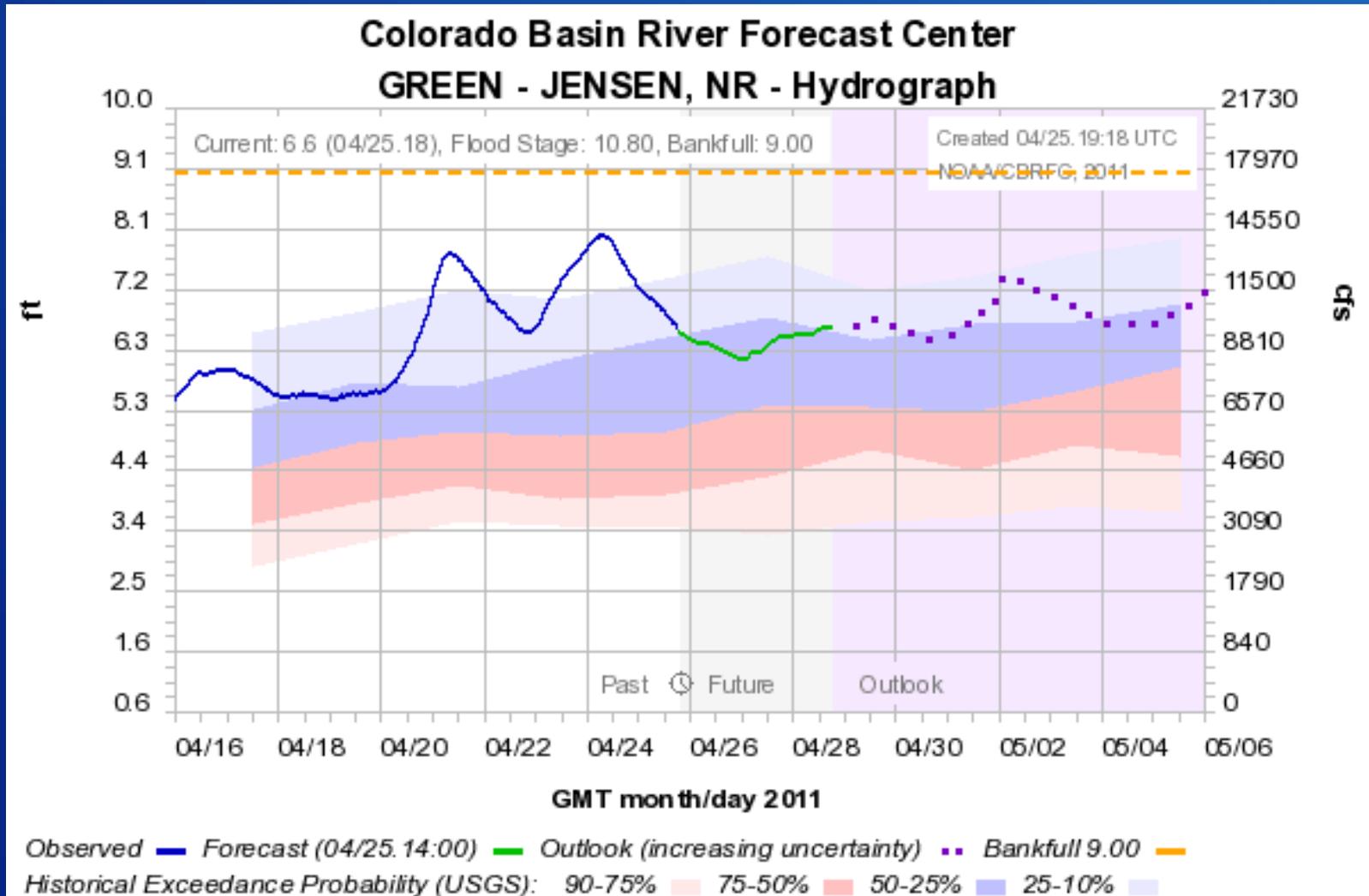


Forecast Site	April Final Forecast % of Avg	Month-to-date % change
FG Inflow	113	36
Yampa Maybell	157	17
Little Snake Lily	157	38
Duchense Randlett	200	61



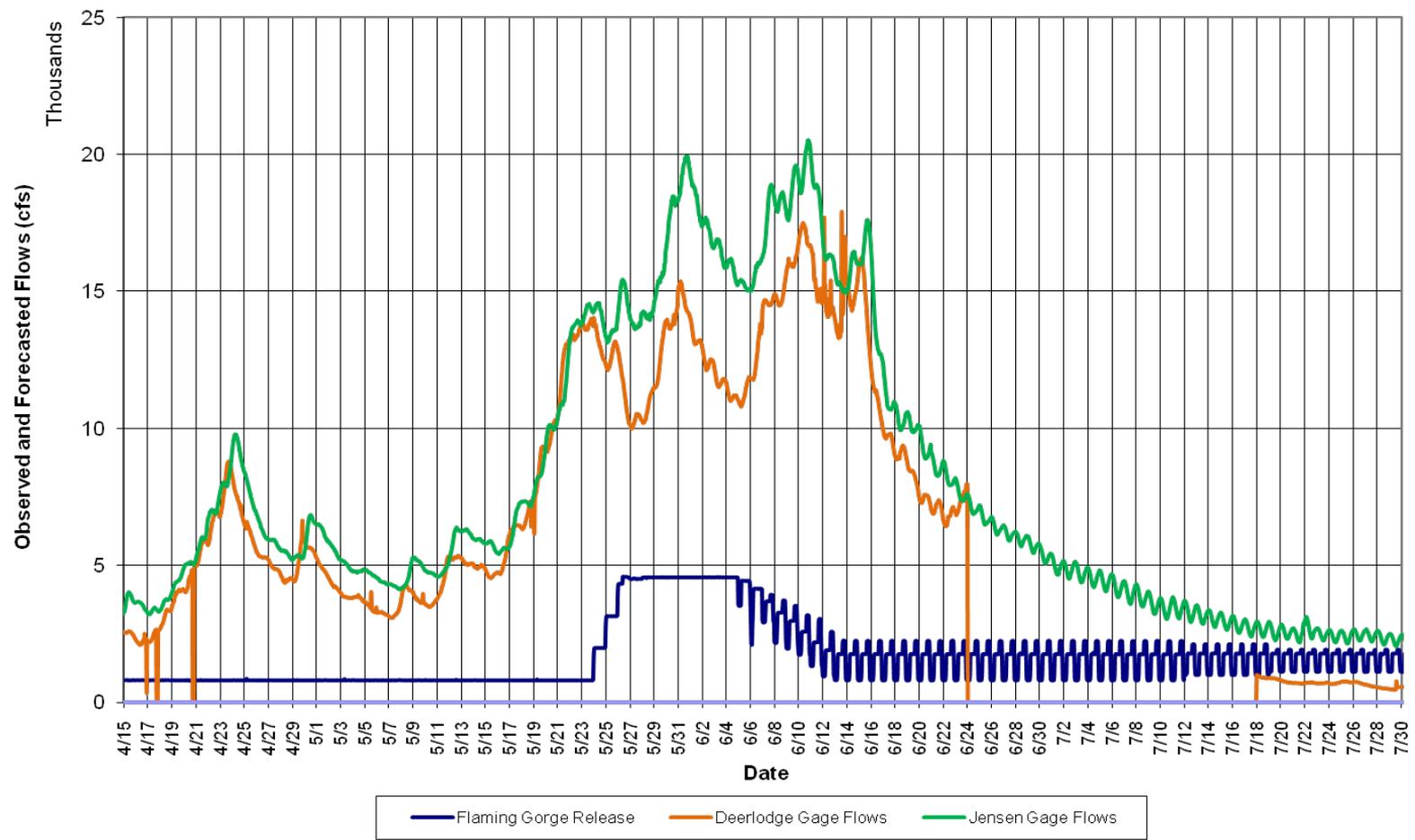
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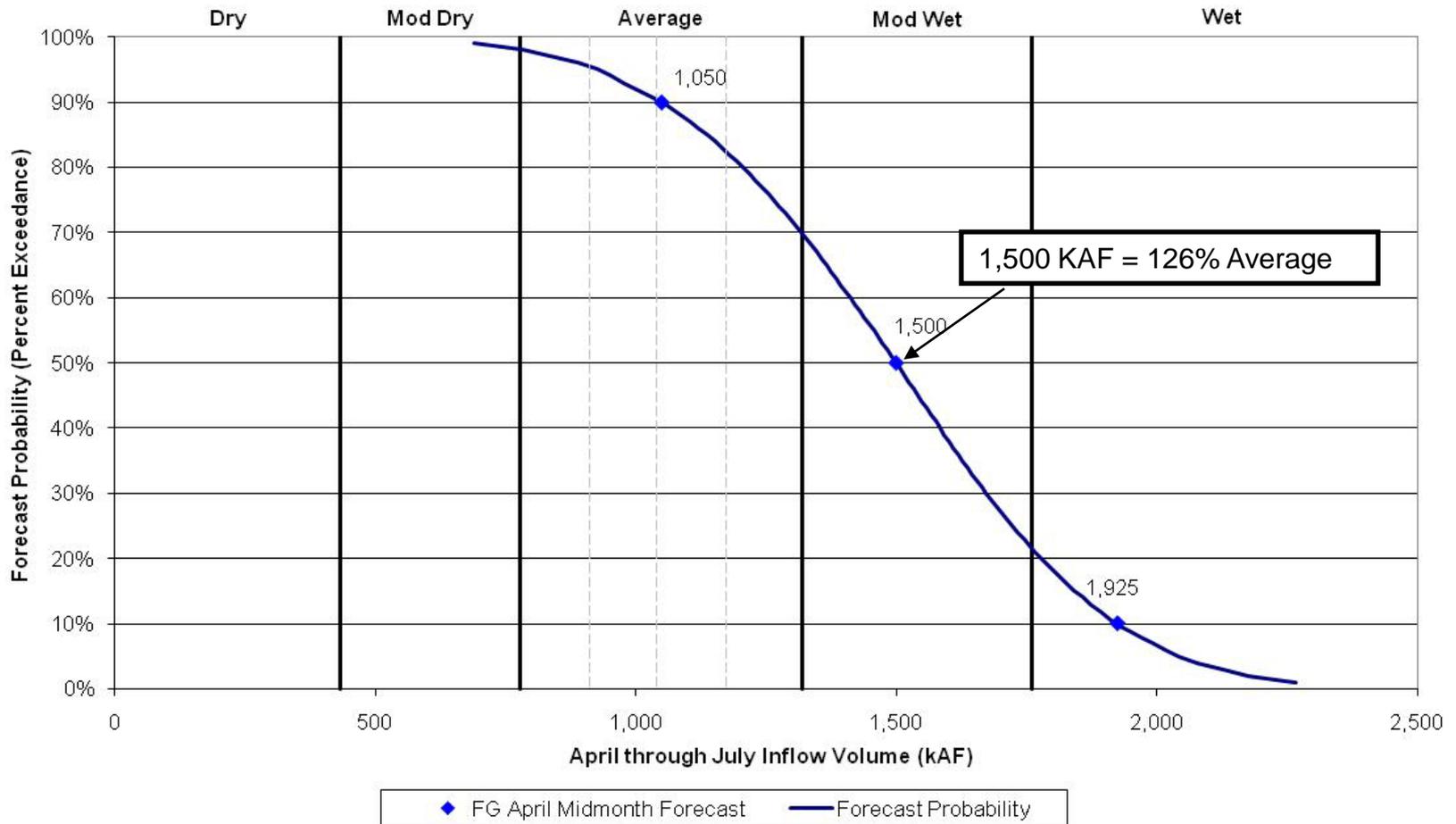
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Flaming Gorge WY2010 Spring Operations



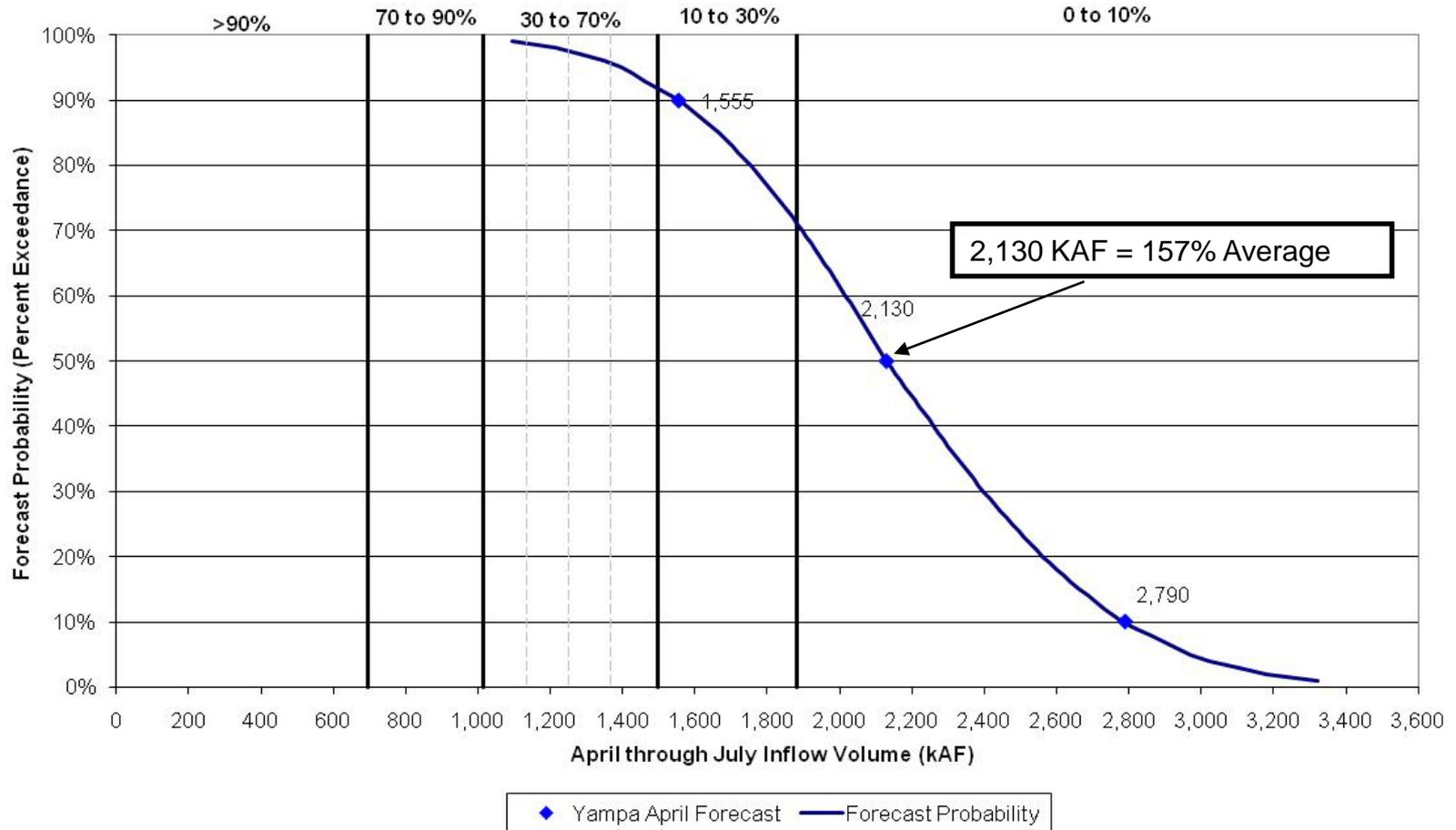
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Flaming Gorge Reservoir
April through July Historic Inflow (1963-2010)
Related to Flow Recommendation Percent Exceedances

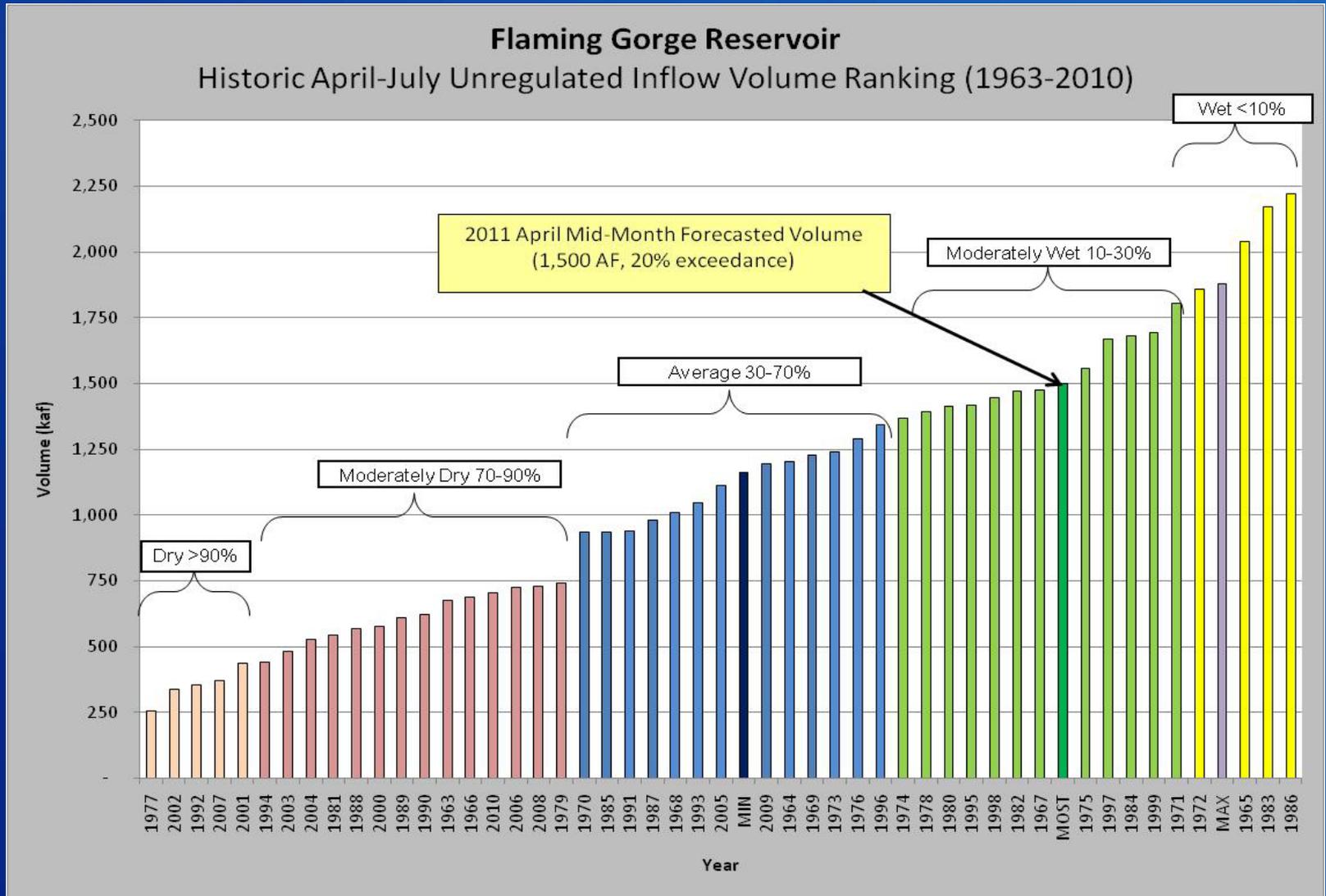


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Yampa River - Maybell Plus Lily
April through July Historic Inflow (1922-2010)
Related to Flow Recommendation Percent Exceedances



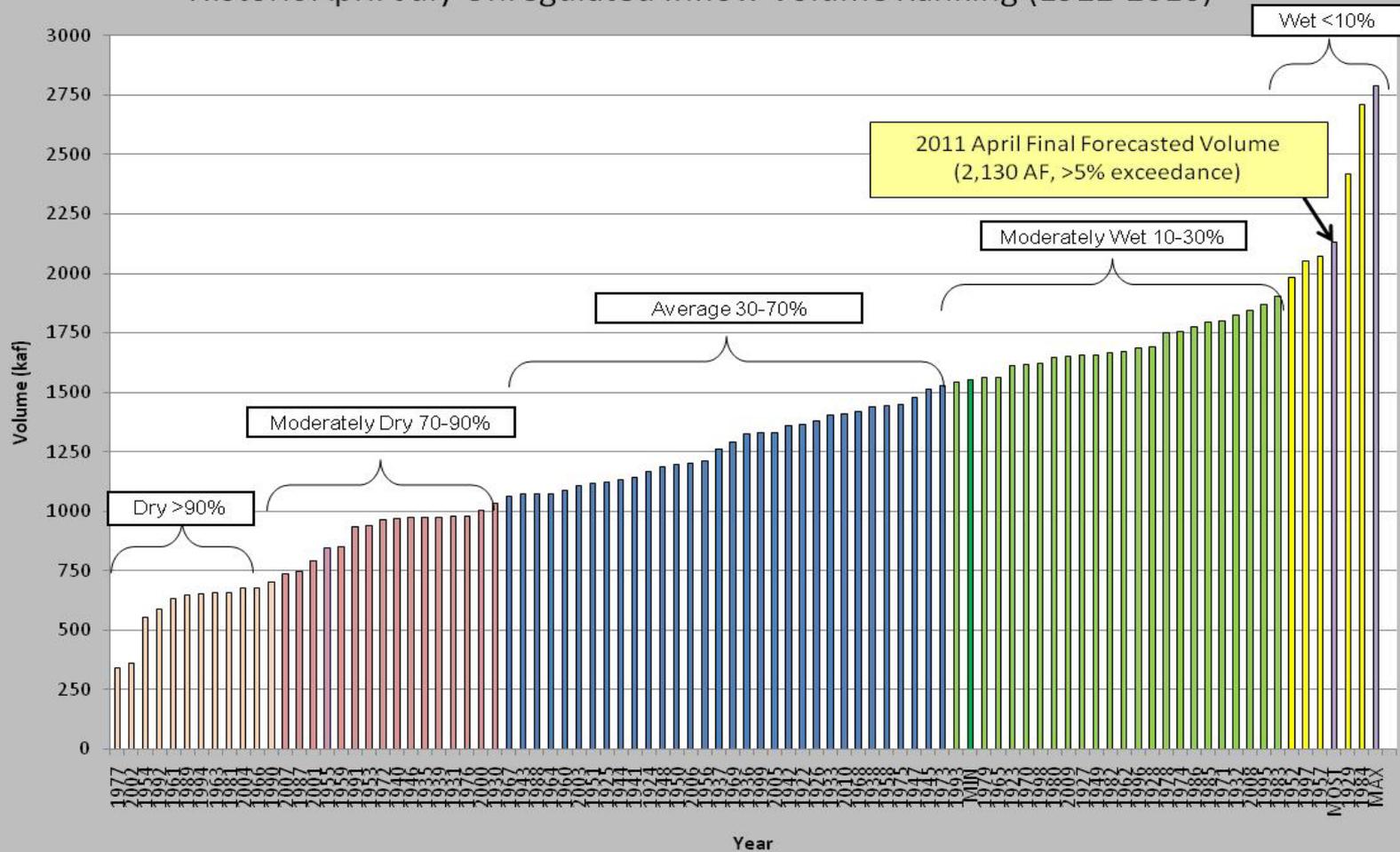
Flaming Gorge Working Group



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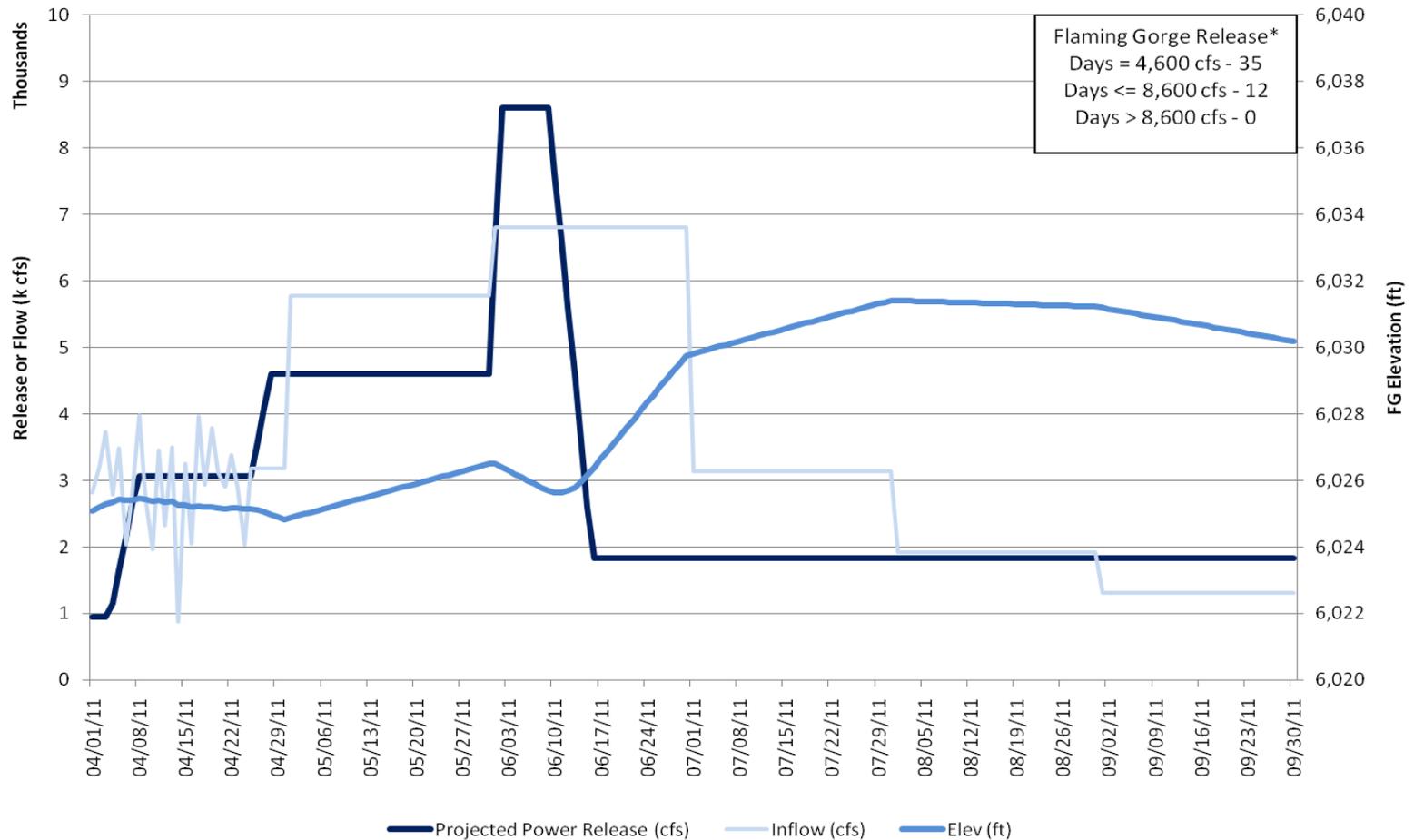
Yampa River Basin - Maybell Plus Lily

Historic April-July Unregulated Inflow Volume Ranking (1922-2010)



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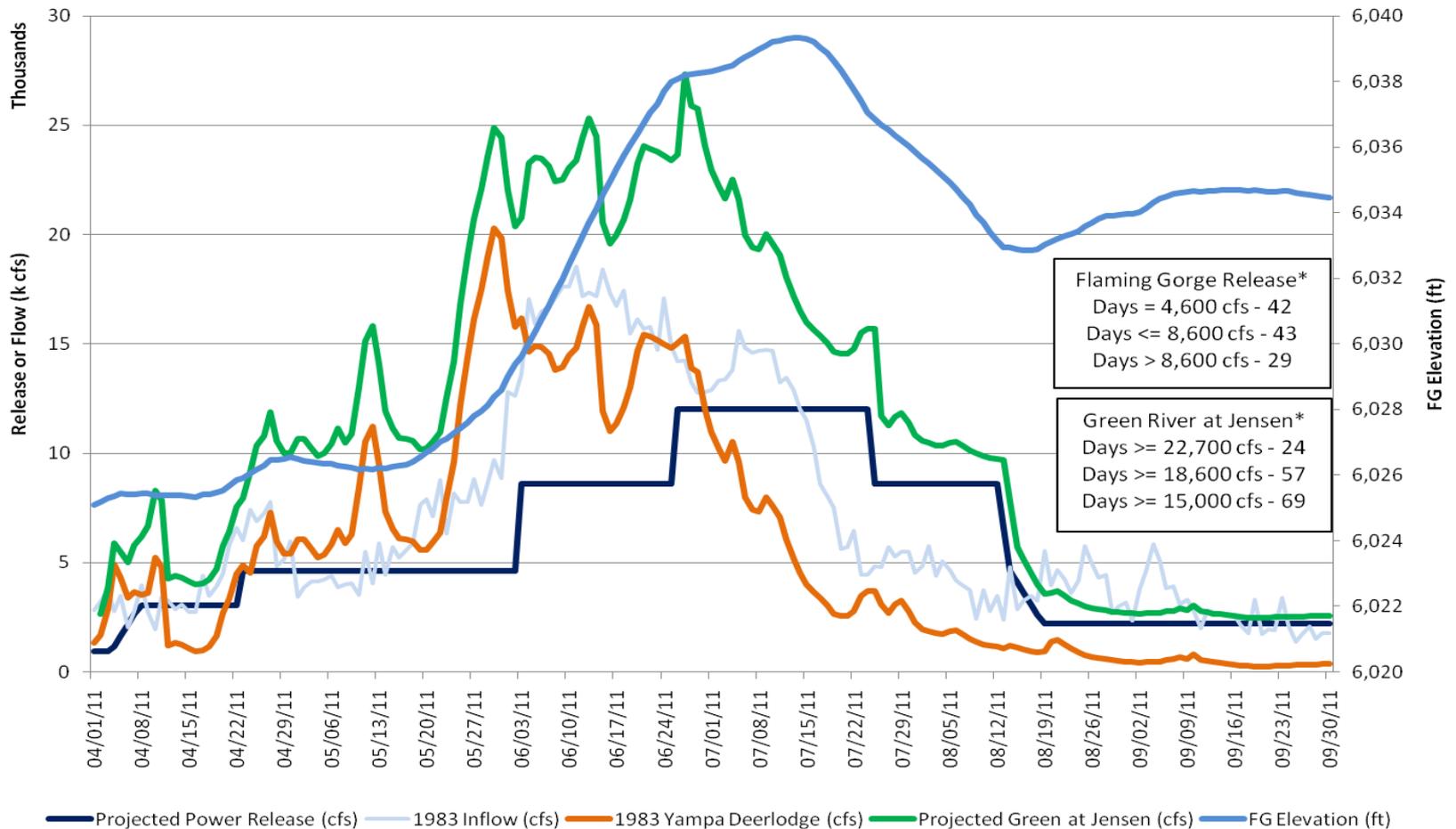
Flaming Gorge Operations April 2011 Operations
 FG Unreg 1,350 KAF - 1984 Yampa Flow 2,710 KAF



*This is a projection based on forecasted inflows. Actual days of flows in 2011 are unknown.

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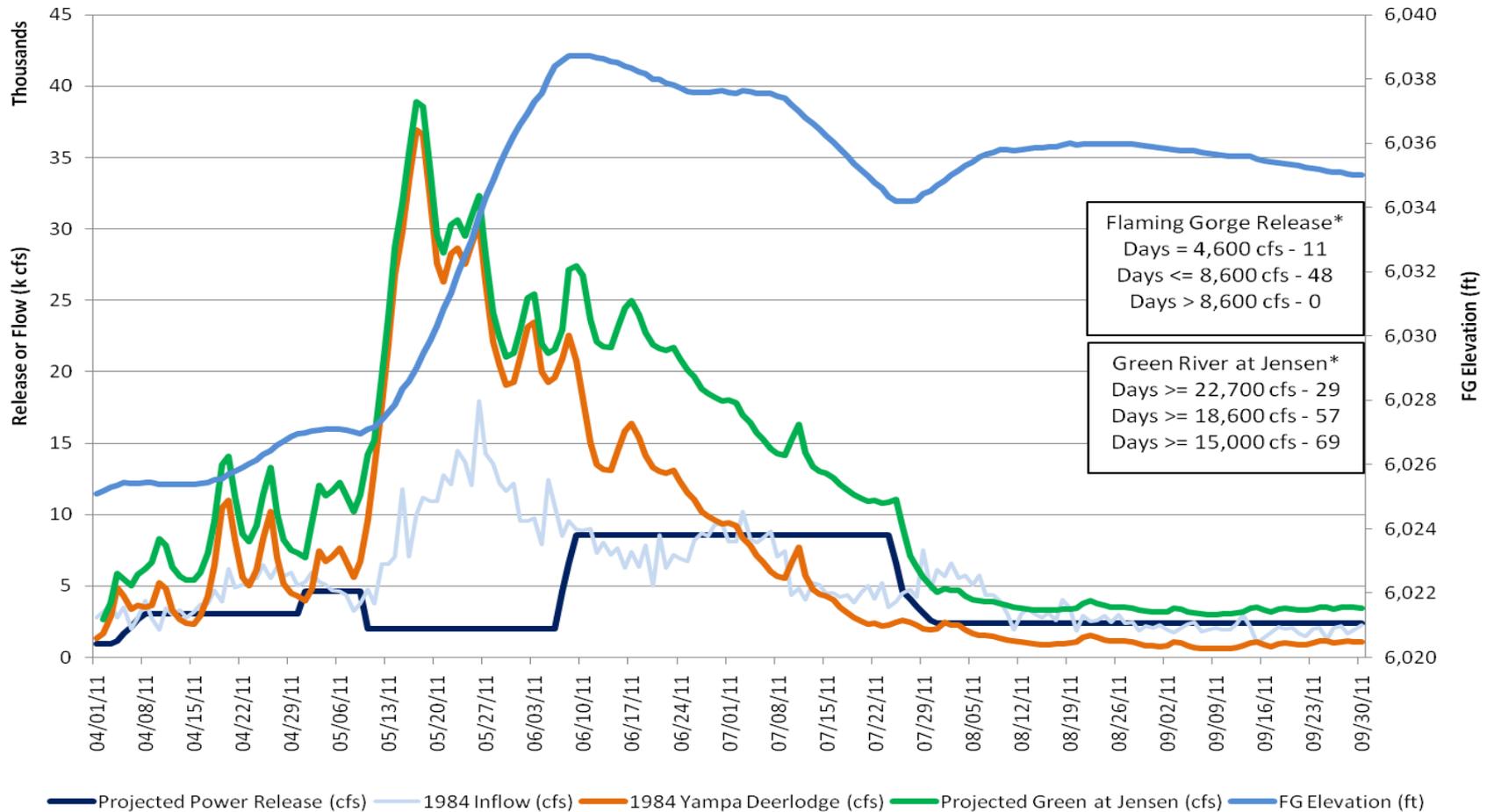
Flaming Gorge Operations April 2011 Operations
 1983 Hydrograph
 FG Unreg 2,173 KAF - Yampa Flow 1,905 KAF



*This is a projection based on historic hydrographs. Actual days of flows in 2011 are unknown.

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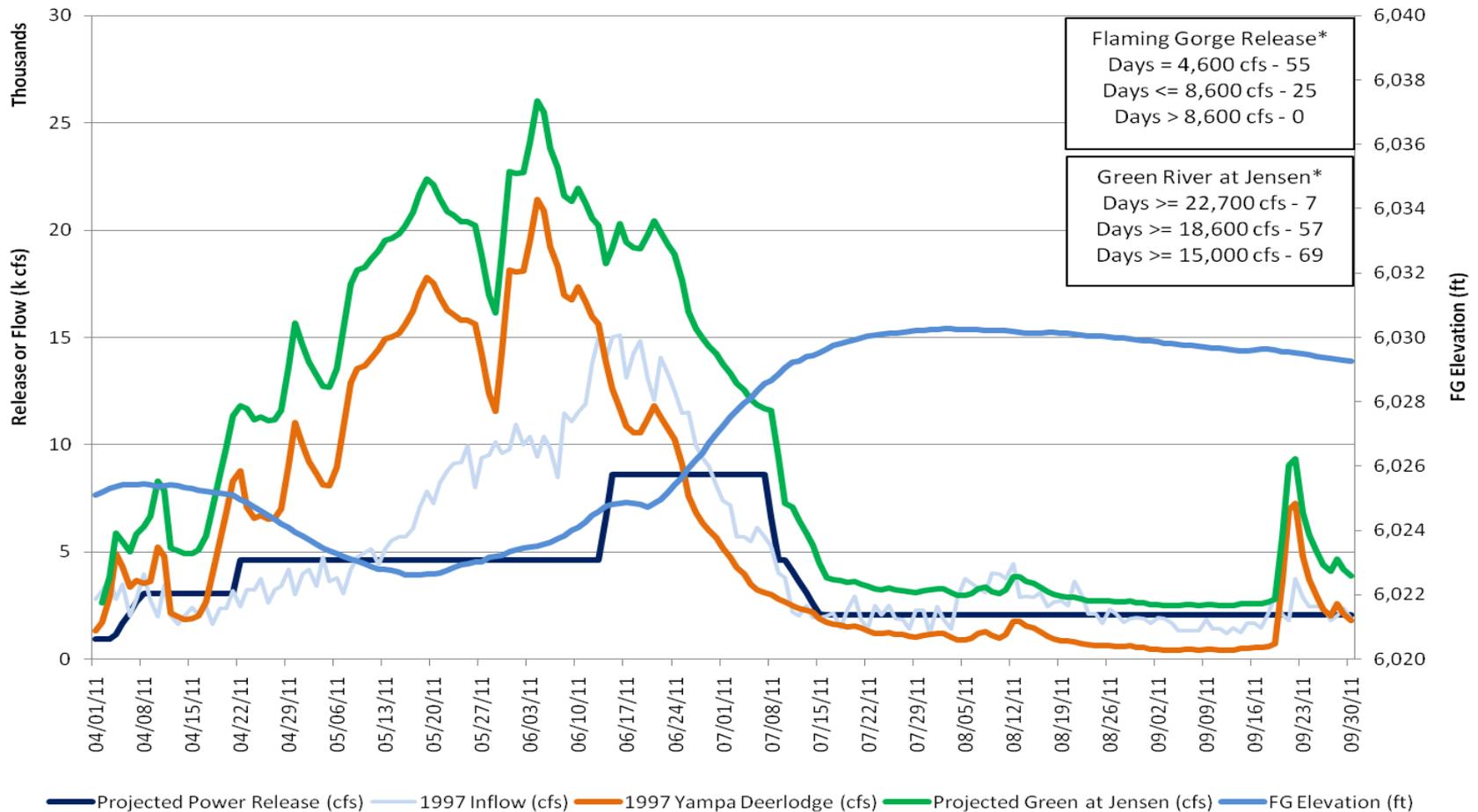
Flaming Gorge Operations April 2011 Operations
 1984 Hydrograph
 FG Unreg 1,680 KAF - Yampa Flow 2,710 KAF



*This is a projection based on historic hydrographs. Actual days of flows in 2011 are unknown.

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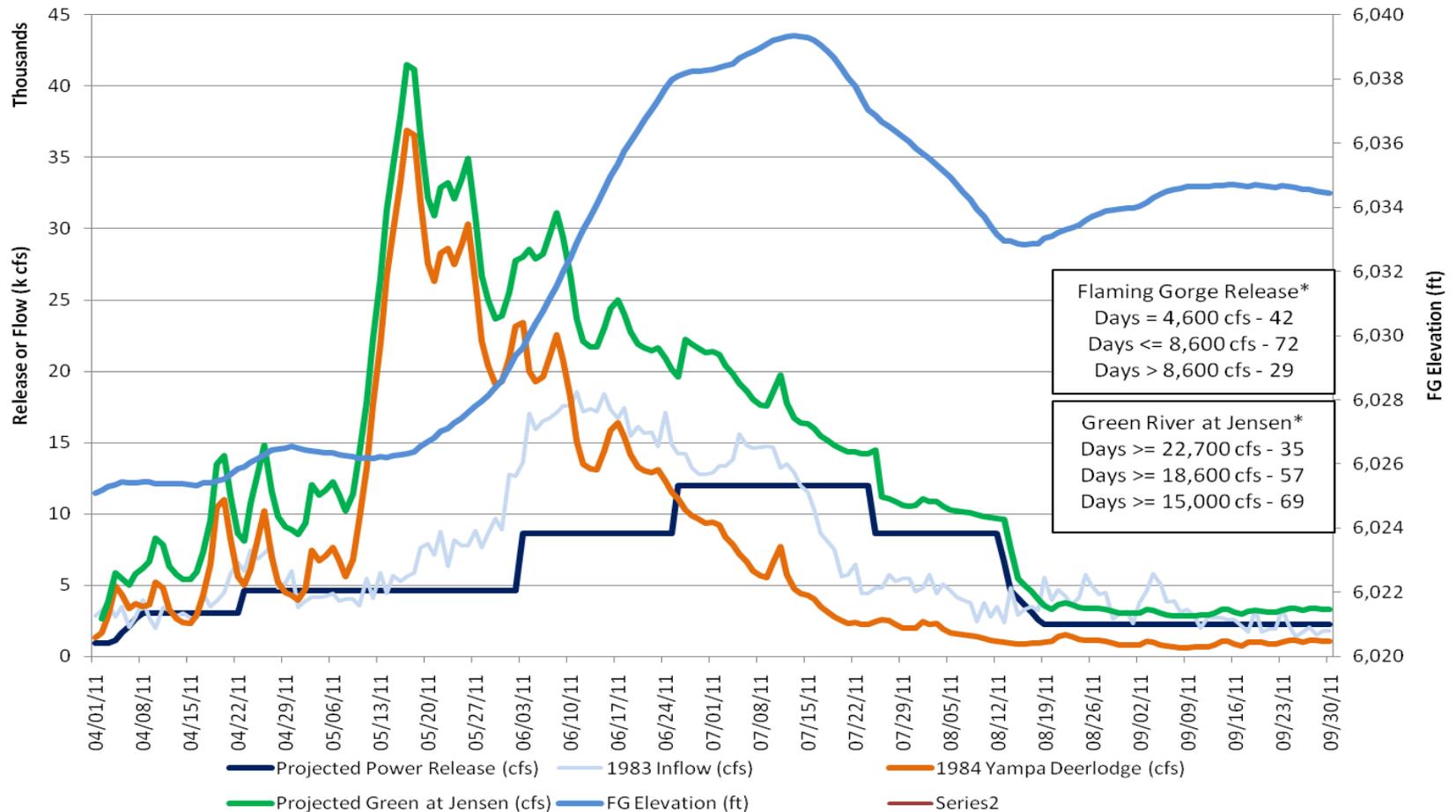
Flaming Gorge Operations April 2011 Operations
 1997 Hydrograph
 FG Unreg 1,669 KAF - Yampa Flow 2,052 KAF



*This is a projection based on historic hydrographs. Actual days of flows in 2011 are unknown.

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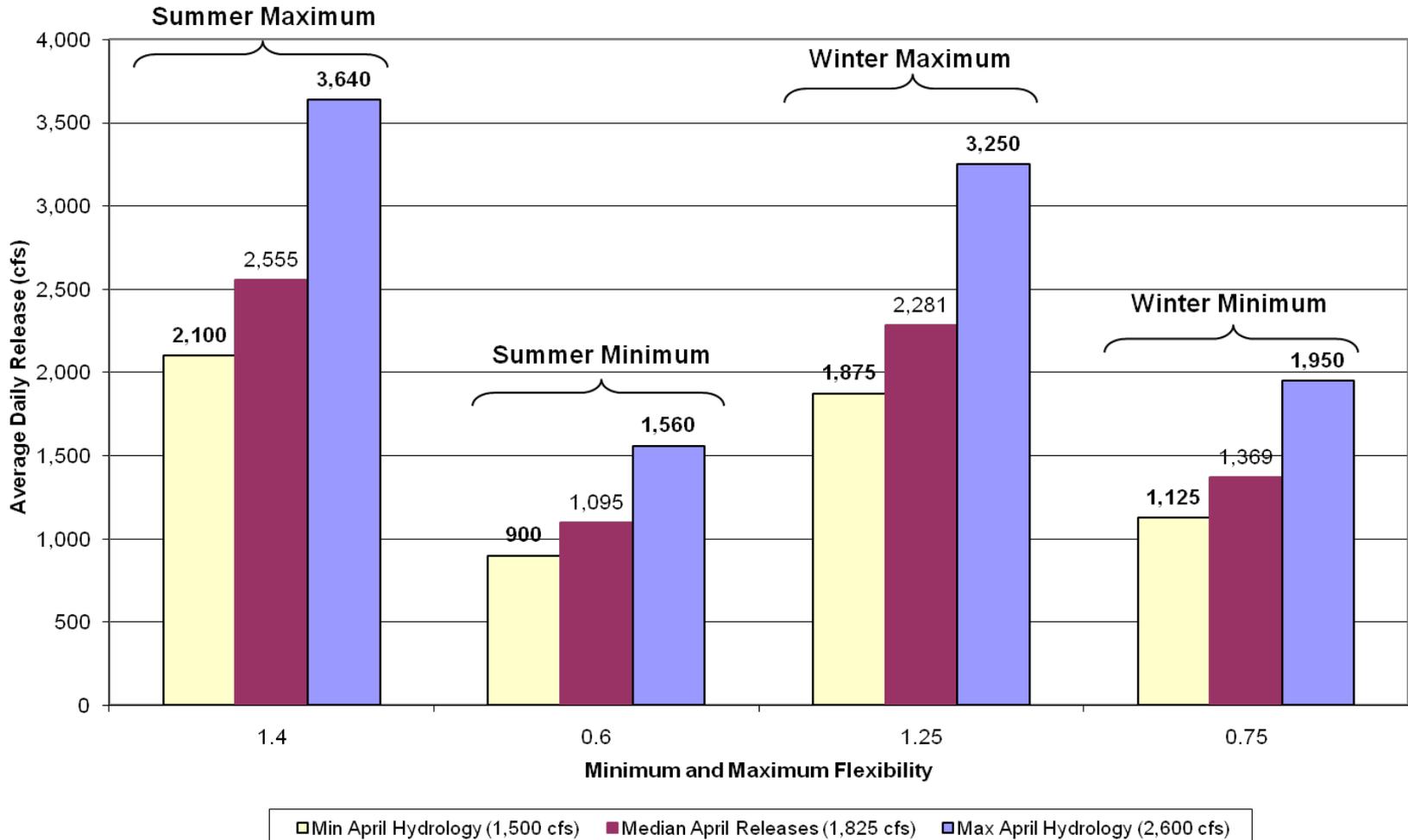
Flaming Gorge Operations April 2011 Operations
 Worst Case Scenario
 FG Unreg 2,173 KAF (1983) - Yampa Flow 2,710 KAF (1984)



*This is a projection based on historic hydrographs. Actual days of flows in 2011 are unknown.

Flaming Gorge Working Group

Base Flow Uncertainty in April 2011 Forecast
Flexibility in Average Daily Base Flows during Summer and Winter



Flaming Gorge Working Group

April 2011

- Questions?
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- (801) 524-3883



RECLAMATION