

# Colorado River Commission of Nevada

## Natural Resources Group Hydrologic Update August 9, 2016



# Unregulated Inflow Into Lake Powell

As of August 1, 2016

	MAF*	% Avg**
• WY 2016 (Projected):	9.78	90%
• April-July 2016 (Projected):	6.61	92%
• July (Observed):	0.60	55%
• August (Forecasted):	0.35	70%

\*MAF=Million Acre-Feet

\*\*30-year average, from 1981-2010 (current normal)



# Storage Conditions

As of August 1, 2016

		<u>Percent of Capacity</u>	<u>Δ from last year</u>
Lake Mead elev.	1,072.75 ft	36%	↓ 5.57 ft
Lake Powell elev.	3,618.22 ft	57%	↑ 5.69 ft
Total System Storage (8/2016)	31.18 maf	52%	↓ 0.18 maf
Total System Storage (8/2015)	31.36 maf	53%	

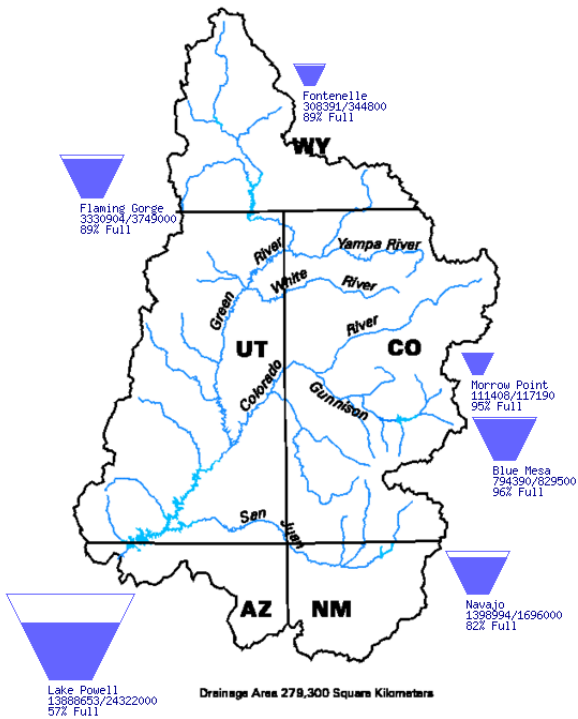


# Reservoir Storage

As of July 13, 2016

Data Current as of:  
07/13/2016

## Upper Colorado River Drainage Basin



## Colorado River Reservoir Storages

Basin	Reservoir	Max Storage (af)	*Current Storage (af)	Percentage
Upper Basin	Crystal Reservoir	17,356	16,588	96%
	Flaming Gorge	3,749,000	3,330,904	89%
	Fontenelle	344,800	308,391	89%
	Morrow Point	117,190	111,408	95%
	Blue Mesa	829,500	794,390	96%
	Navajo	1,696,000	1,398,994	82%
	Lake Powell	24,322,000	13,888,653	57%
Lower Basin	Lake Mead	26,120,000	9,357,000	36%
	Lake Mohave	1,809,800	1,718,100	95%
	Lake Havasu	619,400	577,900	93%
TOTAL		59,625,046	31,502,328	53%

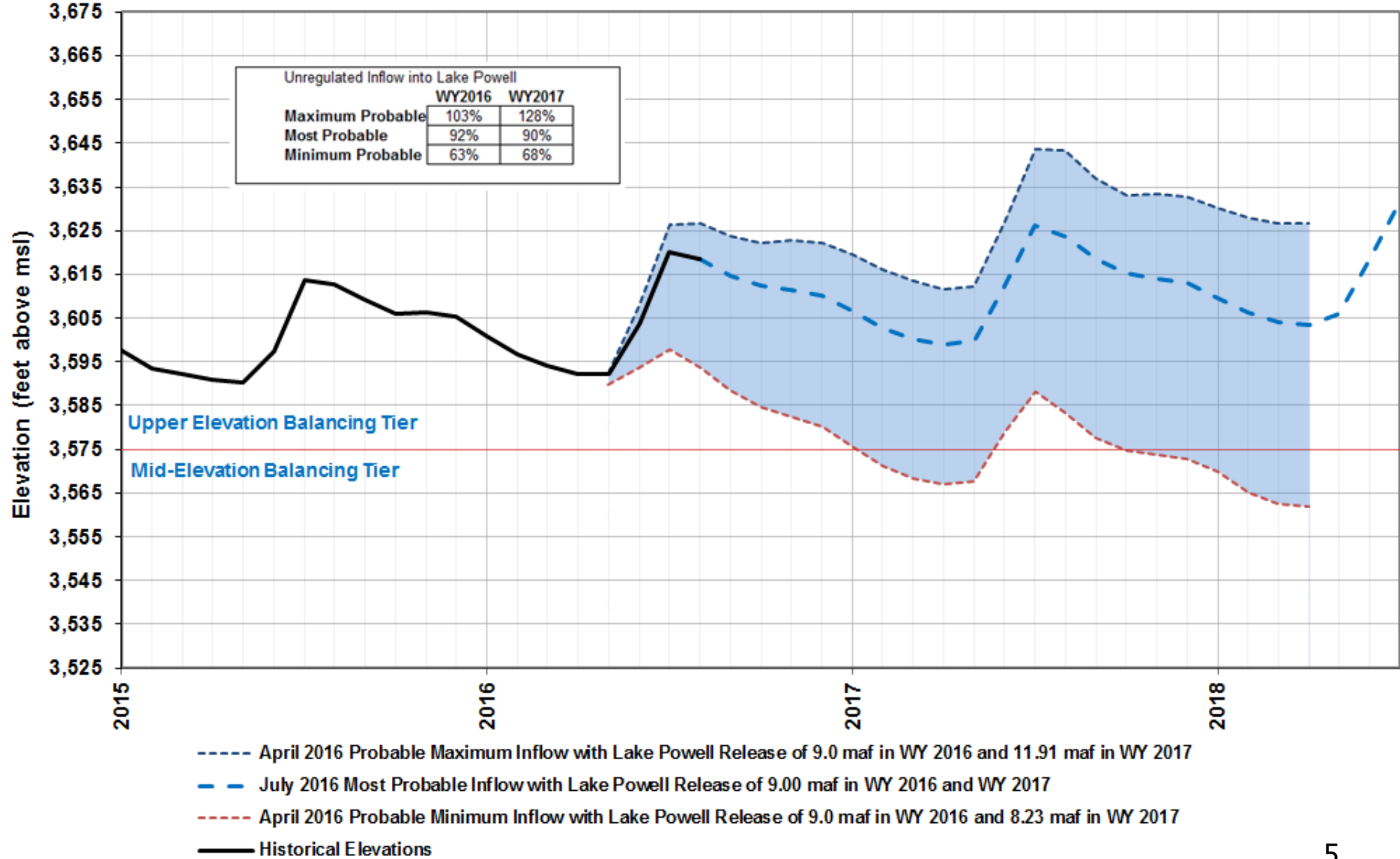
\*Data current as 7/13/2016

<http://www.usbr.gov/lc/region/g4000/hourly/levels.html>

<http://www.usbr.gov/uc/water/rsrvs/ops/r40day.html>

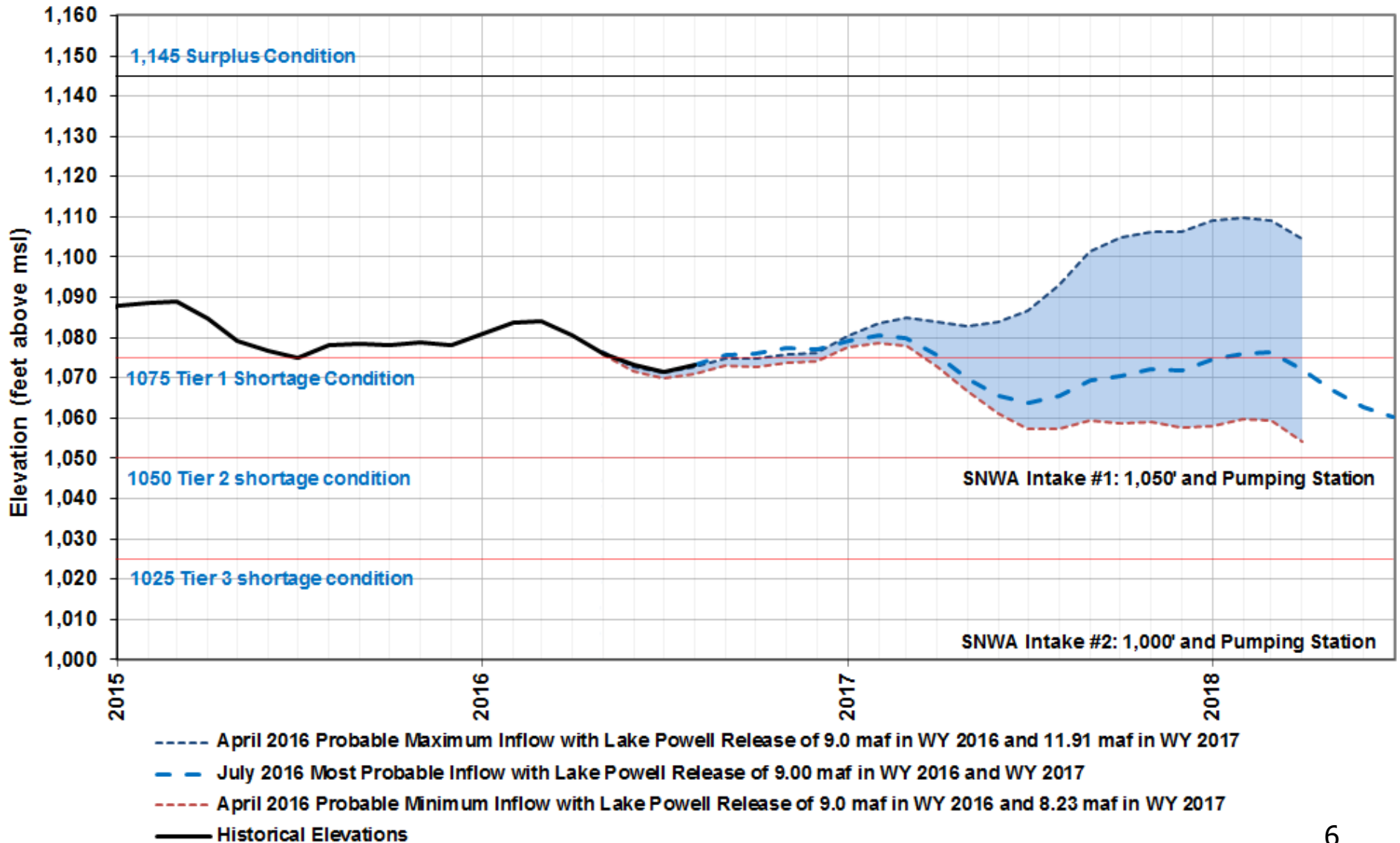
# Lake Powell Projections

## Reclamation's July 2016 24-Month Study

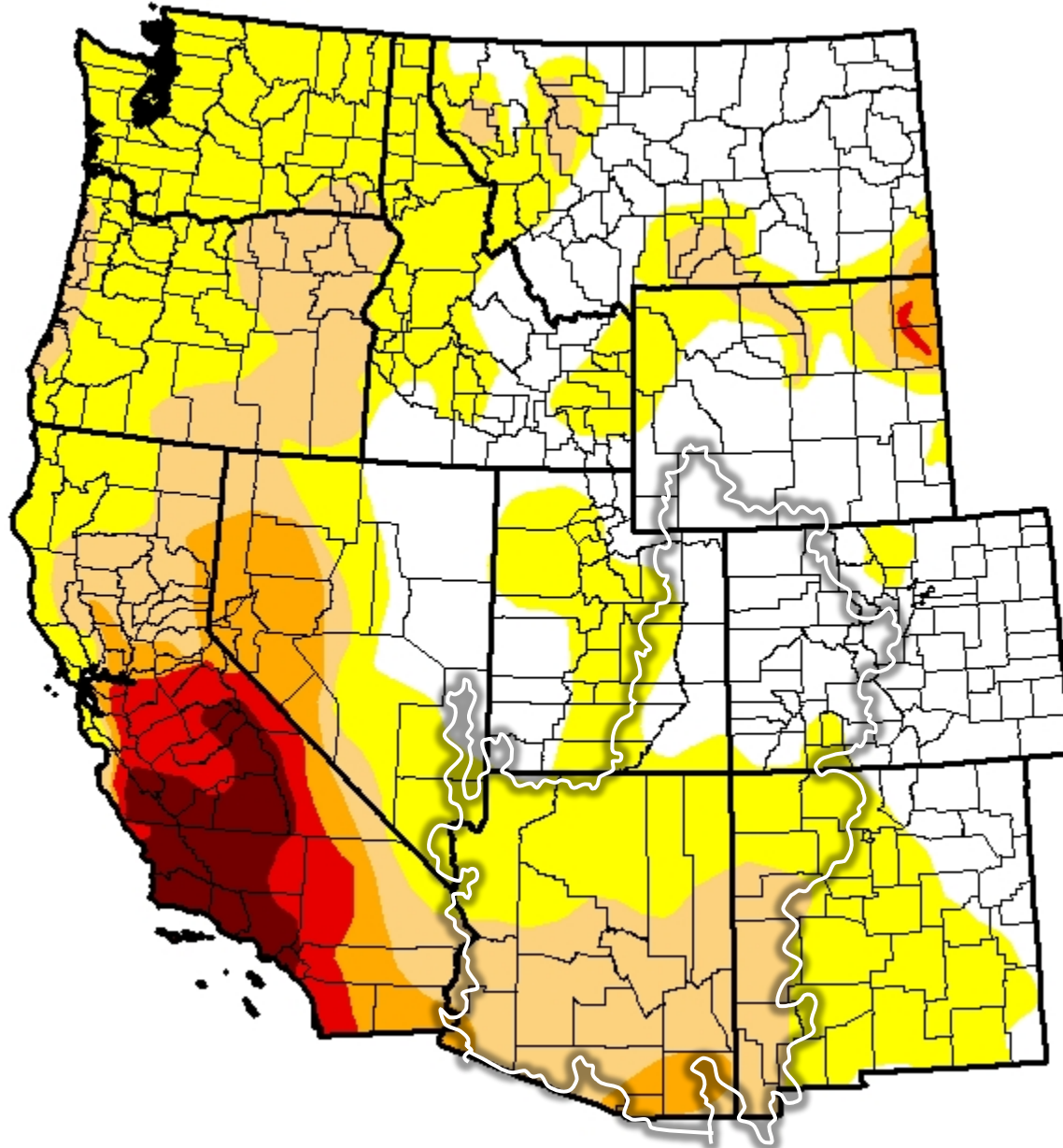


# Lake Mead Projections

Reclamation's July 24-Month Study



# U.S. Drought Monitor








**July 12, 2016**

*(Released Thursday, Jul. 14, 2016)*

Valid 8 a.m. EDT

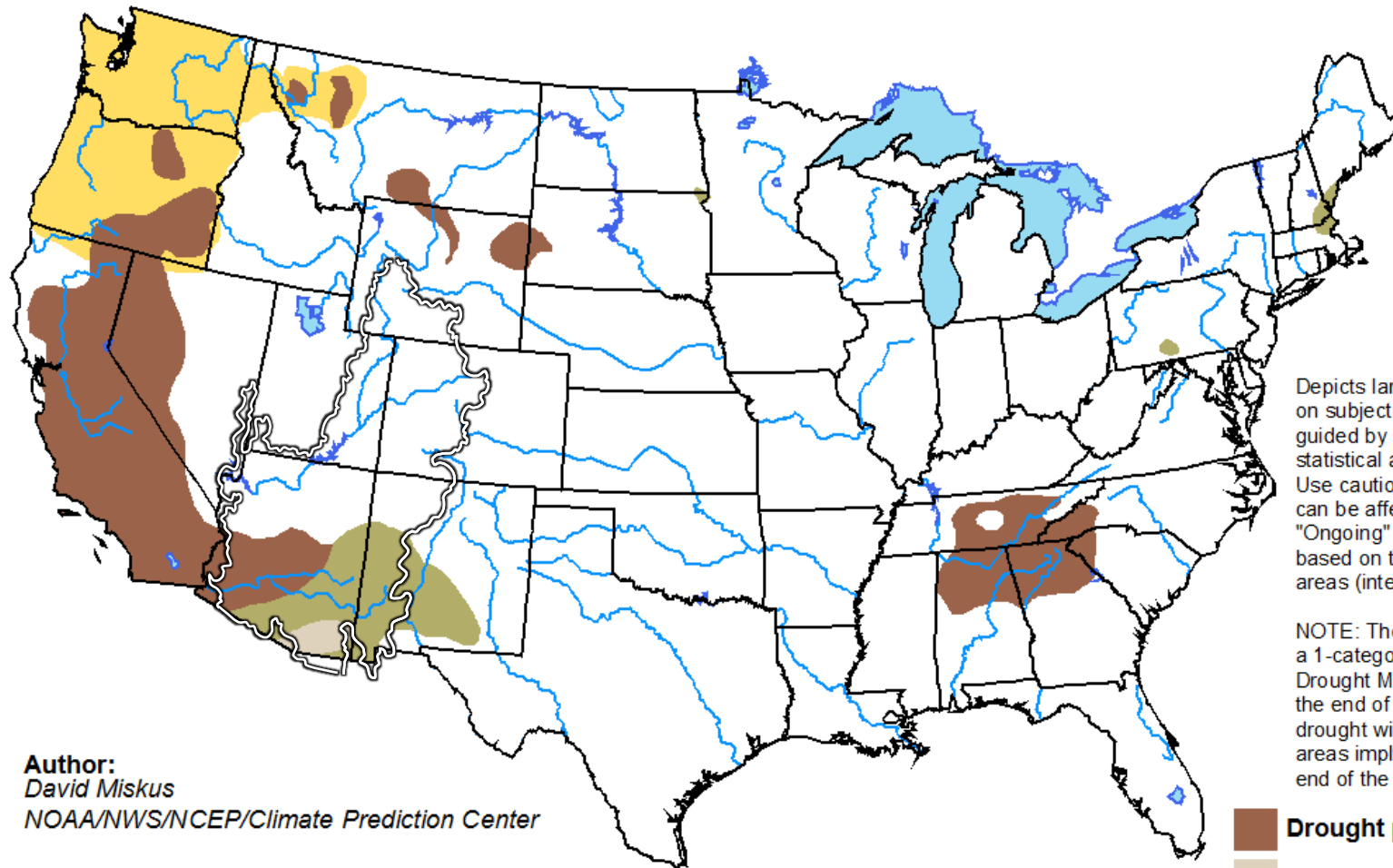
## Intensity:

-  D0 - Abnormally Dry
-  D1 - Moderate Drought
-  D2 - Severe Drought
-  D3 - Extreme Drought
-  D4 - Exceptional Drought

# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period





Valid for June 16 - September 30, 2016  
Released June 16, 2016

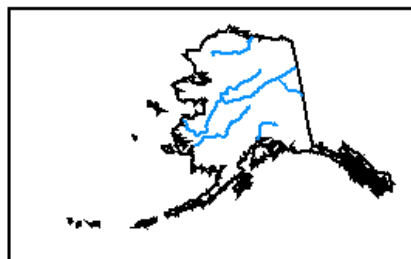


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

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NOAA/NWS/NCEP/Climate Prediction Center

-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely





# Precipitation – Colorado River Basin

As of August 1, 2016

## Upper Colorado Basin

WY Precip to Date

95% (25.6")

Current Basin Snowpack

NA

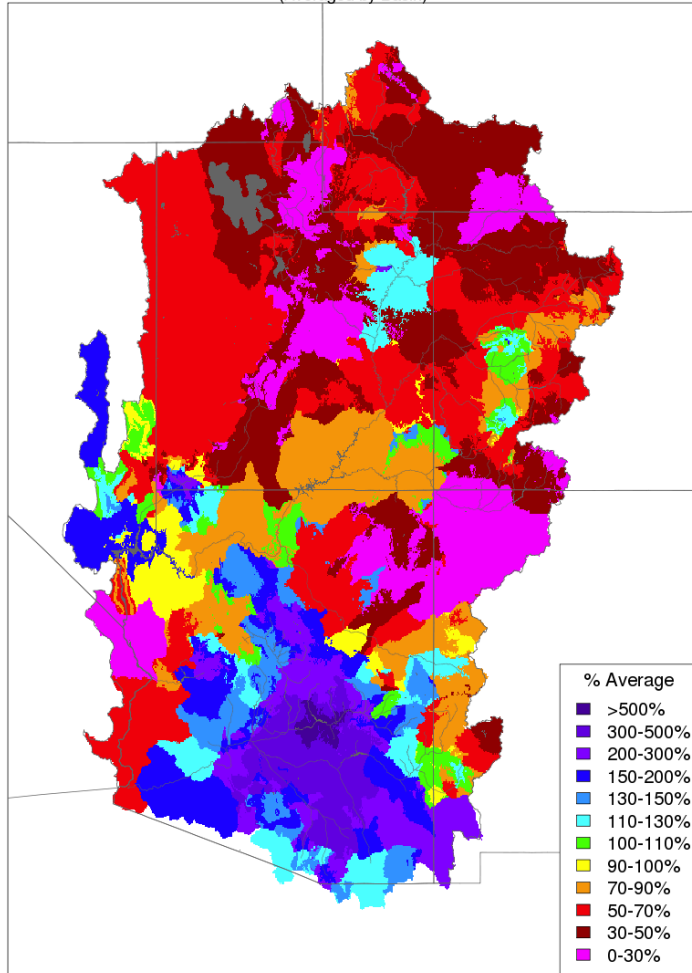
(Avg 1981-2010)



# Precipitation

Monthly Precipitation - June 2016

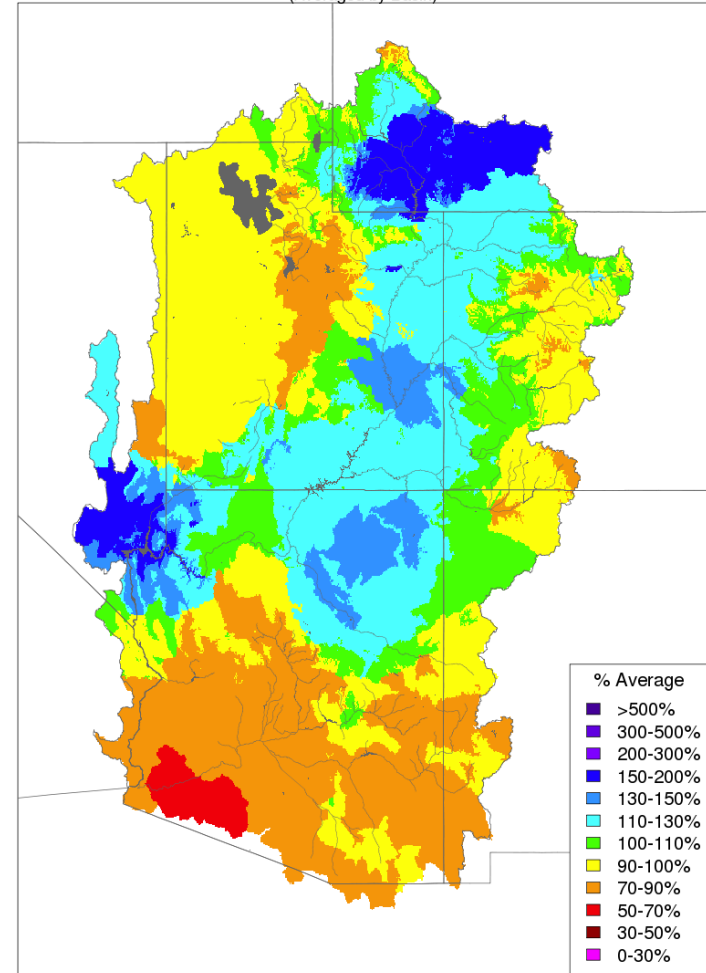
(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

Water Year Precipitation, October 2015 - June 2016

(Averaged by Basin)



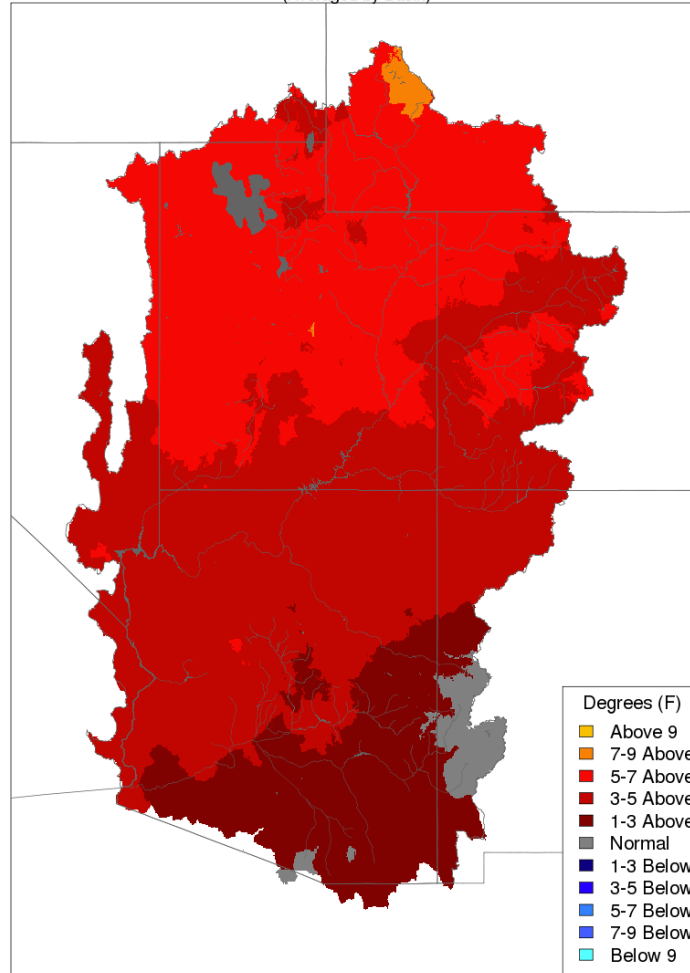
Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

# Temperature Deviations

## Monthly Averaged Temperature Anomaly

Max Temp - Monthly Deviation - June 2016

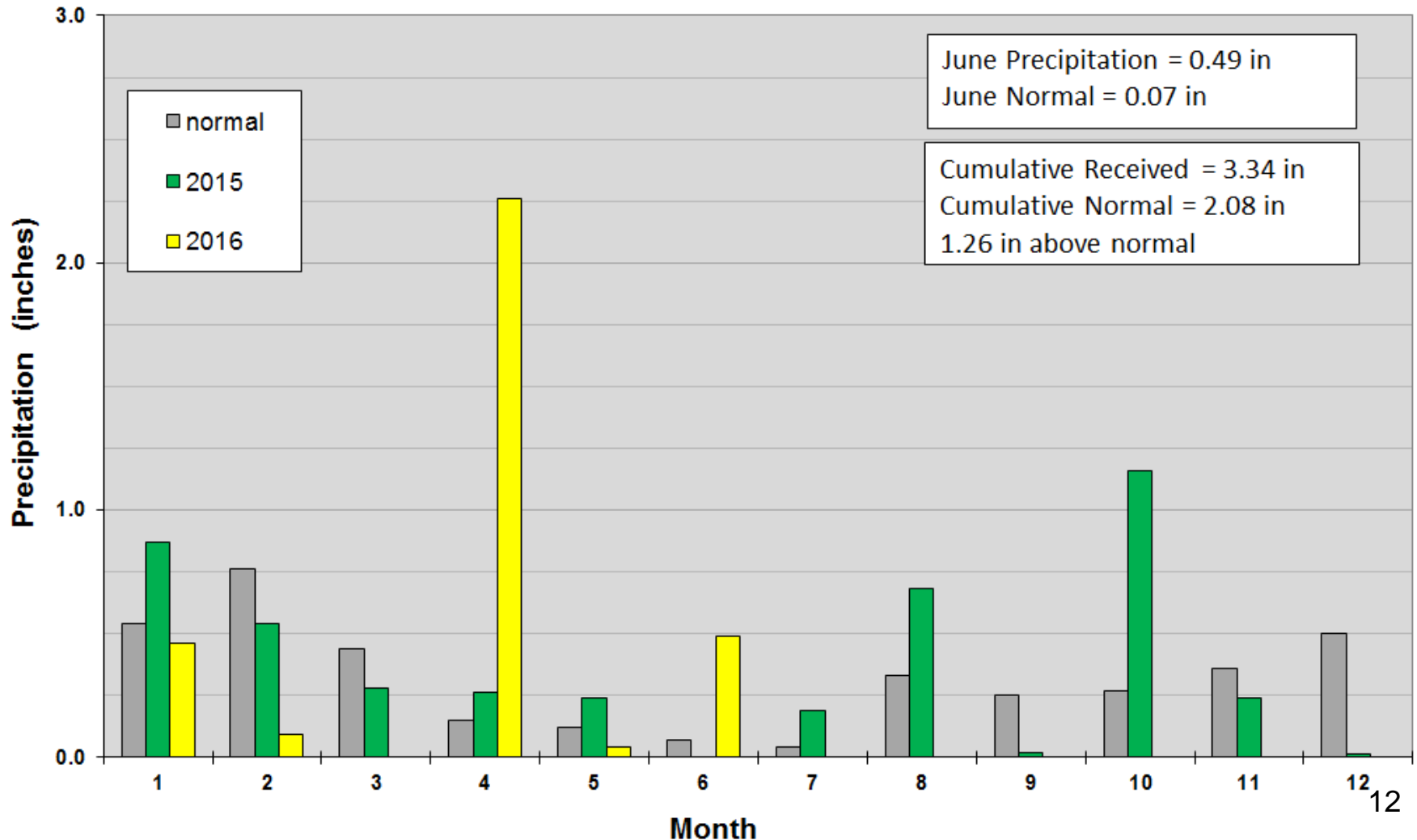
(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

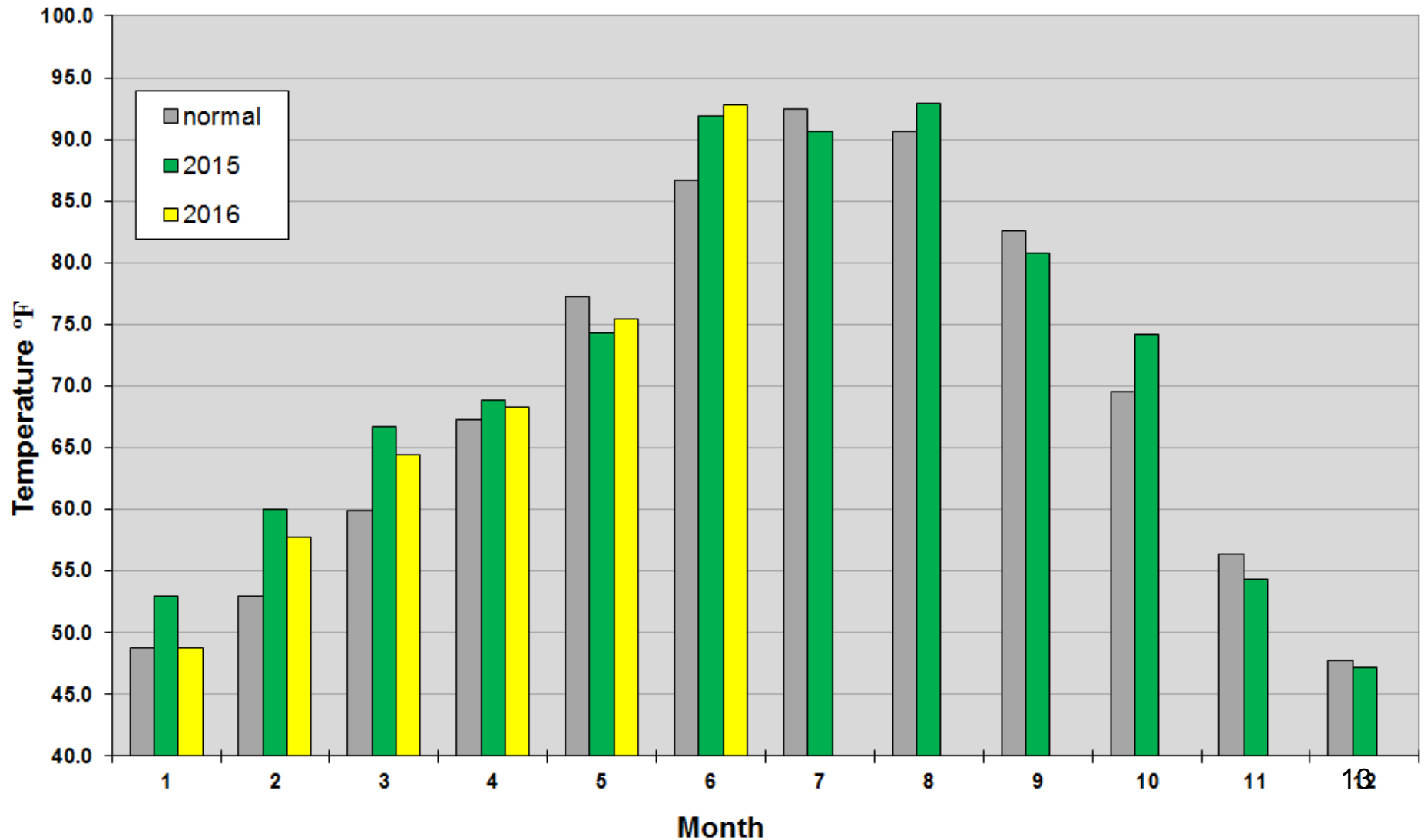
# Las Vegas Precipitation

## Monthly Precipitation at McCarran Airport, Las Vegas, NV



# Las Vegas Average Temperature

## Average Monthly Temperature at McCarran Airport, Las Vegas, NV



# Water Use in Southern Nevada



# Water Use in Southern Nevada

January – June 2016

2016: Consumptive Use = 105,818\* af

2015: Consumptive Use = 100,338 af

**Difference = 5,480 af**

\*Subject to final accounting.



# Water Use Comparison

January - June

<b>Water Use</b>	<b>2015</b> Acre Feet	<b>2016</b> Acre Feet	<b>Difference</b> Acre Feet	<b>% Change</b>
Las Vegas Wash Gauged Flow	110,392	112,970	2,578	2.3%
Diversions	210,807	214,438	3,631	1.7%
Return Flow Credit	110,469	108,620	-1,849	-1.7%
Consumptive Use	100,338	105,818	5,480	5.5%





# Return Flow Credit Calculations

- The Colorado River Commission is responsible for calculating Nevada's Return Flow Credit calculations and providing consumptive use to Reclamation each month.
- Colorado River use data is submitted:
  - Basic Water Company
  - SNWA (Boulder City, LVVWD, North Las Vegas, Nellis Air Force Base)
  - Big Bend Water District
  - National Park Service
  - Reclamation
  - Department of Wildlife
  - Fort Mojave
  - And waste water discharge and ground water operations
- The Colorado River Commission works with Reclamation to finalize the year end water accounting of Nevada's Colorado River water use. <http://www.usbr.gov/lc/region/g4000/wtracct.html>
- A number of factors can impact how Return Flow Credits are calculated:
  - Weather: (precipitation, temperature, and wind)
  - Reuse
  - Ground water use or recharge
  - Lost or unaccounted water
  - Gage error

# Variability

2016	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Diversion	2,434	2,949	2,215	(2,430)	(3,046)	1,487							
RFC	129	652	(1,462)	44	15	(1,240)							
Consumptive Use	2,305	2,297	3,677	(2,474)	(3,061)	2,727							
Diversion	9%	10%	6%	-7%	-8%	3%							
RFC	1%	4%	-8%	0%	0%	-7%							
Consumptive Use	27%	22%	20%	-13%	-14%	10%							
2015	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Diversion	(1,588)	(304)	310	929	(3,508)	(698)	1,236	2,973	4,908	(1,615)	(18)	1,496	4,121
RFC	396	(273)	(200)	895	1,529	1,724	(48)	(627)	(510)	220	1,568	1,334	6,008
Consumptive Use	(1,984)	(31)	510	34	(5,037)	(2,422)	1,284	3,600	5,418	(1,835)	(1,586)	162	(1,887)
Diversion	-6%	-1%	1%	2%	-8%	-2%	3%	6%	11%	-4%	0%	5%	1%
RFC	2%	-2%	-1%	5%	8%	10%	0%	-3%	-3%	1%	8%	7%	3%
Consumptive Use	-32%	0%	4%	0%	-20%	-9%	4%	13%	22%	-9%	-13%	2%	-1%
2014	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Diversion	(48)	(122)	478	698	2,019	(507)	(1,282)	(2,270)	3,530	2,581	1,879	609	7,565
RFC	787	320	1,795	584	(99)	94	182	1,415	184	603	(80)	727	6,512
Consumptive Use	(835)	(442)	(1,317)	114	2,118	(601)	(1,464)	(3,685)	3,346	1,978	1,959	(118)	1,053
Diversion	0%	0%	1%	2%	4%	-1%	-3%	-5%	9%	6%	6%	2%	2%
RFC	4%	2%	9%	3%	-1%	1%	1%	7%	1%	3%	0%	4%	3%
Consumptive Use	-10%	-6%	-9%	1%	7%	-2%	-5%	-15%	17%	9%	14%	-1%	0%
2013	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Diversion	(559)	(1,217)	(288)	583	(1,812)	750	1,134	2,710	(1,070)	(922)	(2,967)	(2,140)	(5,798)
RFC	(600)	1,048	899	617	1,165	1,075	1,346	(598)	1,816	66	685	281	7,800
Consumptive Use	41	(2,265)	(1,187)	(34)	(2,977)	(325)	(212)	3,308	(2,886)	(988)	(3,652)	(2,421)	(13,598)
Diversion	-2%	-5%	-1%	2%	-4%	2%	2%	6%	-3%	-2%	-10%	-8%	-1%
RFC	-3%	6%	5%	4%	7%	7%	7%	-3%	10%	0%	4%	2%	4%
Consumptive Use	0%	-27%	-8%	0%	-11%	-1%	-1%	12%	-18%	-5%	-31%	-27%	-6%

# Why are return flow credits down?

Response to commissioner Kelly's question

Return flow credits are down 1.7% or 1,849 af in 2016 compared to January-June 2015.

After analyzing return flow credits this year with last year, these are a few factors that contributed to the difference:

## **Economic Growth**

- SNWA has increased user accounts which has increased diversions over last year.

## **Weather**

- Precipitation – January, February, March, and May were all drier than last year.
- Temperature – May and June were hotter than last year.

Most of this year has been drier and May+June were hotter which probably resulted in more water being used outdoors = Evaporation = Not making it to the wash.

## **Operational Differences**

- There is an increase of 1,605 af in 2016 of unaccounted water that was diverted, but not delivered.
- Ground water well pumping is 2,229 af less than last year.

It is difficult to know what factor contributed the most to the change, but weather and operational differences both likely decreased the return flow credits compared to last year. The decrease of 1.7% is relatively small and could fluctuate depending on future weather and operations. 19

# Colorado River Commission of Nevada

## Questions?

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