

# Colorado River Commission of Nevada

## Natural Resources Group Hydrologic Update May 19, 2016



# Unregulated Inflow Into Lake Powell

As of May 16, 2016

	MAF*	% Avg**
• WY 2016 (Projected):	9.2	85%
• April-July 2016 (Projected):	6.0	84%
• April (observed):	0.81	77%
• May (forecasted):	1.85	79%

\*MAF=Million Acre-Feet

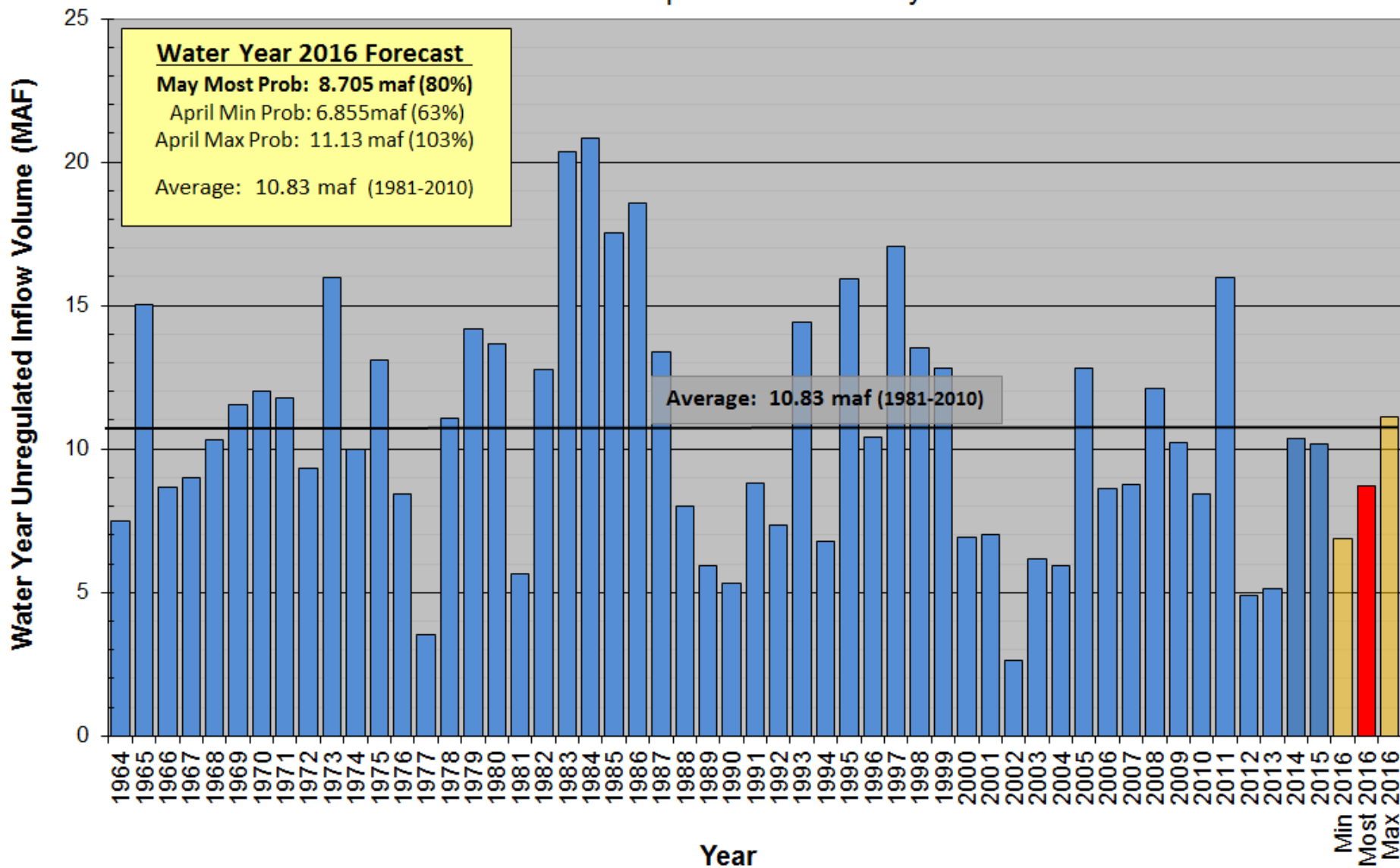
\*\*30-year average, from 1981-2010 (current normal)



# Lake Powell Unregulated Inflow

## Water Year 2016 Forecast

### Comparison with History



# Storage Conditions

As of May 16, 2016

		<u>Percent of Capacity</u>	<u>Δ from last year</u>
Lake Mead elev.	1,074.96 ft	37%	↓ 2.00 ft
Lake Powell elev.	3,594.89 ft	46%	↑ 2.99 ft
Total System Storage (5/2016)	28.93 maf	48%	↑ 0.47 maf
Total System Storage (5/2015)	28.46 maf	48%	

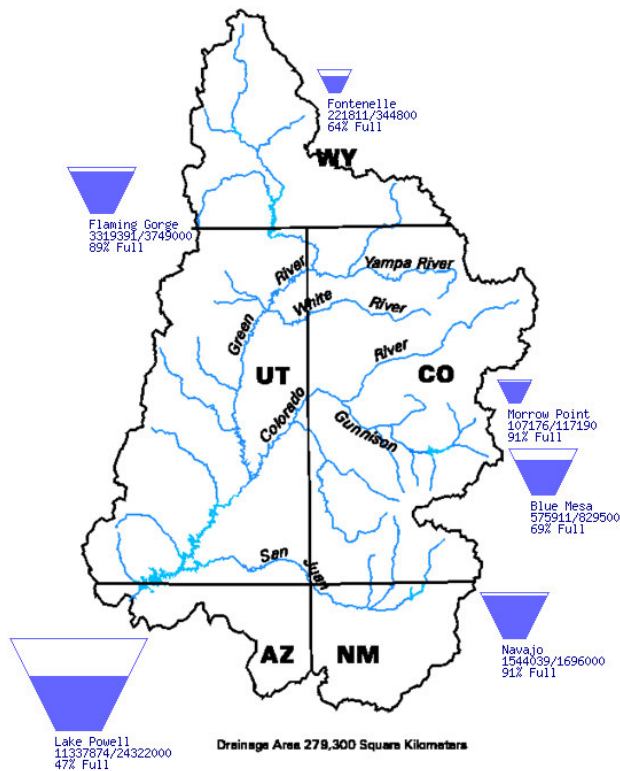


# Reservoir Storage

As of May 17, 2016

Data Current as of:  
05/17/2016

## Upper Colorado River Drainage Basin



## Colorado River Reservoir Storages

Basin	Reservoir	Max Storage	*Current Storage	Percentage	Current Storage subtotals
Upper Basin	Crystal Reservoir	17,356	18,304	105%	5,786,632
	Flaming Gorge	3,749,000	3,319,391	89%	
	Fontenelle	344,800	221,811	64%	
	Morrow Point	117,190	107,176	91%	
	Blue Mesa	829,500	575,911	69%	
	Navajo	1,696,000	1,544,039	91%	
Lower Basin	Lake Powell	24,322,000	11,337,874	47%	2,305,500
	Lake Mead	26,120,000	9,586,000	37%	
	Lake Mohave	1,809,800	1,720,000	95%	
	Lake Havasu	619,400	585,500	95%	
<b>TOTAL</b>		<b>59,625,046</b>	<b>29,016,006</b>	<b>49%</b>	

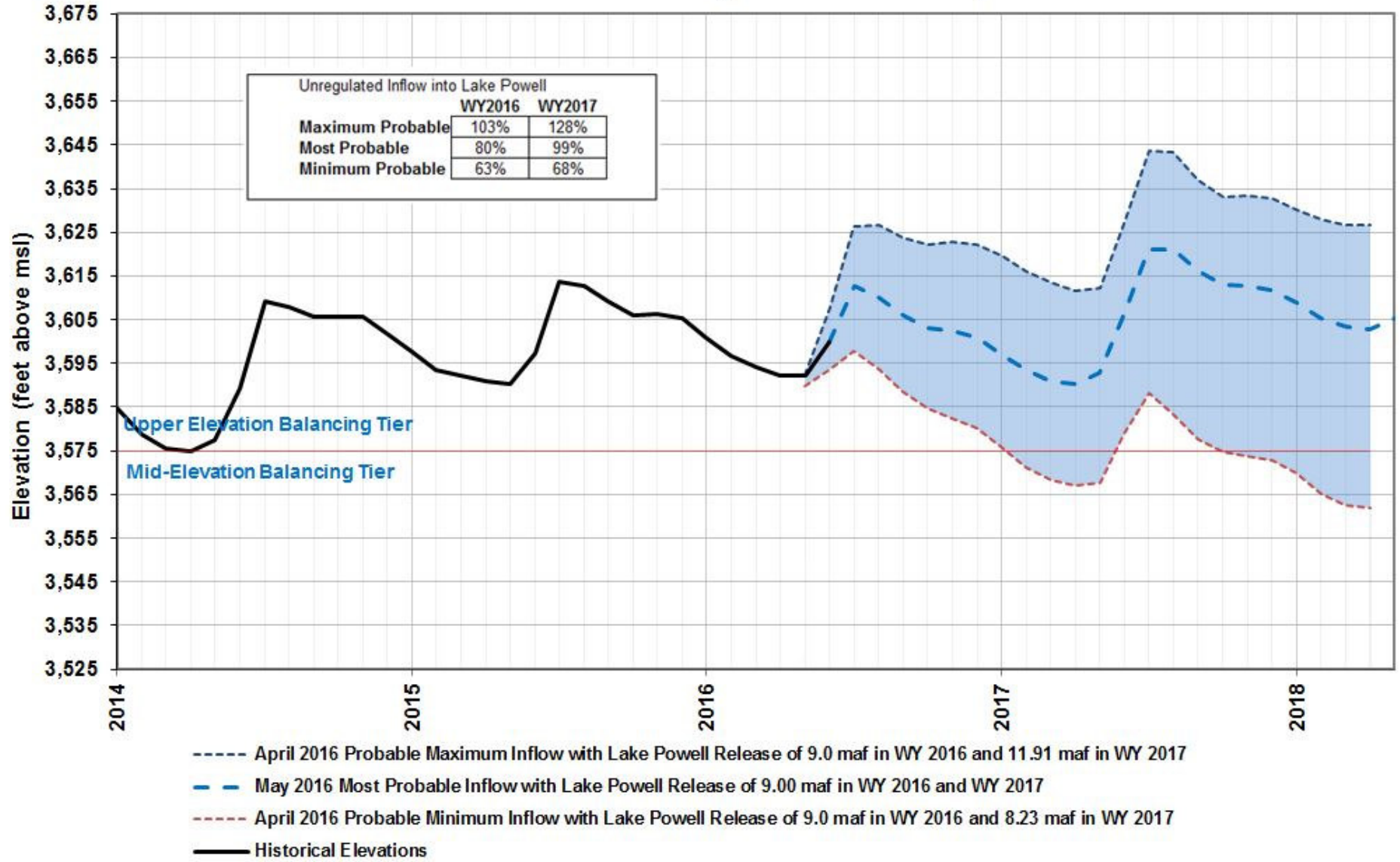
\*Data current as 5/17/2016

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

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

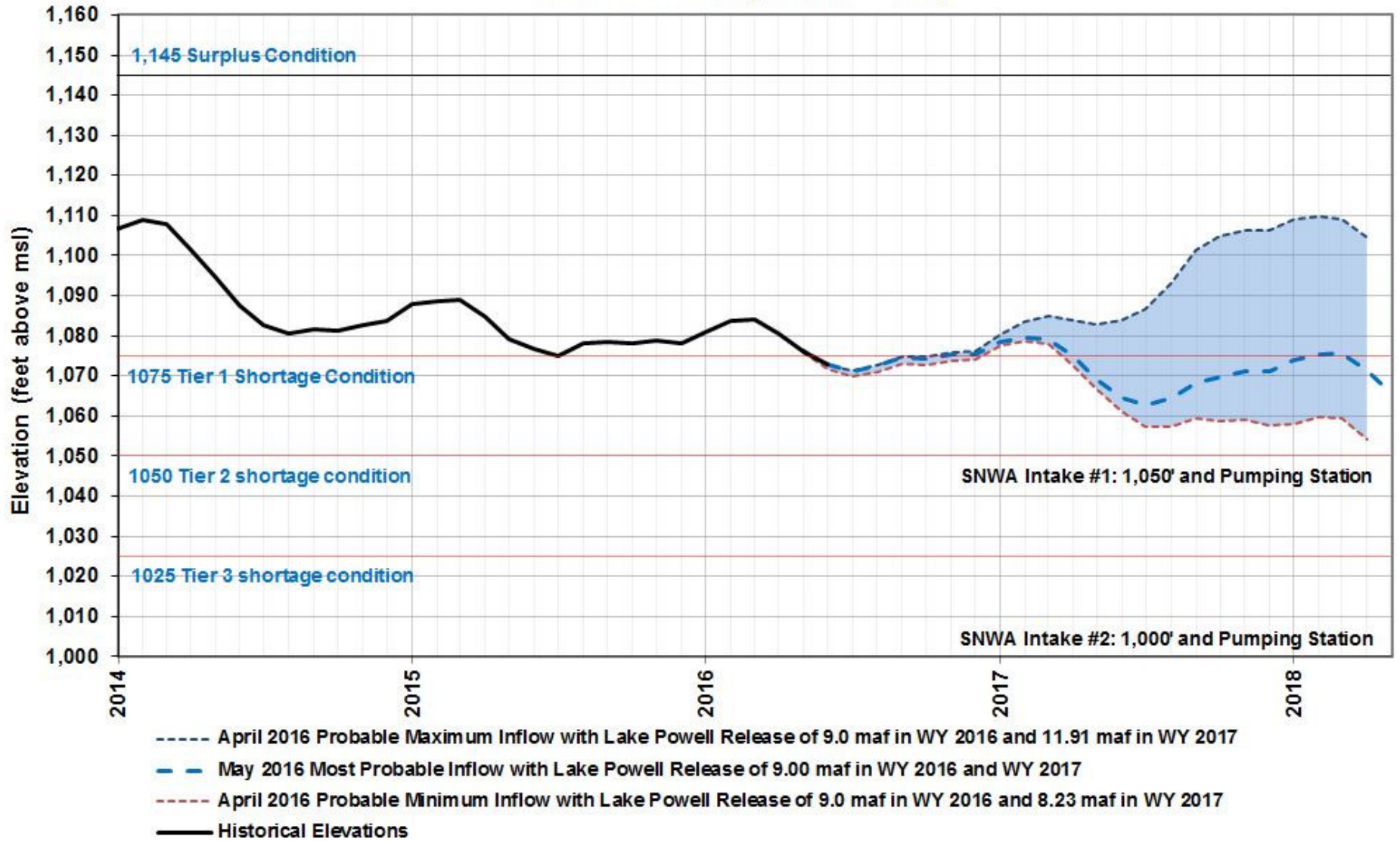
# Lake Powell Projections

## Reclamation's May 2016 24-Month Study



# Lake Mead Projections

Reclamation's May 24-Month Study



# April 2016 CRSS Results

Results from April CRSS Run (Values in percent)

<b>Probability of Occurrence</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Shortage 1st Level (Mead 1,075 to 1,050)	10	56	46	40	33	25	22	20	18	16
Shortage 2nd Level (Mead between 1,050 and 1,025)	0	0	18	18	18	20	23	22	21	21
Shortage 3rd Level (Mead below 1,025)	0	0	0	6	10	13	16	18	21	23
Shortage Condition - Any Tier	10	56	64	64	61	59	60	61	60	60
Mead < 1,025' in Any Month	0	0	9	14	19	22	25	29	30	30
Mead < 1,000' in Any Month	0	0	1	3	6	9	11	10	13	15



# U.S. Drought Monitor






## West

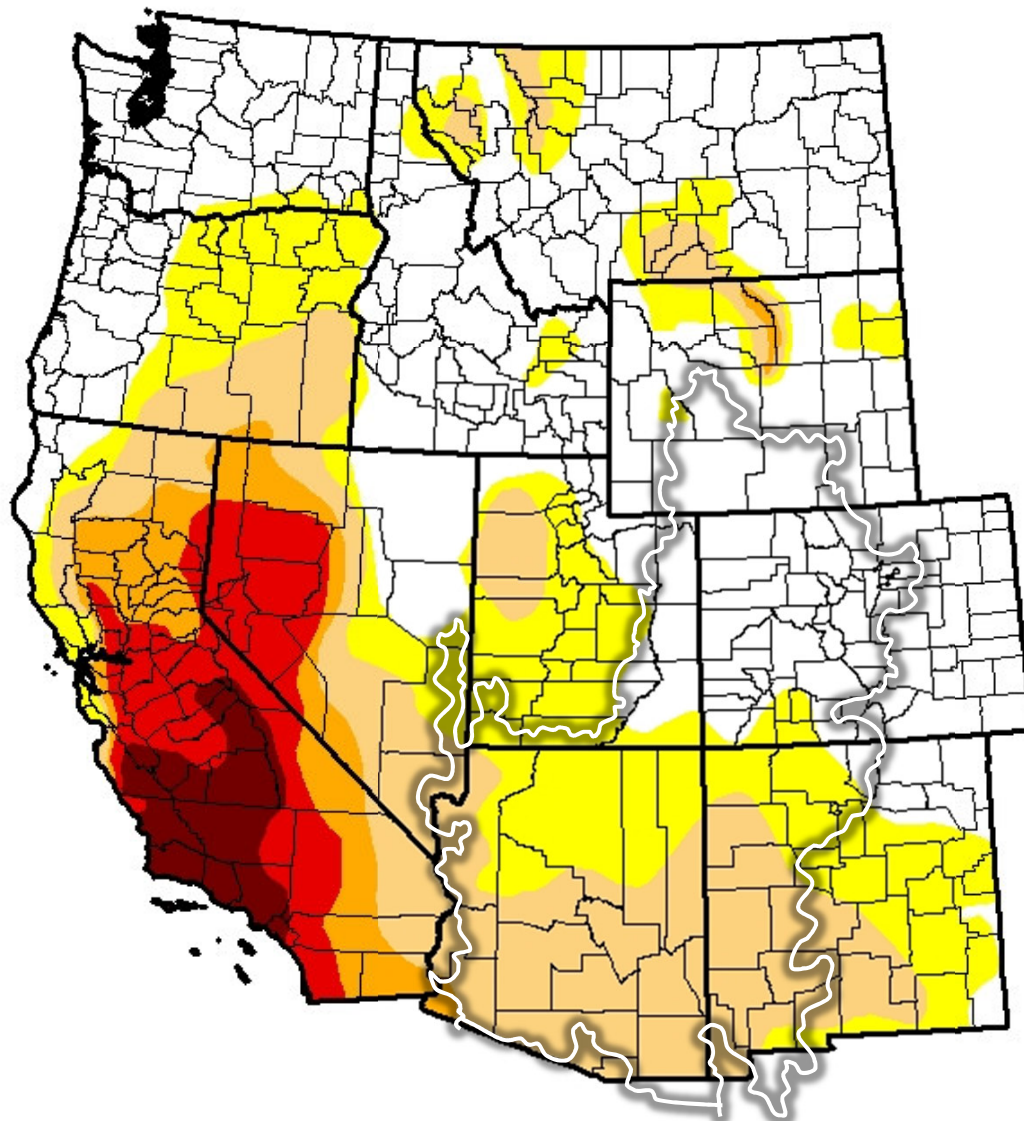
**May 10, 2016**

*(Released Thursday, May. 12, 2016)*

Valid 8 a.m. EDT

### Intensity:

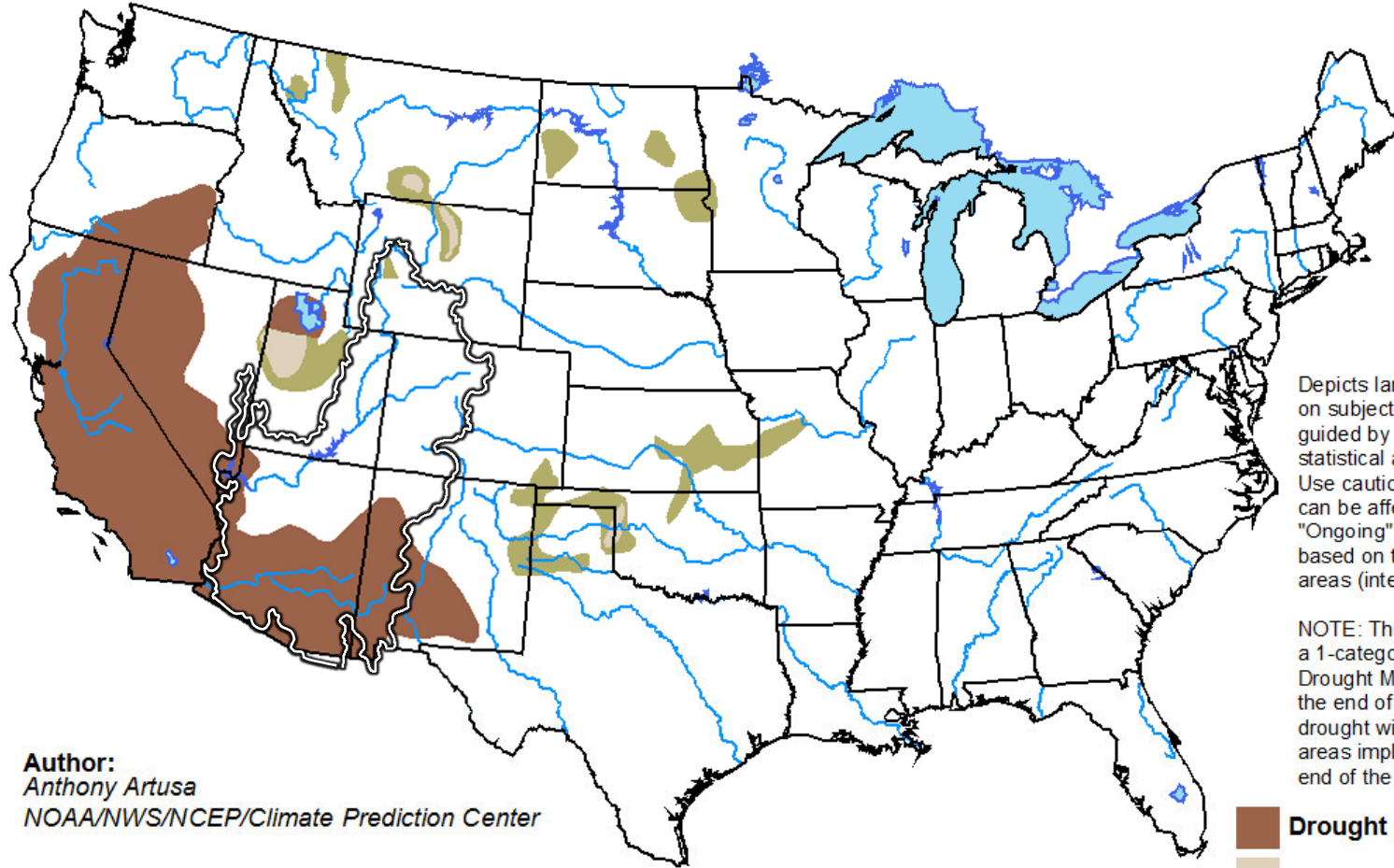
-  D0 - Abnormally Dry
-  D1 - Moderate Drought
-  D2 - Severe Drought
-  D3 - Extreme Drought
-  D4 - Exceptional Drought



# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

Valid for April 21 - July 31, 2016  
Released April 21, 2016

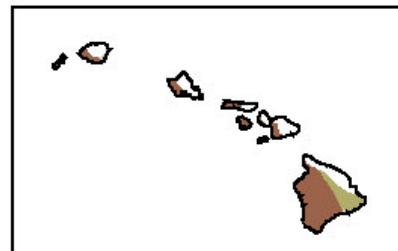
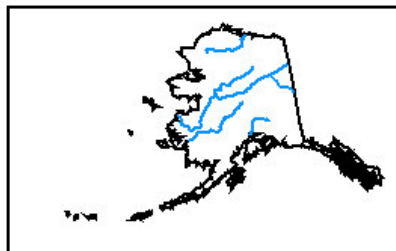


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

Author:  
Anthony Artusa  
NOAA/NWS/NCEP/Climate Prediction Center

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



<http://go.usa.gov/3eZ73>

# Precipitation – Colorado River Basin

As of May 16, 2016

## Upper Colorado Basin

WY Precip to Date

101% (22.8")

Current Basin Snowpack

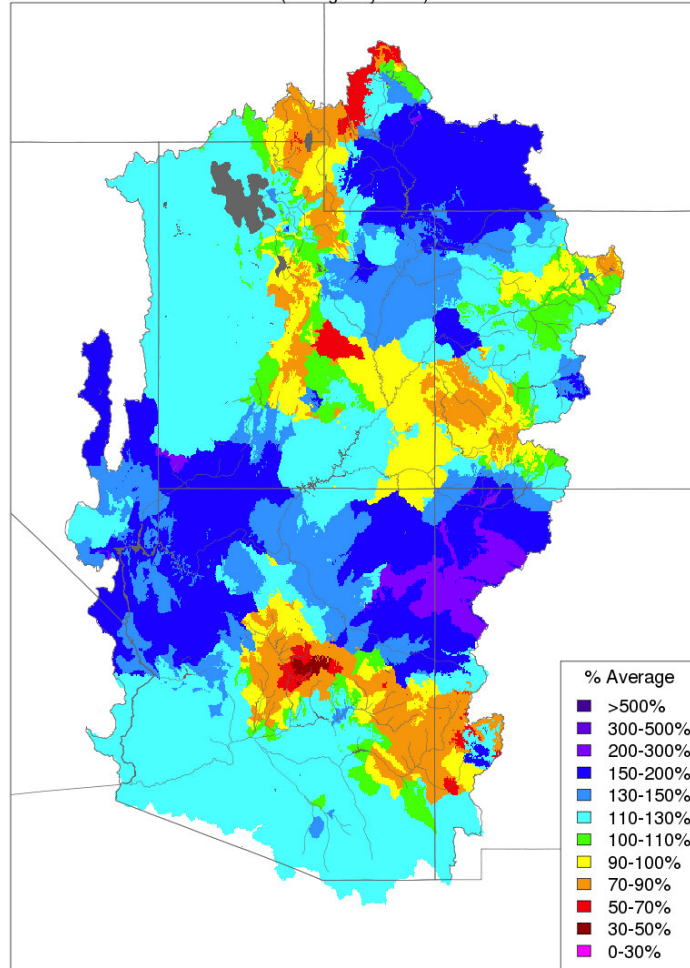
NA

(Avg 1981-2010)



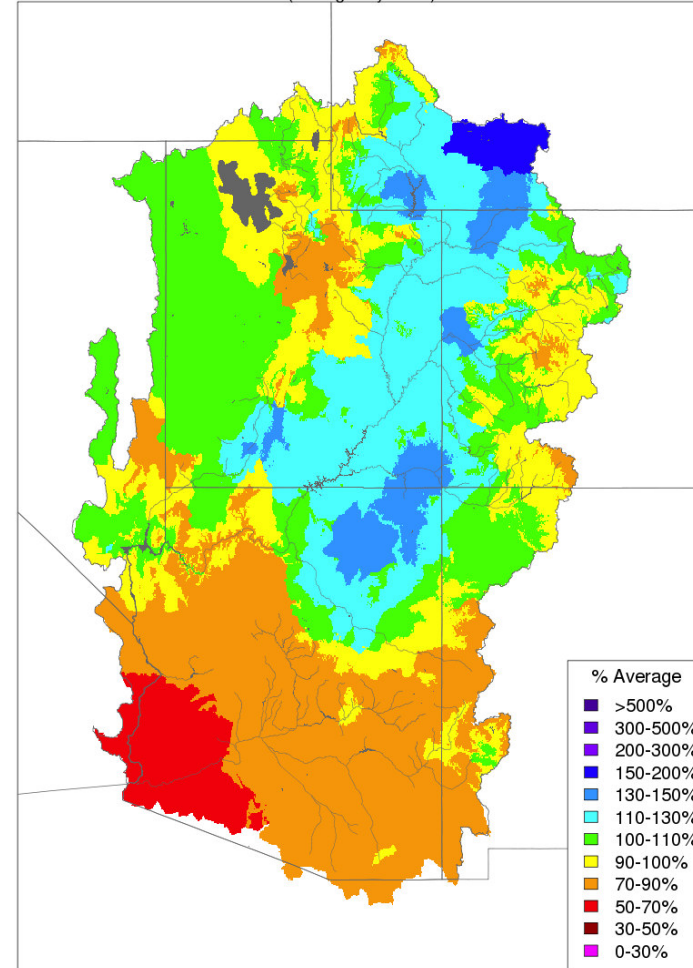
# Precipitation

Monthly Precipitation - April 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 - April 2016  
(Averaged by Basin)

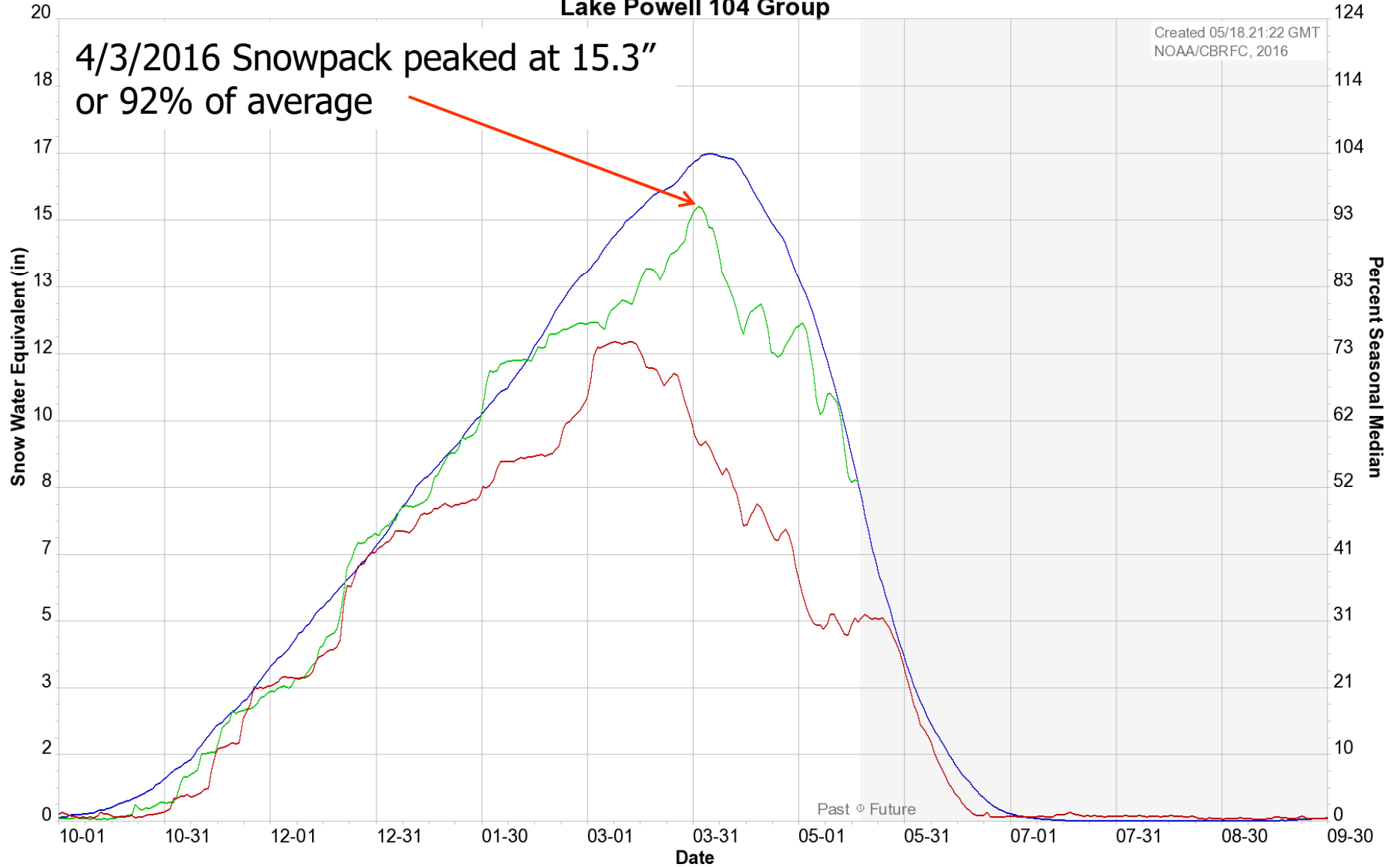


Prepared by NOAA, Colorado Basin River Forecast Center  
Salt Lake City, Utah, [www.cbrfc.noaa.gov](http://www.cbrfc.noaa.gov)

Colorado Basin River Forecast Center  
Lake Powell 104 Group

Created 05/18.21:22 GMT  
NOAA/CBRFC, 2016

4/3/2016 Snowpack peaked at 15.3"  
or 92% of average



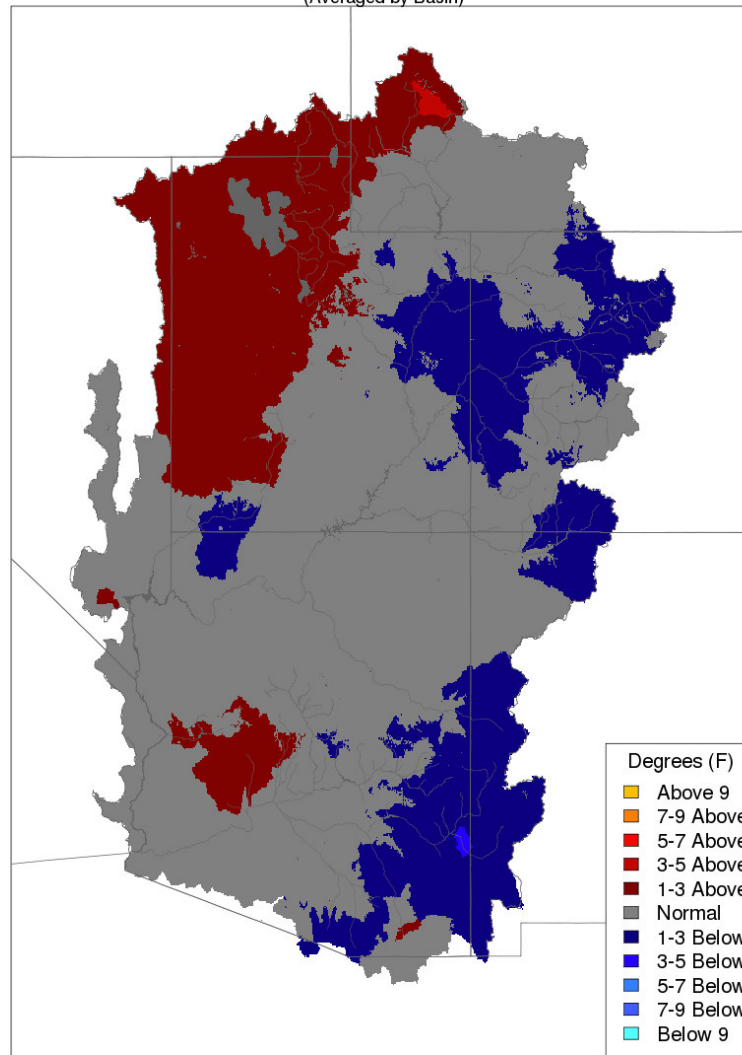
Average 1981-2010 — 2016 — 2015 —

# Temperature Deviations

Monthly Averaged Temperature Anomaly

Max Temp - Monthly Deviation - April 2016

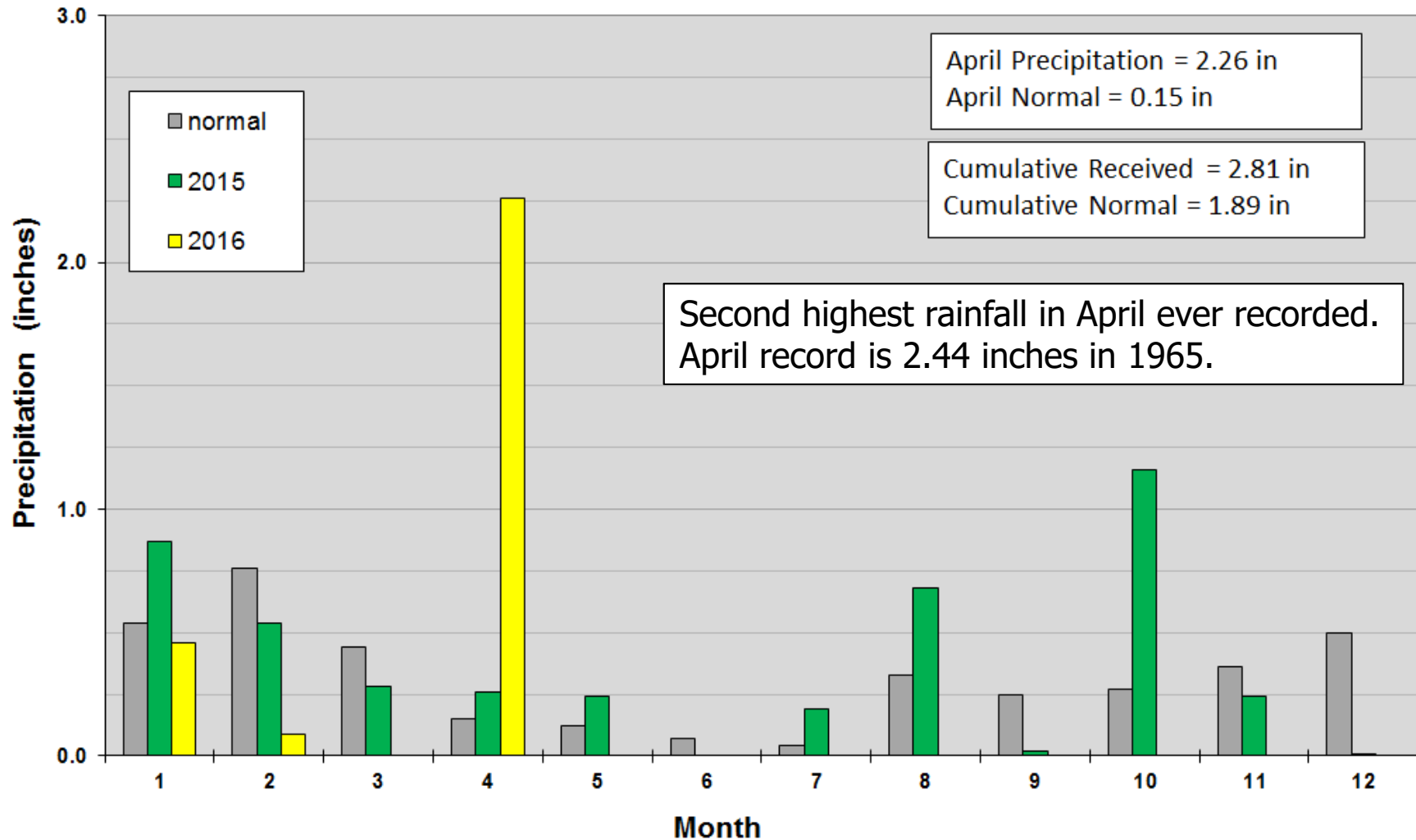
(Averaged by Basin)



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

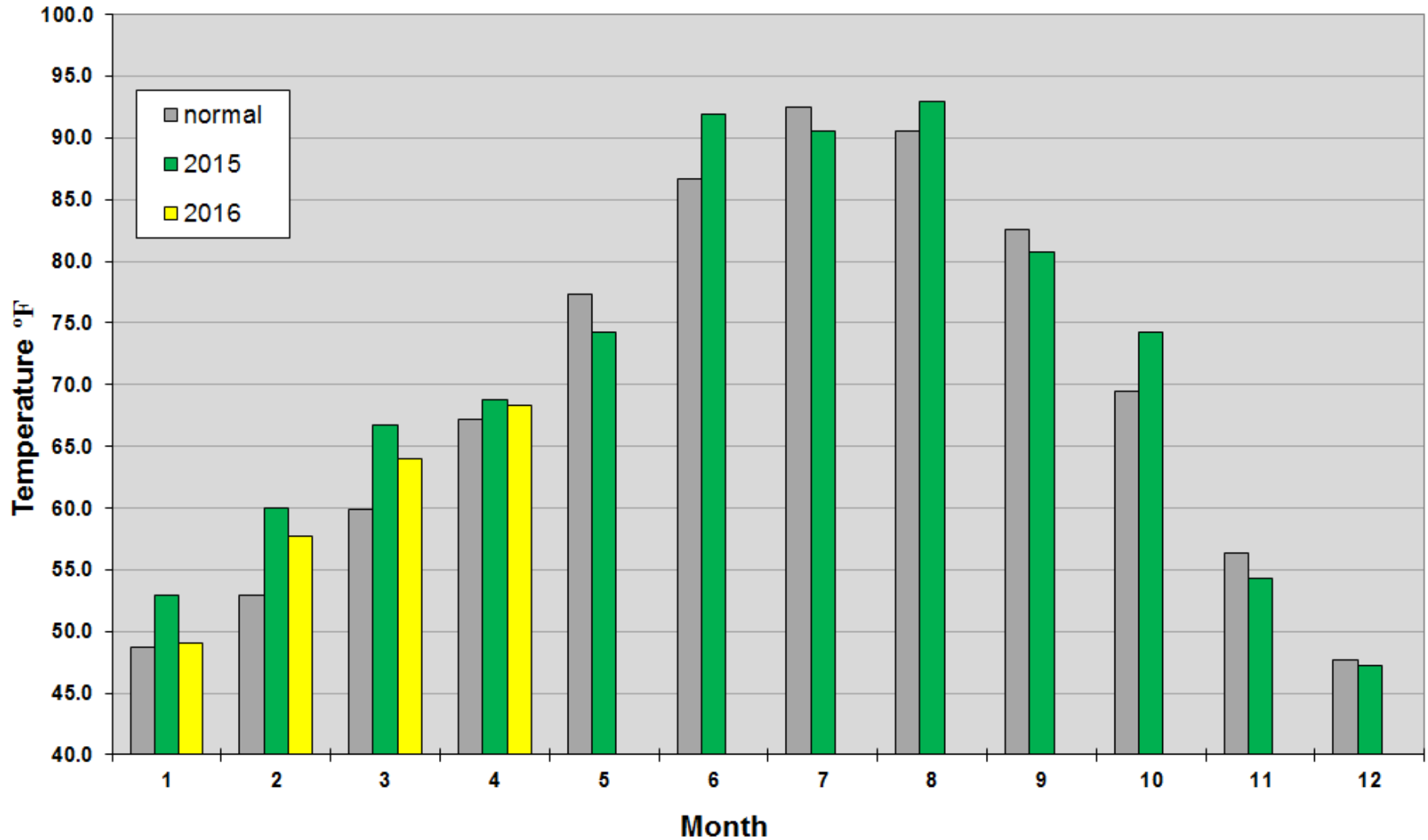
# Las Vegas Precipitation

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



# Las Vegas Average Temperature

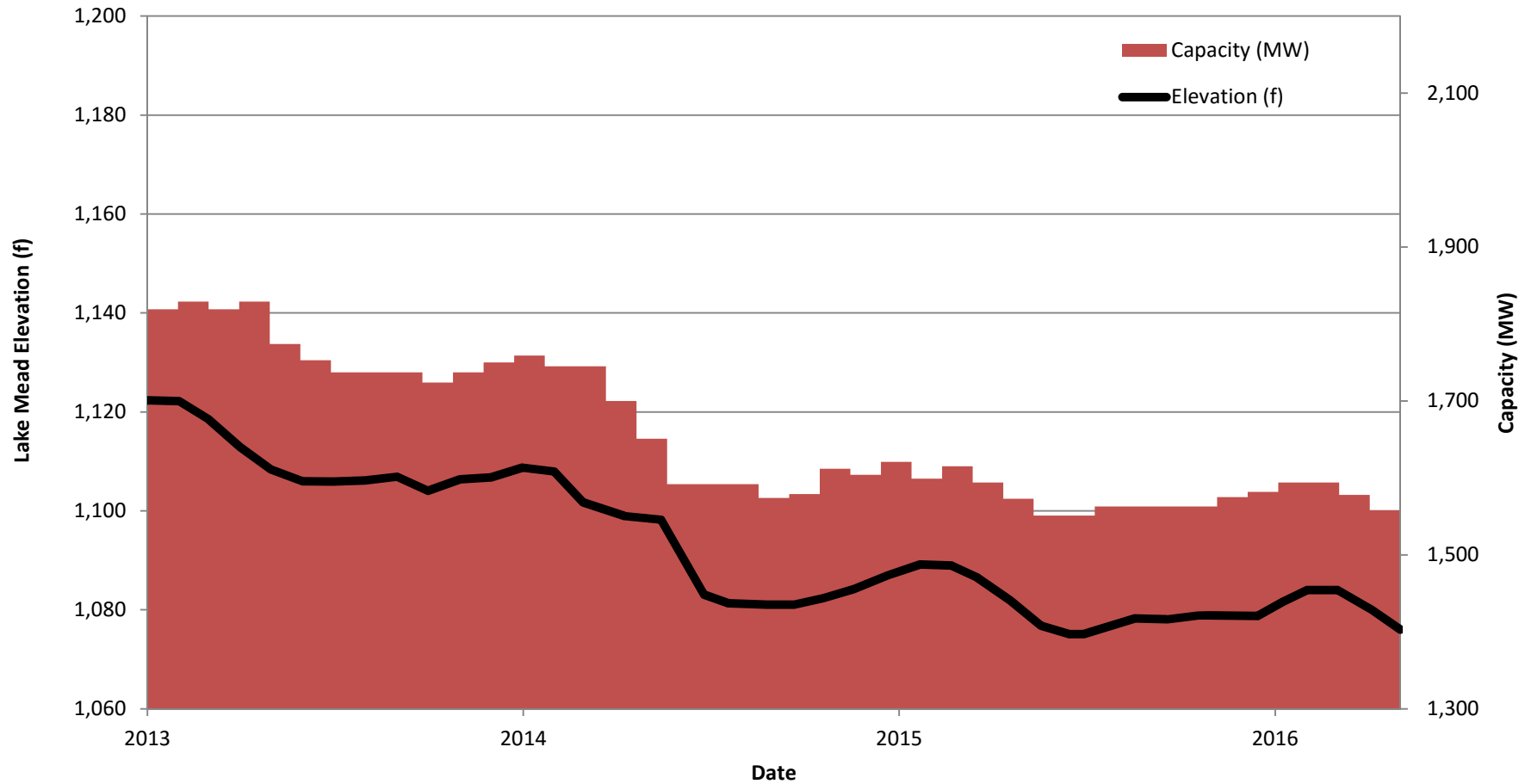
**Average Monthly Temperature at McCarran Airport, Las Vegas, NV**





# Hydropower Capacity

Lake Mead Elevation and Hoover Powerplant Generation Capacity



- On May 5, 2016 capacity was decreased 20 MW to 1,558 MW.

# Water Use in Southern Nevada



# Consumptive Use Jan–Mar 2015 vs Jan-Mar 2016

28.9% or 8,284 af increase in consumptive use during two time periods.

- SNWS diversions increased 7,691 af.
- Decrease in return flow credits of 675 af.

## **Factors for increased diversions:**

- Increase in SNWA customer growth with 7,313 new accounts.
- February 2016 was leap year that includes 1 additional day of water use (800-900 af diversion).
- Operational changes (decreased well field pumping).

Early in the year smaller total consumptive use numbers can cause larger percent changes. Jan–Mar has smaller diversions compared to months May-Aug.



# Water Use in Southern Nevada

January – April 2016

2016: Consumptive Use = 55,339\* af

2015: Consumptive Use = 49,532 af

**Difference = 5,807 af**

\*Subject to final accounting.



# Water Use Comparison

January - April

<b>Water Use</b>	<b>2015</b> Acre Feet	<b>2016</b> Acre Feet	<b>Difference</b>	<b>% Change</b>
Las Vegas Wash Gauged Flow	74,881	77,906	3,025	4.0%
Diversions	123,784	128,964	5,180	4.2%
Return Flow Credit	74,532	73,625	-627	-0.8%
Consumptive Use	49,532	55,339	5,807	11.7%

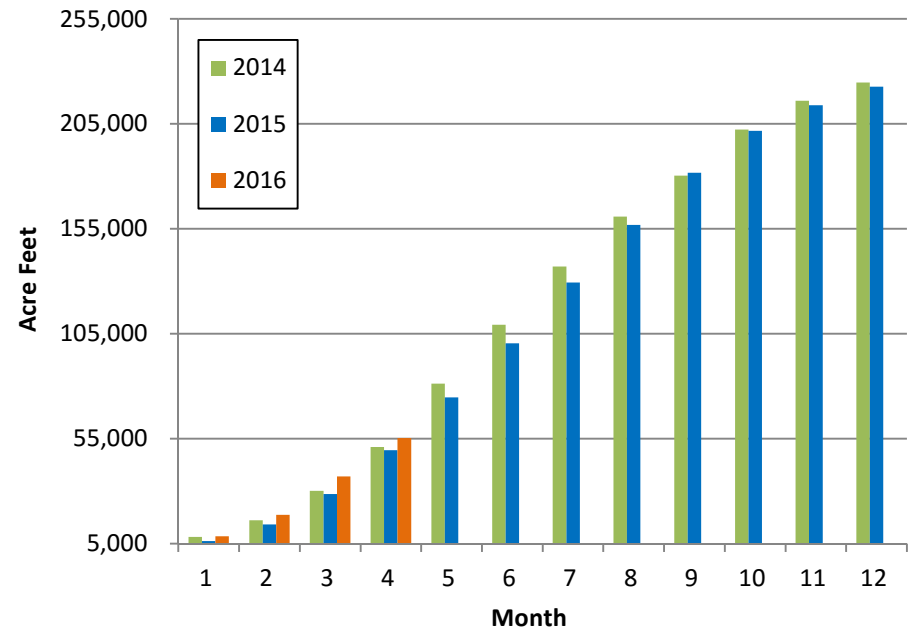
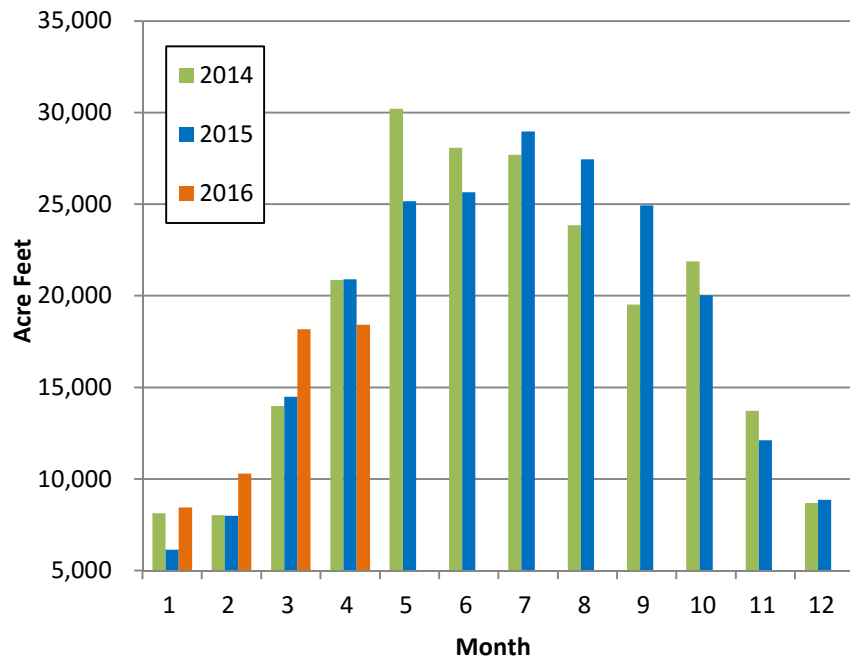


## Monthly consumptive use

	2014	2015	2016
Jan	8,128	6,146	8,451
Feb	8,027	7,994	10,294
Mar	13,981	14,490	18,170
Apr	20,871	20,902	18,425
May	30,199	25,153	
Jun	28,079	25,653	
Jul	27,686	28,968	
Aug	23,856	27,450	
Sep	19,514	24,940	
Oct	21,871	20,026	
Nov	13,714	12,117	
Dec	8,697	8,859	
<b>Total</b>	<b>224,622</b>	<b>222,699</b>	

## Cumulative consumptive use

	2014	2015	2016
Jan	8,128	6,146	8,451
Feb	16,155	14,140	18,744
Mar	30,136	28,630	36,914
Apr	51,006	49,532	55,339
May	81,206	74,685	
Jun	109,285	100,338	
Jul	136,971	129,307	
Aug	160,827	156,757	
Sep	180,341	181,697	
Oct	202,212	201,723	
Nov	215,926	213,840	
Dec	224,622	222,699	
<b>Total</b>	<b>224,622</b>		



# Colorado River Commission of Nevada

## Questions?

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