Water Supply 2016
Early Outlook Briefing

December 10, 2015

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* Please mute your phone until ready to ask questions *
Initial Hydrologic Conditions
   Fall weather review - precipitation, snowpack, soil moisture

Early 2016 Runoff Outlook
   Raw model guidance

Short Term Weather

El Niño and Long Term Outlook
   Current state, El Niño outlook, Historical impacts

CBRFC Products Update
   New and modified web page products
   2016 water supply briefings
2015 Fall Weather

September 2015

October 2015

Upper Atmosphere Pattern
2015 Fall Weather

November 2015

November 10-15 2015

Upper Atmosphere Pattern

Splitting storms
Water Year 2016 Precipitation

Seasonal Precipitation, October 2015 - November 2015
(Averaged by Hydrologic Unit)

% Average:
- > 150%
- 129 - 150%
- 110 - 129%
- 100 - 109%
- 90 - 99%
- 70 - 89%
- 50 - 69%
- < 50%
- Not Reported

Prepared by
NOAA, National Weather Service
Colorado River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov
Soil Moisture

CBRFC Model Soil Moisture
November 15, 2015

Model Soil Moisture
Lower Zone
(~deeper than 50 mm)
Current Snow – SNOTEL
Very early in the season. The percent of average observation will be impacted by just a couple of good storm systems.

Currently SNOTEL is at 45% of median

Today med 5.3 ~ 2.9 inch deficit
April med 20.3 ~ 11.2 inch deficit
Current Snow – Modeled SWE
Seasonal Water Supply Forecasts Have Ended.

Seasonal water supply forecasts are produced November through July. Check back during this period for seasonal forecasts.

Contact Us with any questions/comments you may have.
April-July 2016 Daily ESP
(as of 12/6/15)

652 KAF / 66% avg

Exceedance probability

The latest 2015-12-06 50% ESP forecast is 652 kaf.
Plot Created 2015-12-07 10:02:23, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.
April-July 2016 Daily ESP (as of 12/7/15)

1033 KAF / 83 % avg
April-July 2016 Daily ESP  
(as of 12/6/15)  
533 KAF / 79% avg
April-July 2016 Daily ESP (as of 12/7/15)

270 KAF / 92% avg
April-July 2016 Daily ESP (as of 12/6/15)

679 KAF / 85% avg
April-July 2016 Daily ESP
(as of 12/7/15)

64 KAF / 50% avg
April-July 2016 Daily ESP
(as of 12/6/15)

5667 KAF / 77% avg
April-July 2016 Daily ESP
(as of 12/7/15)

90 KAF / 76% avg
April-July 2016 Daily ESP
(as of 12/7/15)

38 KAF / 65% avg
Jan-May 2016 Daily ESP (as of 12/8/15)

68 KAF / 120% median

Jan-May 2016 Daily ESP (as of 12/8/15)

251 KAF / 81% median
WATER YEAR 2016 Model Guidance (April-July % Average)
Short Term Forecast

Today, December 10th at 930 am MST
Short Term Forecast

Friday December 11th
Short Term Forecast

Thursday December 17th
Short Term Forecast – Precipitation Totals Dec 10 – Dec 17
Long Term Outlook: ENSO Event

NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 12/7/2015

(white regions indicate sea-ice)
**CPC/NCEP Summary (as of 11/30/15)**

**ENSO Alert System Status: El Niño Advisory**

El Niño conditions are present.

Positive equatorial sea surface temperature (SST) anomalies continue across most of the Pacific Ocean.

El Niño will likely peak during the Northern Hemisphere winter 2015-16, with a transition to ENSO-neutral anticipated during the late spring or early summer 2016.

*El Niño: characterized by a positive ONI (3 month running mean of sea surface temperature anomalies) greater than or equal to 0.5°C.*

2015 among the strongest El Niño events

**Most recent ONI value (September - November 2015): 2.0°C**
Long Term Outlook - ENSO Impacts
Historical ENSO Impacts - Lake Powell

Strong Events:
1957-1958* (pre-Powell)
1965-1966 (below avg)
1972-1973 (above avg)
1982-1983 (above avg)
1991-1992 (below avg)
1997-1998 (near avg)

*Based on Reclamation Natural Flow, this was an above average year
Historical ENSO Impacts – Flaming Gorge
Historical ENSO Impacts – Lower Colorado

VIRU1 and Seasonal ONI

VDTA3 and Seasonal ONI
Climate Outlooks

Jan-Feb-Mar 2016
Feb-Mar-Apr 2016
Mar-Apr-May 2016
Apr-May-Jun 2016
May-Jun-Jul 2016
Jun-Jul-Aug 2016
Web Page Modifications
Monthly/Seasonal Precipitation Maps

- Lumped areas based on CBRFC model defined sub-areas vs. HUC
- Can be ‘trimmed’ to display most important areas for runoff contribution
  - more representative of how water supply conditions have been affected
  - these trimmed areas can then be used to compute the monthly %average precipitation
- Added additional increments to %average scale for better resolution of extreme events
- Available as an overlay on front page map
Monthly/Seasonal Precipitation Maps
Trimmed to runoff contributing areas
WEB PAGE

New Front Map Overlays

- Seasonal Precipitation (Water Year)
- Monthly Precipitation
- Month To Date
- Full and trimmed versions

- Fall Model Soil Moisture
- Current Model Soil Moisture
- Current Model ‘Inches to Saturation’
- Full and trimmed versions
Model Soil Moisture

Soil Moisture - December 02 2015
(Modeled, Averaged by Basin)

Inches to Saturation

% Average:
- >500%
- 300-500%
- 200-300%
- 150-200%
- 130-150%
- 110-130%
- 100-110%
- 90-100%
- 70-90%
- 50-70%
- 30-50%
- 0-30%

Prepared by NOAA, Colorado-Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov
Web Page Modifications

- Upper Colorado Situational Awareness Page
  - One location for snow, precip, soil moisture, etc
  - Runoff forecast information and contribution breakdown from the larger River Basins.
  - The ability to view the “trimmed” basins, those that are most important to the runoff volumes

- Inclusion of the 30 / 70 % exceedance forecasts.
2016 water supply briefings

- Tentative dates for 2016 monthly water supply briefings
  - Thursday Jan 7th @ 1 pm MT
  - Thursday Feb 4th @ 1 pm MT
  - Friday Mar 5th @ 11 am MT
  - Thursday Apr 7th @ 1 pm MT
  - Thursday May 5th @ 1 pm MT

- Additional briefings and a peak flow briefing will be scheduled as needed.

- Date/Times are subject to change. All registration information will soon be posted to the CBRFC web page.
SNOW- Not off to a strong start in many areas but also not worrisome this early in the game.

SOIL MOISTURE– Will have a negative impact on spring runoff in most areas with a few exceptions.

RUNOFF VOLUMES – Too early for excitement or despair. Great Basin is currently looking the worst while the Upper Colorado Basin is near to below average. The Lower Colorado is quite dependent on winter rain so El Niño offers room for optimism there.

EL NIÑO – It is among the strongest on record and expected to continue into the spring. Historically doesn’t mean much for Lake Powell Inflow but a there is a tendency for wetter conditions in the Lower Colorado Basin and drier conditions in the upper Green River Basin. That said both high and low runoff years have occurred during El Niño events throughout our forecast area. The El Niño relationships are not conclusive.

This is where it gets fun – expect conditions to vary over the next few months.