May 2016
Colorado River Basin Water Supply Briefing

May 5, 2016

Paul Miller – Service Coordination Hydrologist

Colorado Basin River Forecast Center
National Weather Service
NOAA

Conference Phone #: 877-929-0660
Passcode #: 1706374

Please mute your phone until ready to ask questions
April Weather

Current conditions impacting forecasts

Overview of May water supply forecasts

Peak flow forecasts

Upcoming weather and longer range outlooks

Contacts

* Please mute your phone until ready to ask questions *
April Weather
April 2016 Notables for Las Vegas

All of these data are valid for McCarran International Airport. Records date back to 1938.

Total Rainfall for the Month

- 2.26 inches (2nd all time for April)
- Monthly record is 2.44 inches (1965)
- The last month with over 2 inches of rain was August 2012.

Number of Measurable Precipitation Days

- 7 (2nd all time for April)
- Monthly record is 8 (1965)
- Two days with greater than 0.50 inches measured. For a single calendar day, this has occurred only 7 times in April.

Number of Thunderstorm Days

- 5 (1st all time for April)
- Previous record was 4 (1941)

Other Notables

- The 0.93 inches recorded on April 30 was the 2nd highest for an April calendar day. The highest was 0.97 inches on April 12, 1965.
- Number of calendar day precipitation records broken in 2016: 4.
April Precipitation

Monthly Precipitation - April 2016
(Averaged by Basin)

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

126%

Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov
Water Year Precipitation

Upper Colorado significant runoff contributing areas

Some improvement since last month

Upper Colorado ~98% average

Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov
Snow (% median): May 3, 2016

Percent median snow water equivalent changes since April 1:

- Generally increased due to storms and cooler temperatures in the latter half of April.
- Continued snowmelt in the San Juan River Basin; impacts from recent storms were a bit less.

Be cautious of percent of median values this time of year. Low normal values can result in large changes and swings in the percent of median value!
Snow - SNOTEL Network

Snow (% median): May 3, 2016
Snow – CBRFC Hydrologic Model

Snow Conditions - April 01 2016
(Modeling, Major Contributing Areas)

Snow Conditions - May 01 2016
(Modeling, Major Contributing Areas)
Dry fall soil moisture conditions over most of the Upper Colorado River Basin (as represented by the CBRFC’s hydrologic model) have negatively impacted streamflow forecasts this year.

Lower basin conditions can be more variable, as fall and spring rains and other storm events can impact soil moisture conditions significantly.
This “Inches to Saturation” soil moisture map gives an indication of where soils are becoming saturated in the CBRFC hydrologic model due to snowmelt and/or rainfall. Dark green areas show where the model may begin to produce runoff with additional moisture input.

This map is primarily intended to assess runoff efficiency in the Lower Colorado River Basin during winter rain events.

It does not affect the water supply volume forecasts in the Upper Colorado River Basin, but can provide some information during the spring snowmelt.
April – July Forecast Streamflow Volumes

Change in the Percent of Average forecast between April 1 and May 1

- **Lake Powell:** 5500 KAF / 77% (+200 KAF)
- **Navajo Res:** 520 KAF / 71% (-10 KAF)
- **Blue Mesa:** 525 KAF / 78% (+10 KAF)
- **McPhee Res:** 215 KAF / 73% (-40 KAF)
- **Colorado-Cameo:** 2140 KAF / 91% (+80 KAF)
- **Flaming Gorge:** 770 KAF / 79% (+30 KAF)
- **Yampa-Deerlodge:** 1250 KAF / 101% (+120 KAF)

May 1 Forecast of April – July Volume Percent of Average

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April-July 2016 Official Forecast (as of 5/1/16)

770 KAF / 79% avg

Exceedance probabilities

10%  30%  50%  70%  90%

Daily Model Guidance

Official Forecast

Observed Volumes

The latest (2016-05-03) 50% ESP forecast is 788 KAF.

Plot Created 2016-05-03 15:58:44, NOAA / NWS / CBRFC

Forecasts in the forecast target period include observed values.

ESP is Unregulated and No Precipitation Forecast Included
April-July 2016 Official Forecast  
(as of 5/1/16)

192 KAF / 50% avg

Purple lines indicate the daily ESP values do not include observed-to-date data so volumes are for current day forward, not full April-July period.

**Purple ESP forecasts do not include observed and are not total runoff.**
April-July 2016 Official Forecast
(as of 5/1/16)

1250 KAF / 101% avg
Forecast Evolution Plot – Dillon Reservoir

April-July 2016 Official Forecast (as of 5/1/16)

170 KAF / 104% avg

The latest (2016-05-03) 50% ESP forecast is 165 kaf.
Plot Created 2016-05-03 15:49:19, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.
Forecast Evolution Plot – Blue Mesa Reservoir

April-July 2016 Official Forecast
(as of 5/1/16)

525 KAF / 78% avg

The latest (2016-05-03) 50% ESP forecast is 537 kaf.
Plot Created 2016-05-03 15:41:35, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.
Dolores - Mcphee Res (MPHC2)
2016-05-01 Apr-Jul Official 50% Forecast: 215 kaf (73% of average)
ESP is Unregulated and No Precipitation Forecast Included

April-July 2016 Official Forecast (as of 5/1/16)
215 KAF / 73% avg

The latest (2016-05-03) 50% ESP forecast is 227 kaf.
Plot Created 2016-05-03 16:08:53, NOAA / NWS / CBR FC
Forecasts in the forecast target period include observed values.
Forecast Evolution Plot – Navajo Reservoir

April-July 2016 Official Forecast (as of 5/1/16)

520 KAF / 71% avg

The latest (2016-05-03) 50% ESP forecast is 566 kaf.
Plot Created 2016-05-03 16:10:39, NOAA / NWS / CBRFC
Forecasts in the forecast target period include observed values.
Forecast Evolution Plot – Lake Powell

April-July 2016 Official Forecast (as of 5/1/16)

5500 KAF / 77% avg
No longer making forecasts for Arizona River Basins this season. These are from last month.
April-July 2016 Official Forecast
(as of 5/1/16)
49 KAF / 84% avg
April precipitation in the Northern and Northeastern portion of the Upper Colorado River Basin resulted in moderate increases in the Yampa, Upper Colorado, and Gunnison regions

Dry conditions persisted in the Four Corners area, resulting in decreased forecasts in the San Juan and Dolores regions

Snowpack generally improved as a percent of median in the Green, Yampa, and Colorado Headwater regions, particularly at higher elevations. Snowpack in the Southwest and Lower Colorado River Basin has basically melted out
The chance of El Niño gradually decreases during the spring and ENSO-neutral is favored during May-June-July (MJJ) 2016. The chance of La Niña increases to more than 50% in August-September-October (ASO) 2016.
What about La Niña?

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<th>Average ONI (Aug-Mar)</th>
<th>Average ONI one year later</th>
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<td>57-58</td>
<td>1.41</td>
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<tr>
<td>63-64</td>
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<td>65-66</td>
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<tr>
<td>87-88</td>
<td>1.09</td>
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<td>91-92</td>
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<td>02-03</td>
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<td>1.66</td>
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</tr>
<tr>
<td>82-83</td>
<td>1.90</td>
<td>-.55</td>
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<td>97-98</td>
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<td>???</td>
</tr>
<tr>
<td>Average</td>
<td>1.89</td>
<td>-1.17</td>
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What about La Niña?
Snow and ENSO (ENSnow?)

April 1 SWE (% median)
No site is currently forecast to exceed flood stage due to snowmelt at this time.

Forecasts and/or flood levels do not exist on every stream.

Spring weather, such as extended periods of much above normal temperatures or heavy rainfall during melt, can cause flooding problems in any year.

From CBRFC homepage (www.cbrfc.noaa.gov):
-> “Rivers” drop down menu
-> select Peak Flow Map or List

list: http://www.cbrfc.noaa.gov/rmap/peak/peaklist.php
Forecast is for magnitude of peak only, not timing. As time of peak nears, please refer to daily forecast hydrographs for up-to-date information.
Upcoming Weather – A wet weekend ahead?

Dry and warm conditions will be prevalent until Friday, when a closed low will settle over the area and potentially bring precipitation to much of the CBRFC region.

Weather outlook

Closed low could bring precipitation over much of the CBRFC region this weekend.
24-Hour Precipitation Forecast
5AM 05/06 through 05/07

May 5, 2016 Forecast
Climate Prediction Center is showing increased chances for warmer and wetter conditions in our region over the next 8-14 days.
Climate Prediction Center is showing increased chances for wetter, warmer conditions over the next 3 months.
Rest of the season...

- Unless there’s a want for it, or another unusual May, we do not have any future Colorado Water Supply webinars scheduled, but definitely let us know if you need anything!
- Great Basin Webinar May 6th (tomorrow!) at 10 a.m. Mountain

Contacts:

Green River Basin: Ashley Nielson ashley.nielson@noaa.gov
Gunnison/Dolores/San Juan: Greg Smith greg.smith@noaa.gov
Upper Colorado: Brenda Alcorn brenda.alcorn@noaa.gov
Lower Colorado: Tracy Cox tracy.cox@noaa.gov

Today’s slides available online: www.cbrfc.noaa.gov/present/present2016.cgi