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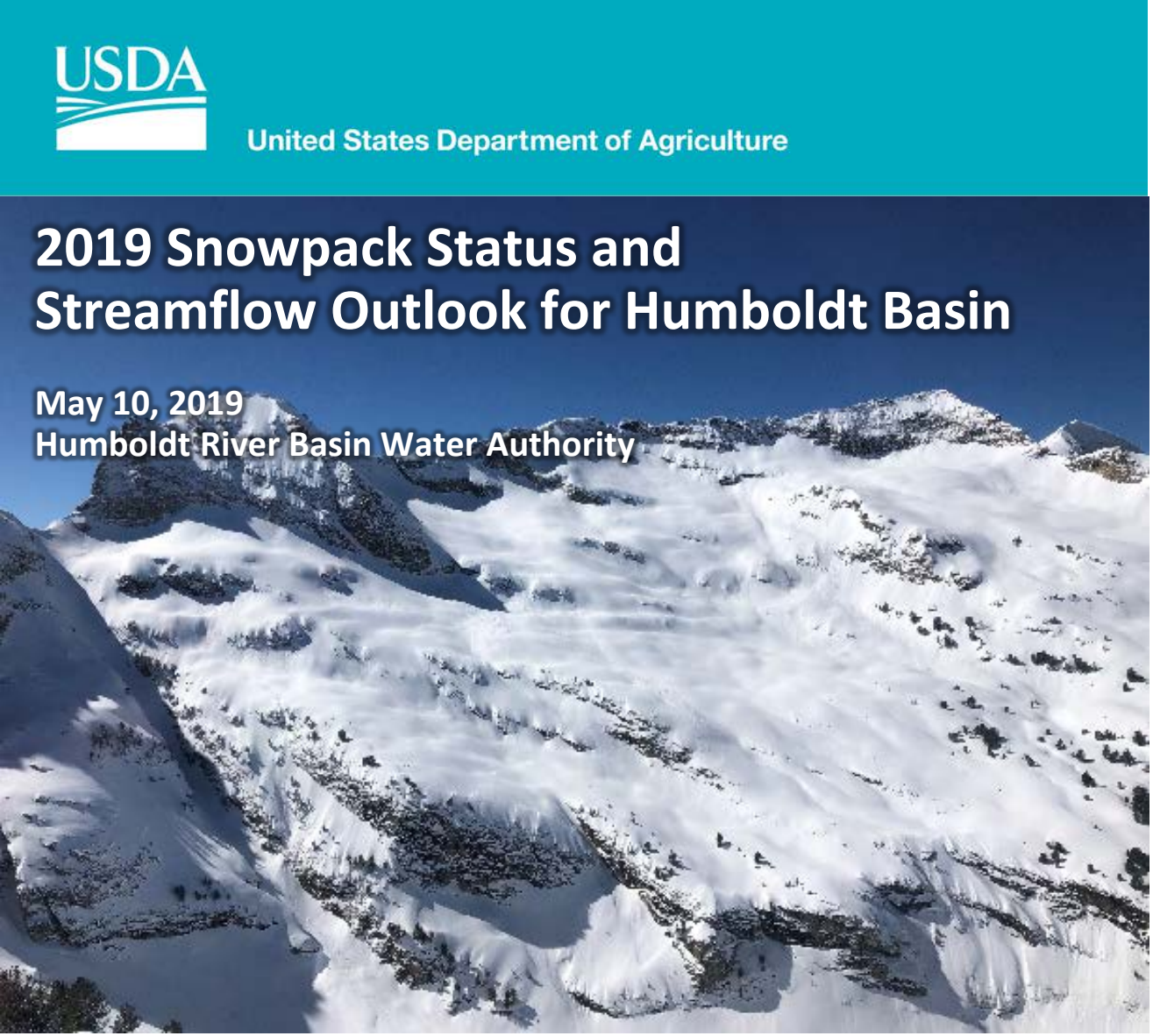
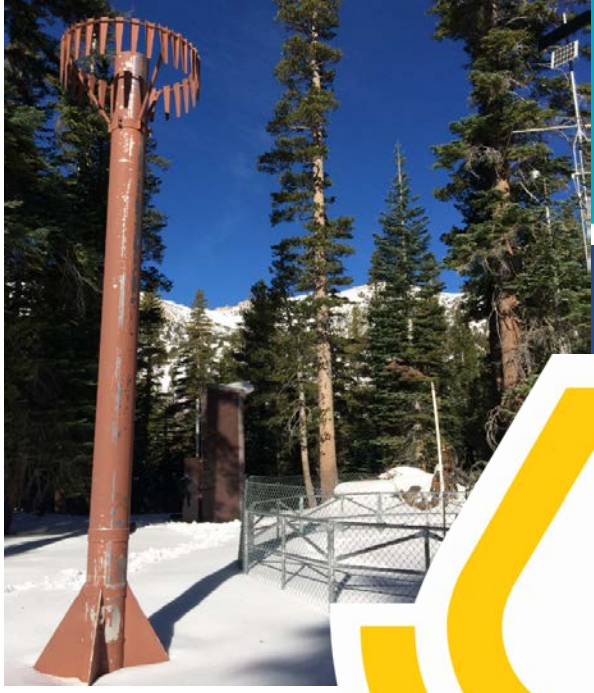
2019 Snowpack Status and Streamflow Outlook for Humboldt Basin

May 10, 2019
Humboldt River Basin Water Authority



Ruby Mountains - Seitz Canyon 3/11/19 *Courtesy - Ruby Mtns Heli Skiing*



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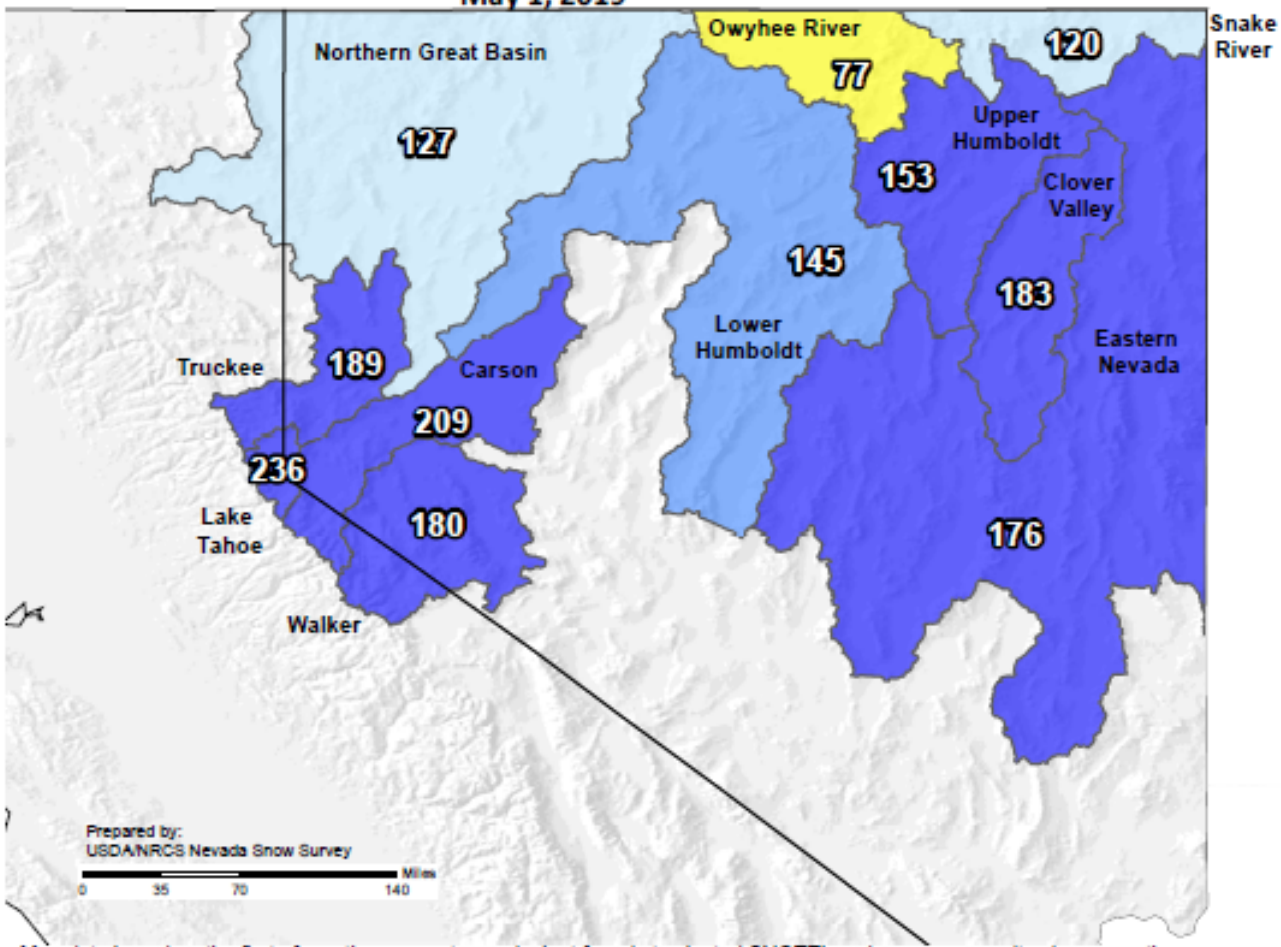
https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/

Natural Resources Conservation Service

Nevada & Eastern Sierra
Percent of Median Snowpack
May 1, 2019



1st of Month Snow Water Equivalent Basin-wide Percent of 1981-2010 Median

- <50%
- 50-69%
- 70-89%
- 90-109%
- 110-129%
- 130-150%
- >150%

Provisional data subject to revision

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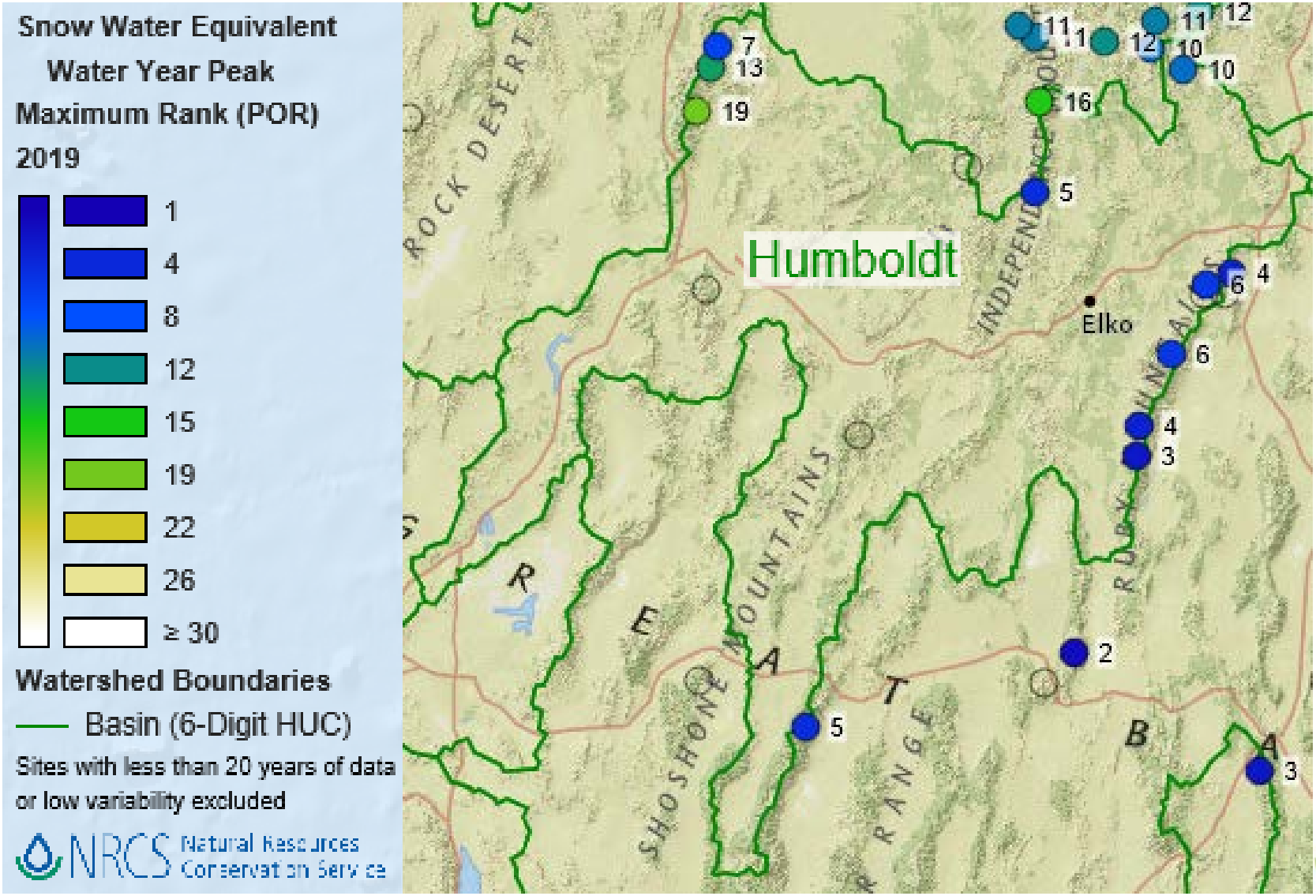
Natural Resources Conservation Service

Map data based on the first of month snow water equivalent found at selected SNOTEL and snow course sites in or near the basin compared to the median value for those sites. SNOTEL data based on the first reading of the day (typically midnight). Snow course data based on measurements taken within the last 5 days of preceding month. A table based, station-by-station, report of the underlying data can be found by selecting "Nevada" and report type "Snowpack" for the date listed above on the following webpage: http://www.wcc.nrcs.usda.gov/basin.html.

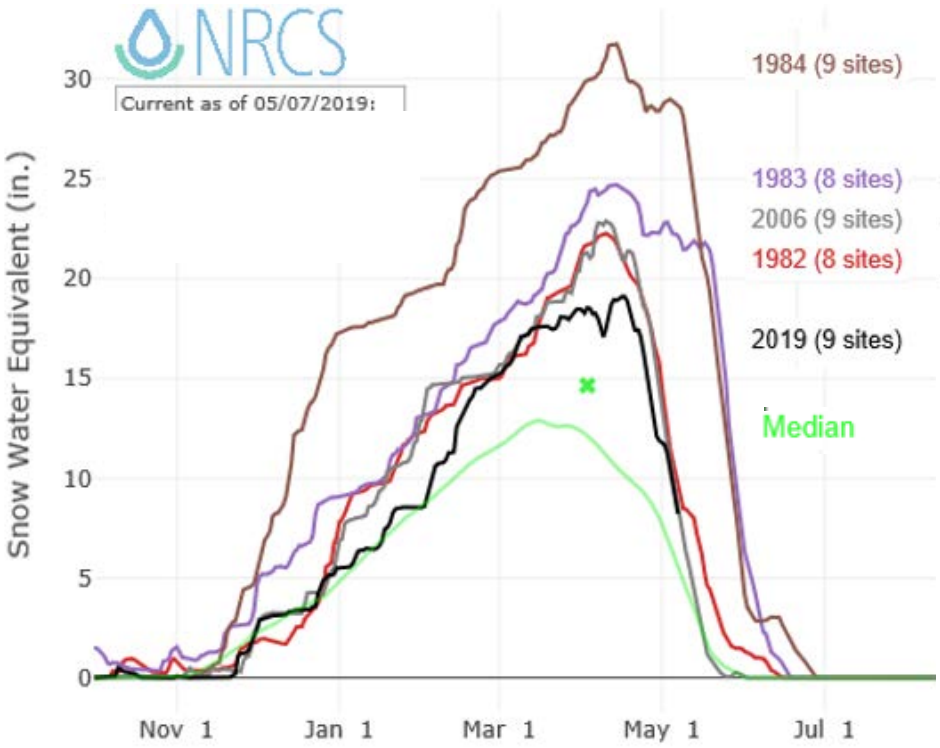
2019 Peak Snowpack Ranked High

(especially Upper Humboldt which ranked top 6)

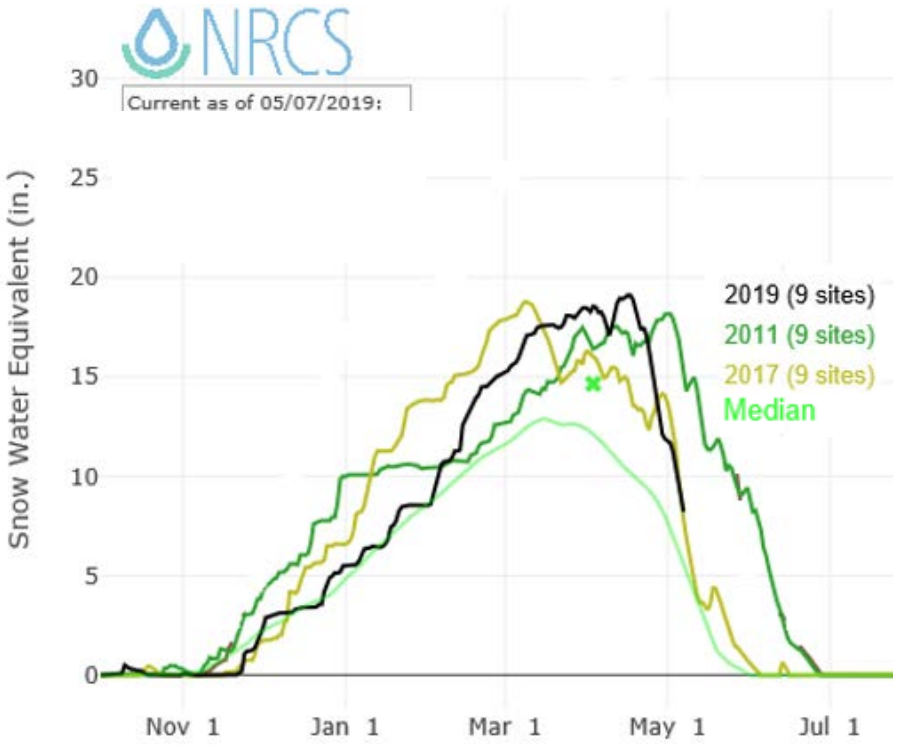


Snow Water Equivalent in Upper Humboldt River Basin

Bigger Years
1984, ‘83, ‘06, ‘82

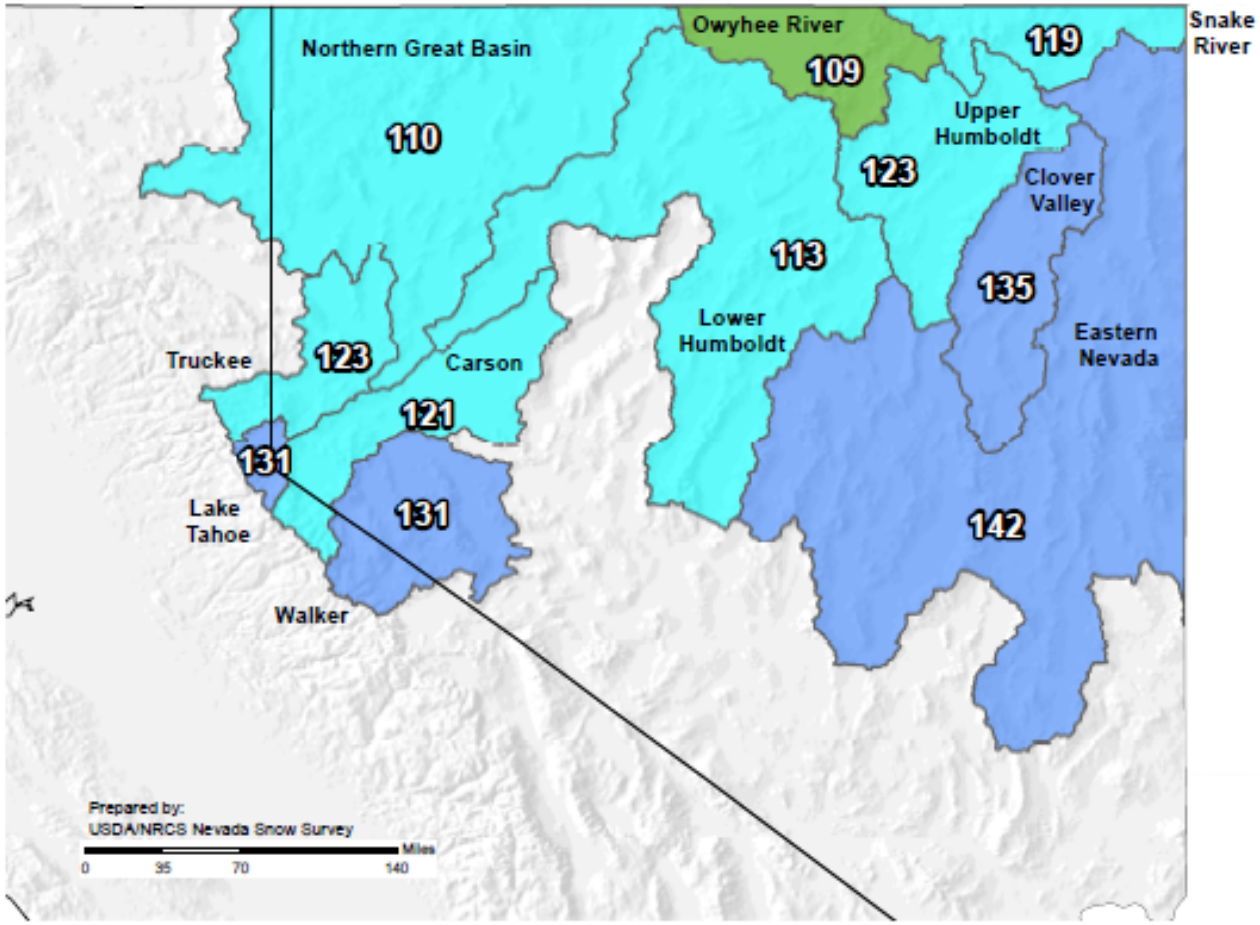


Similar Years
2011 and 2017



Resources Conservation Service

Nevada & Eastern Sierra
Water Year to Date Precipitation
October 1, 2018 through May 1, 2019



Basin-wide Water Year Precipitation to Date as a Percent of the 1981-2010 Average

- <50%
- 50-69%
- 70-89%
- 90-109%
- 110-129%
- 130-150%
- >150%

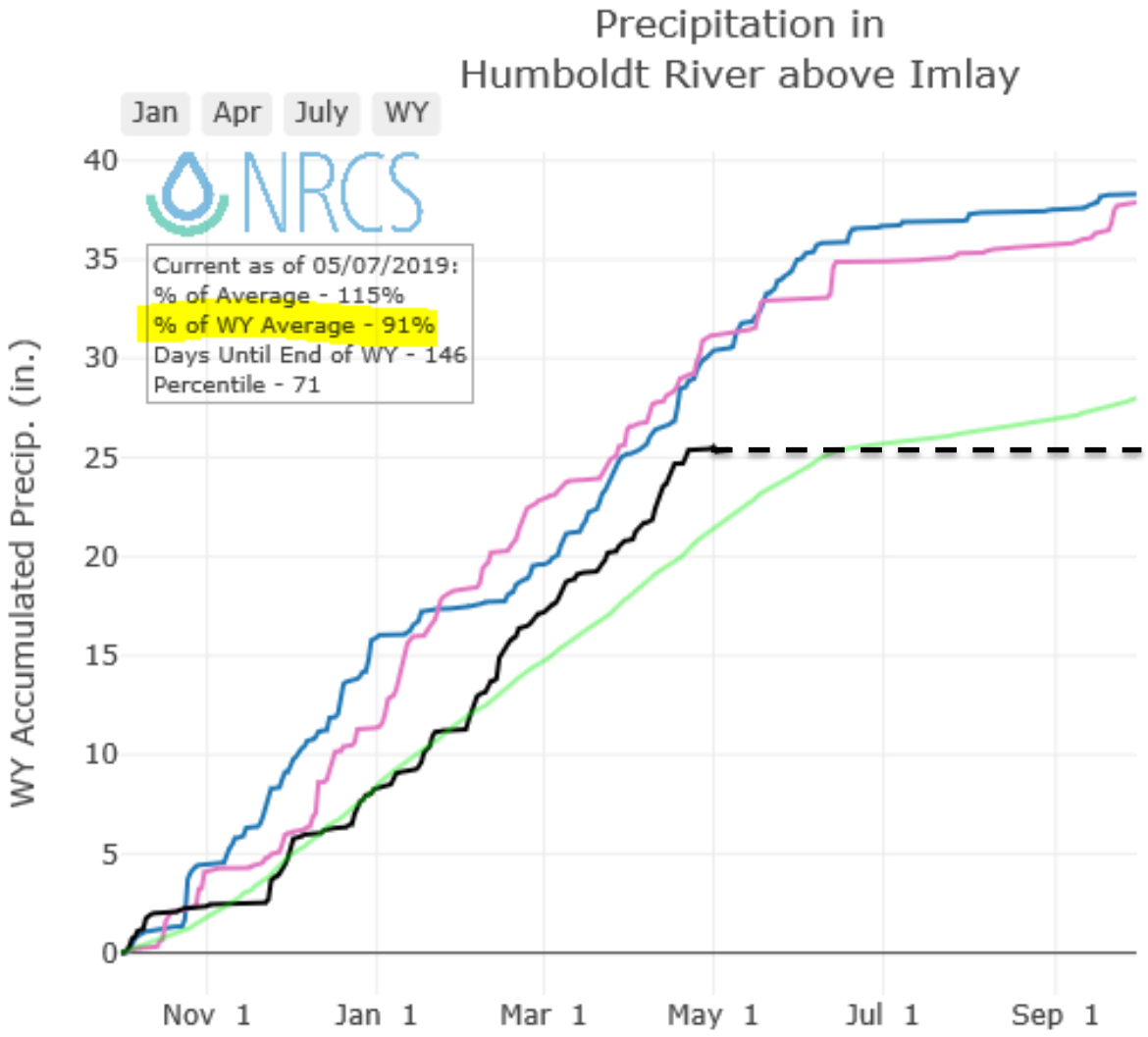
Provisional data subject to revision

USDA Natural Resources Conservation Service

Map data based water year to date precipitation for the first of the month at selected SNOTEL sites in or near the basin compared to the average value for those sites. SNOTEL data based on the first reading of the day (typically midnight). A table based, station-by-station, report of the underlying data can be found by selecting "Nevada" and report type "Precipitation" for the date listed above on the following webpage: http://www.wcc.nrcs.usda.gov/basin.html.

Natural Resources Conservation Service

2011 and 2017 were wetter to date than 2019



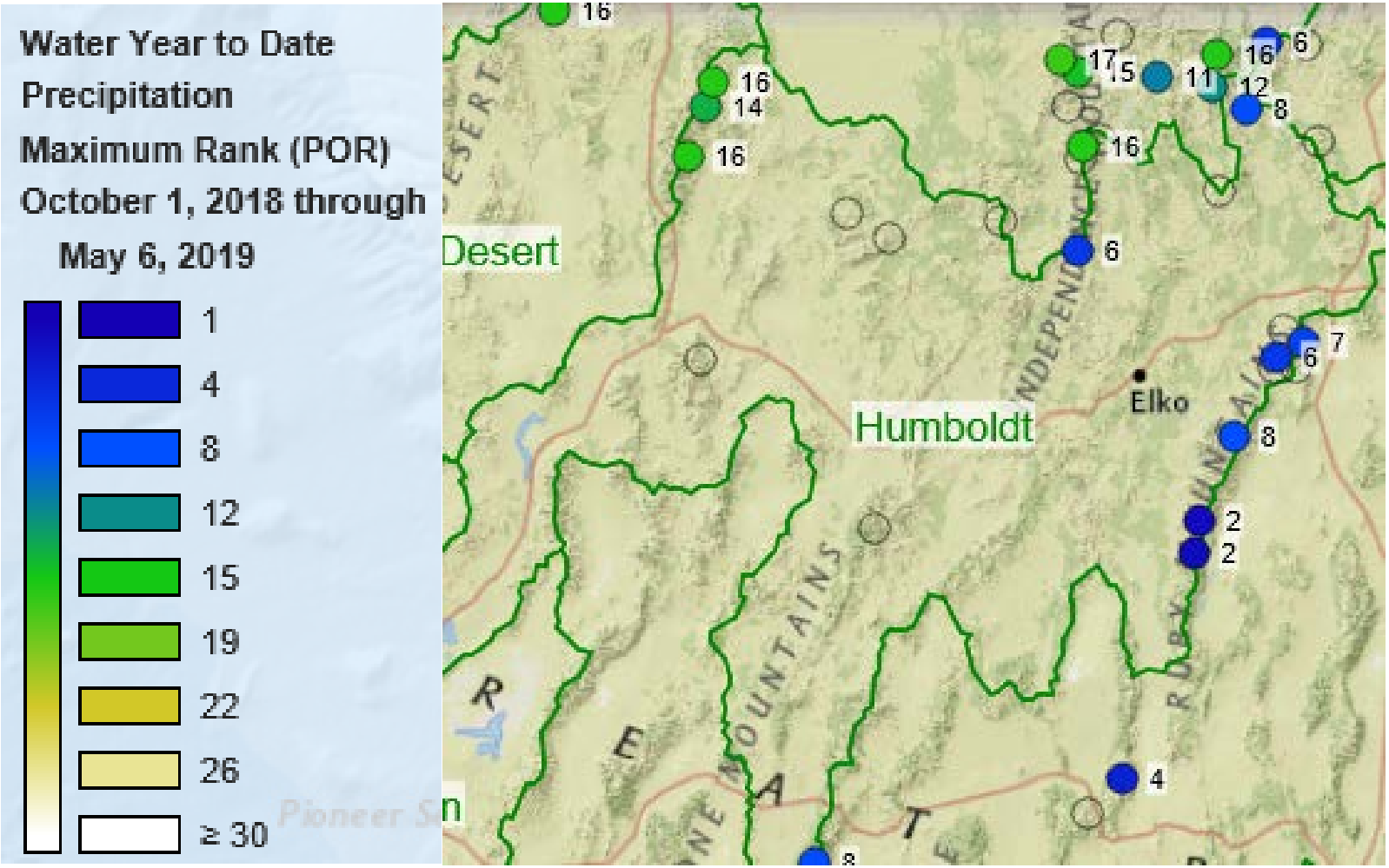
~135% of annual average

So far 91% of annual average

2011
2017
2019
Average ('81-'10)

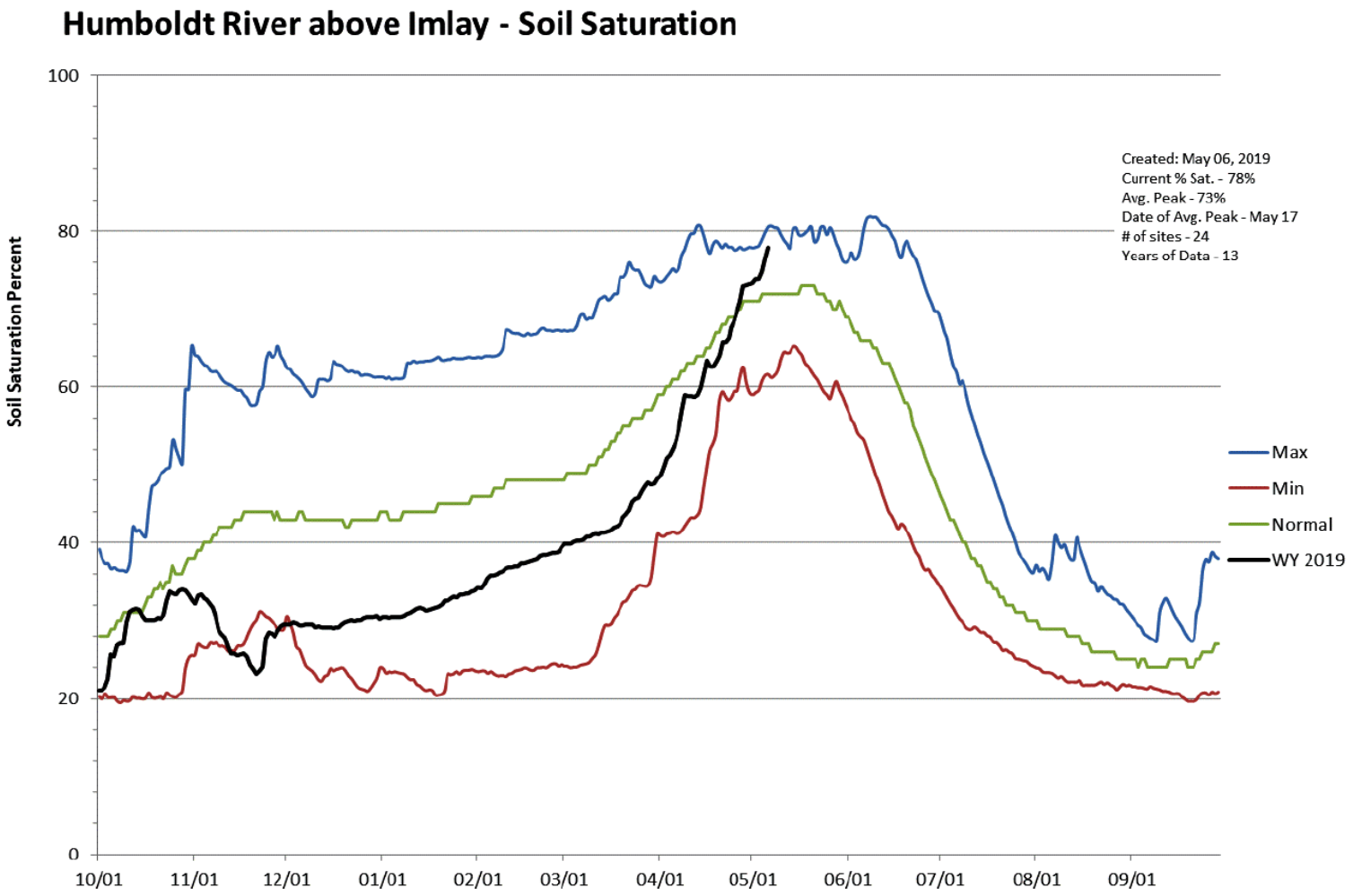
Natural Resources Conservation Service

Water Year Precip also ranks high in Upper Humboldt



Soil Moisture

With more than half this year's peak snow water already melted soil moisture went from below average to well above average.



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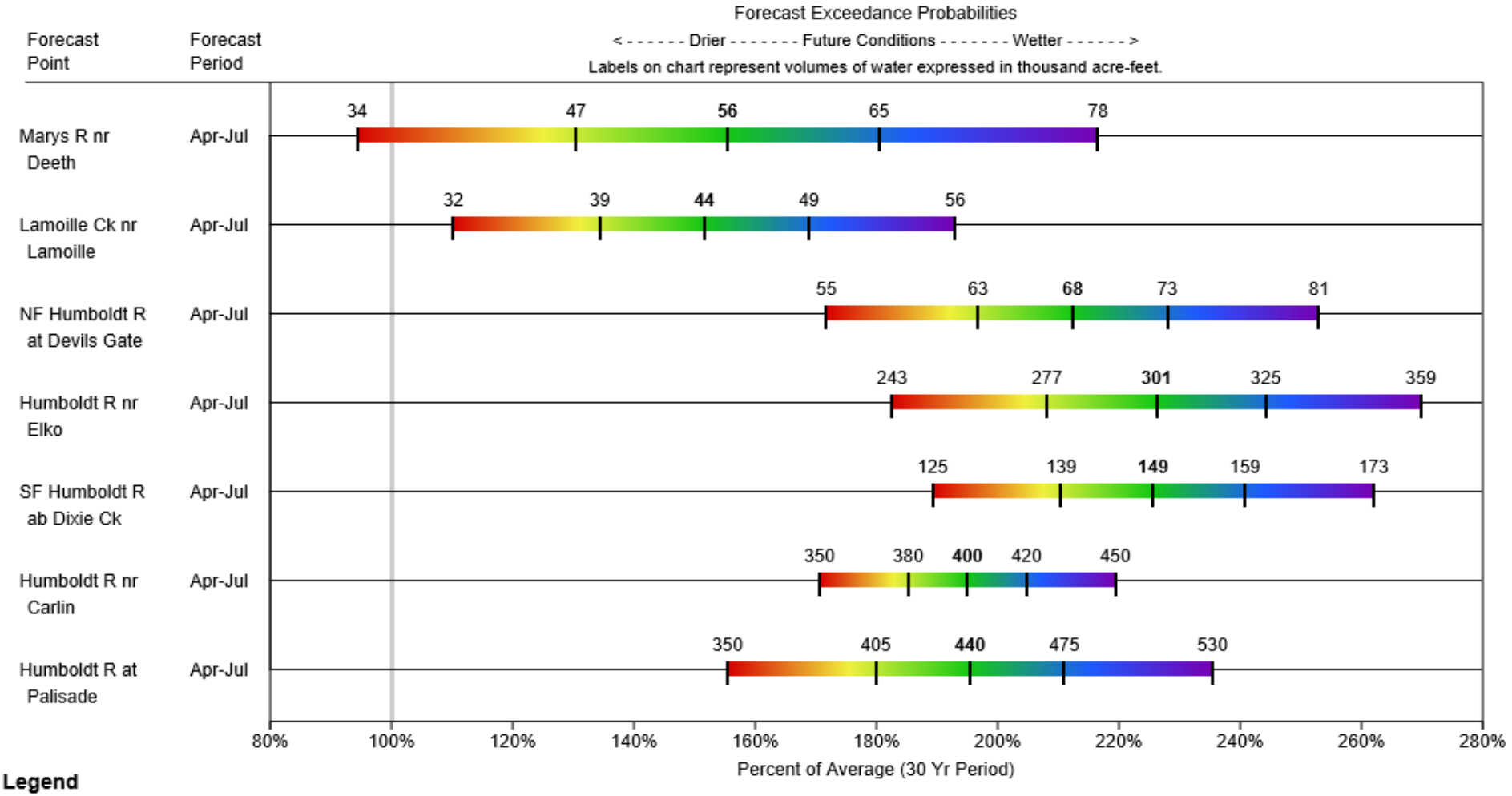
Upper Humboldt River Basin

Water Supply Forecasts

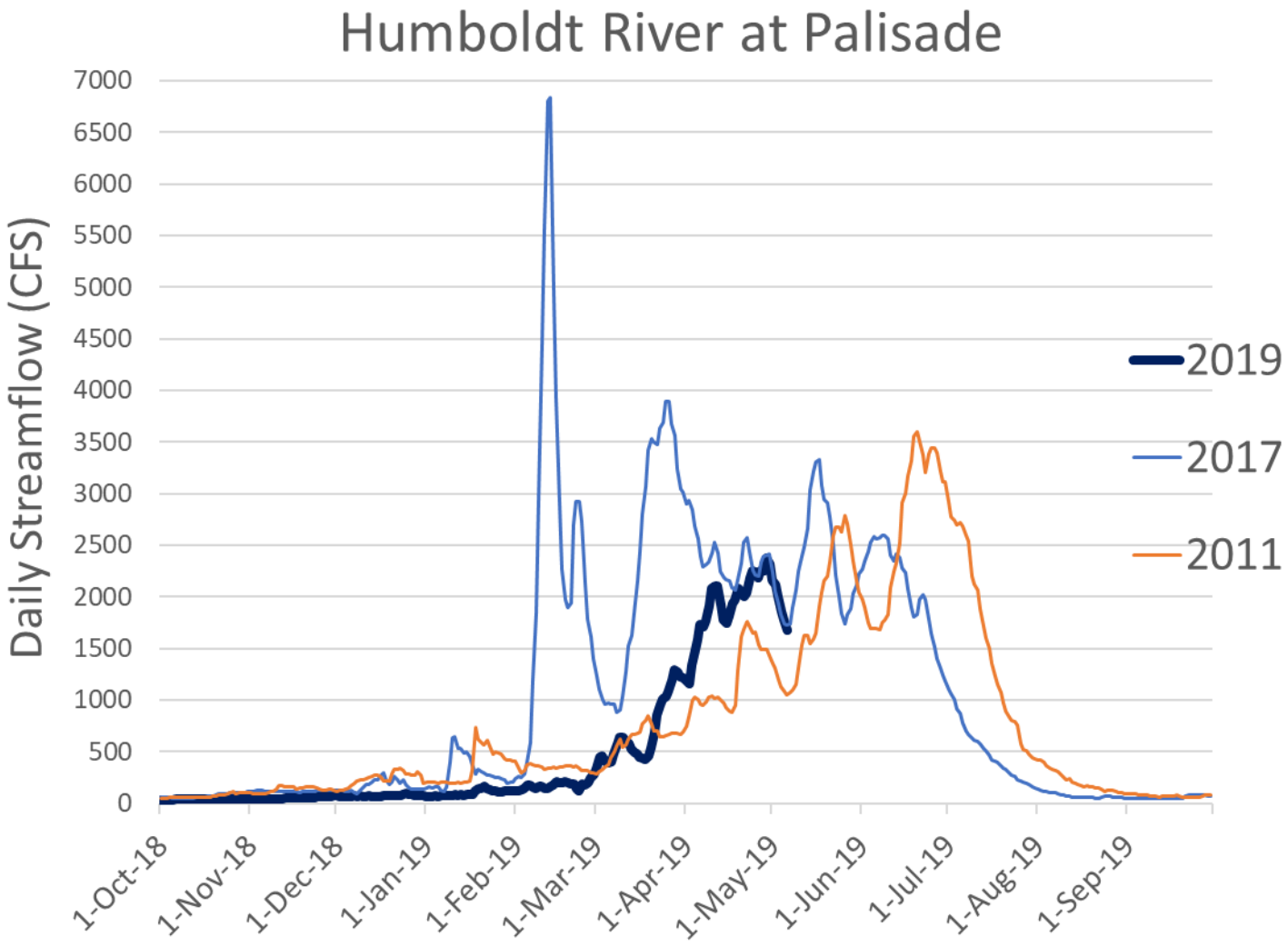
May 1, 2019

50% exceedance forecasts are 150-225% of average



Legend

95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume



Apr-Jul Volume

440kaf NRCS Forecast
383kaf NOAA RFC May 1

440kaf observed

437 kaf observed

Natural Resources Conservation Service

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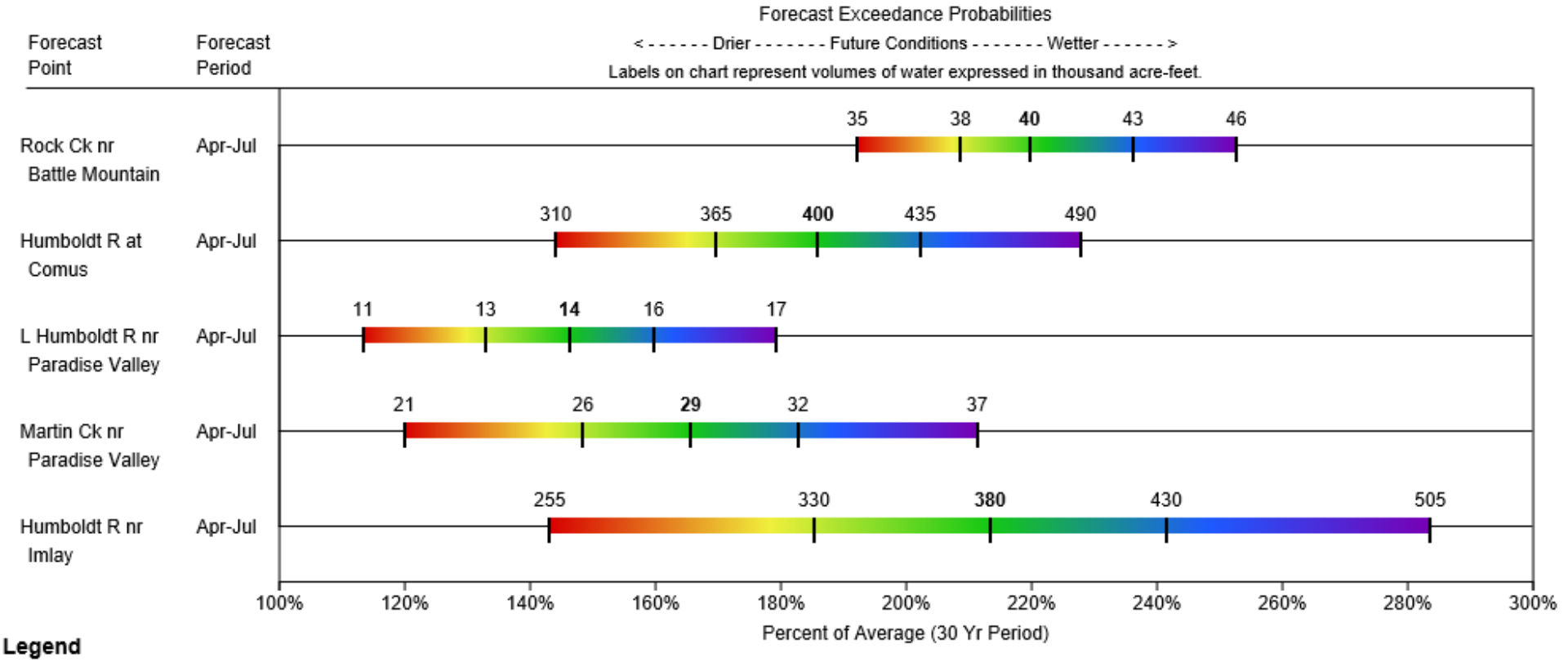
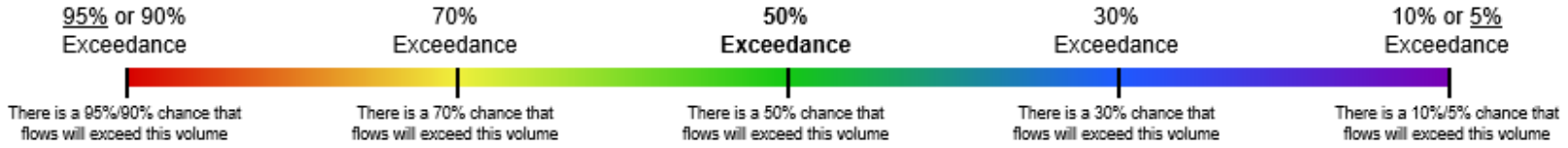
Lower Humboldt River Basin
Water Supply Forecasts
May 1, 2019

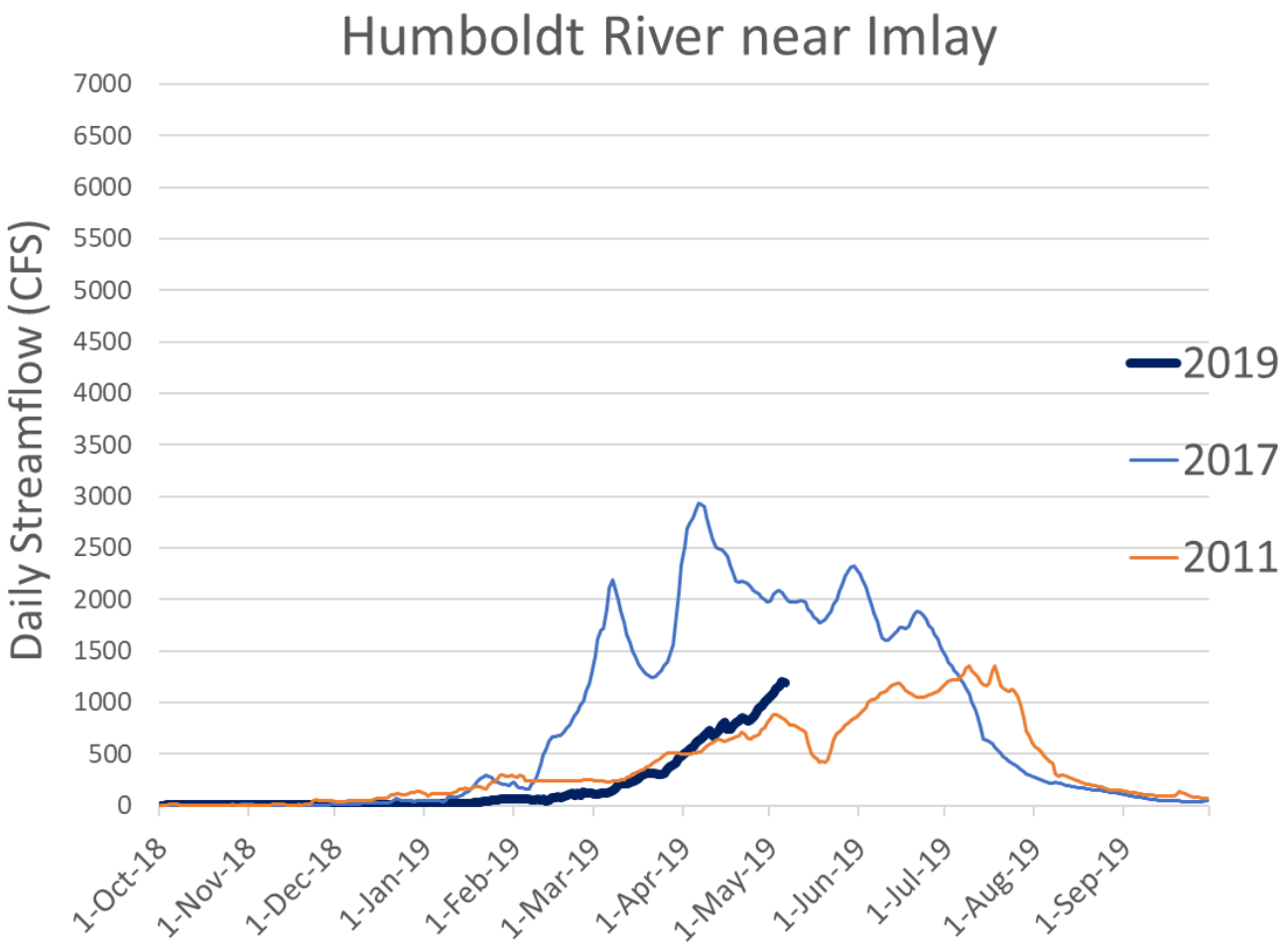
50% exceedance forecasts are 145-220% of average



Legend



Natural Resources Conservation Service



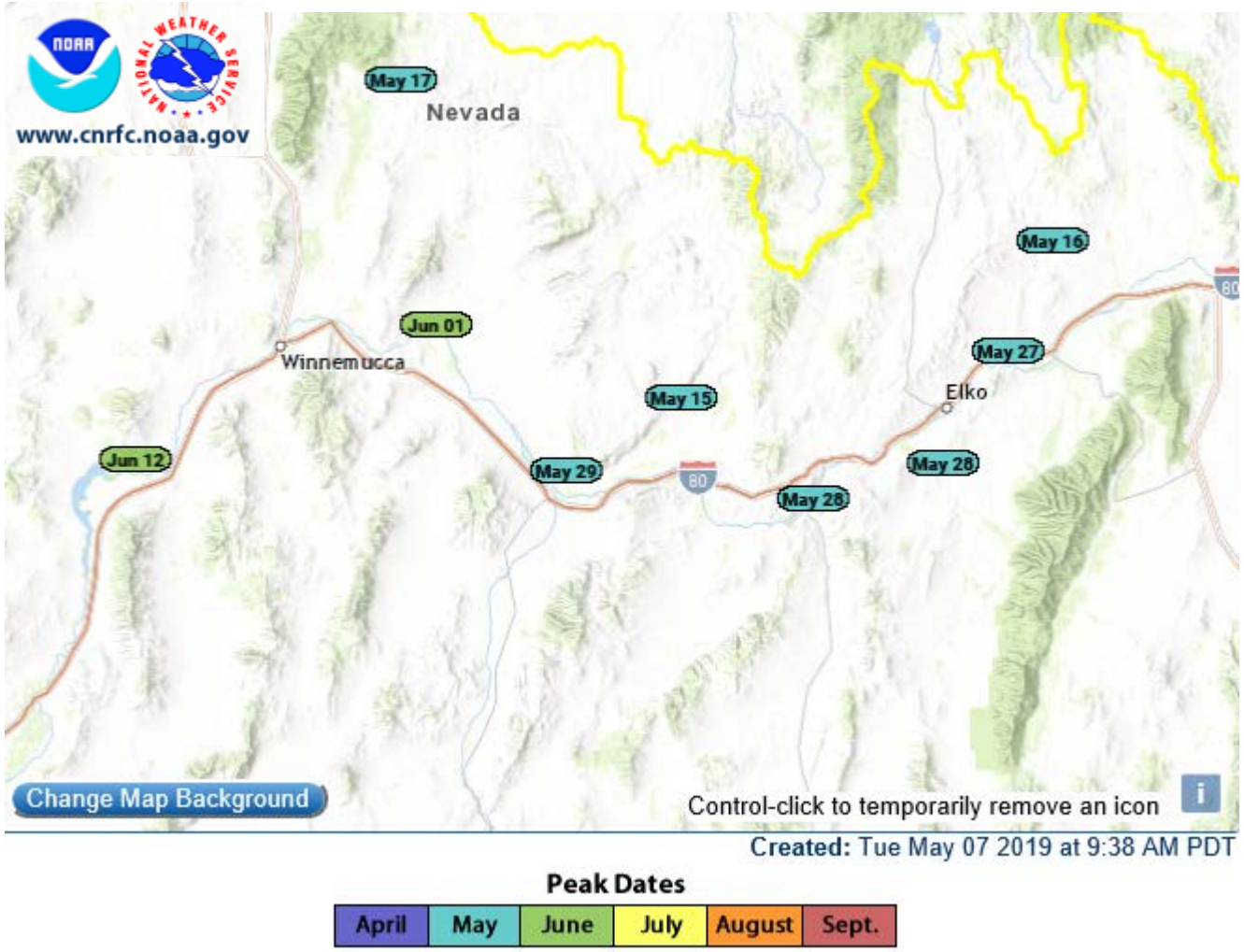
Apr-Jul Volume

380kaf NRCS Forecast
262.5 NOAA RFC May 1 Forecast

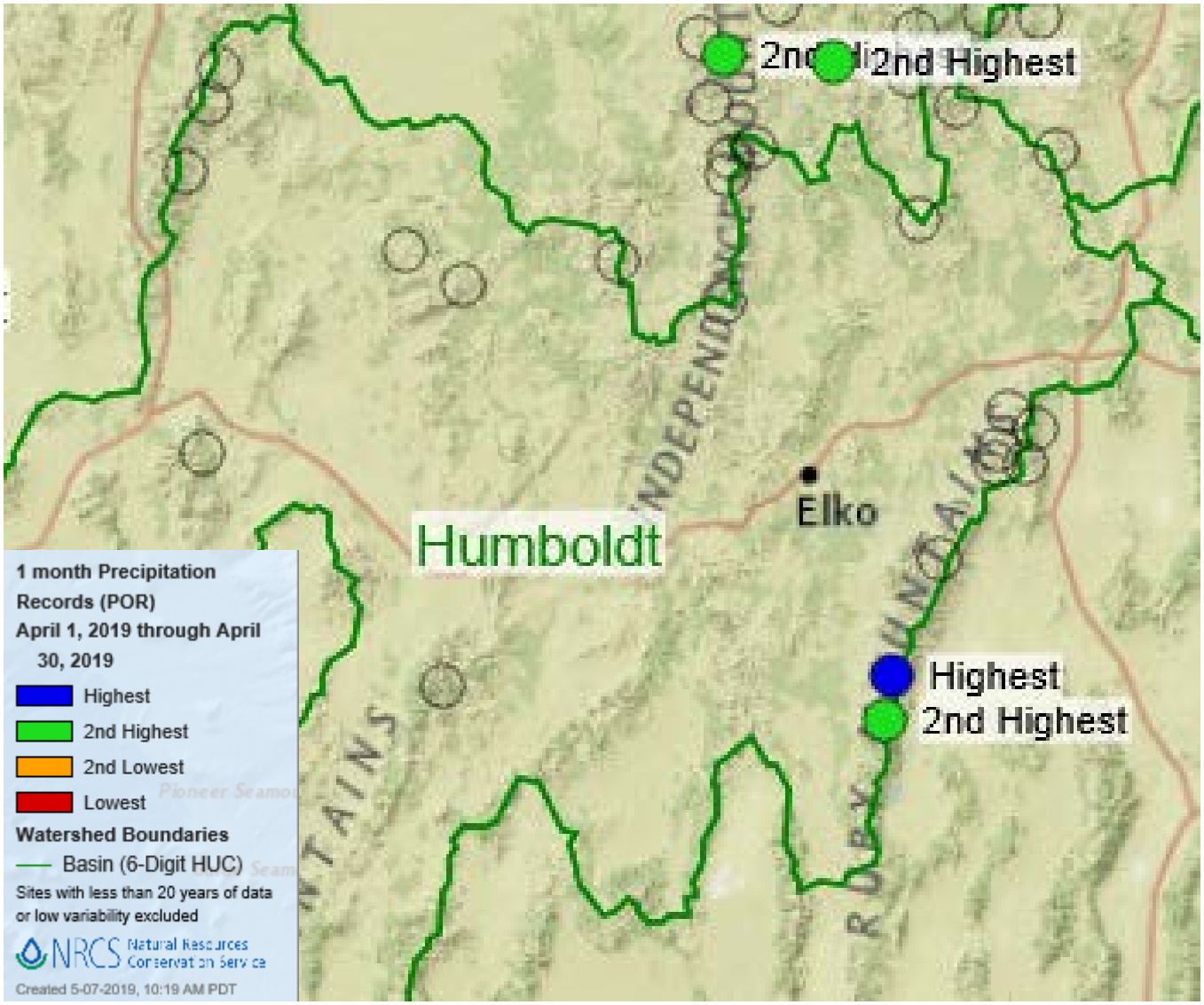
419kaf observed

214 kaf observed

NOAA CNRFC Forecast Date of Peak Flow



April was particularly wet

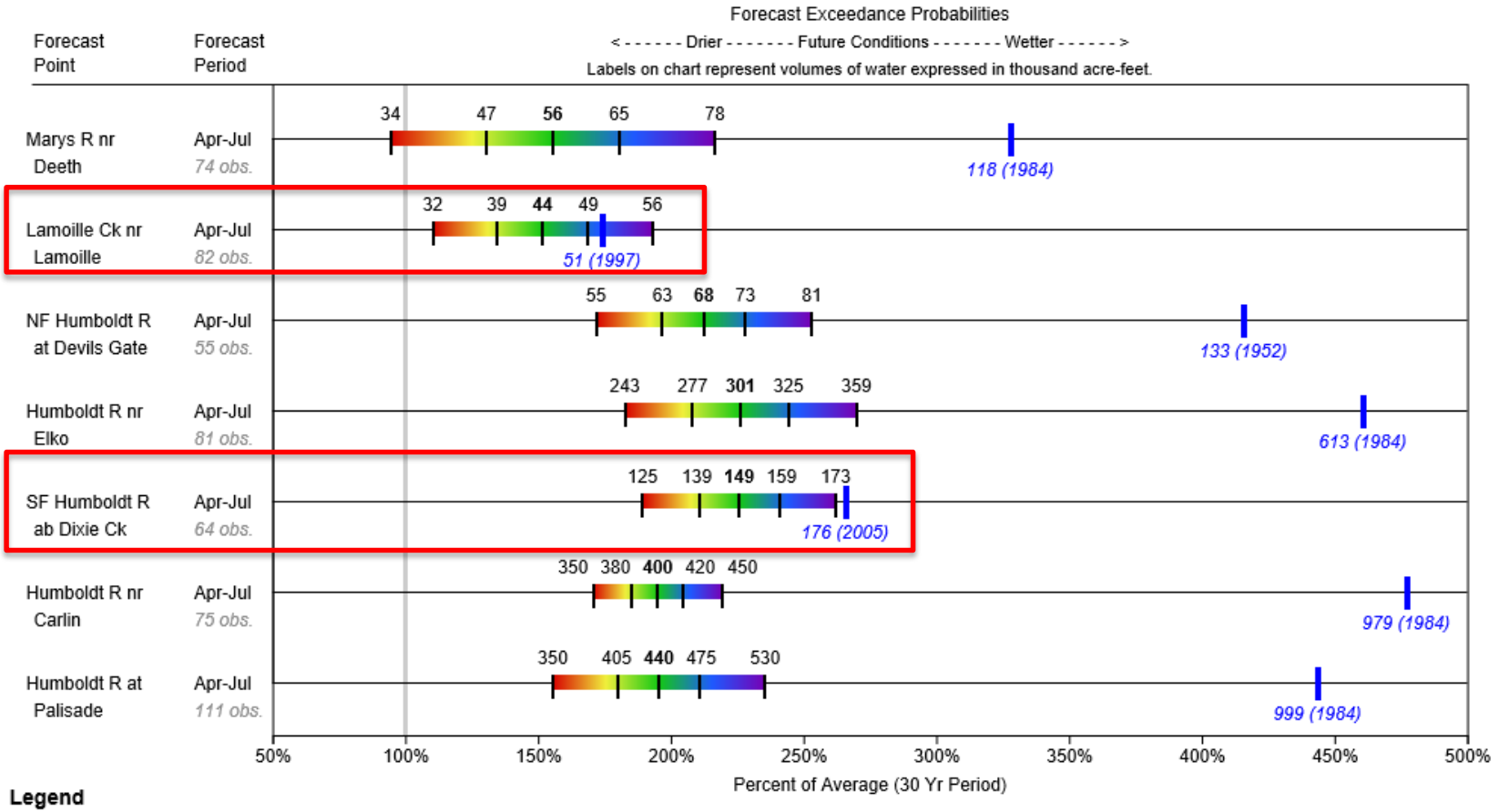


Wetter conditions during April-July increase probability wetter exceedance volumes for streamflow

Upper Humboldt River Basin

Water Supply Forecasts

May 1, 2019



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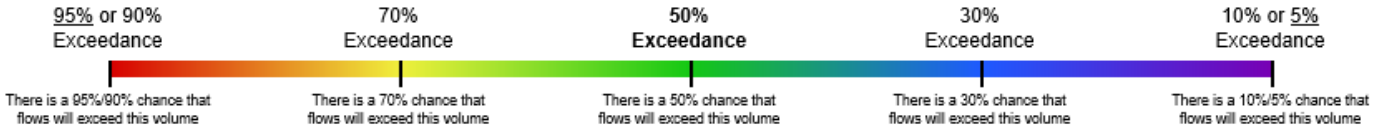

When selected, the following historic streamflow values and statistics will be shown:

- *Period of Record Minimum Streamflow KAF (Year)*
- *1981-2010 Normal Streamflow KAF*
- *Observed Streamflow KAF*
- *Period of Record Maximum Streamflow KAF (Year)*

Key Points:

Snowpack:

- 2019 was a big year, similar and slightly higher than 2011 and 2017

Precipitation:

- Nearly every storm brought only snow, very little winter rain
- Total precipitation in 2019 not as much as 2011 or 2017
- April was the wettest month of the water year at 7 of 24 sites in basin
- April precipitation was near record high for month in southern Rubies

Soil Moisture:

- All soil moisture deficits from dry fall and cold winter are gone.
- Current soil moisture nearing daily maximums.

Streamflow Forecasts:

- April-July forecasts call for ~150-225% of average streamflow.
- Palisade forecast 440kaf (196%), Imlay forecast 380kaf (213%)
- Peaks are still to come, NOAA RFC predicting around Memorial Day in Upper Basin