



United States Department of Agriculture

2021 Streamflow Outlook for the Humboldt Basin

May 14, 2021
Nevada Division of
Water Resources

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*Lamoille Canyon
March 11, 2021*

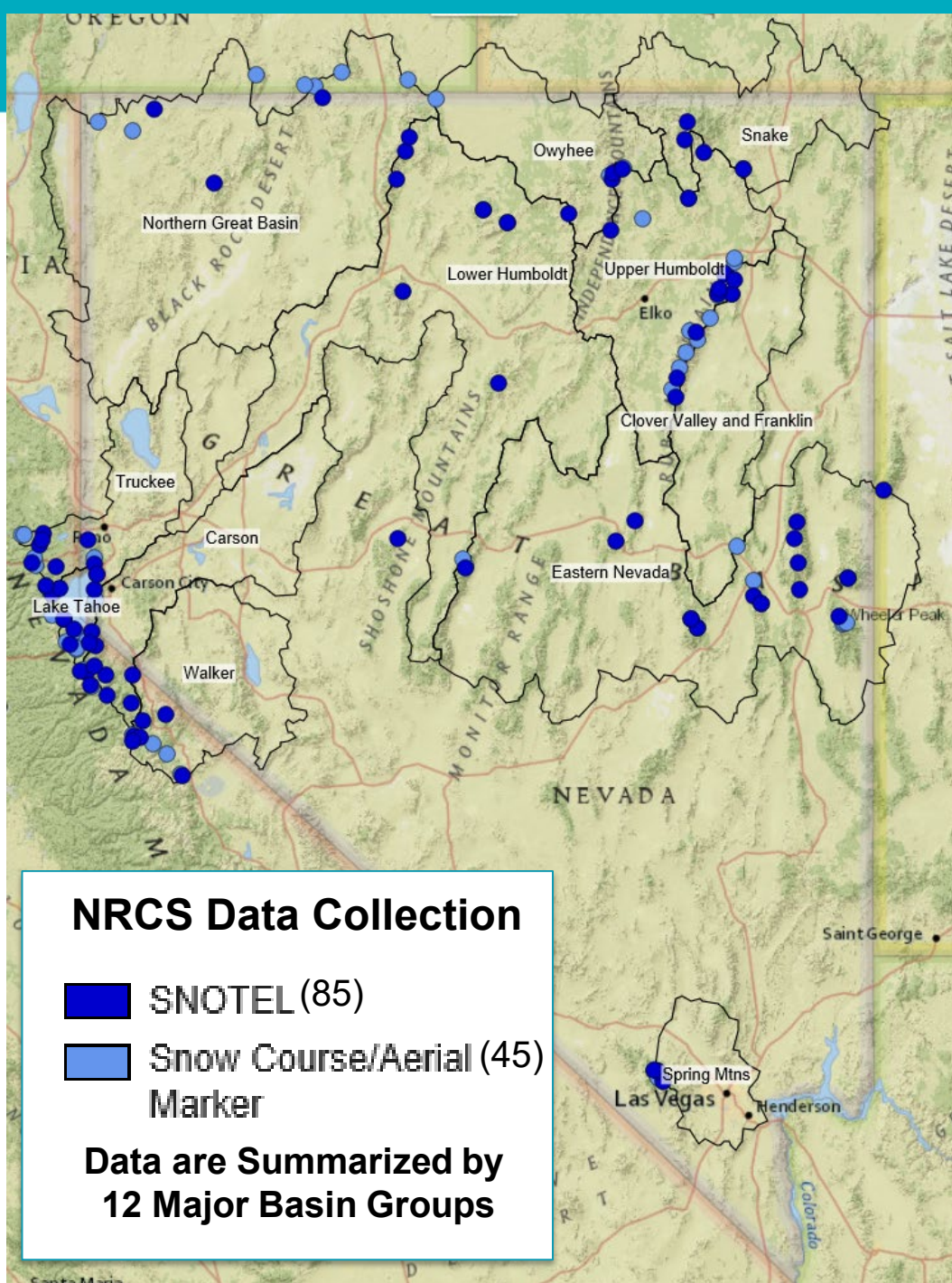


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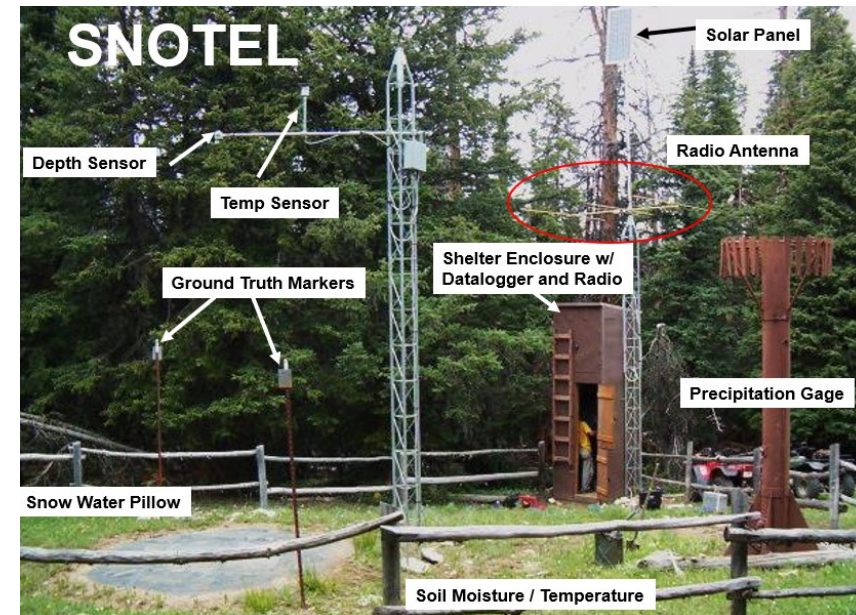
www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/

Snow Survey Overview

Key Vocab: Snow Water Equivalent (SWE)



Snow Course



Natural Resources Conservation Service

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NRCS - Nevada Helping People Help the Land

Outside the Snow Survey, the NRCS works with private landowners to put conservation practices in place that will benefit the soil, water, air, and wildlife.

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Snow Survey

The **Nevada NRCS Snow Survey and Water Supply Forecasting Program** provides mountain snowpack data and streamflow forecasts for the state of Nevada, as well as, the Eastern Sierra Nevada. Applications of snow survey products include water supply management, flood control, climate modeling, recreation, and conservation planning.



(Click on image to get report)

Latest Outlook Report & Streamflow Forecasts

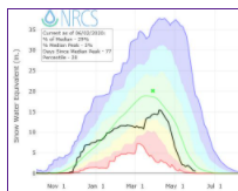
- > May 1, 2021 Water Supply Outlook Report - *New*
- > May 1, 2021 Streamflow Forecast Tables - *New*

Today's Update Reports

- > Snow and Precipitation Percent of Normal
- > Precipitation Month to Date
- > Precipitation Percent of Monthly Ave
- > Snowpack Percent of Normal Peak
- > GIS Maps: [Snow](#) | [Water Year Precip](#) | [Monthly Precip](#)

Monthly Basin Data Reports

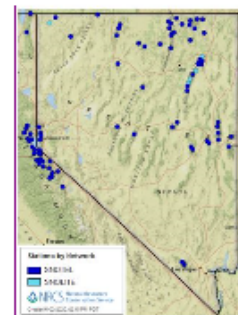
Select from snowpack, precipitation, and reservoir storage reports



Interactive SNOTEL Charts

Charts for snowpack, precipitation, air temp and soil moisture

- > Basin Summary Charts
- > Individual SNOTEL Charts



Interactive Map

Displays both current and historic data in an easy-to-use, visual interface. Data types include SNOTEL, snow course, streamflow, reservoir storage, and streamflow forecasts and more.

- > Site Inventory
- > Snowpack Percent of Median
- > Water Year Precipitation Percent of Average
- > Additional Pre-Defined Links

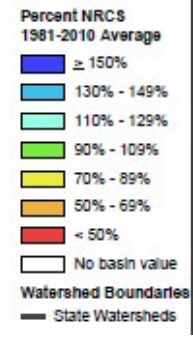
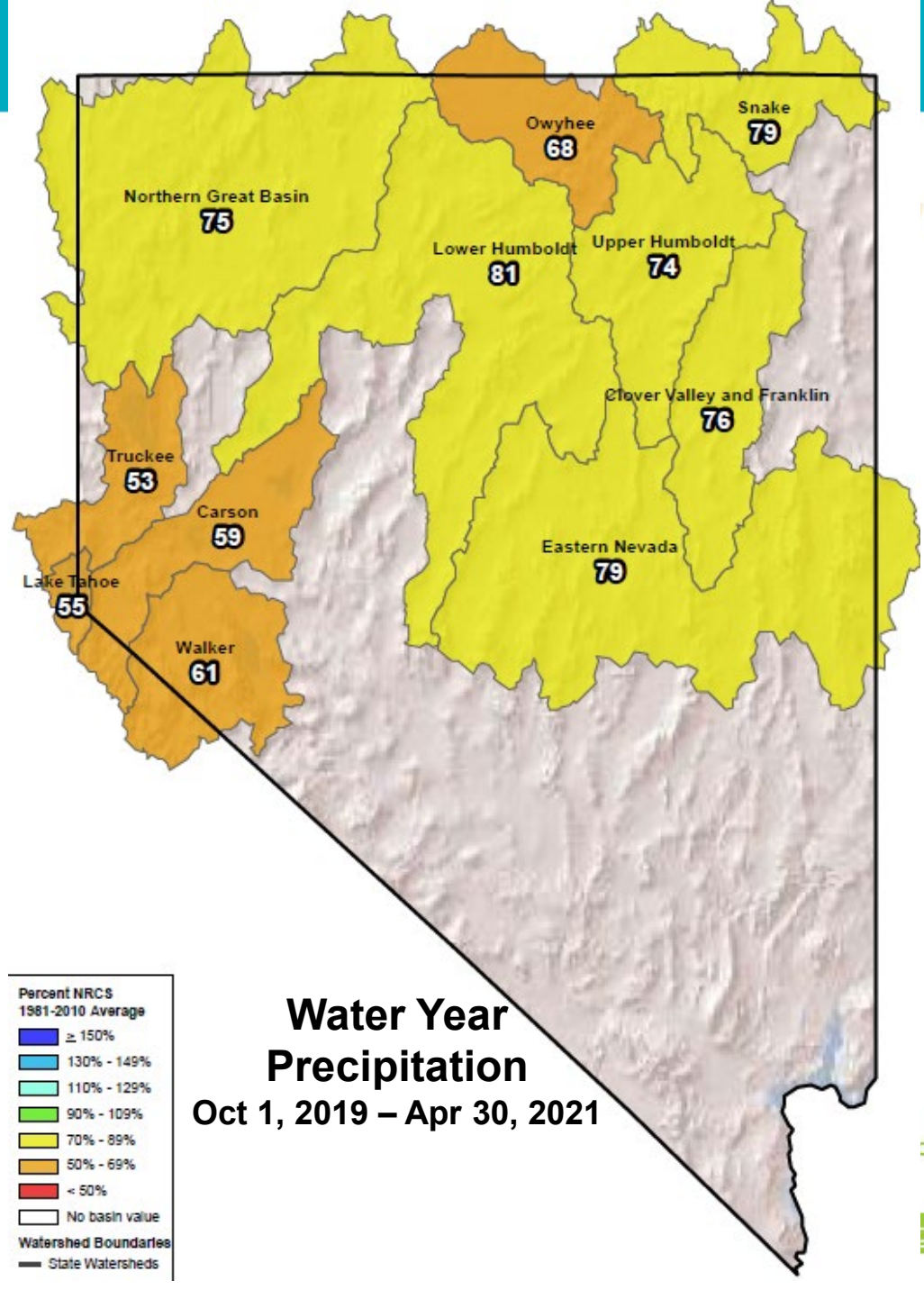
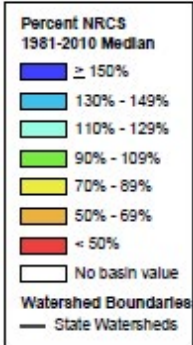
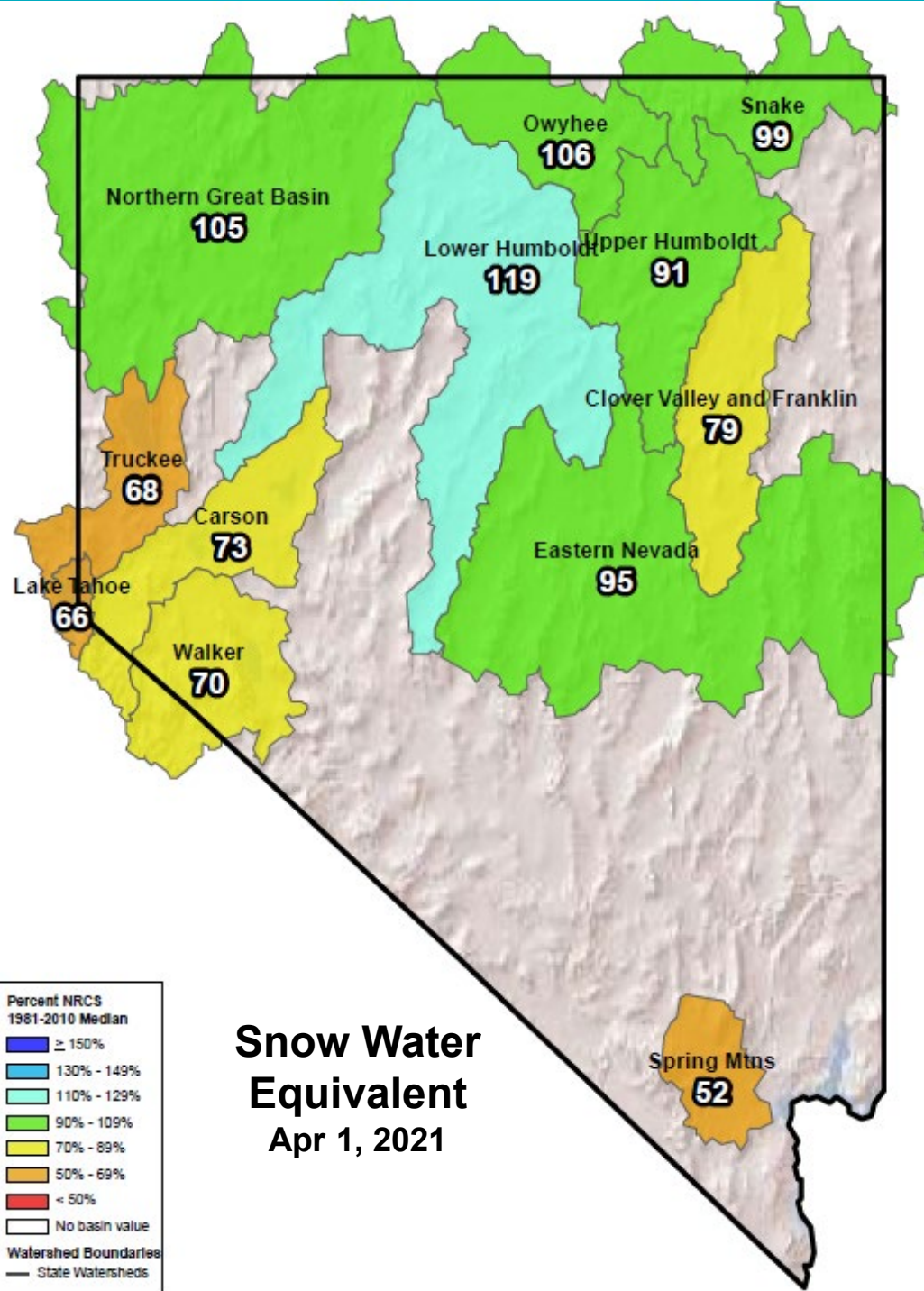


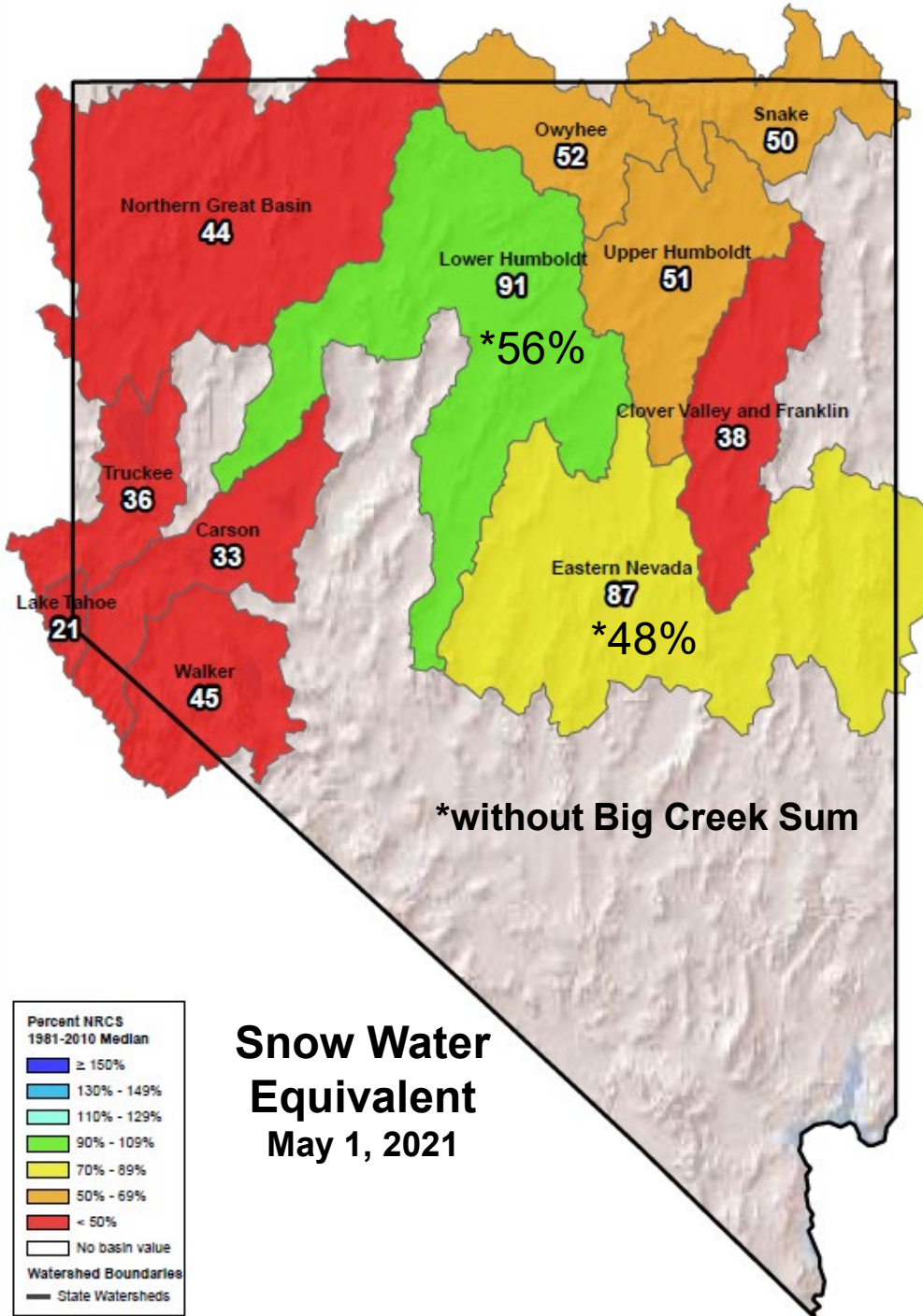
NV Snow Survey Website

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

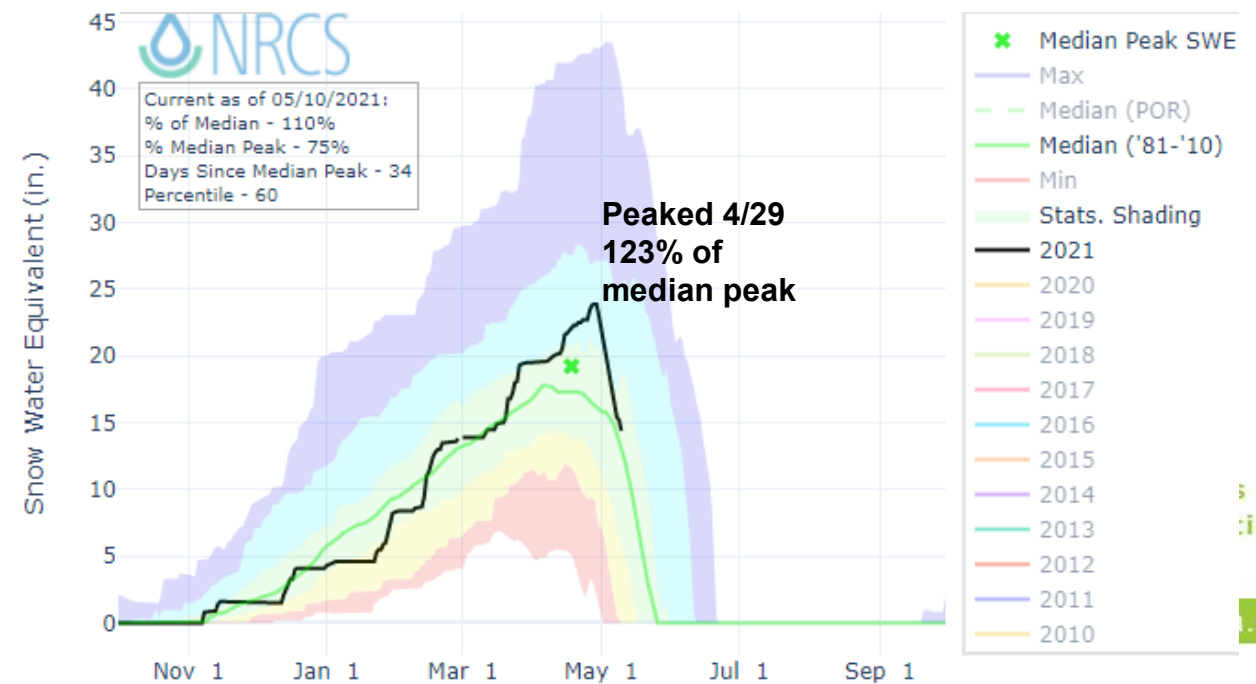
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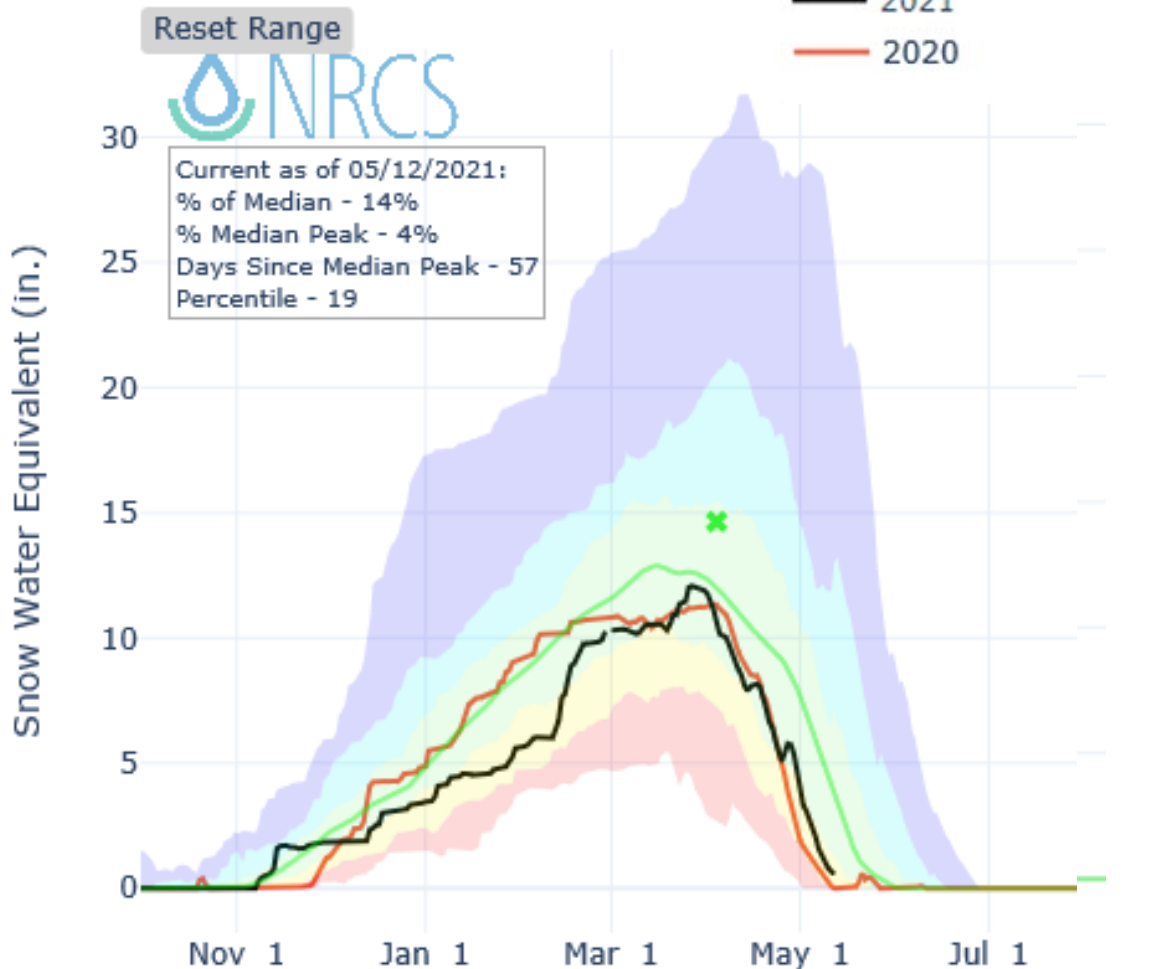
**Big Creek Summit SNOTEL
4/30/21**



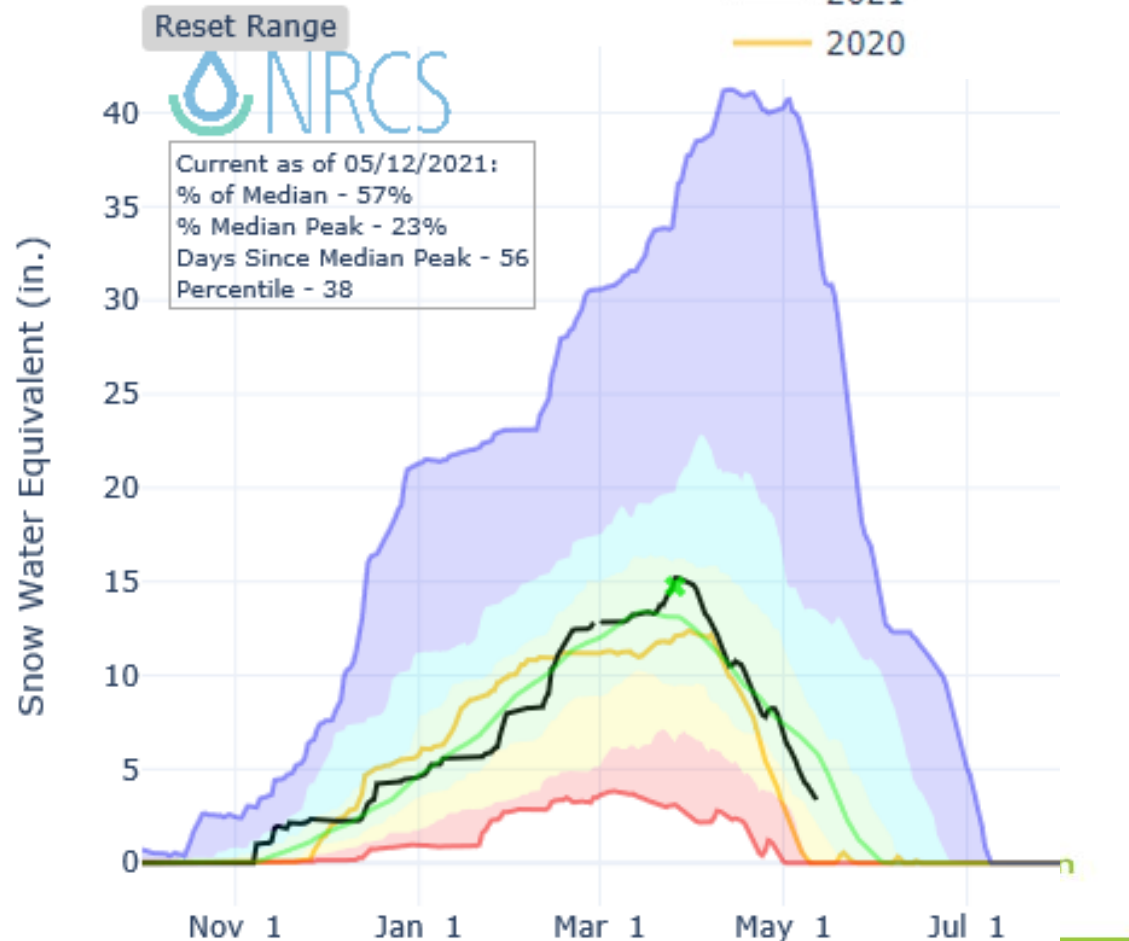
Snowpack 2020 vs 2021

2021 snowpack near median and slightly better than 2020

SNOW WATER EQUIVALENT IN UPPER HUMBOLDT



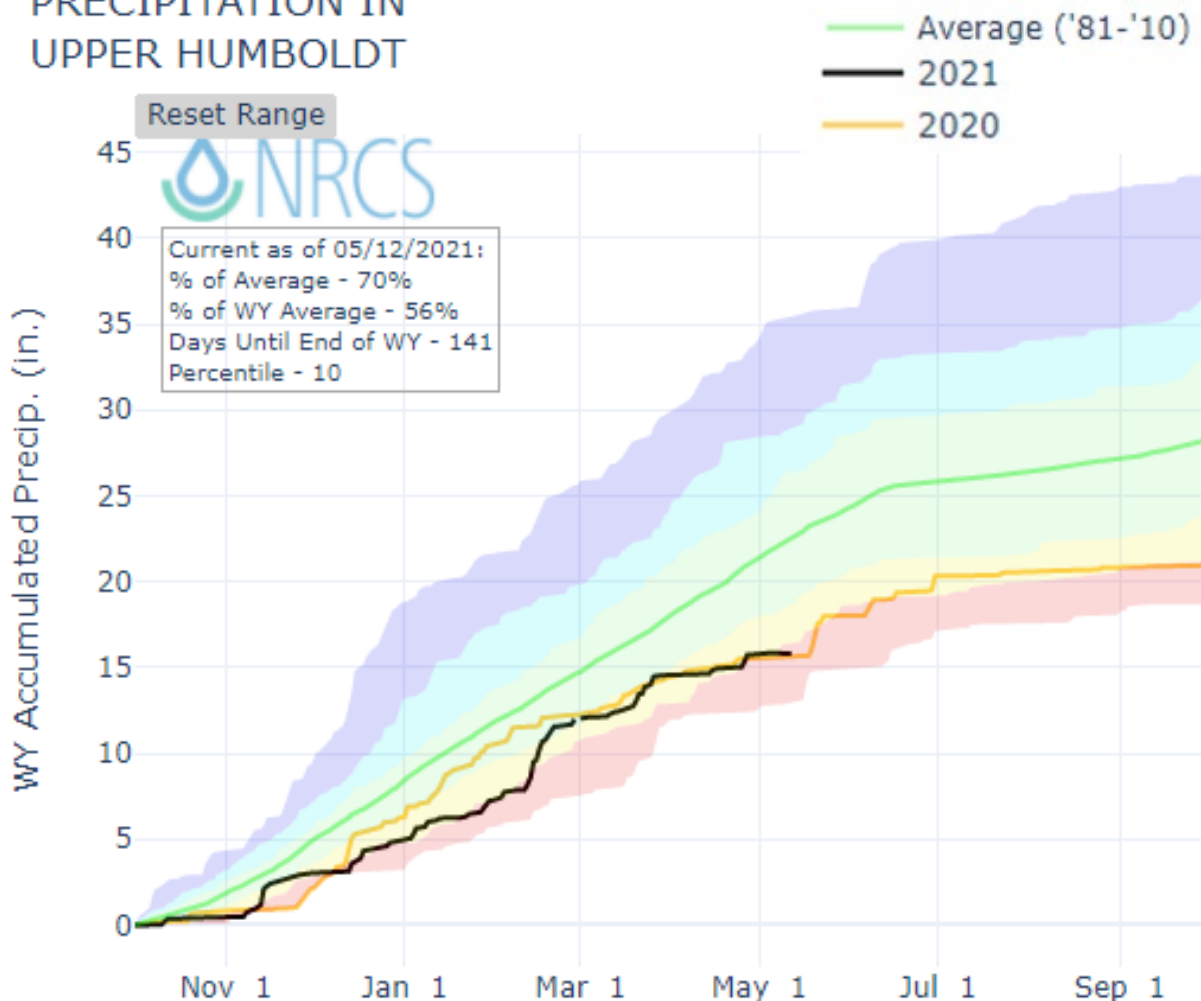
SNOW WATER EQUIVALENT IN LOWER HUMBOLDT



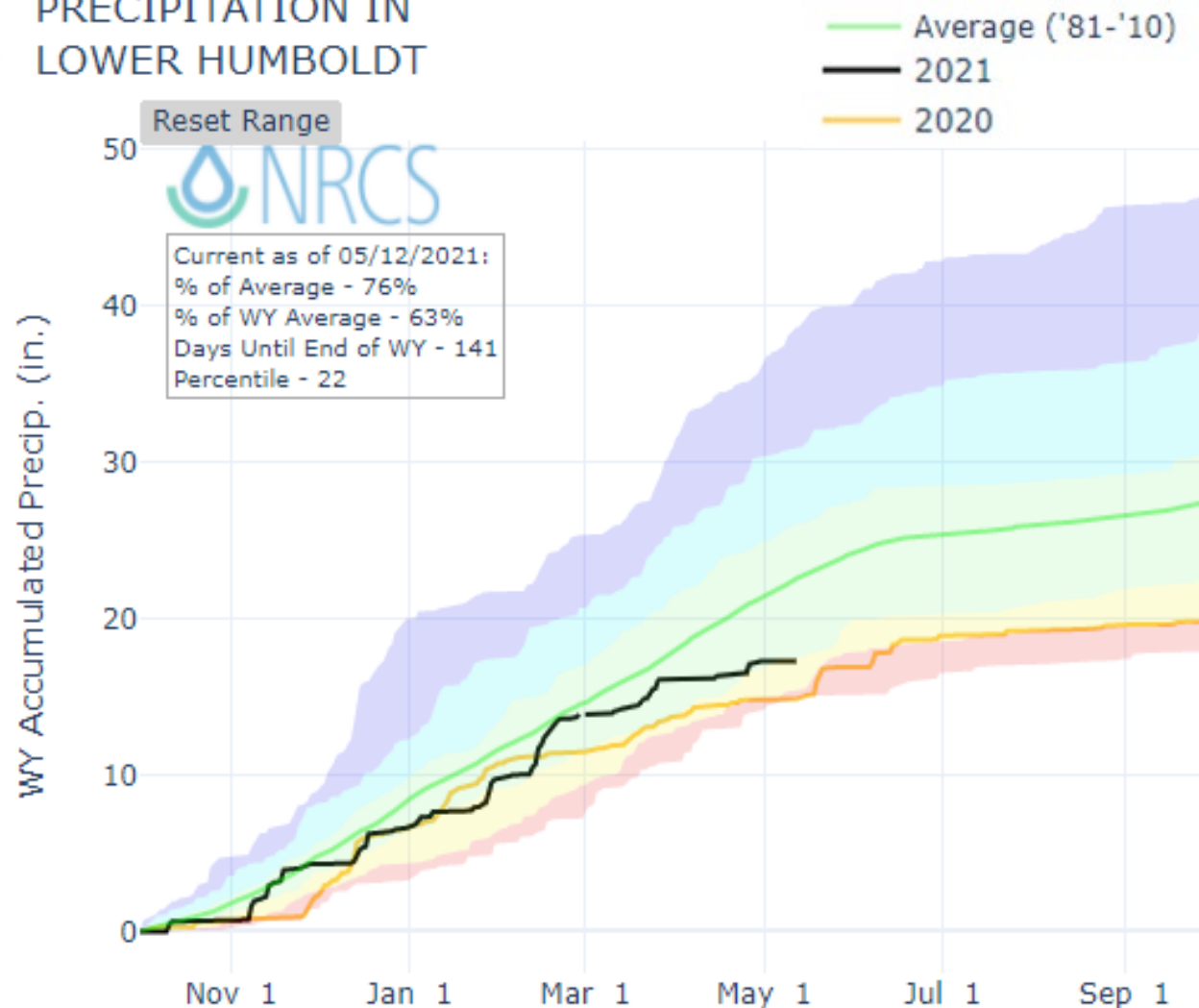
Water Year Precipitation 2020 vs 2021

Water Year Precipitation is similarly low both years

PRECIPITATION IN UPPER HUMBOLDT



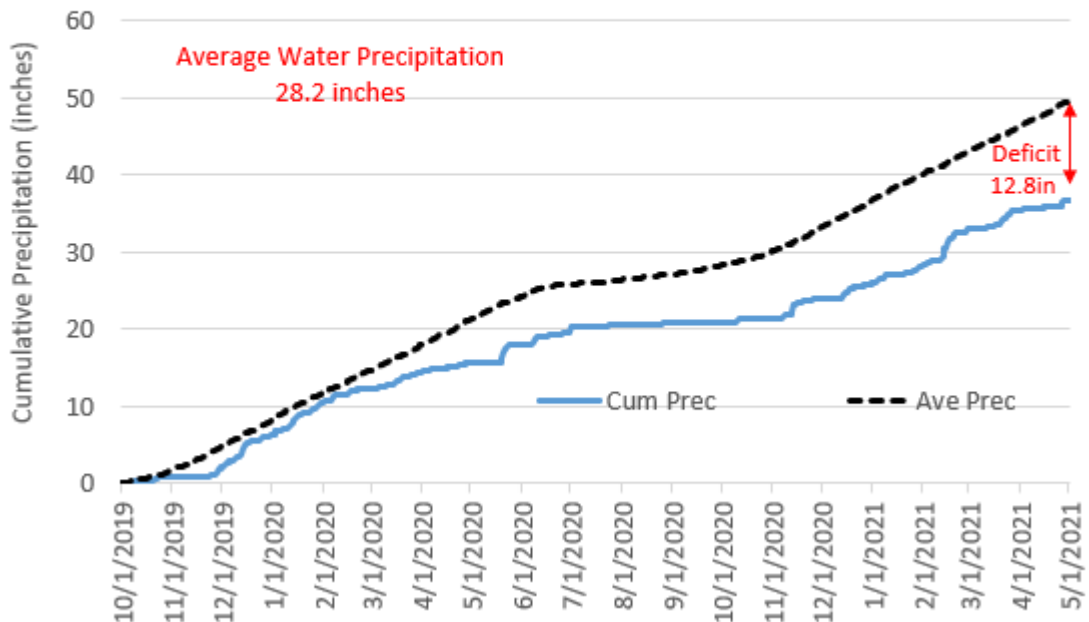
PRECIPITATION IN LOWER HUMBOLDT



19-month Precipitation

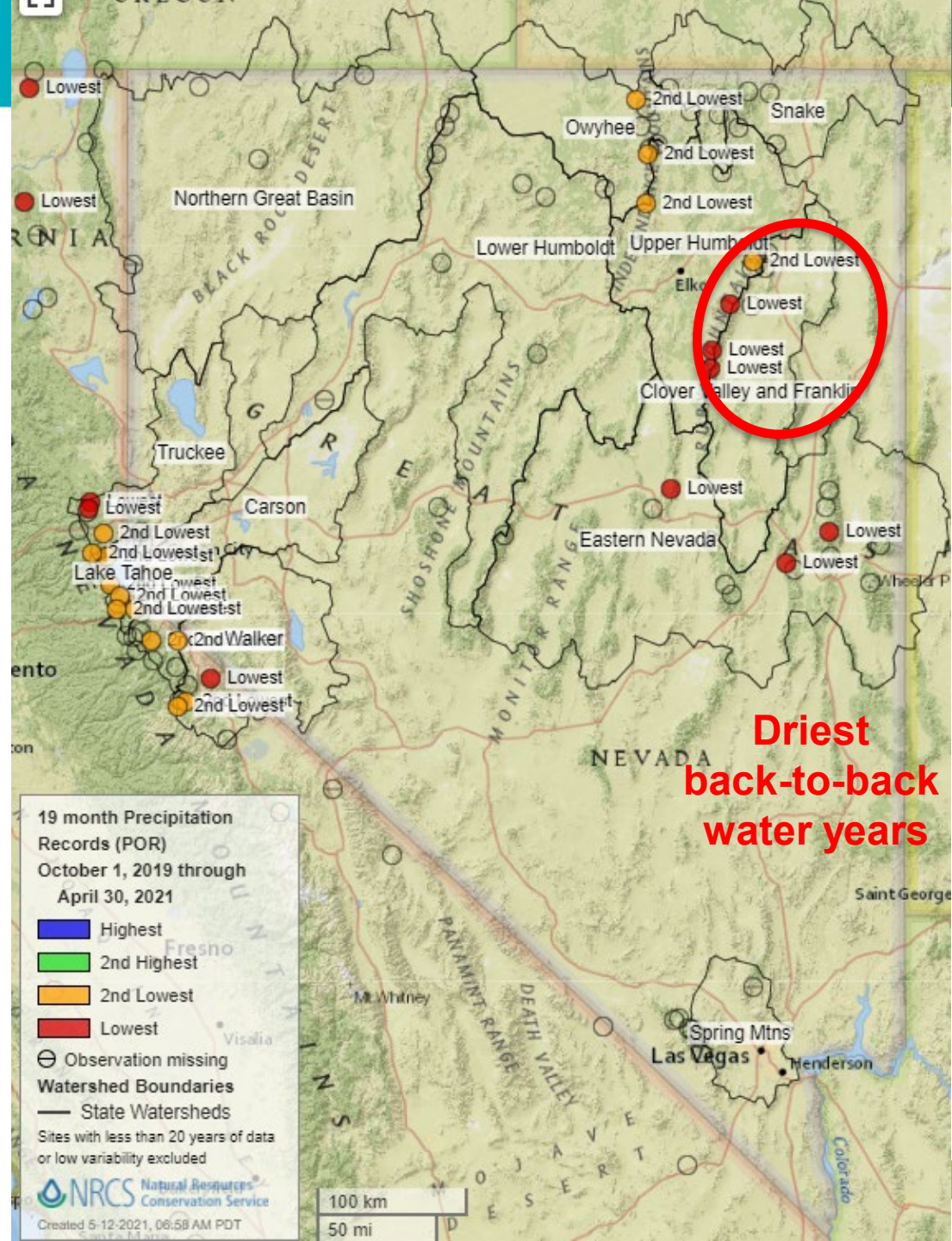
Upper Humboldt Basin

19-month Cumulative Precipitation vs Average
10/1/19 through 4/30/21



Basin	Precipitation Deficit 10/1/19 to 4/30/21 (inches)	Average Water Year Precipitation (inches)	Precipitation Deficit as Percent of Average Water Year Precipitation
Upper Humboldt	-12.8	28.3	-45%
Lower Humboldt	-13.7	27.5	-50%

~Half a water year behind

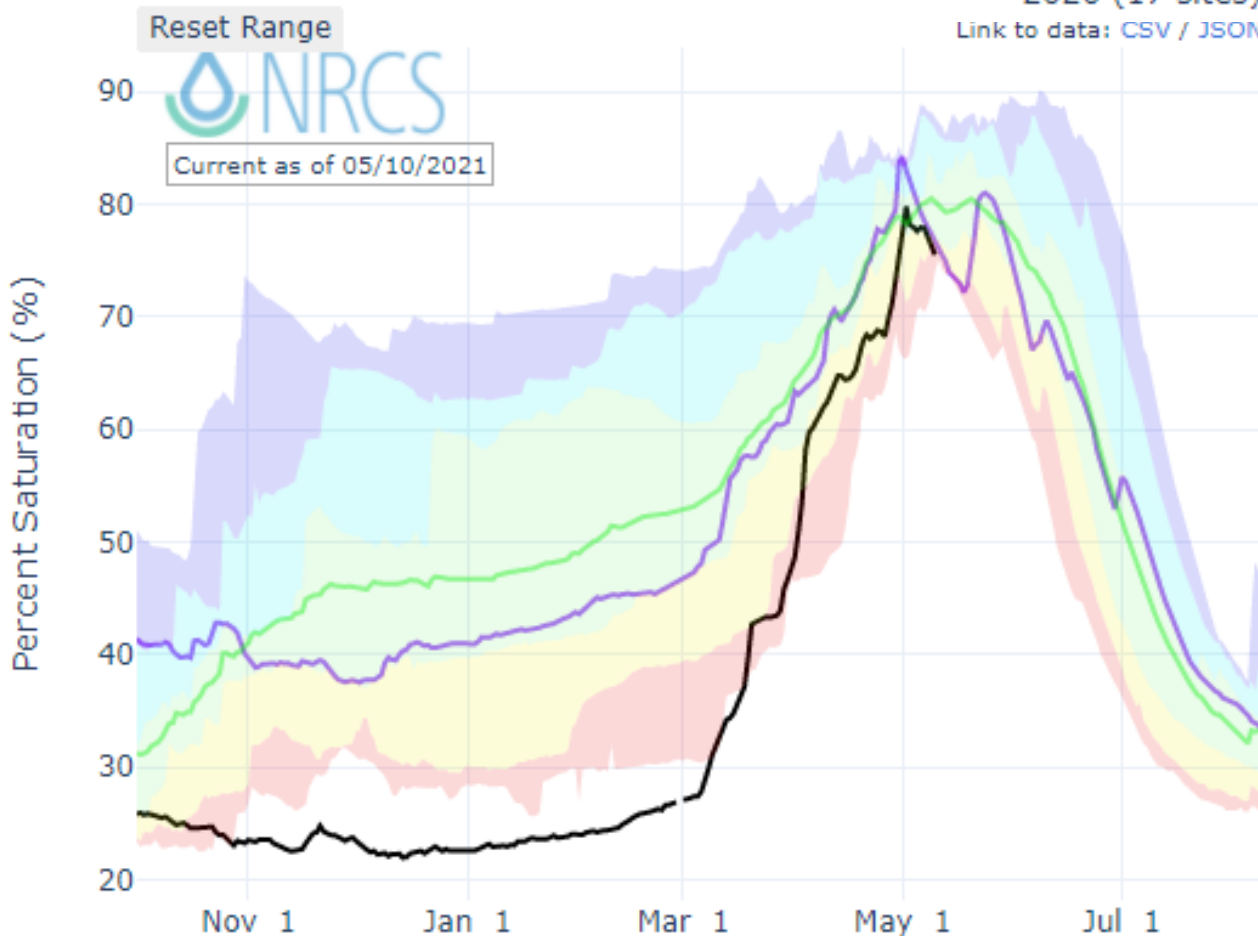


Soil Moisture 2020 vs 2021

Soil Moisture far less than last year - New winter minimum

DEPTH AVERAGED SOIL SATURATION IN UPPER HUMBOLDT

- Average (POR)
 - 2021 (17 sites)
 - 2020 (17 sites)
- [Link to data: CSV / JSON](#)

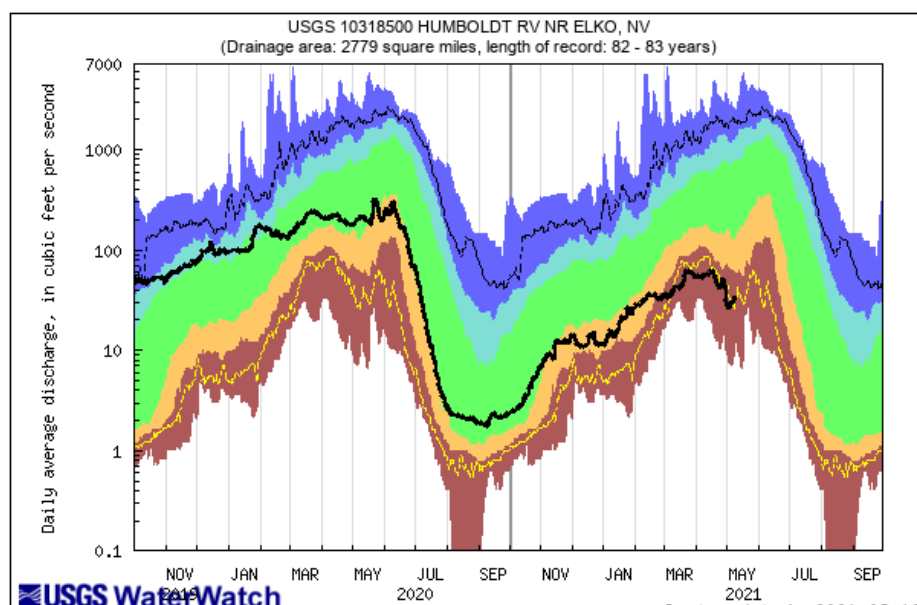
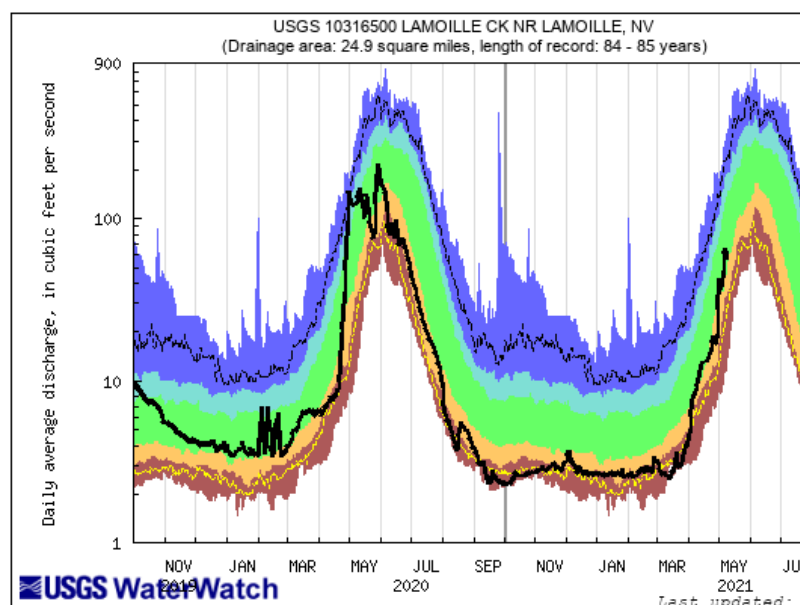
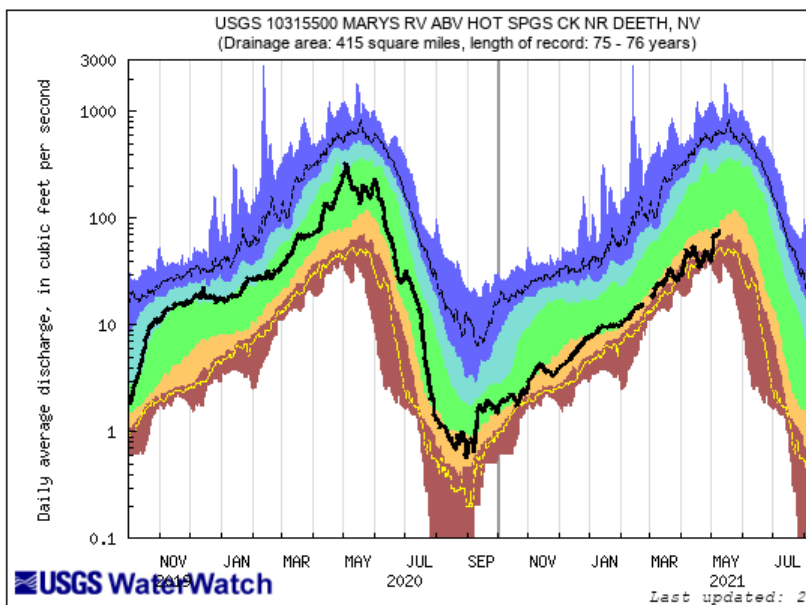


**Soil Moisture POR based on data since Oct 2005*



Streamflow 2020 vs 2021

Baseflows far less than last year



Explanation - Percentile classes

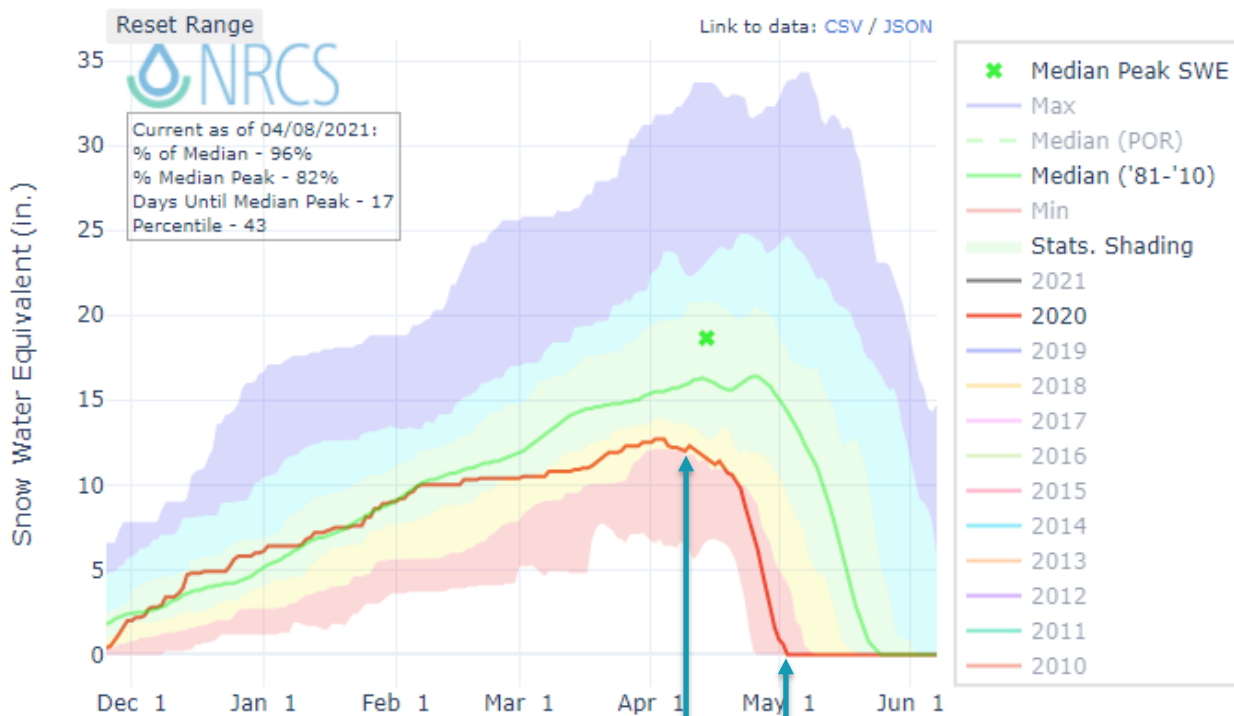
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile - highest	Flow
Much below normal		Below normal	Normal	Above normal	Much above normal		



How long do dry soils soak up snowmelt?

In 2020, Corral Canyon soil moisture increased for 14 days out of 23 days of melt

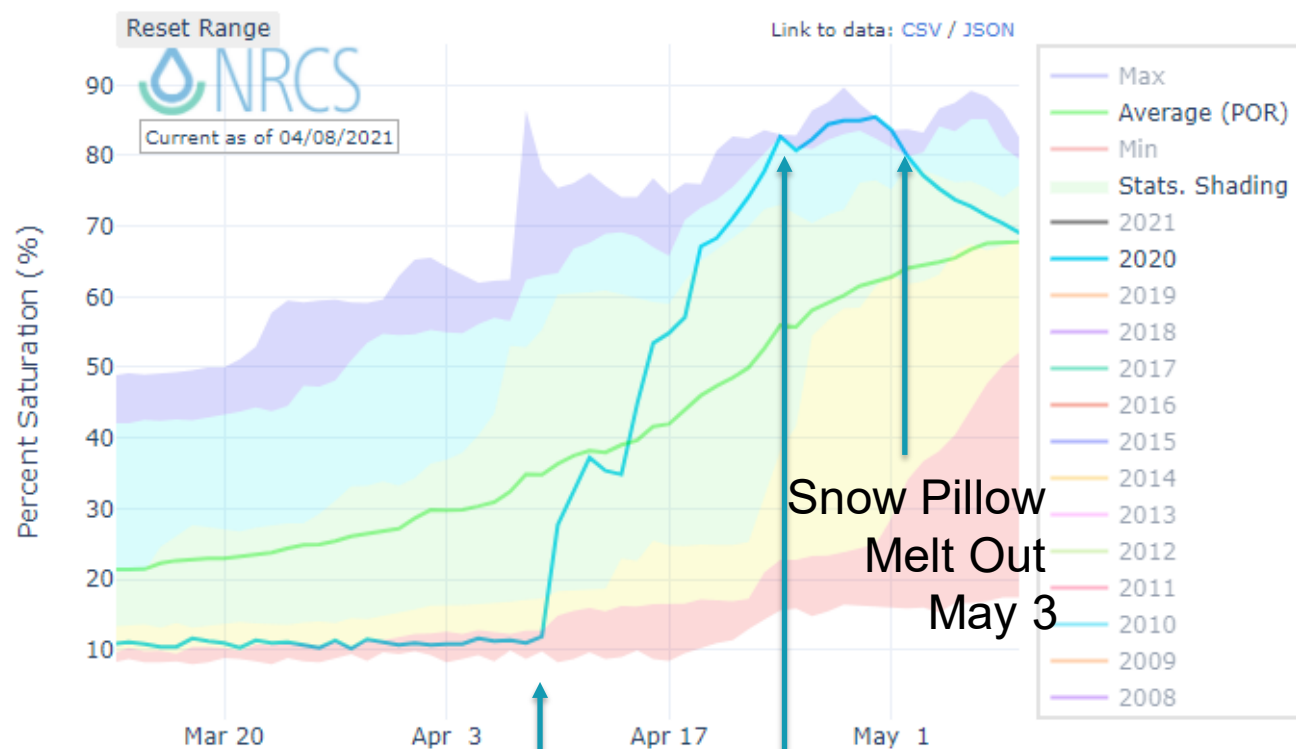
SNOW WATER EQUIVALENT AT CORRAL CANYON



Melt begins Apr 10

Snow Pillow Melt Out May 3

DEPTH AVERAGED SOIL SATURATION AT CORRAL CANYON



Snow Pillow Melt Out May 3

Melt begins Apr 10

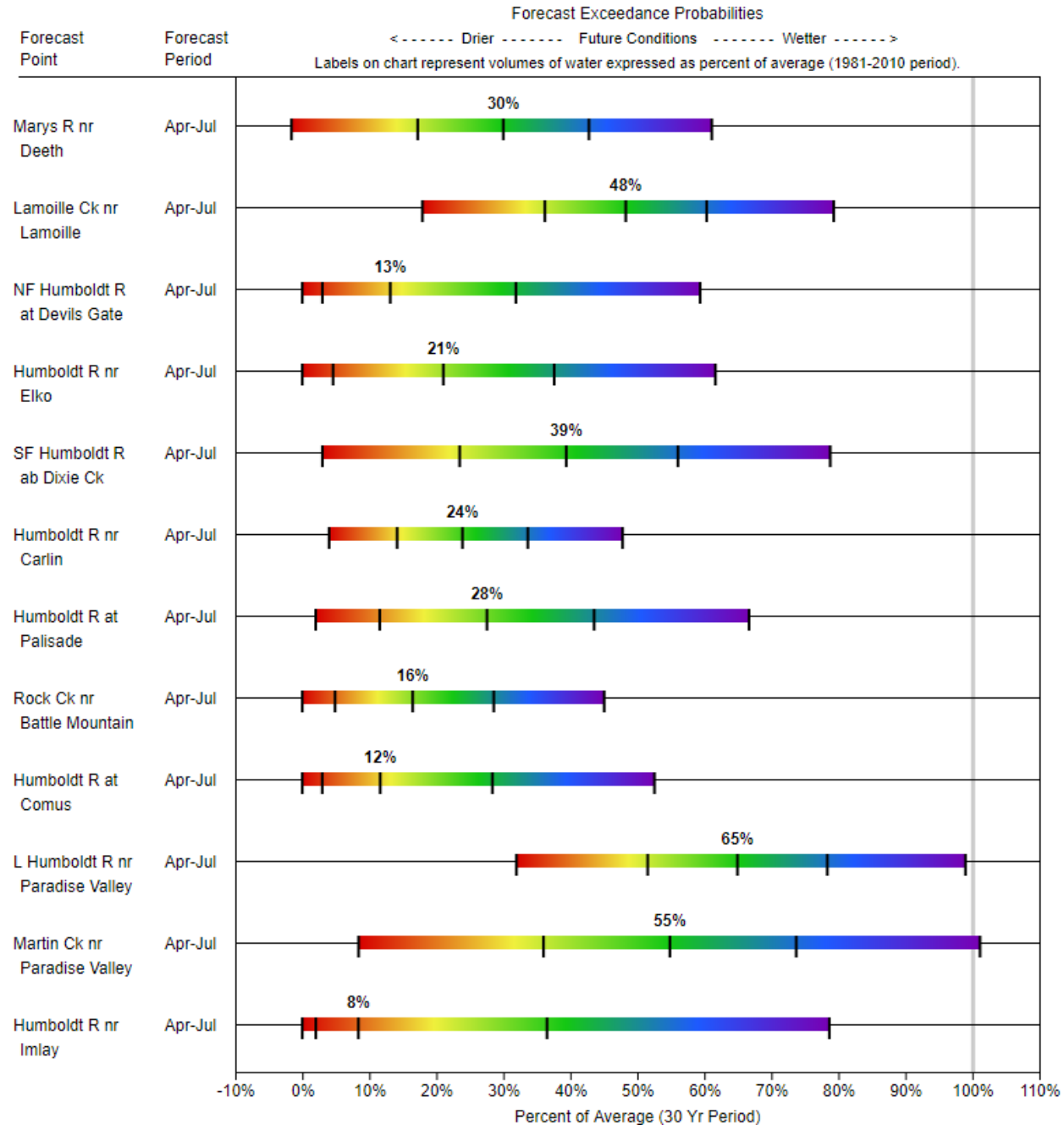
Near Saturation April 24



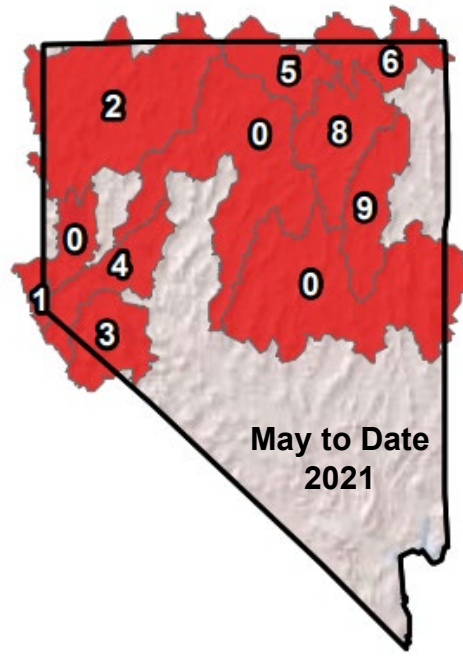
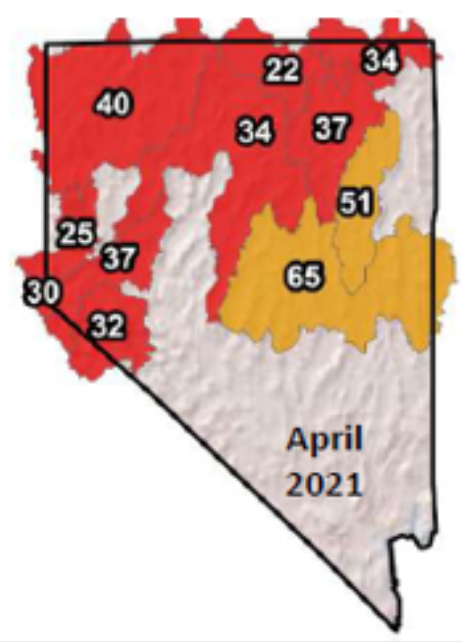
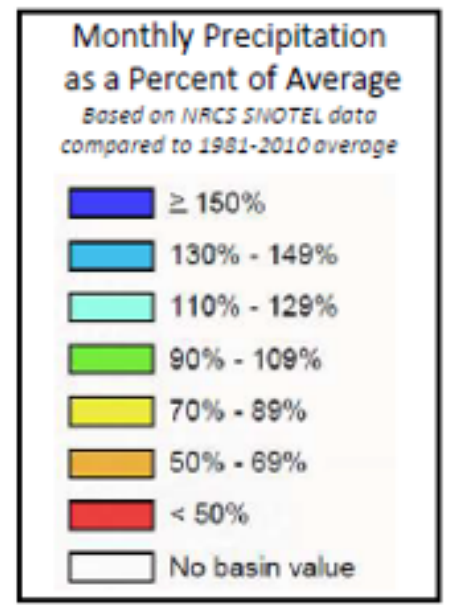
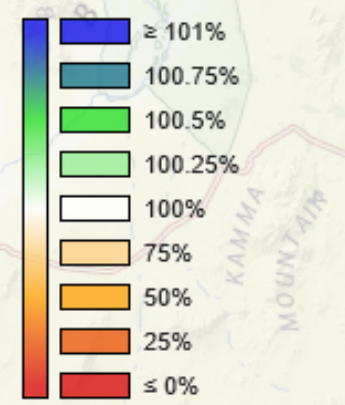
April - July Streamflow Forecasts

Exceedance Forecasts

50% / 70% / 90%
8-65% / 2 - 52% / 0-32%



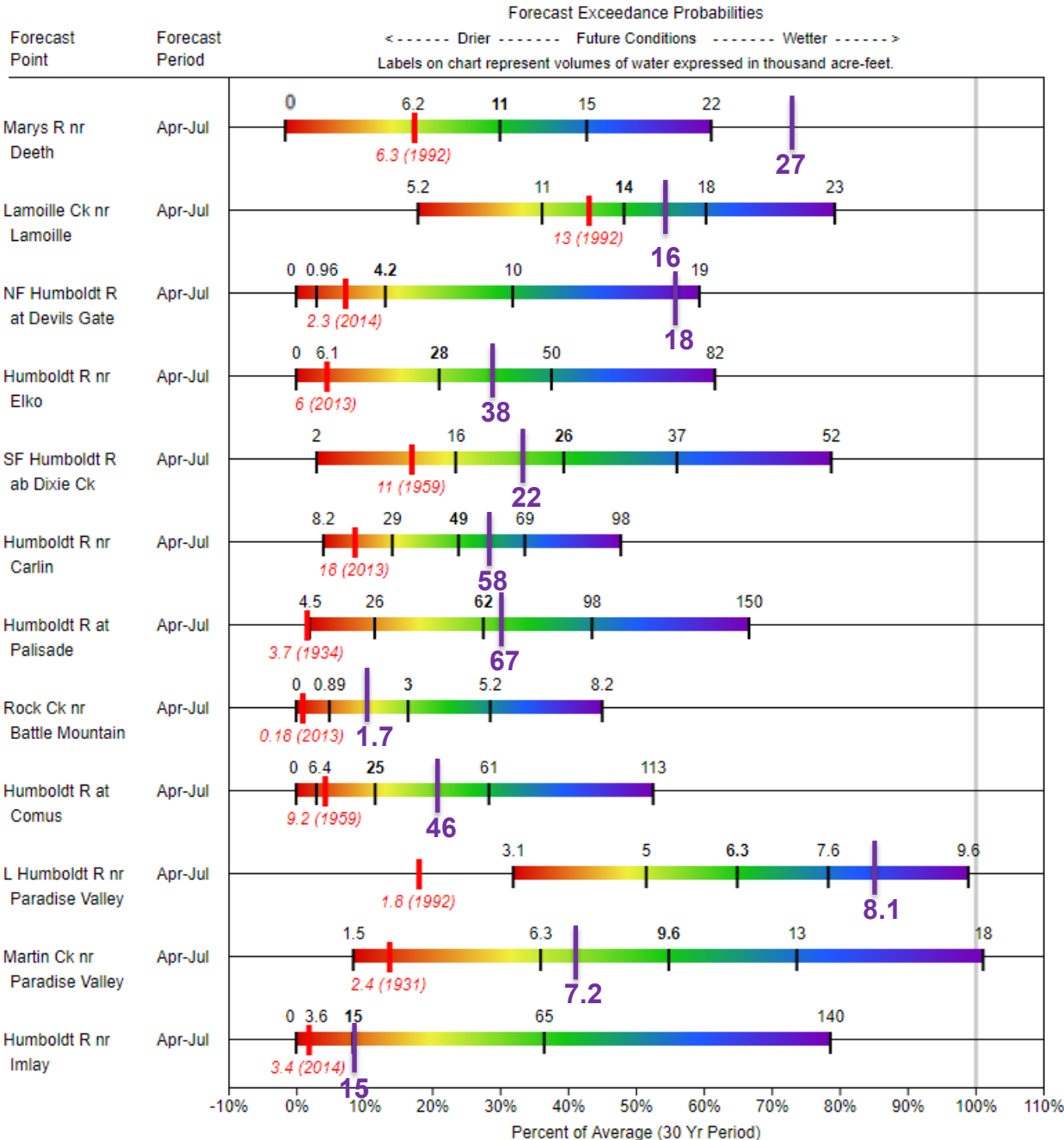
1 month Adjusted Volume - Observed
Percent NRCS 1981-2010 Average
April 1, 2021 through April 30, 2021



2021 April-May to Date
 Streamflow 2-40% average
 Apr and May Monthly Prec << average

April 1, 2021
Volumetric
Forecasts

Compared to
2020 Observed
Runoff Volumes



Summary

50% exceedance forecasts are less than 2020 observed runoff

Conditions to note:
Snowpack a bit better in 2021

But...
Soil moisture significantly less
Winter base flows much lower
Apr-May runoff 2-40% average

70 & 90% exceedance volumes likely

Some 90% exd's are new minimums

| 2020 Observed
 | Record Minimum (Year)

Natural Resources Conservation Service

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Other Items to be aware of...

New Lamoille Canyon SNOTEL

Application under review by USFS

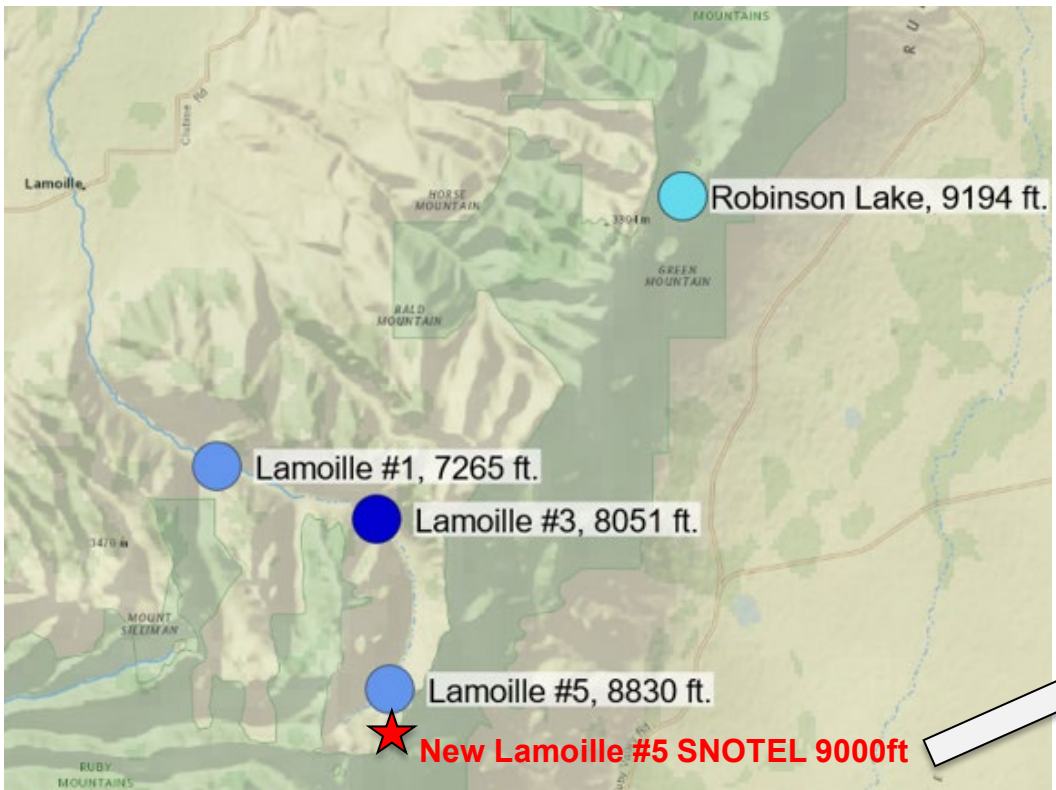


Existing SNOTELs

UPPER HUMBOLDT RIVER	
Corral Canyon	8445
Jacks Peak	8424
Green Mountain	8185
Lamoille #3	8051
Bear Creek	8040
Dorsey Basin	7903
Pole Canyon	7760
Stag Mountain	7640
Jakes Creek	7380
Jack Creek Upper	7377
Seventysix Creek	7350
Draw Creek	7332
Tent Mtn Lower	7100
Fry Canyon	6798
Dry Creek	6555
Taylor Canyon	6325

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Proposed SNOTEL Location 7/3/19



New 30 Year Normals - 1991-2020 Period

Coming October 2021

1. For the 1991-2020 period averages & medians will be calculated and stored.
2. The median will be default central tendency in NRCS products.
3. The median better represents the middle of the dataset, with half the years above and half below.
4. The target publication date for 1991-2020 normals is October 1, 2021
5. Normals will be calculated for sites with ≥ 10 years of data in 30-year period.

Data types:

- Daily SWE & Accumulated Precipitation
- Peak SWE and Peak SWE Date
- Dates for Onset of Snow and Meltout
- Monthly Streamflow Volume and Reservoir Storage

Contact us anytime with questions and comments



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