NEVADA DIVISION OF
WATER RESOURCES

Nevada Department of
CONSERVATION & NATURAL RESOURCES

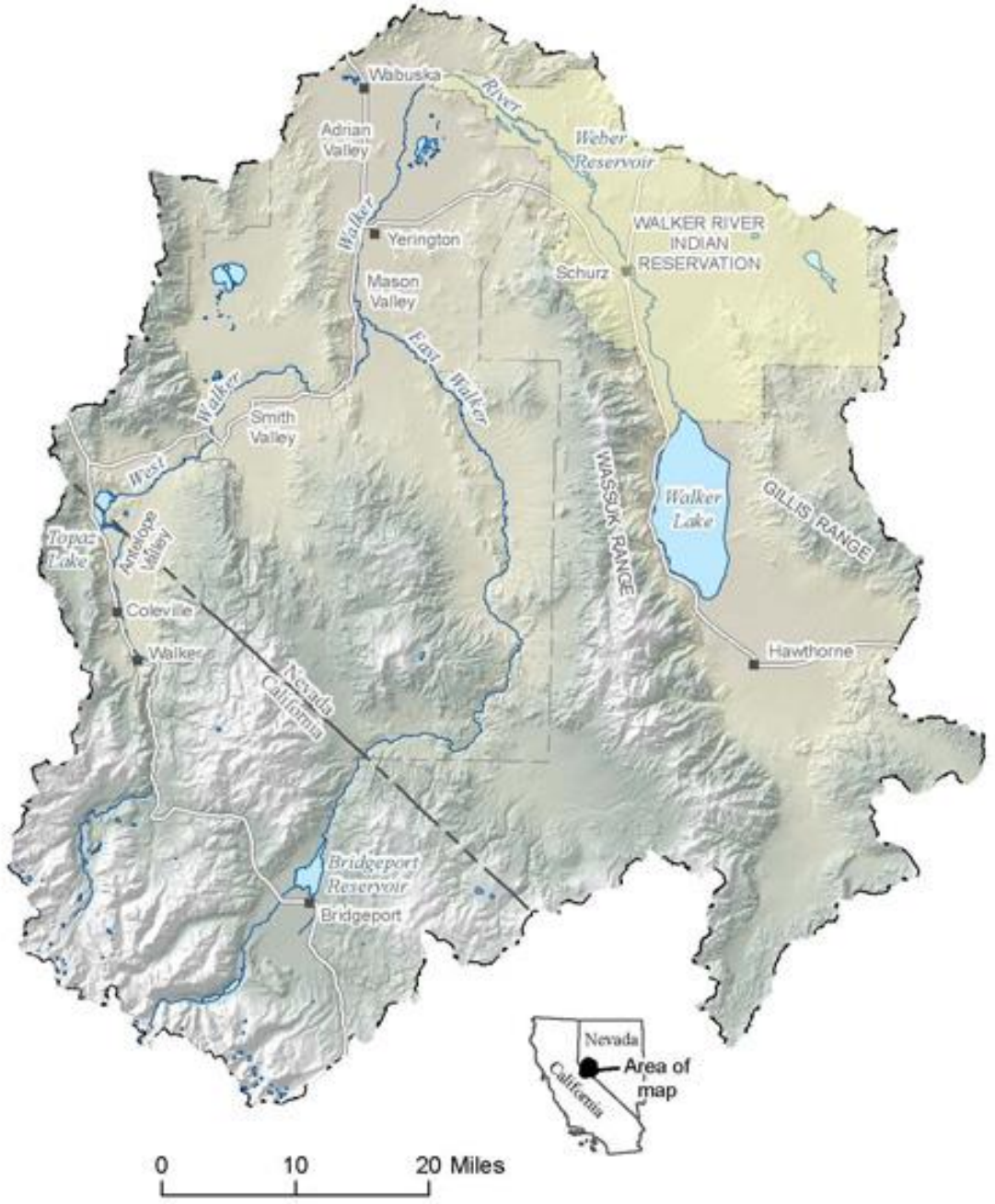
Drought to Flood, Pumping, and Groundwater Management in Mason & Smith Valleys

April 6, 2023

Presented by:

AJ Jensby and Kip Allander

Nevada Division of Water Resources



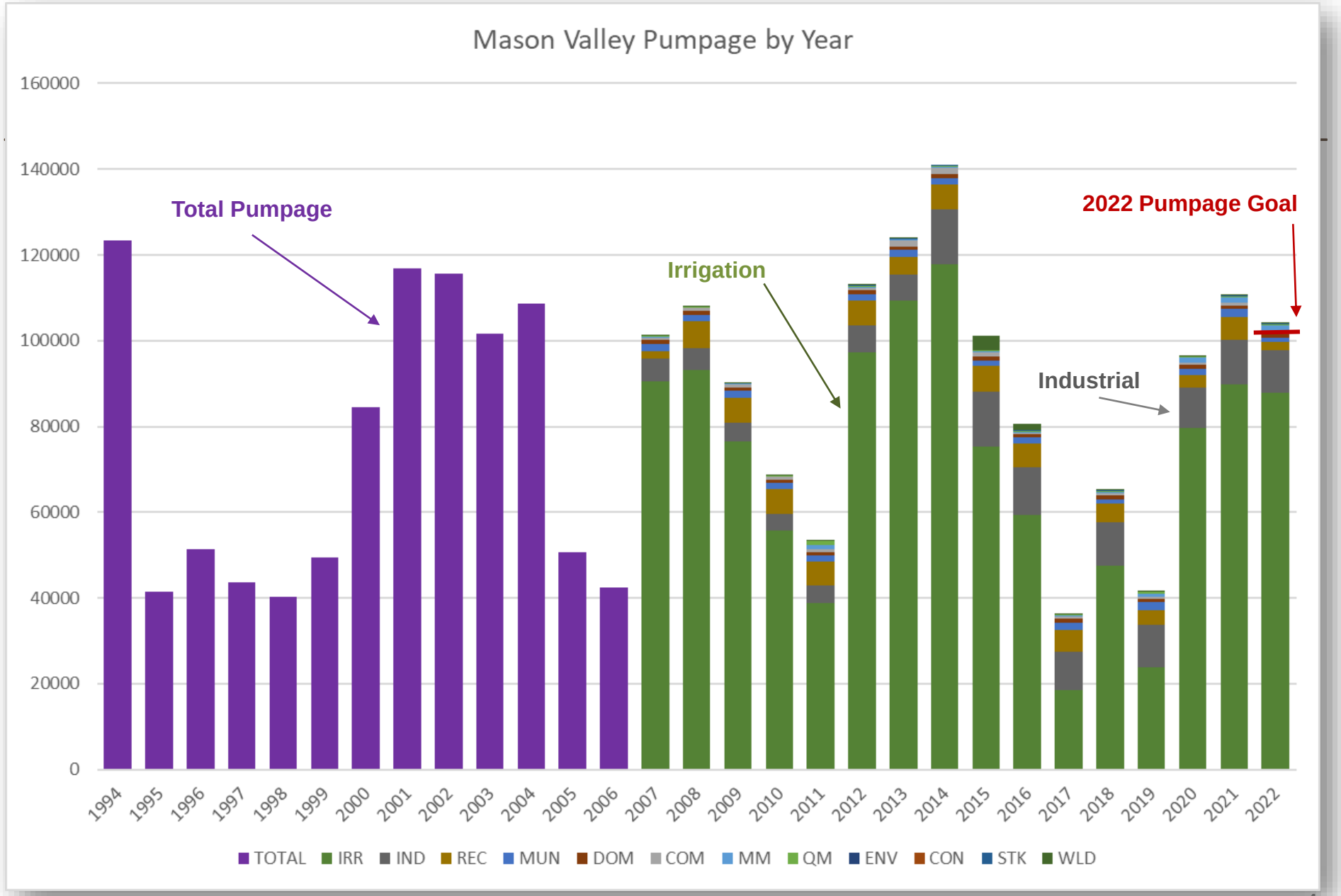
Overview

- Pumping and water levels for 2022
- Current water supply conditions
- From drought to flood
- Sustainability goals
- Pumping goals for 2023
- Summary and Outlook

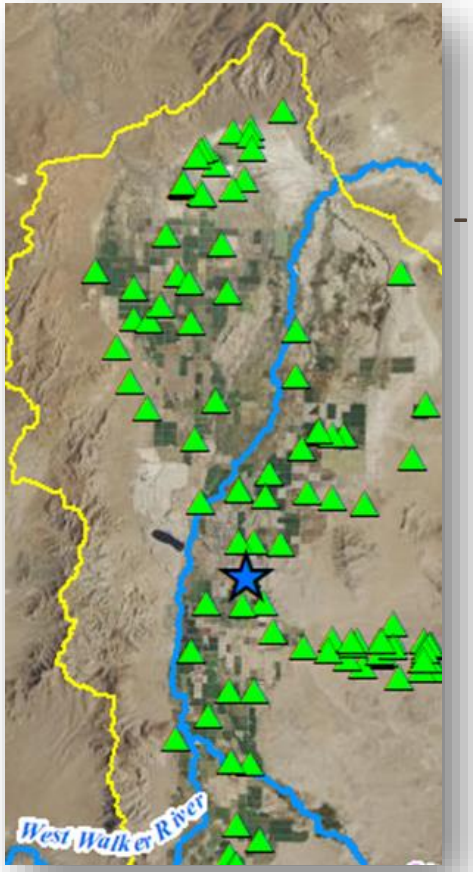
2022 PUMPING REVIEW AND WATER LEVEL DECLINES

Mason Valley Total Pumpage

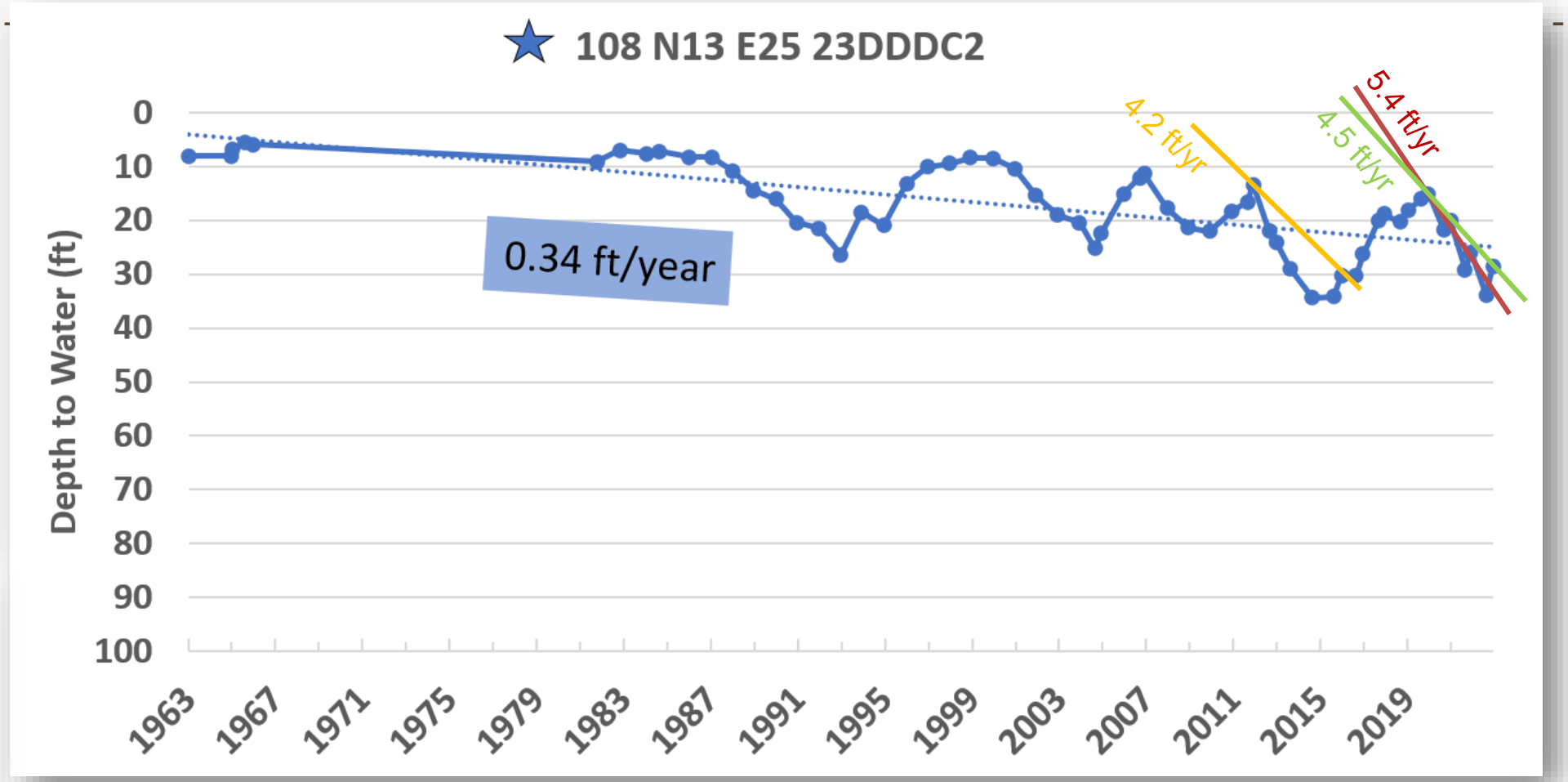
2015 – 2021 Pumpage data had revisions. Goal is to always work towards the most accurate numbers.



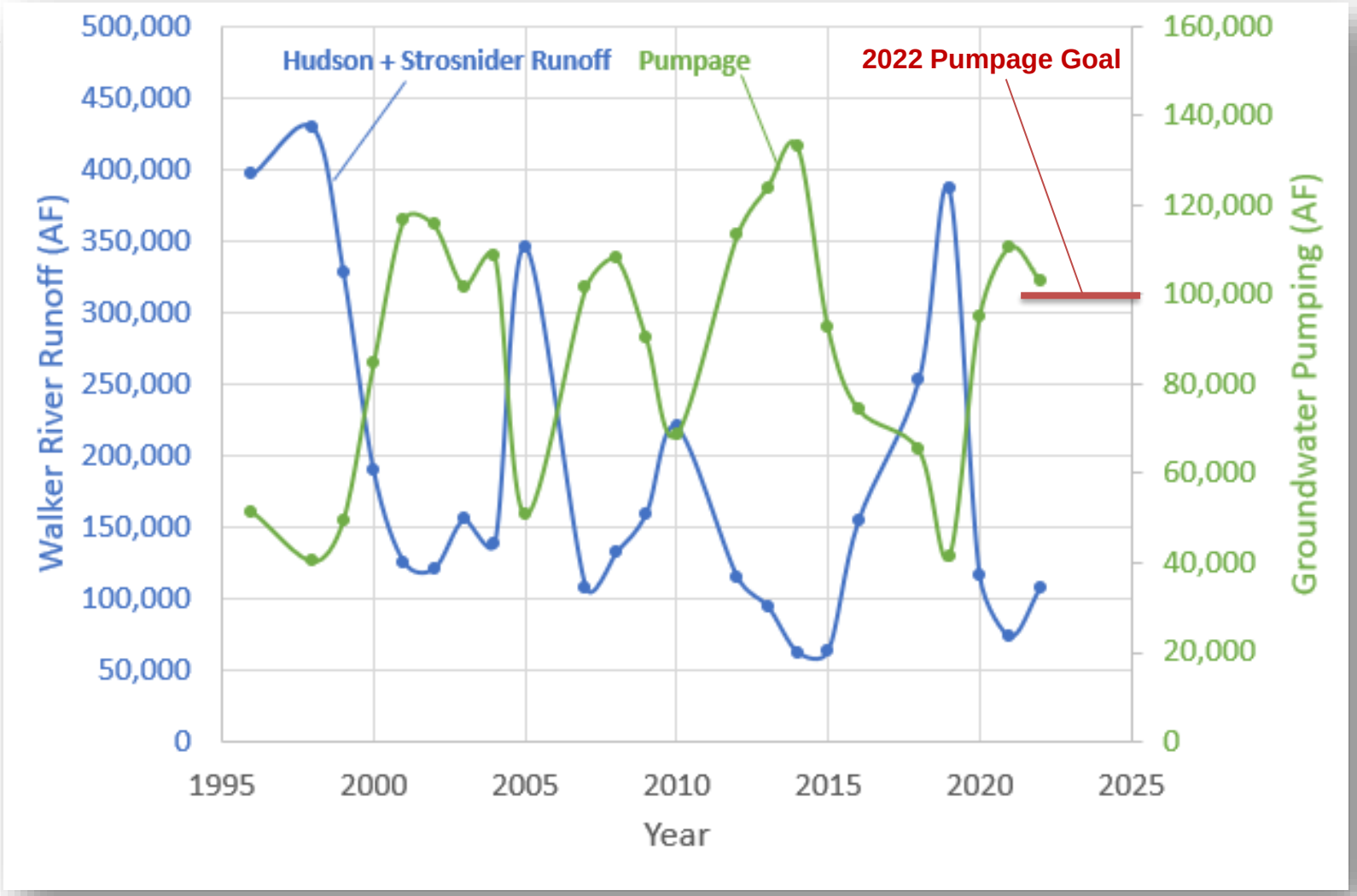
Mason Valley Water Levels

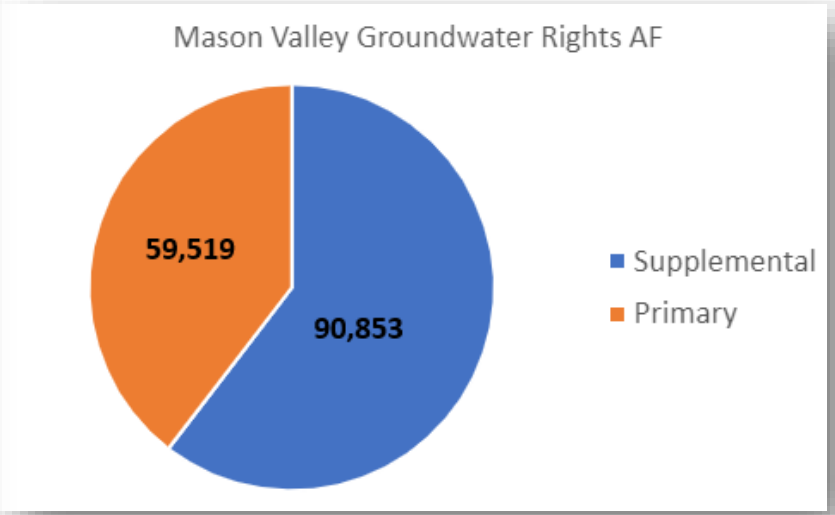


Average Mason Valley Water Level Declines (ft/yr)	
2012-2016	3.4
2020-2022	4.1
2020-2023	3.5



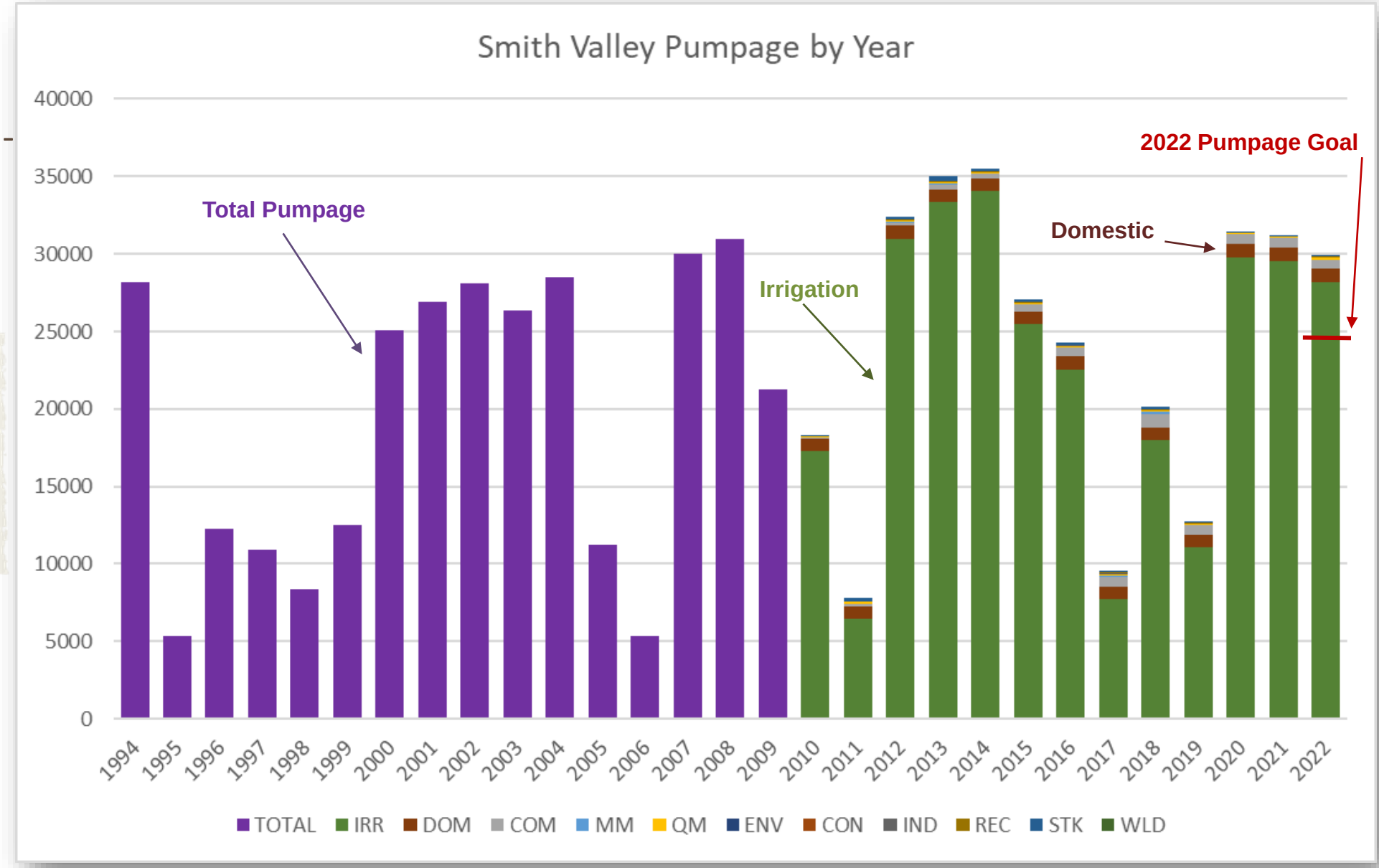
Walker River Streamflow vs. Mason Valley Pumping



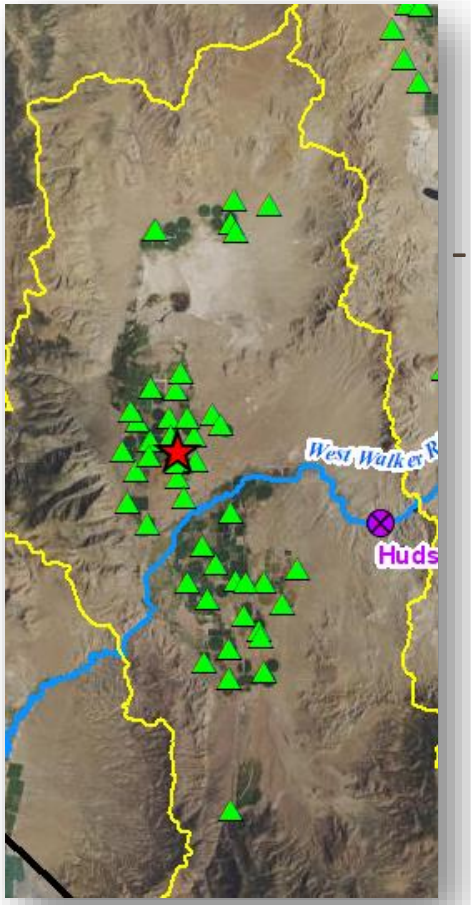


Smith Valley Total Pumpage Minus Artesia

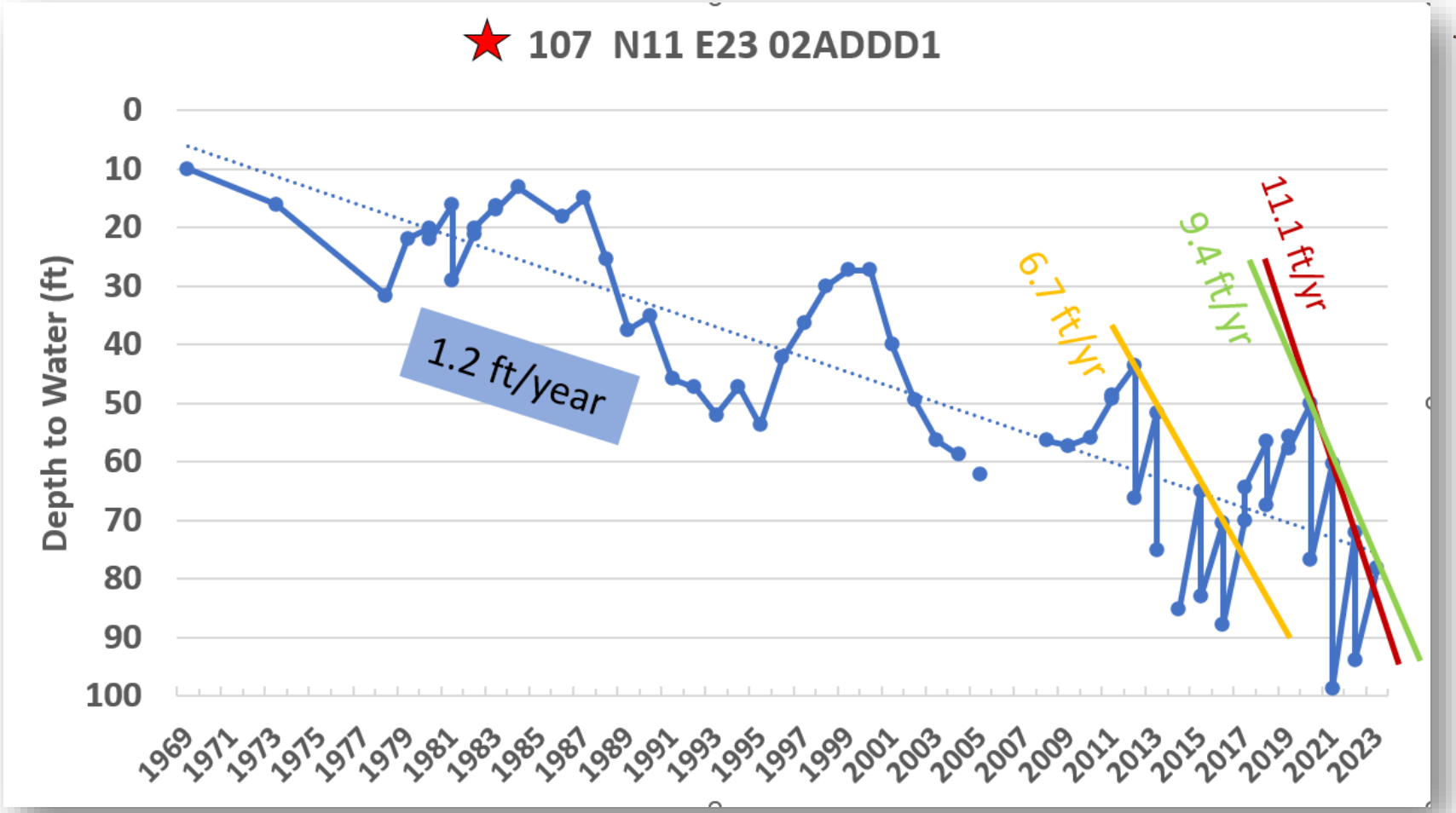
Smith 2015 – 2021 Pumpage data had revisions. Goal is to always work towards the most accurate numbers.



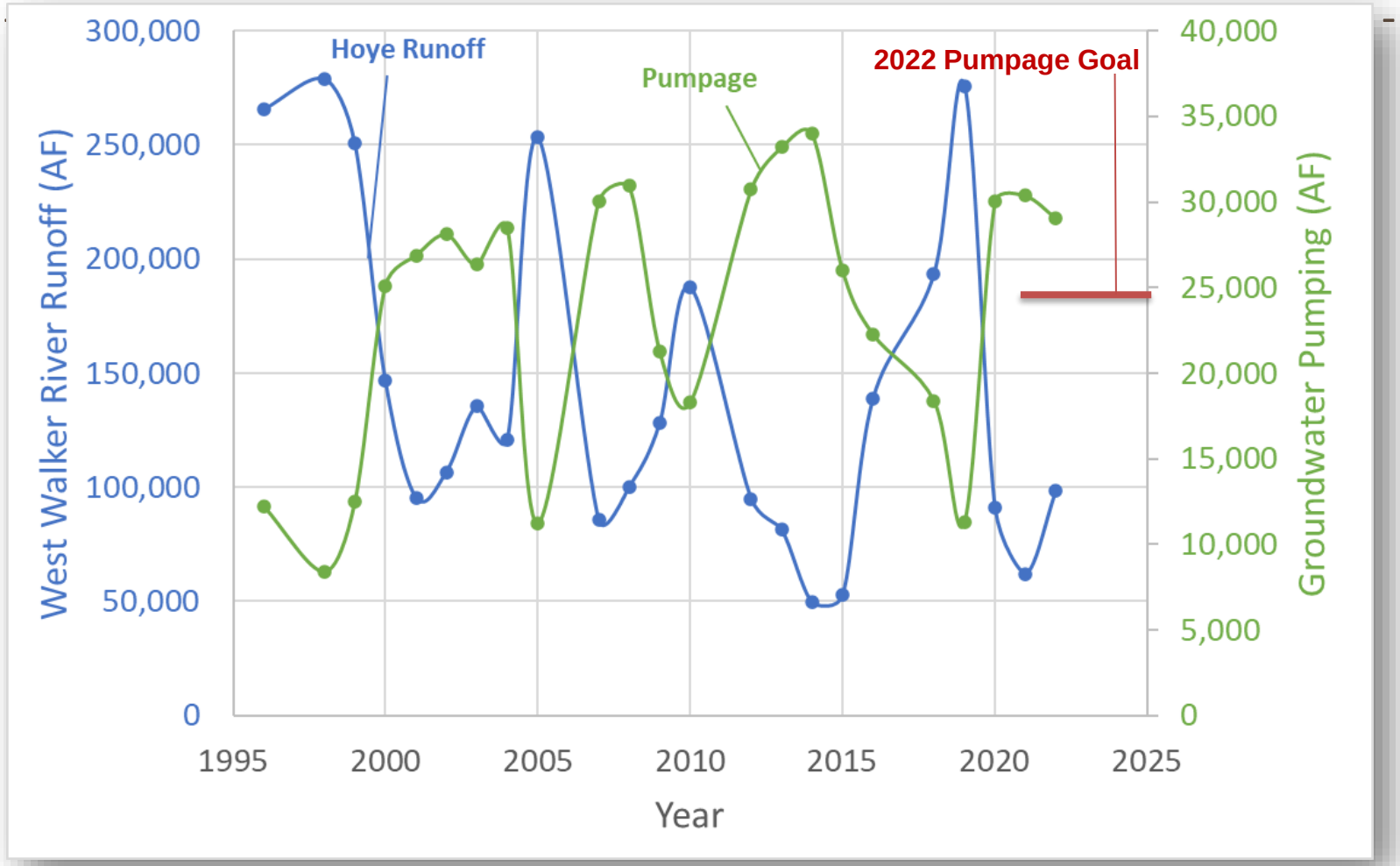
SMITH VALLEY WATER LEVELS

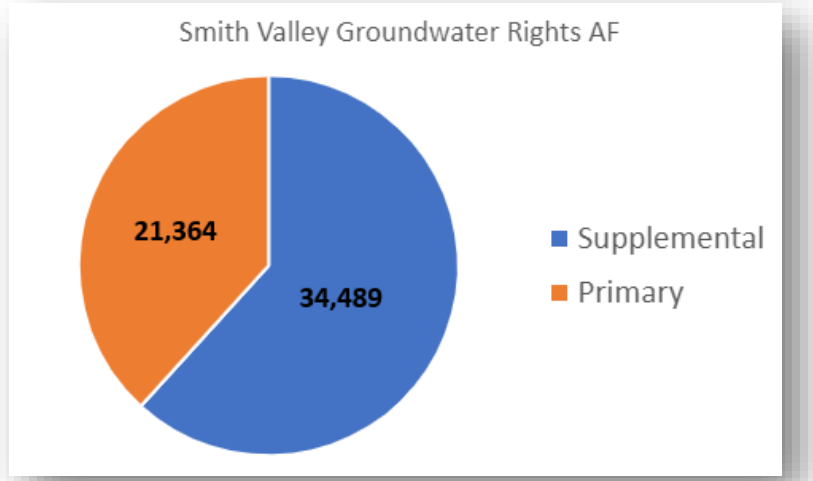


Average Smith Valley Water Level Declines (ft/yr)	
2012-2016	5
2020-2022	7.4
2020-2023	6.6



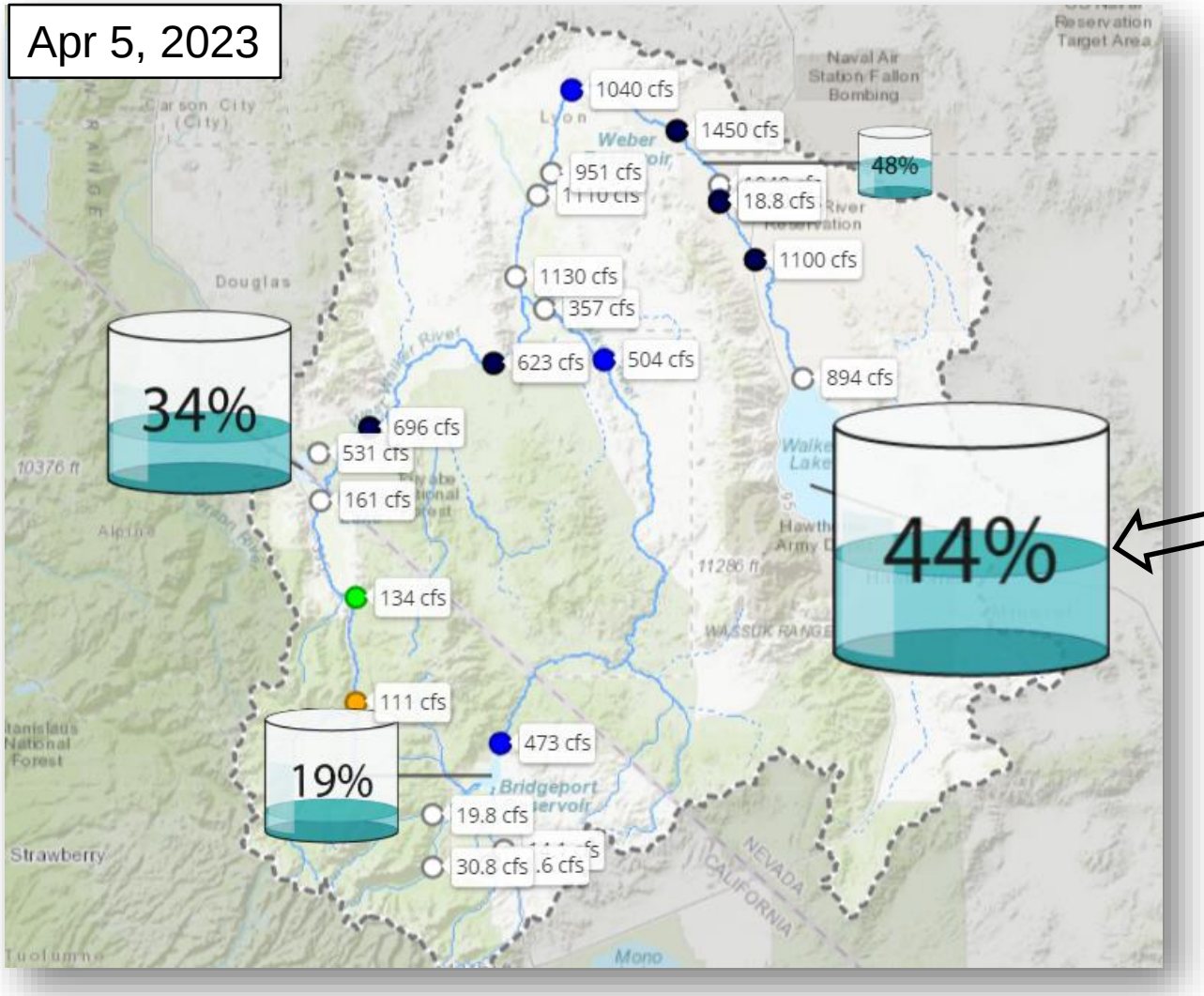
Walker River Streamflow vs. Smith Valley Pumping





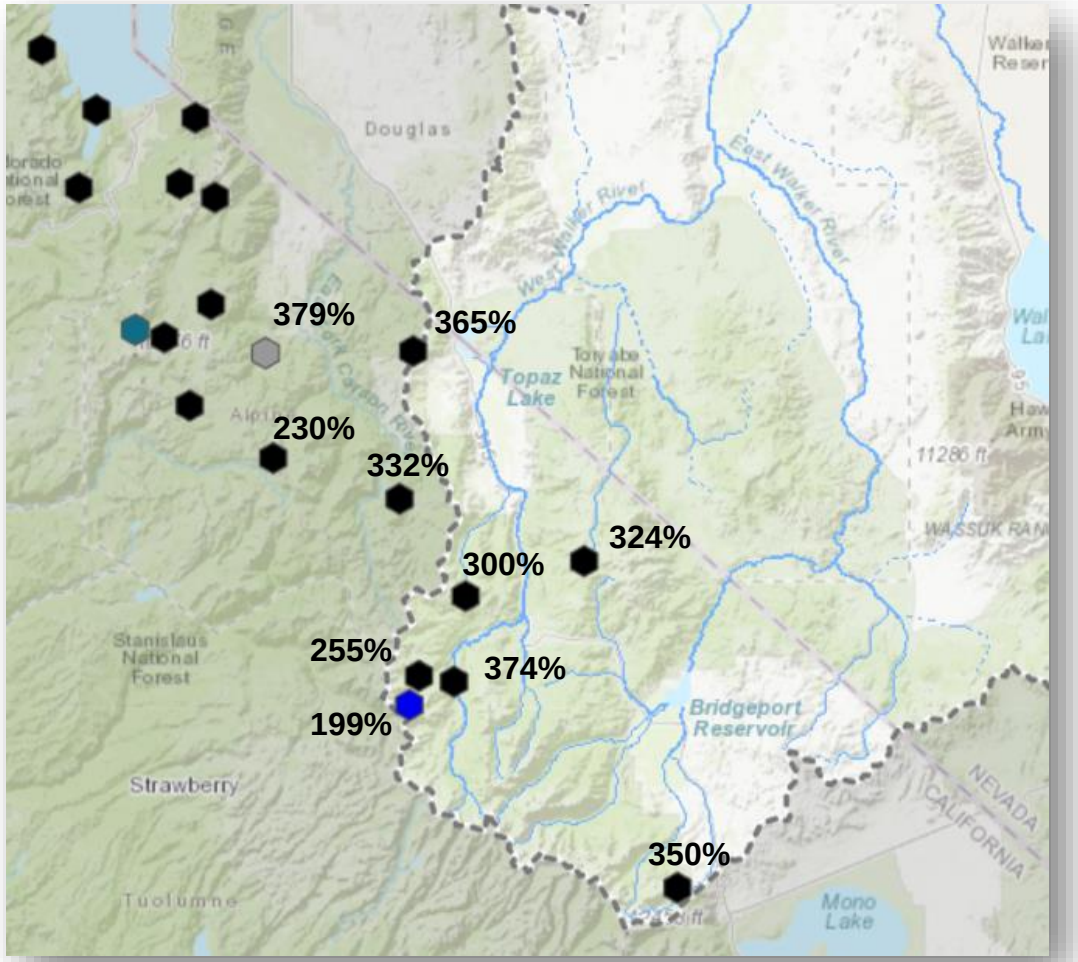
WATER SUPPLY OUTLOOK

Reservoir Storage



Up 2.8%

Snow Water Equivalent, % of April 1 median



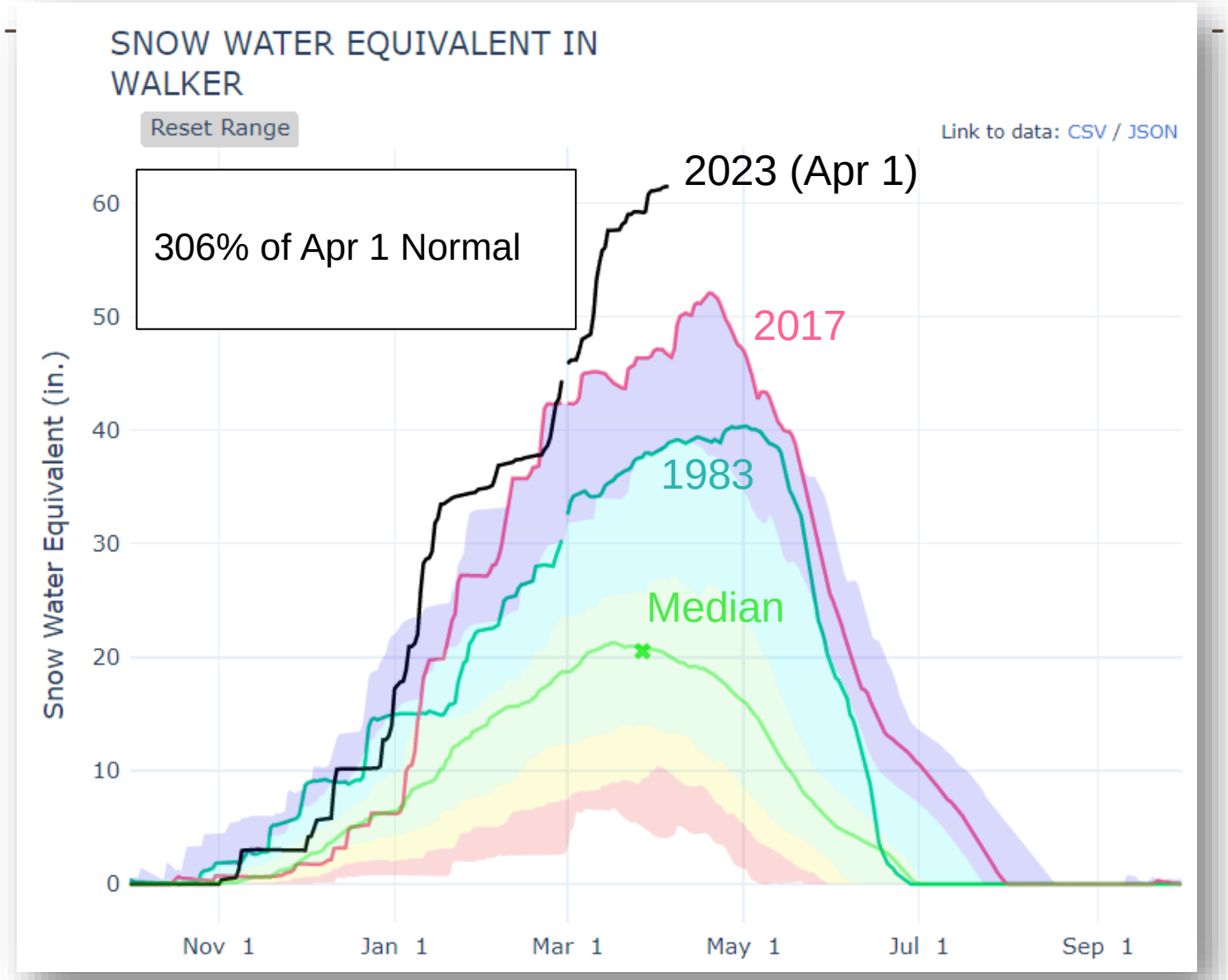
NRCS Snow Telemetry (SNOTEL): Snow Water Equivalent, Percent of Median for April 1st

Remove

0%	> 100 – 125%
> 0 – 25%	> 125 – 150%
> 25 – 50%	> 150 – 175%
> 50 – 75%	> 175 – 200%
> 75 – 100%	> 200%

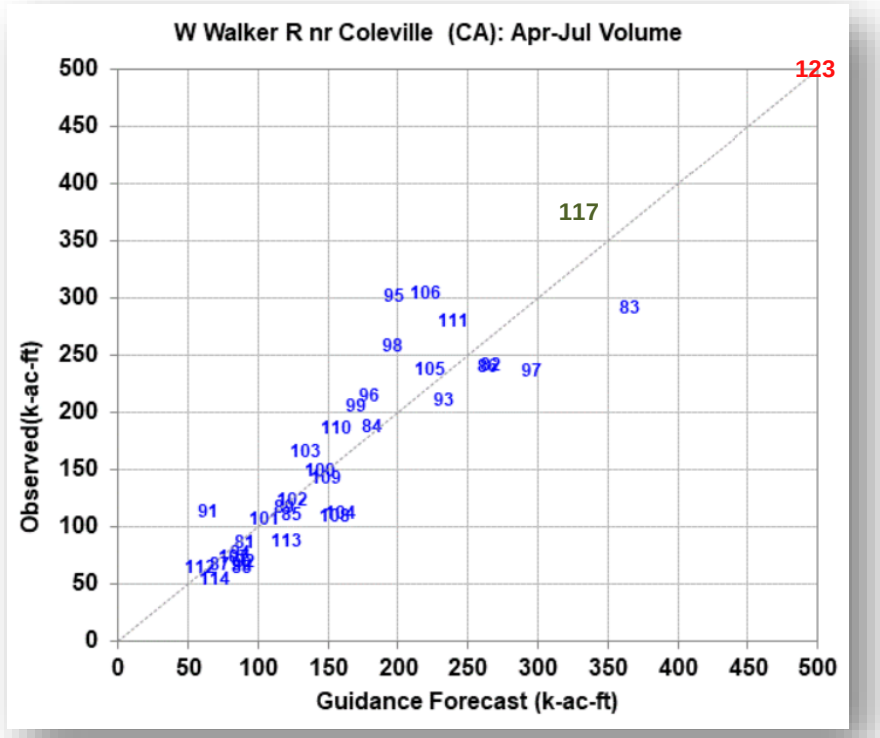
No value

2023 Walker Snowpack (Snow Water Equivalent)

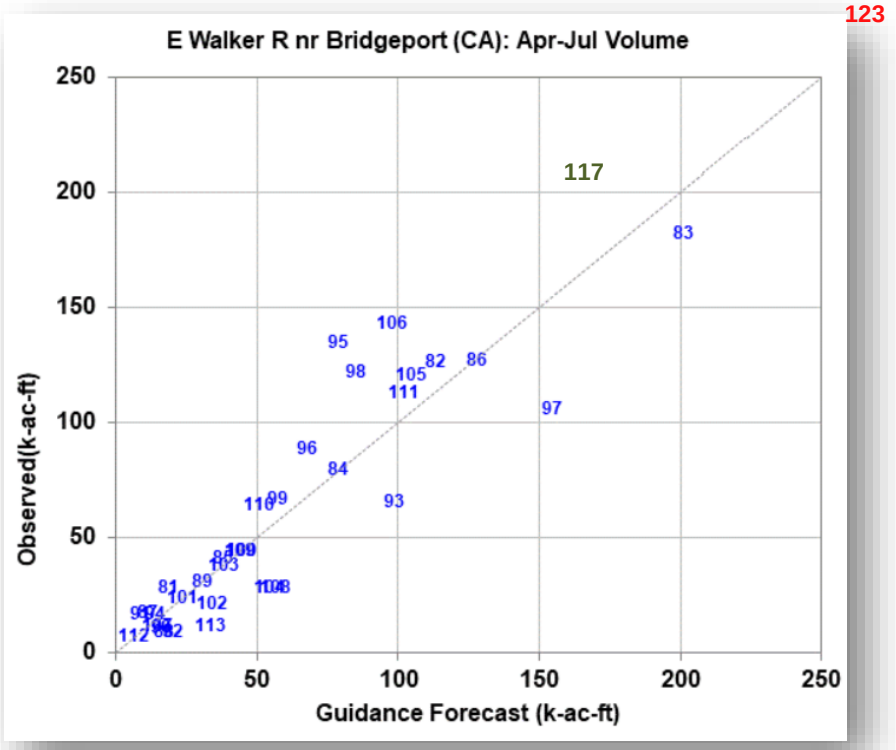


NRCS Projected Runoff for April through July (as of Mar 23, 2023)

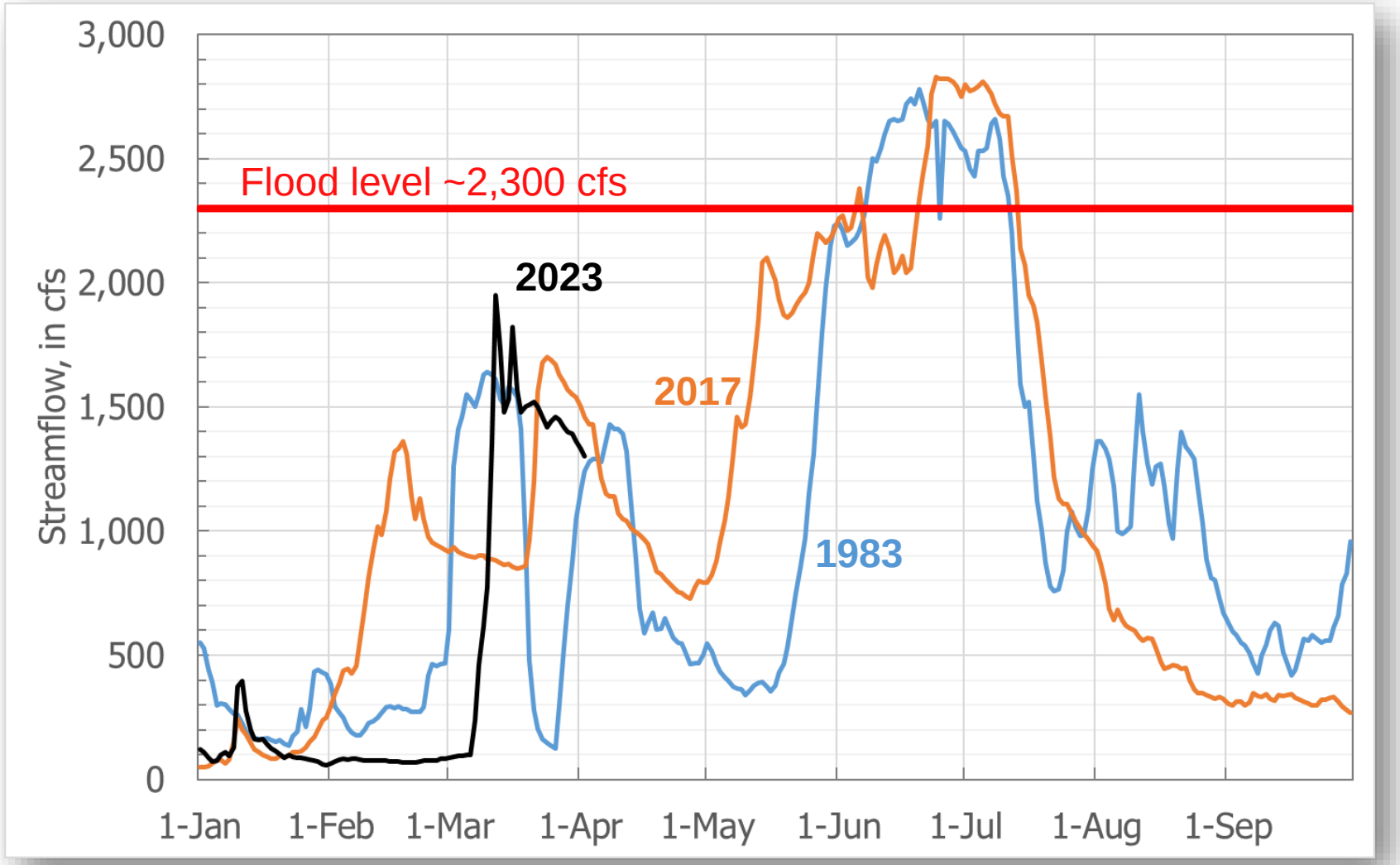
West Walker River



East Walker River

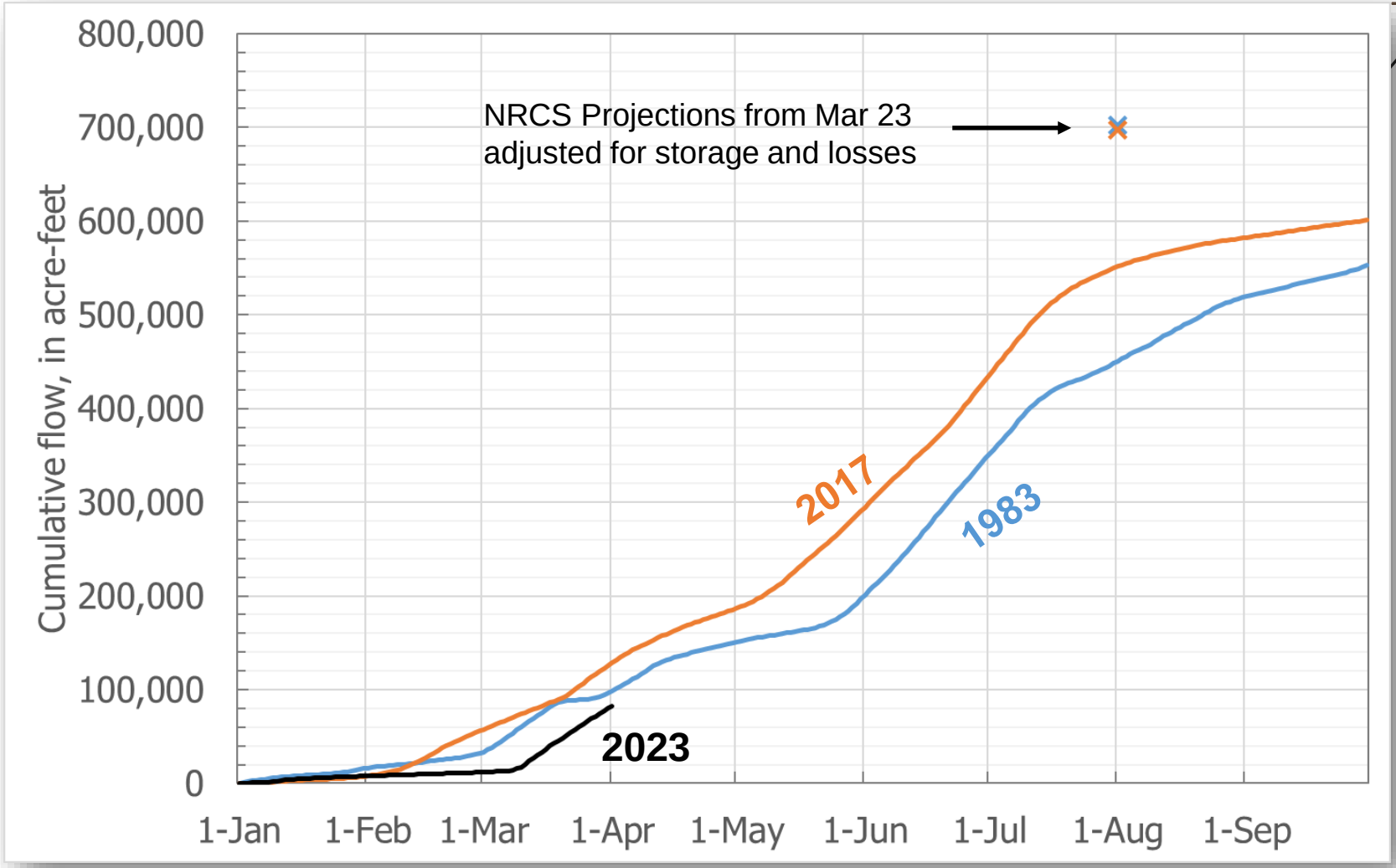


Hydrographs for Walker River at Snyder Lane nr Mason



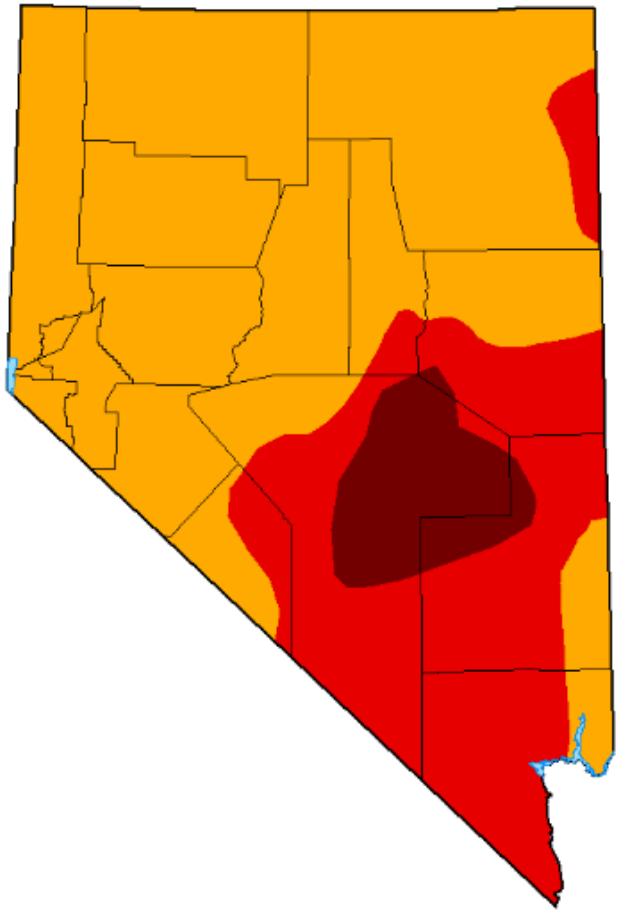
Cumulative Flow for Walker River at Snyder Lane nr Mason

There is significant chance of prolonged flooding on West Walker and Walker Main this Spring into Summer.



U.S. Drought Monitor

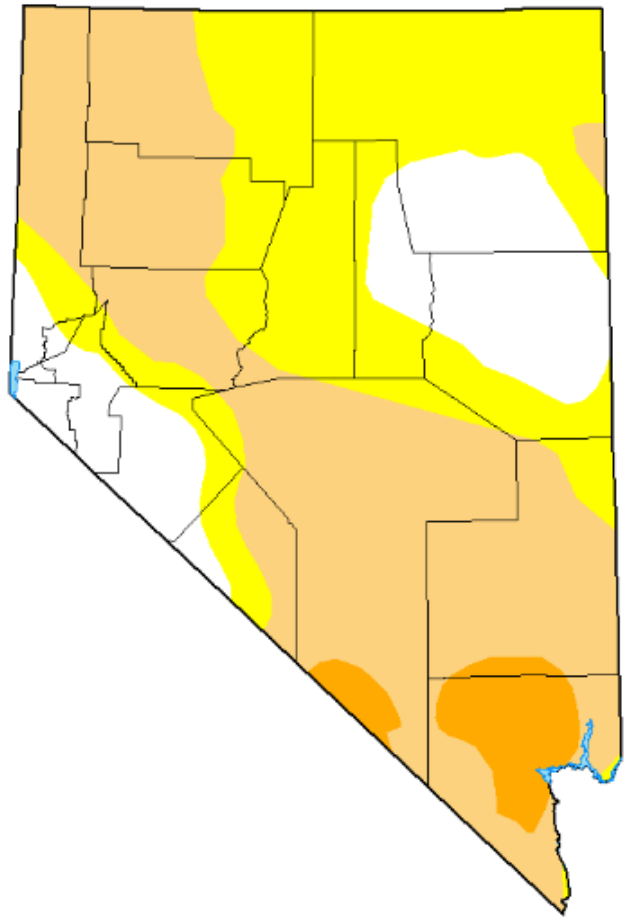
Mar 29, 2022



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

Mar 28, 2023



Flood and Per Acre Duty

With the anticipated high potential for flooding from snowmelt runoff in 2023, the Division of Water Resources recognizes that certain flood control measures may be necessary to protect public safety and infrastructure in and around Yerington.

Diversions of the Walker River through ditches to distribute flood waters and attenuate the peak flow will not be considered by the Division as an irrigation delivery, and such diversions will not be counted as part of the total duty allowed to be diverted for beneficial use during the 2023 season.

This allowance is only in effect during flood conditions due to 2023 snowmelt runoff. Once the flood hazard has subsided this notice does not authorize any diversions without a water right.

Email dated March 08, 2023

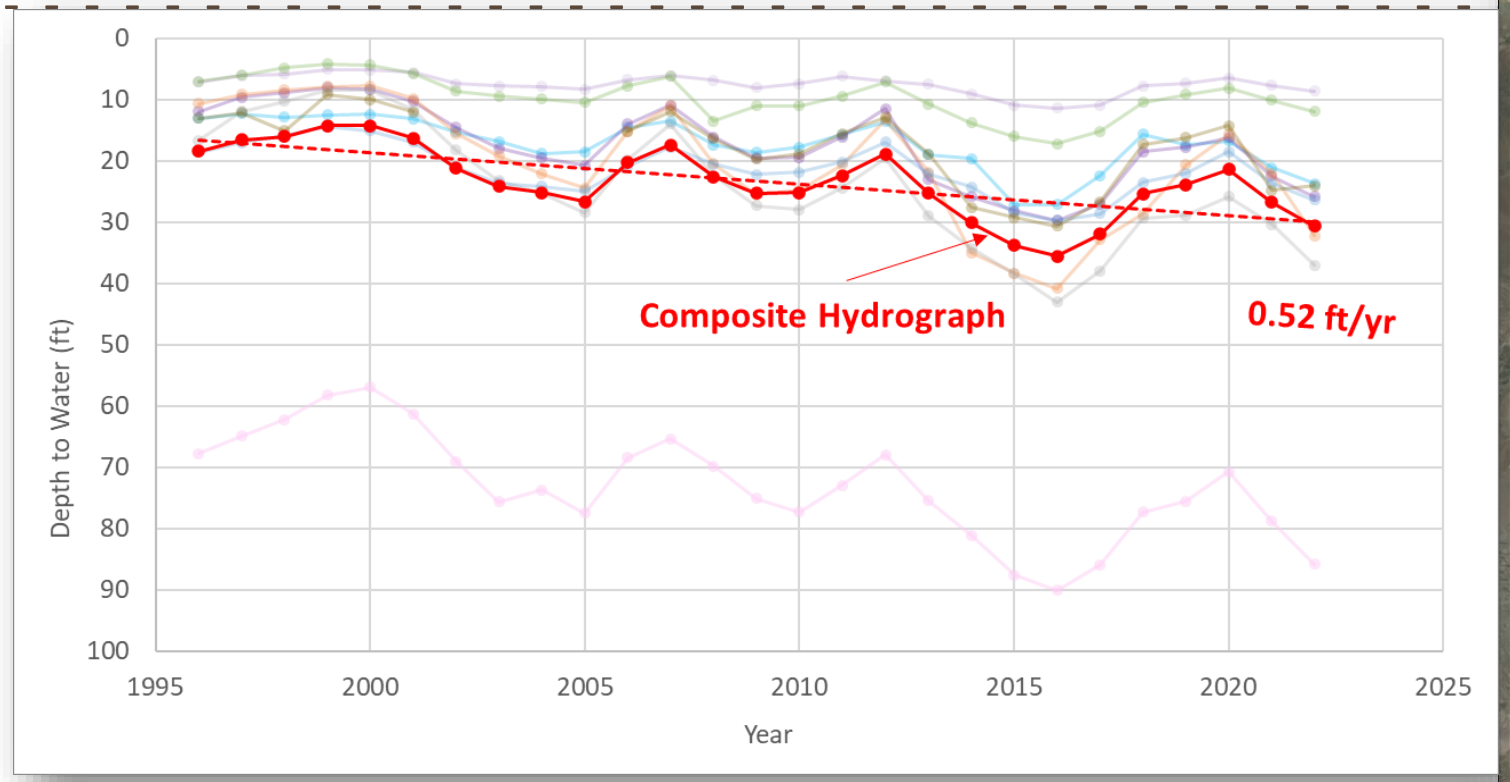
Adam Sullivan, State Engineer

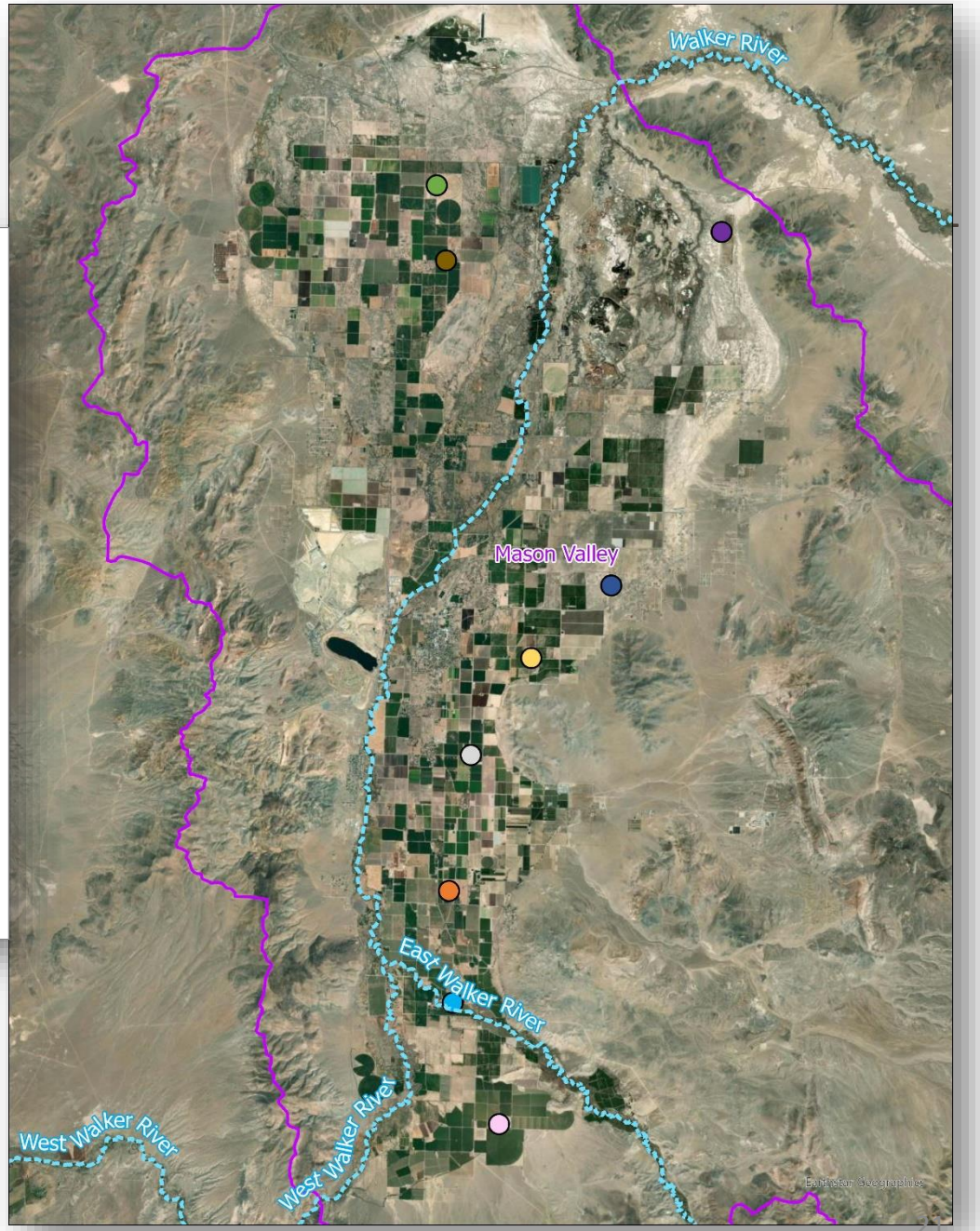
Maximizing these conditions for benefit of groundwater system

- When flood mitigation is needed:
  - Route to diversions, canals, ditches, drains, fields as needed.
  - May flood fields or other land as needed to try and help reduce flooding to community – does not count toward annual duty.
  - Higher heads = greater gw recharge
- Use your decree and flood while minimizing GW use.
- Very little to no supplemental pumping should be used this year.

SUSTAINABLE PUMPING GOALS

Mason Valley Water Levels



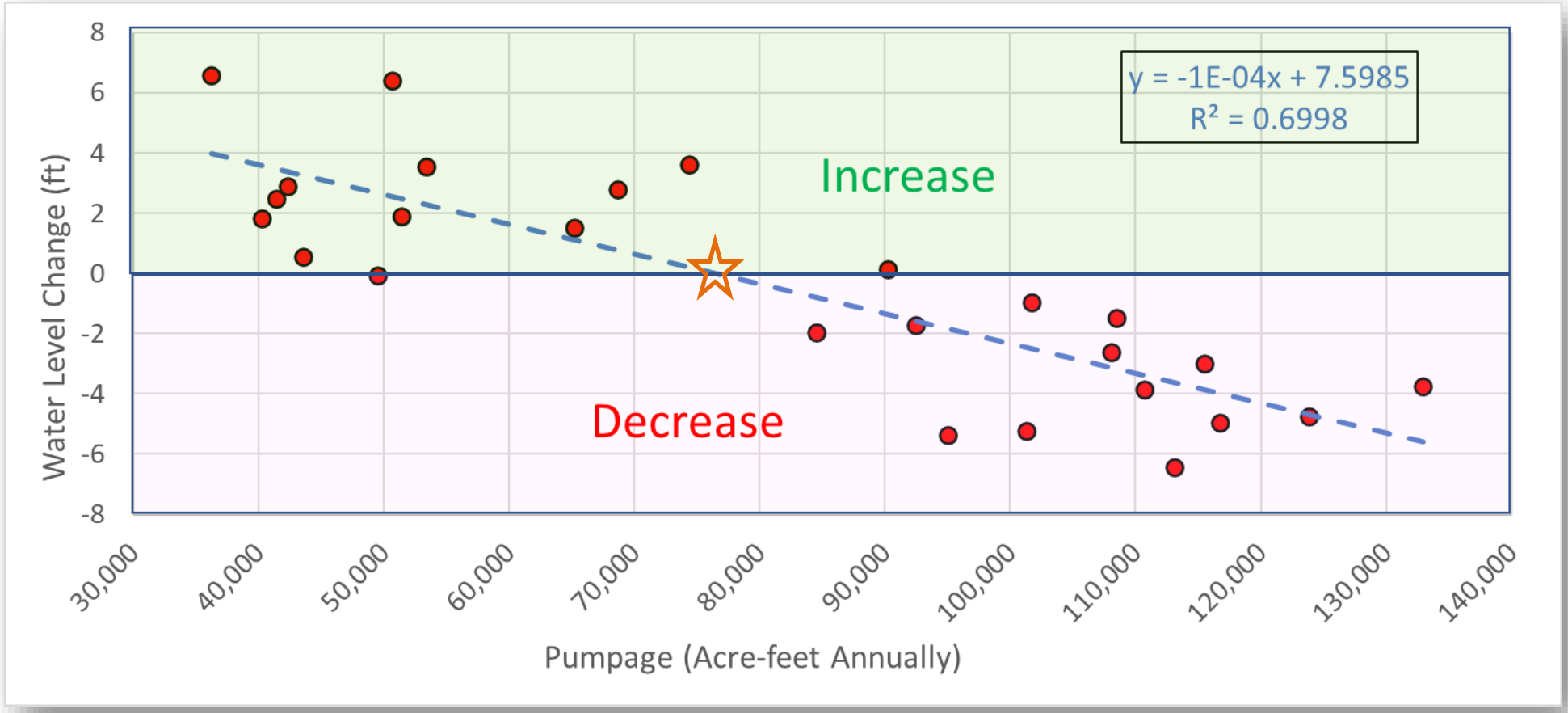


Mason Valley Pumping Vs. Water Level Change

1996-22 Average Pumping: 82,072 AF

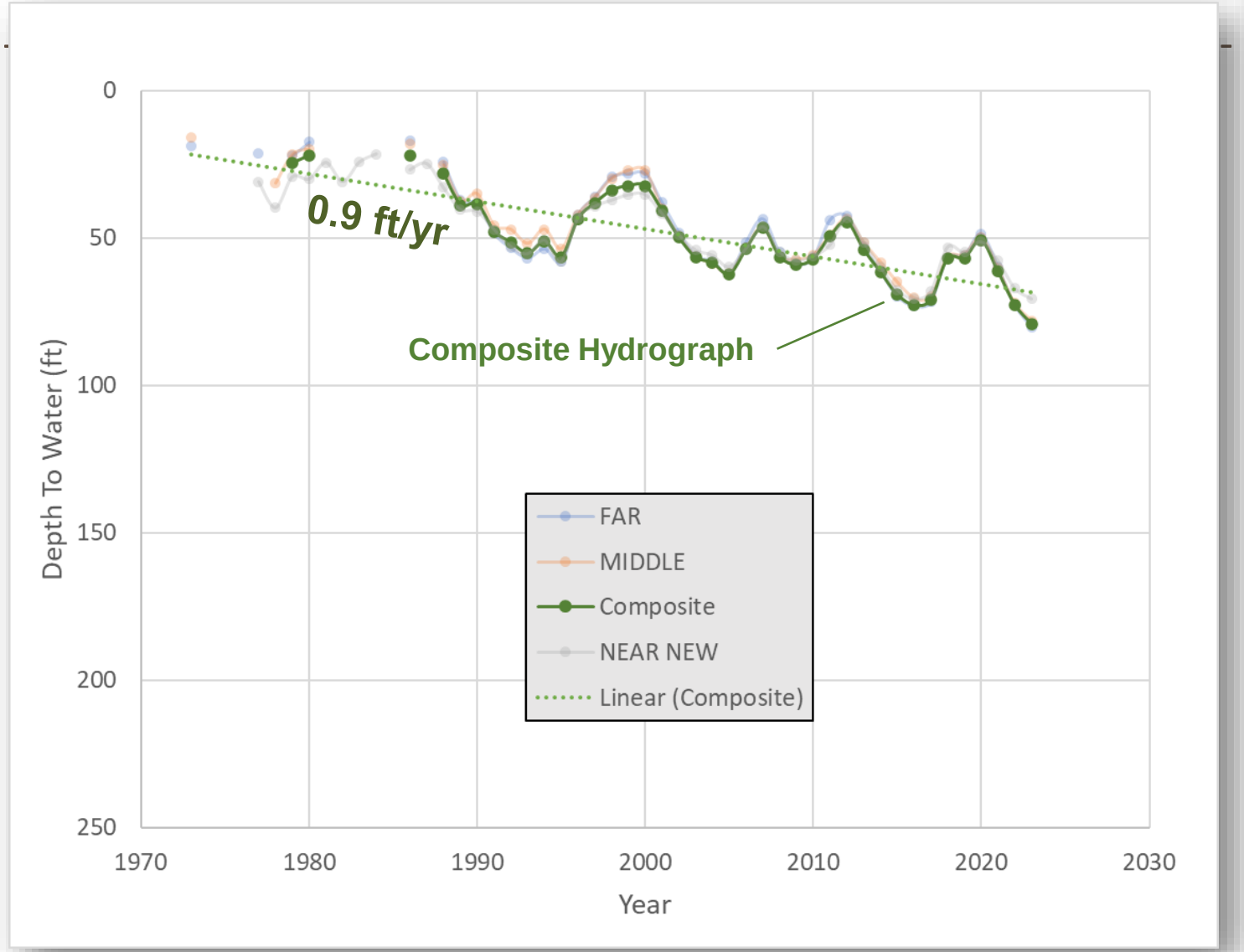
Estimated Average Goal: <76,000 AF

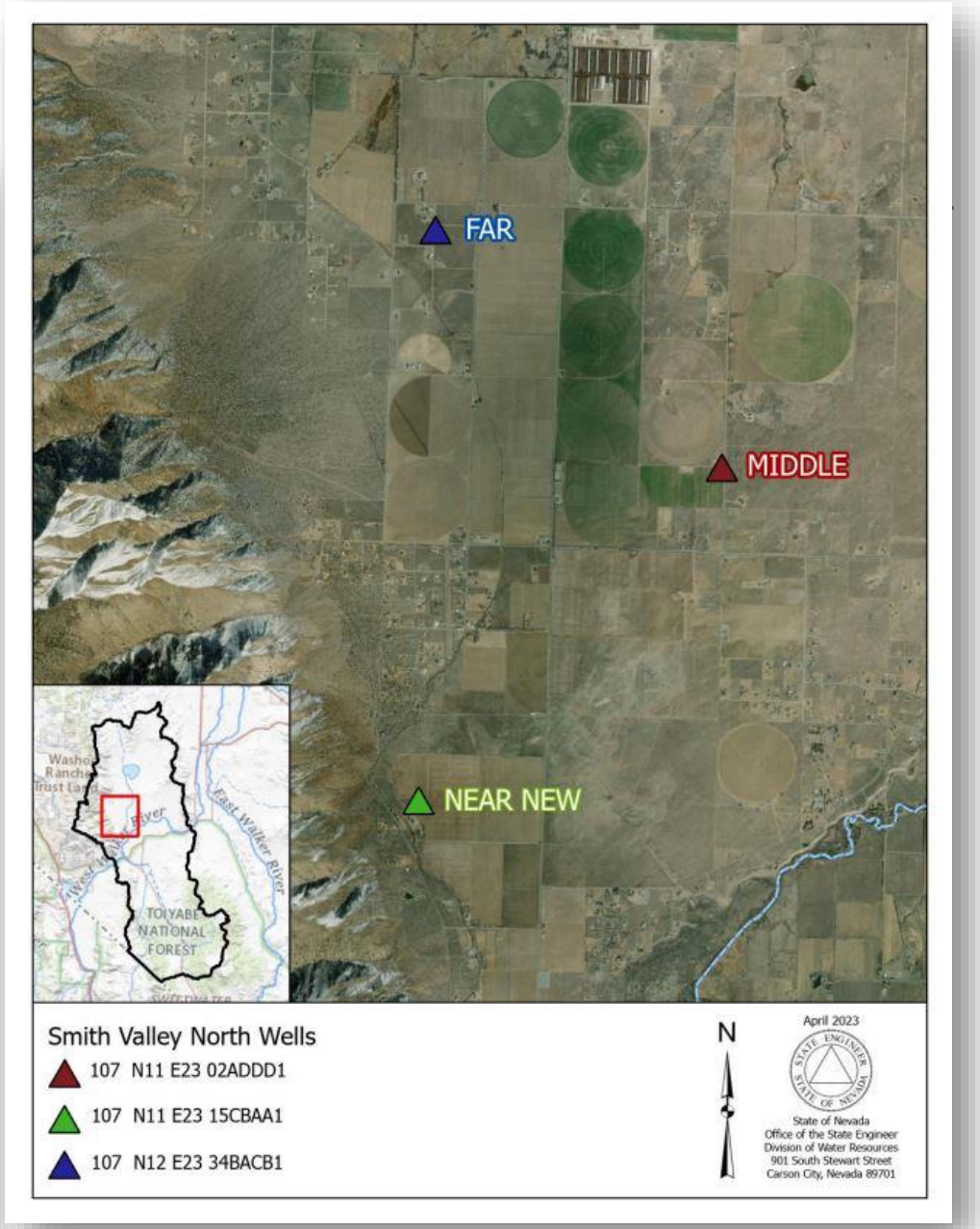
Pumping Reduction Goal is ≥5,250 AF/year



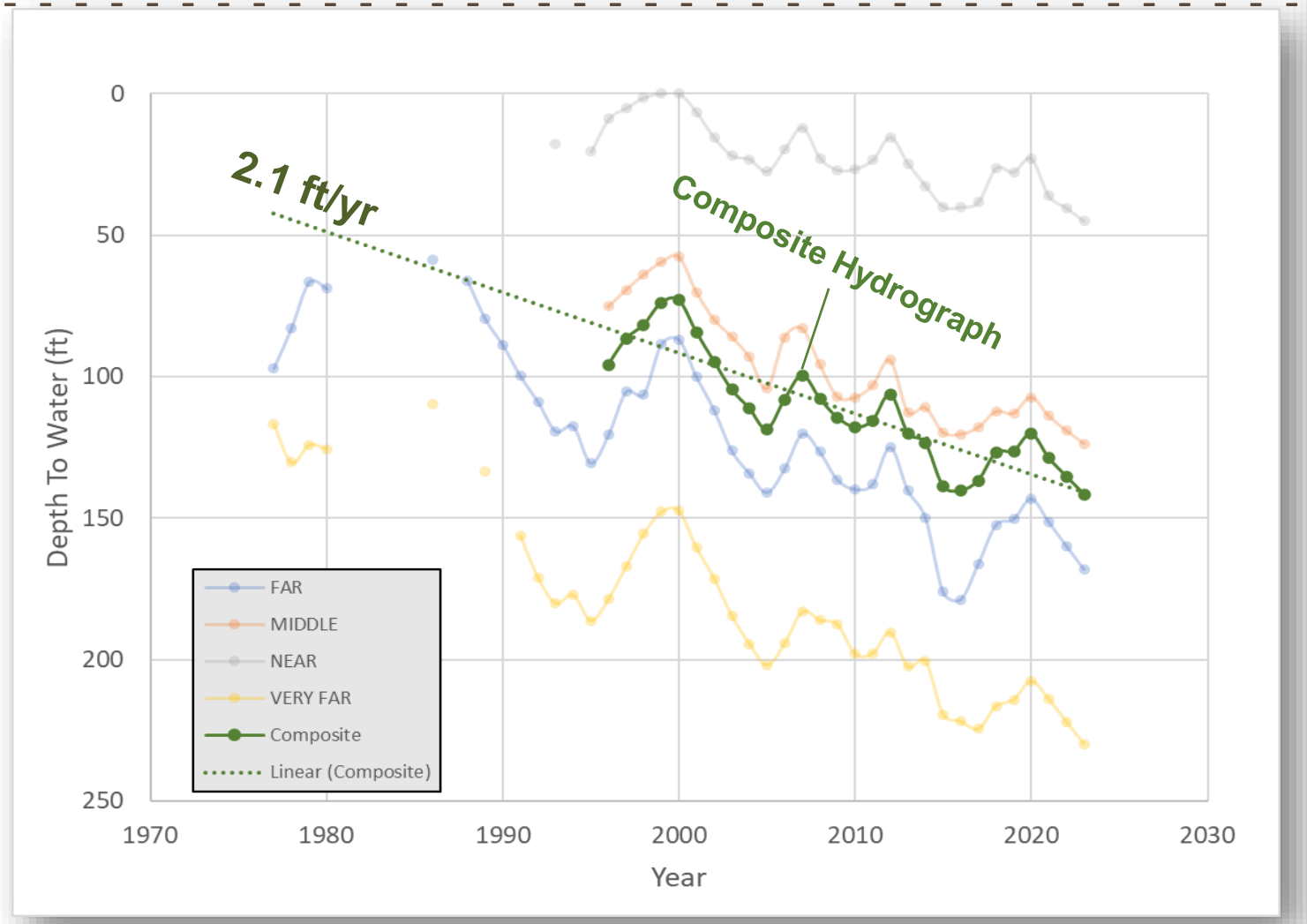
No water level change @ streamflow of ~ 242,000 AF (96-22 median = 155,436 AF)

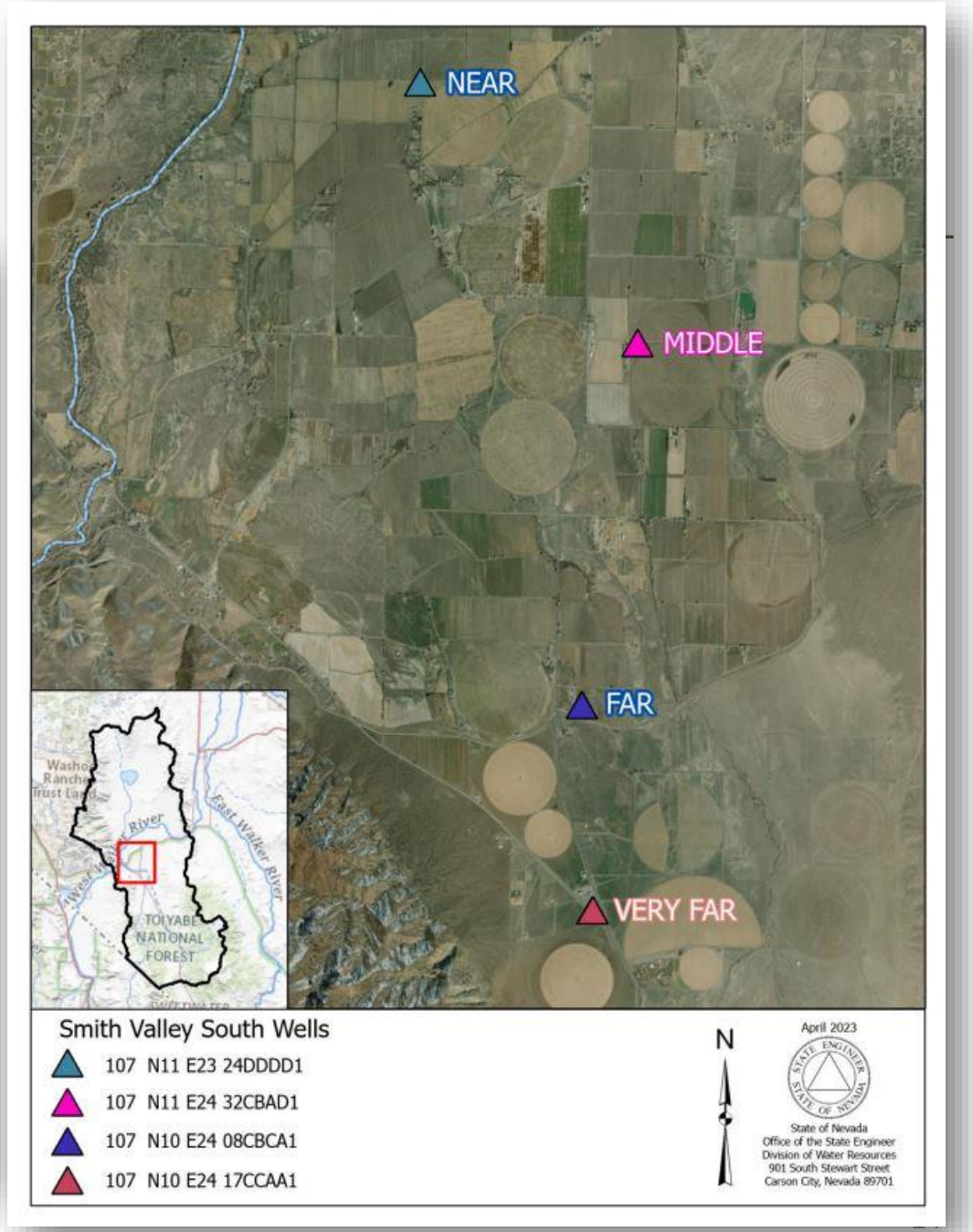
Northern Smith Valley





Southern Smith Valley

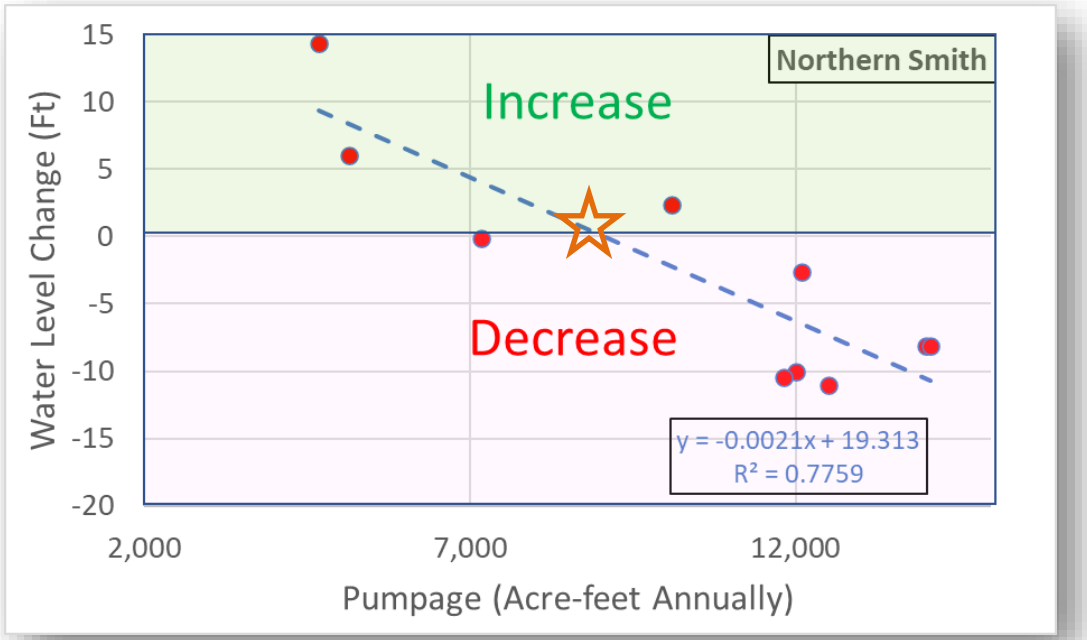




Smith Valley Pumping Vs. Water Level Change

Northern Smith*

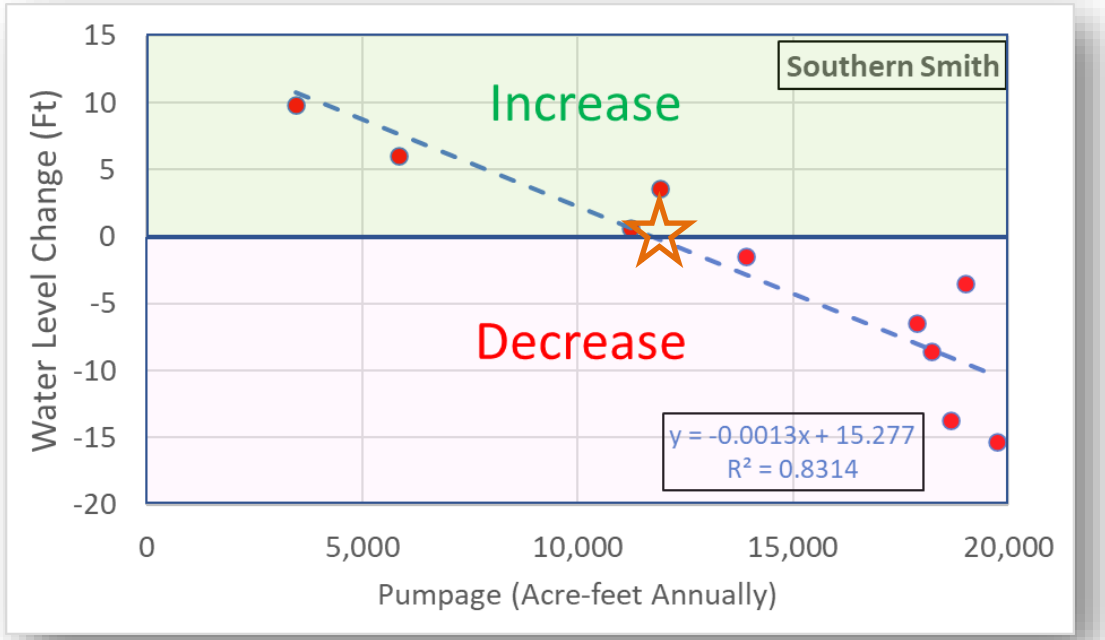
2012-21 Average Pumping: 10,360 AF
Estimated Goal: <9,200 AF



*Excludes Artesia

Southern Smith

2012-21 Average Pumping: 13,980 AF
Estimated Goal: <11,800 AF



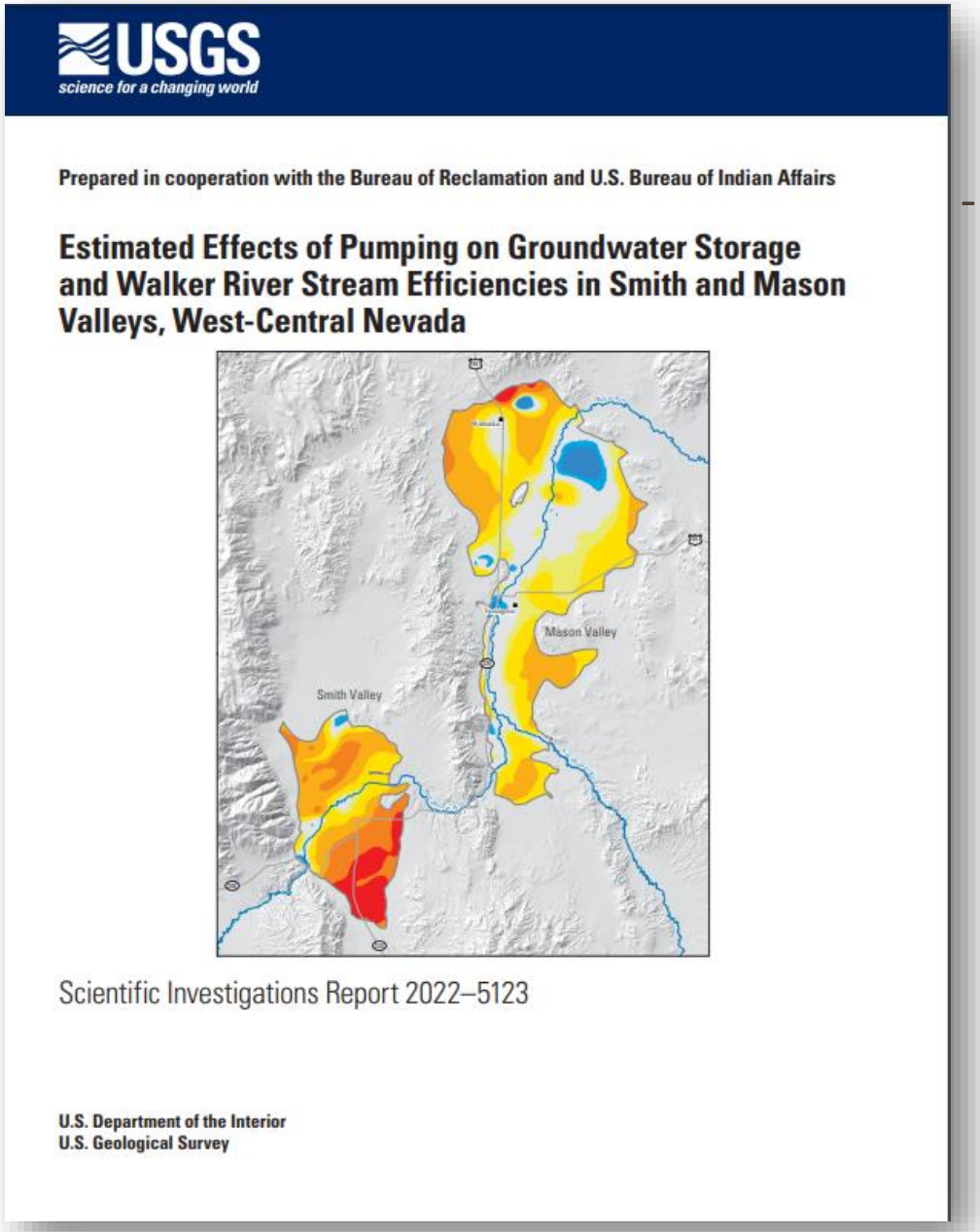
Total pumping reduction goal ≥ 3,400 AF/yr (average of 21,000 AF)

No water level change @ streamflow of ~ 169,000 AF (07-21 median = 100,000 AF)

USGS Report on effects of pumping in Smith and Mason published

Report documenting long-term groundwater storage loss and River Efficiency loss was published end of 2022.

https://doi.org/10.3133/sir20225123



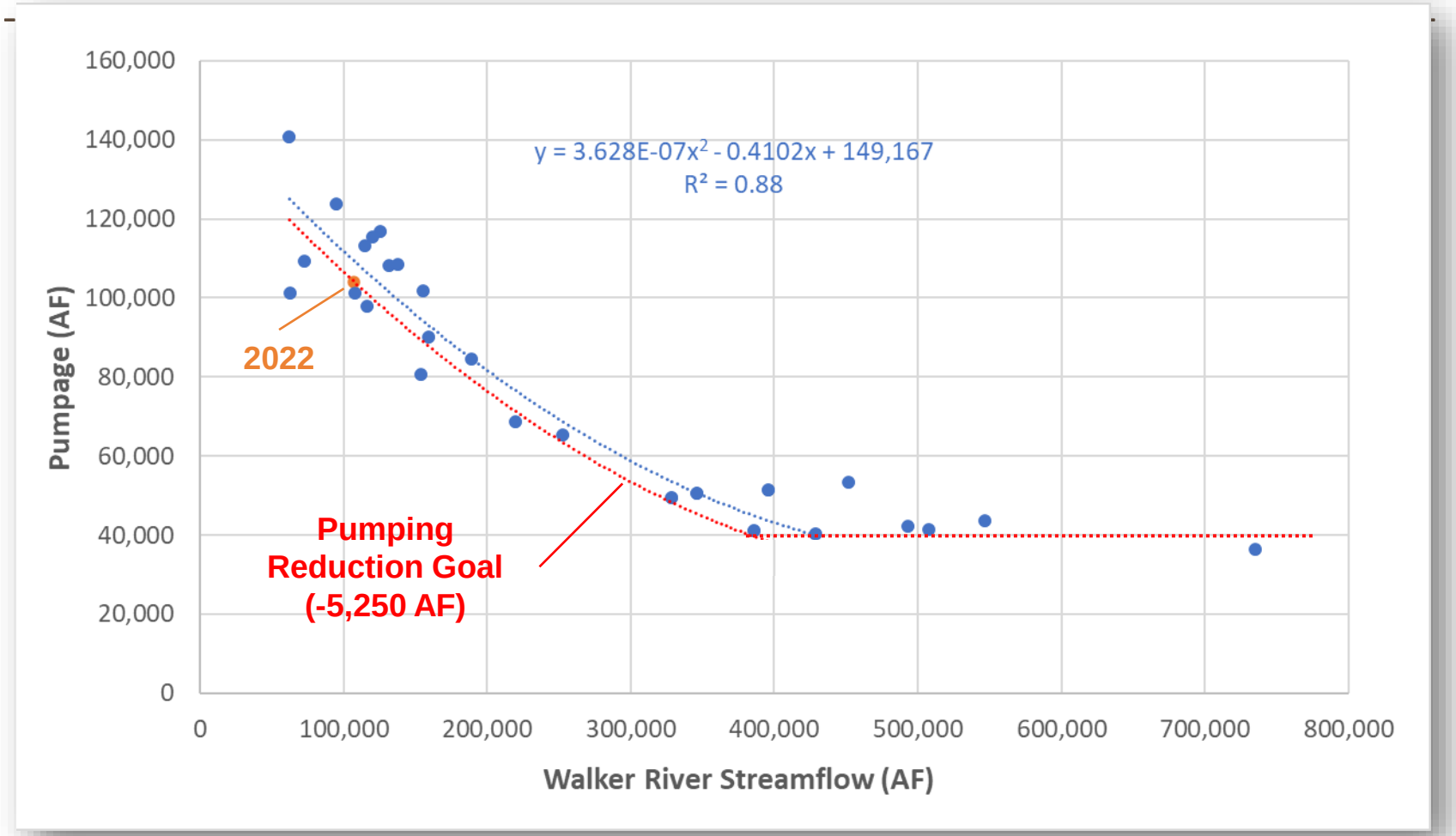
SEASONAL PUMPING GOALS - EXPERIMENTAL

Walker River Streamflow* vs. Mason Valley Pumping

Regression updated. Better fit. Allows for a little higher pumpage goals during droughts.

Looking at big water years, pumping is nearly constant.

For annual inflows >383,000 acre-feet, establish pumping goal of 40,000 acre-feet



*Top 5 wettest years have been removed from regression

Pumping Prediction (Apr 1) – Mason Valley

April Pre-Season Pumping Forecast = -0.786*(0.55BP+0.45TP) – 43,749*SWE + 151,444 - 5,250

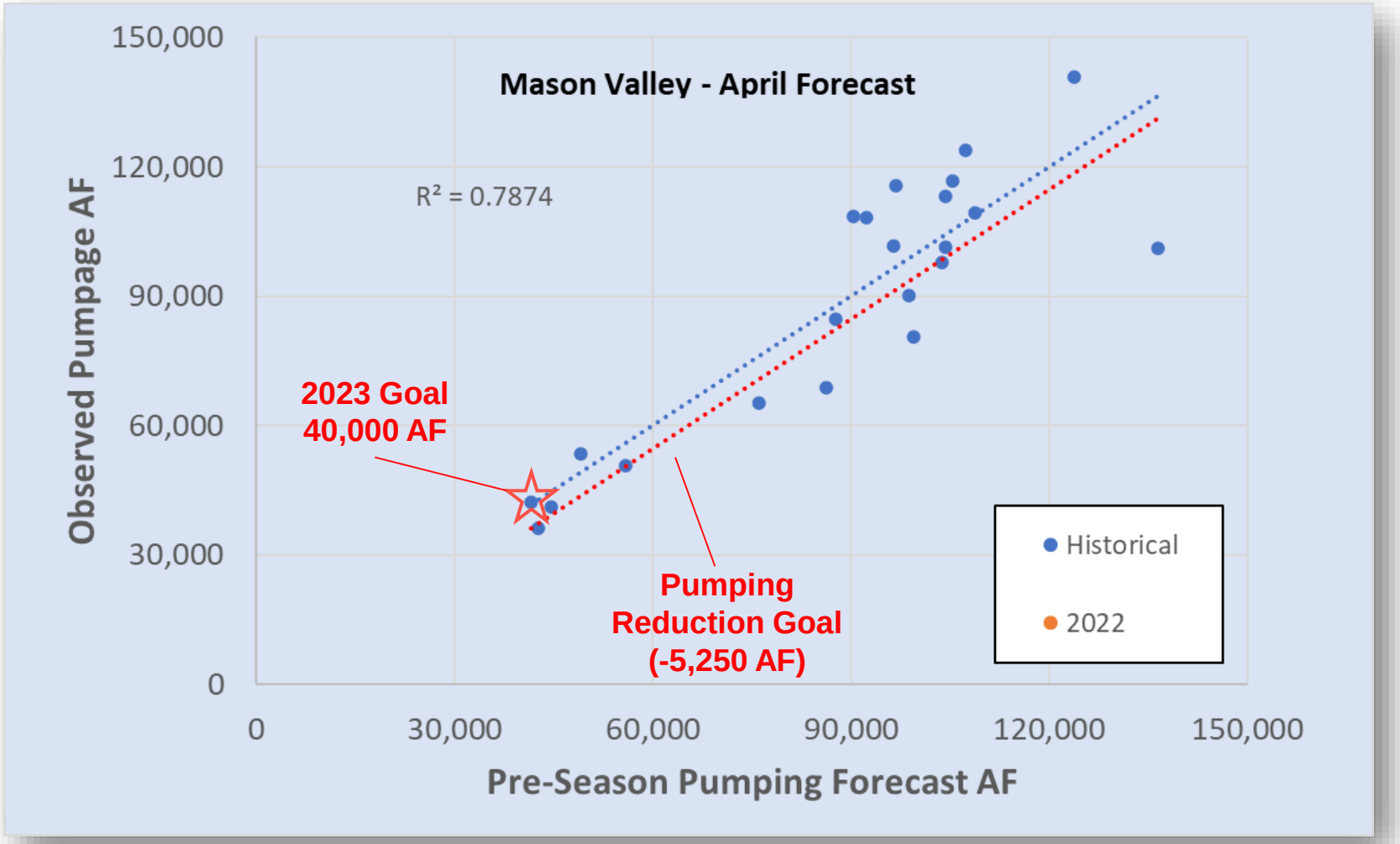
April 1 Observations of:

BP = Bridgeport Storage

TP = Topaz Storage

SWE = Walker Basin
Snow Water Equivalent

Relation does not work for years with stream inflow >383,000 acre-feet.

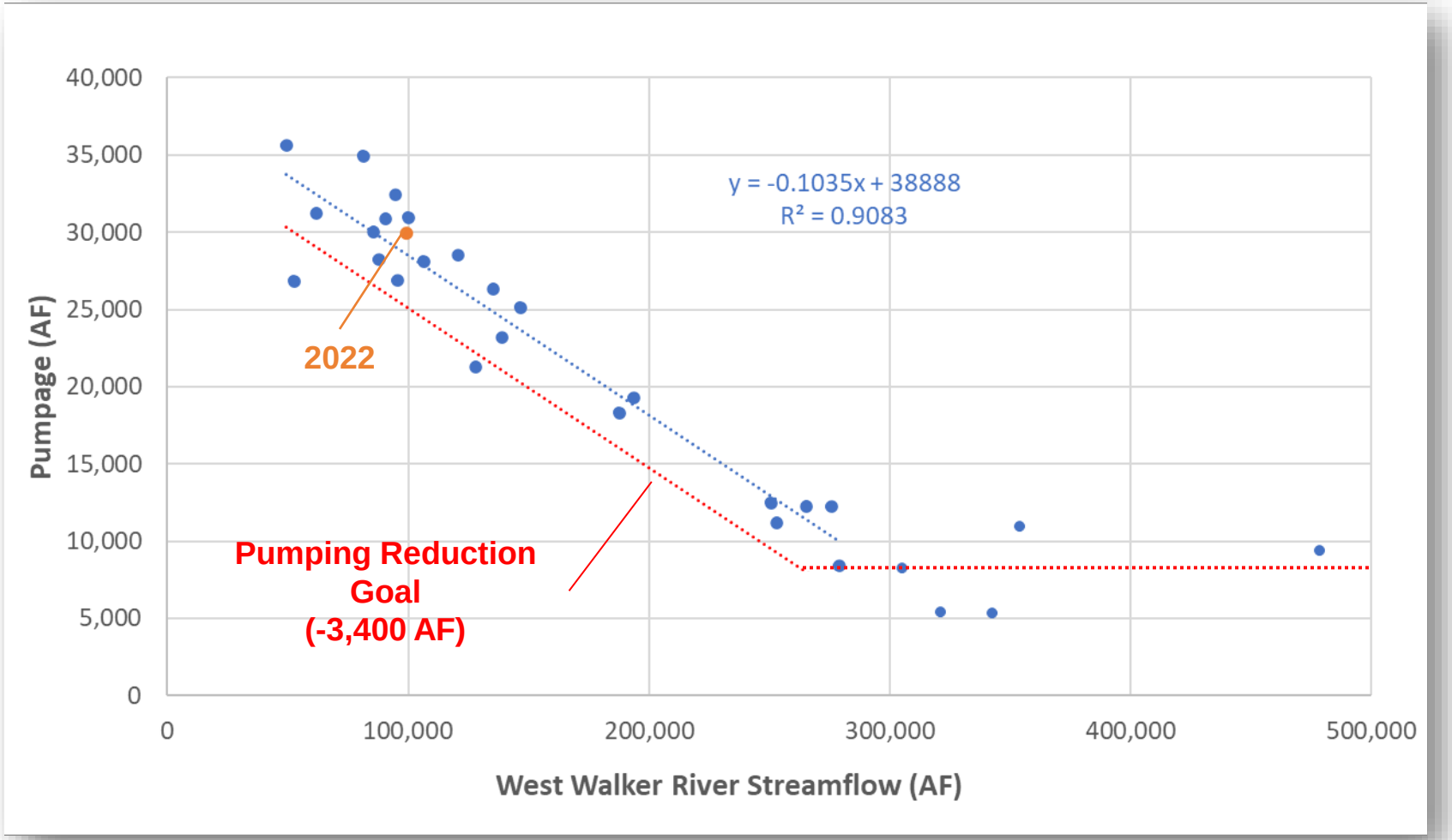


West Walker Streamflow* vs. Smith Valley Pumping

Regression updated.

Looking at big water years, pumping is nearly constant.

For annual inflows >262,000 acre-feet, establish pumping goal of 8,400 acre-feet



*Top 5 wettest years have been removed from regression, pumping doesn't include Artesia

Pumping Prediction (Apr 1) – Smith Valley

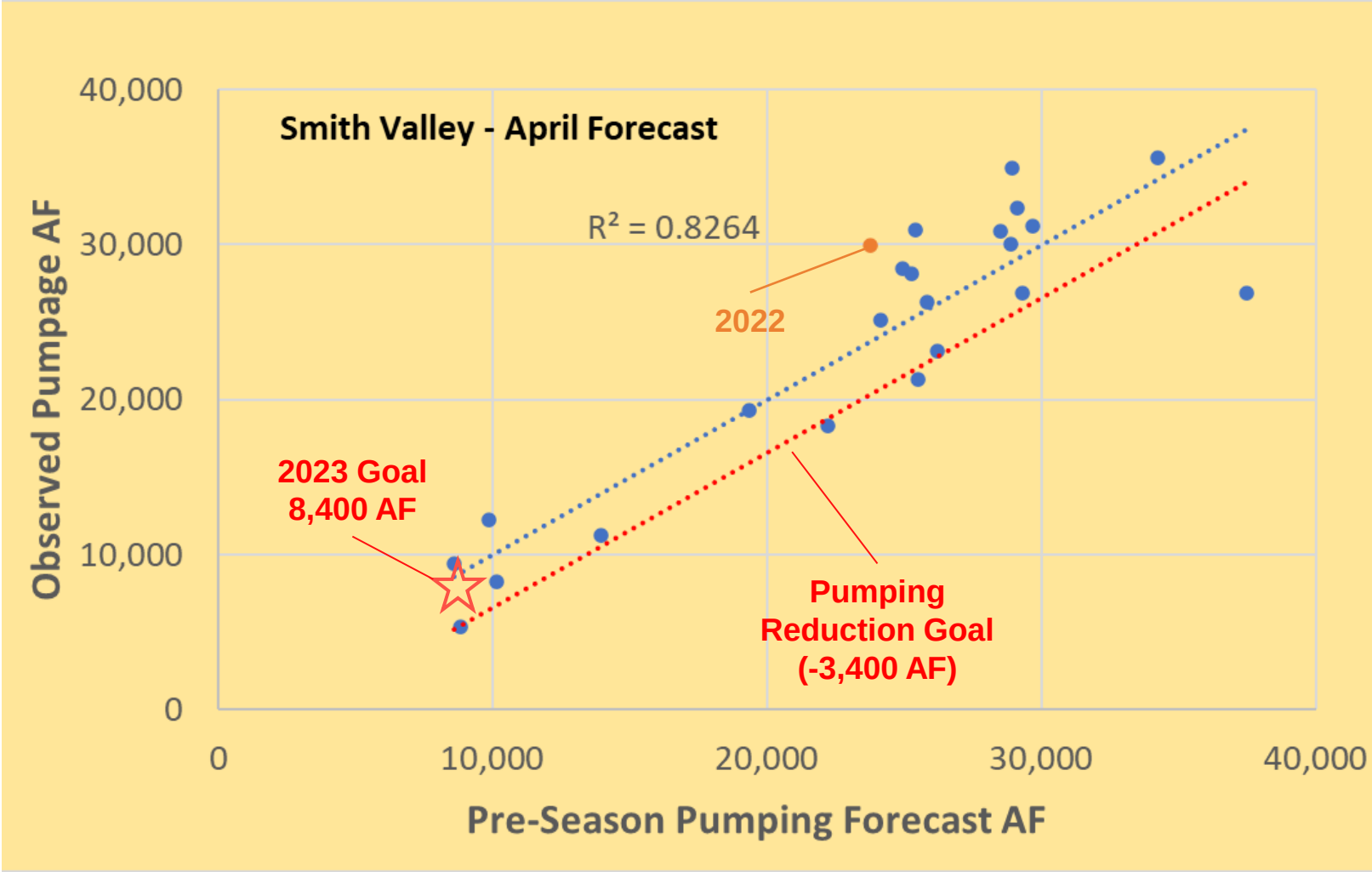
April Pre-Season Pumping Forecast = -0.199*(TP) -13,833*(SWE) + 42,452 - 3,400

March 1 Observations of:

TP = Topaz Storage

SWE = West Walker Basin
Snow Water Equivalent

Relation does not work for years with stream inflow >262,000 acre-feet.



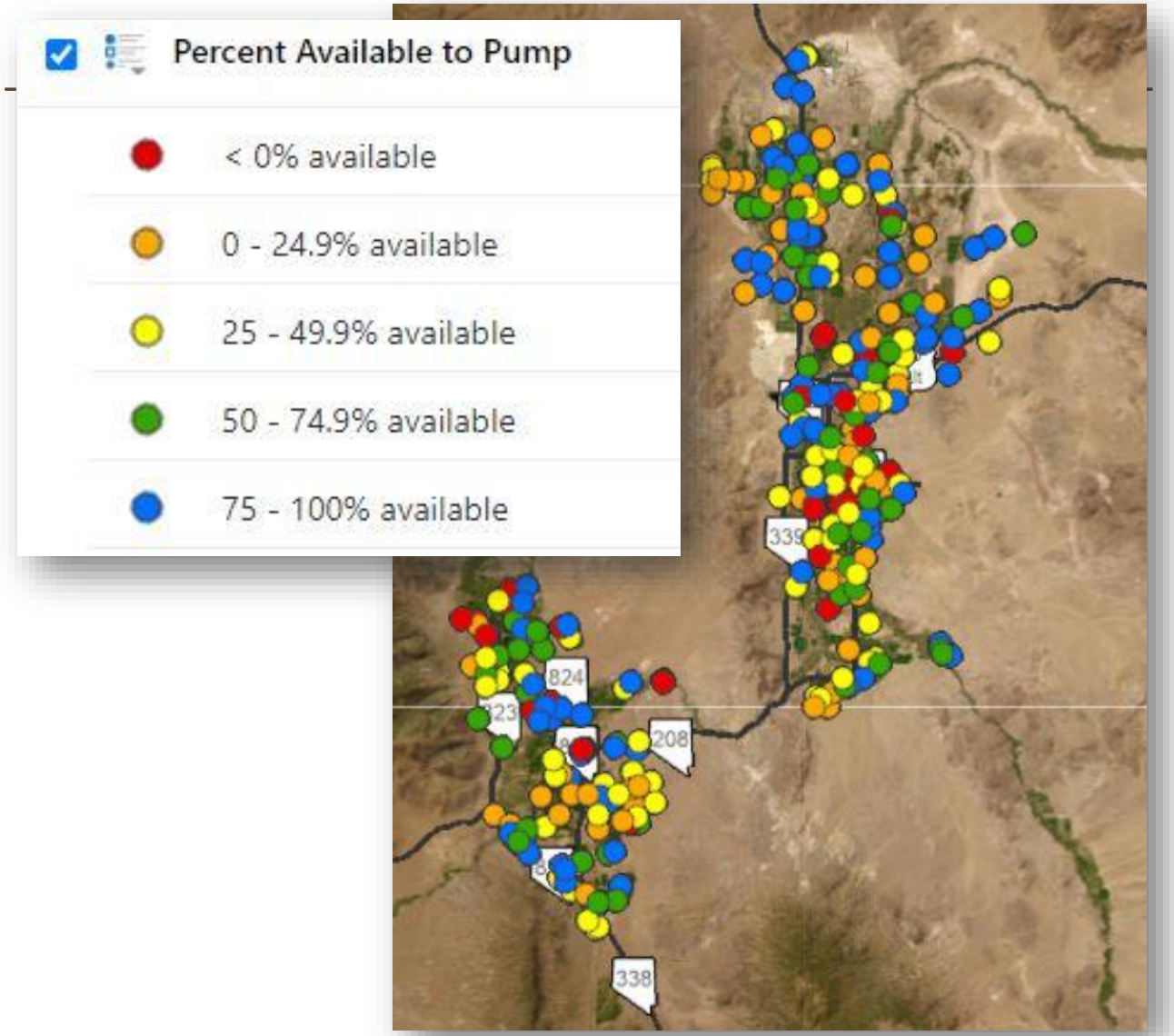
MASON/SMITH PUMPAGE WEBMAP

Mason / Smith Pumpage Map

- Wells color-coded by % of duty remaining to pump for the year
- Linked to the online Meters Database*

water.nv.gov -> Mapping & Data -> Mapping Application Links -> *Mason and Smith Valley Groundwater Pumping Availability*

*All Smith/Mason water users > 5AF must report monthly meter readings at: *meters.water.nv.gov*



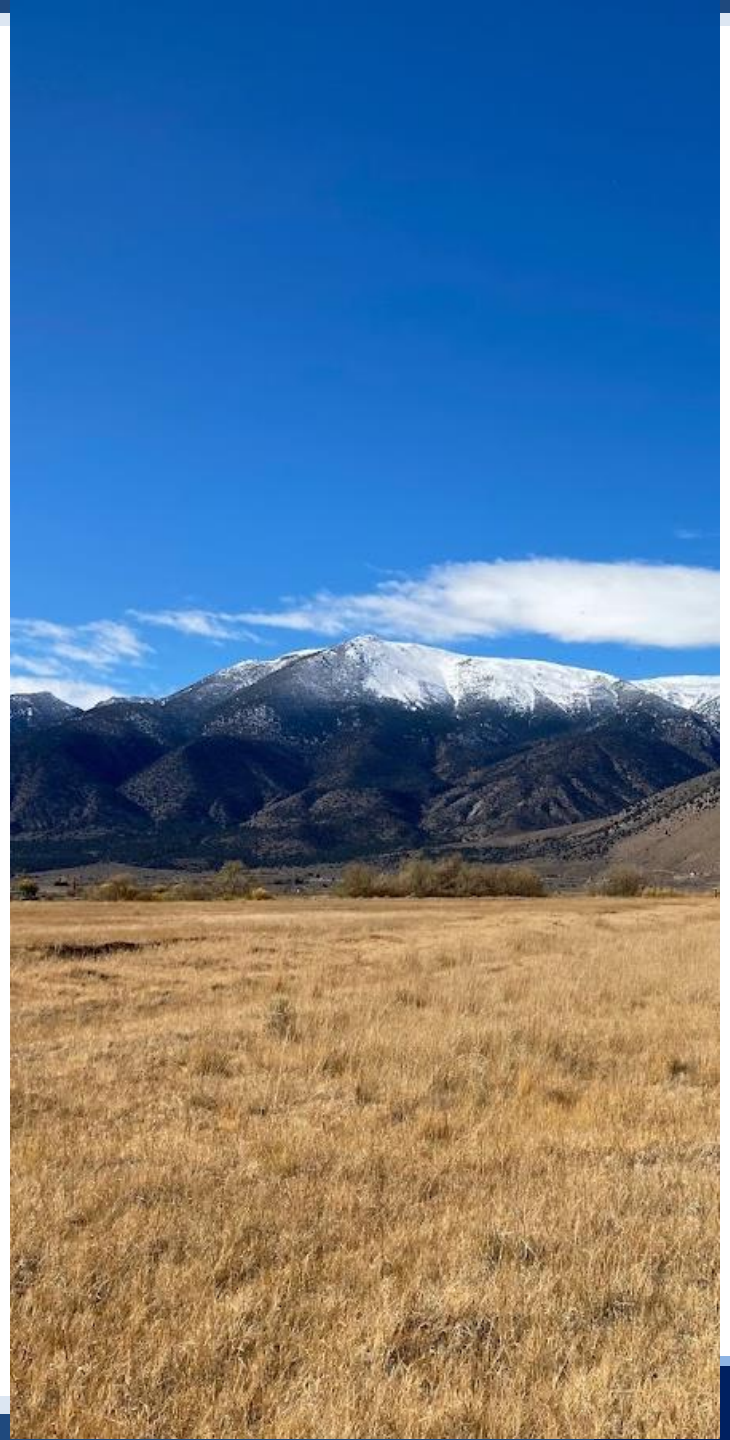
Summary for 2022 season

- 2022 pumping was less than 2021. Met goals in Mason Valley. A little over goal in Smith Valley.
- Groundwater levels declined from 2022 pumping but less than decline from 2021 pumping.

Outlook for 2023 season

- 2023 will be a big year for Walker River and should serve most water rights most of the year.
- Very little to no supplemental pumping should be needed.
- Voluntary pumping reductions still needed to help reduce long-term average.
- Walker River likely to be at, over, or near flood stage for much of the late Spring and Summer.
- When flood mitigation is needed, use of water will not count toward annual duty. Use it to help replenish the aquifer.
- 2023 pumpage goal for Mason Valley is 40,000 acre-feet.
- 2023 pumpage goal for Smith Valley is 8,400 acre-feet.
- We should see significant water level increases this year. Try to use flood water in a manner that maximizes recharge.

Questions?



Contact

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