YSGA Areas of Special Concern and Recharge from Streams

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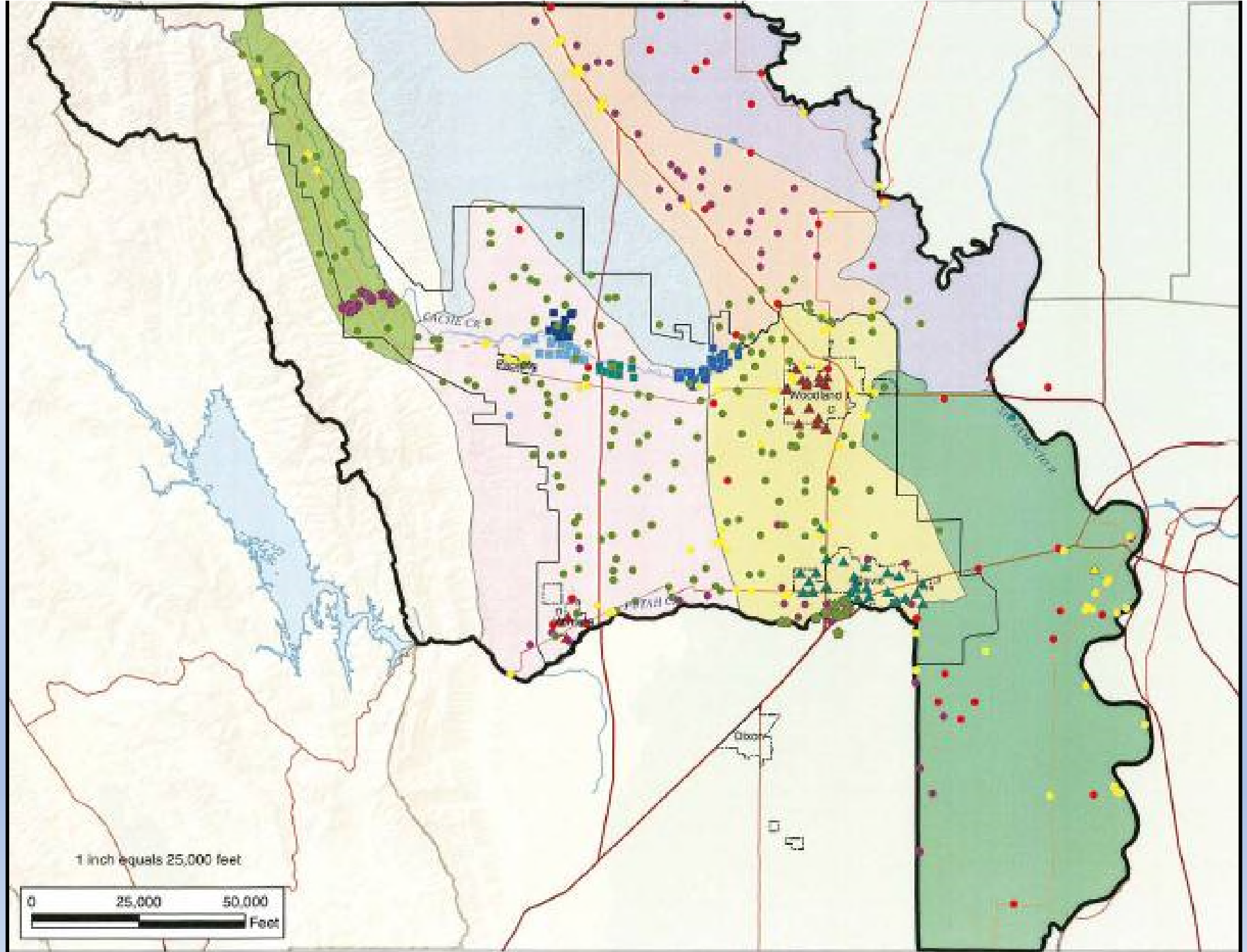
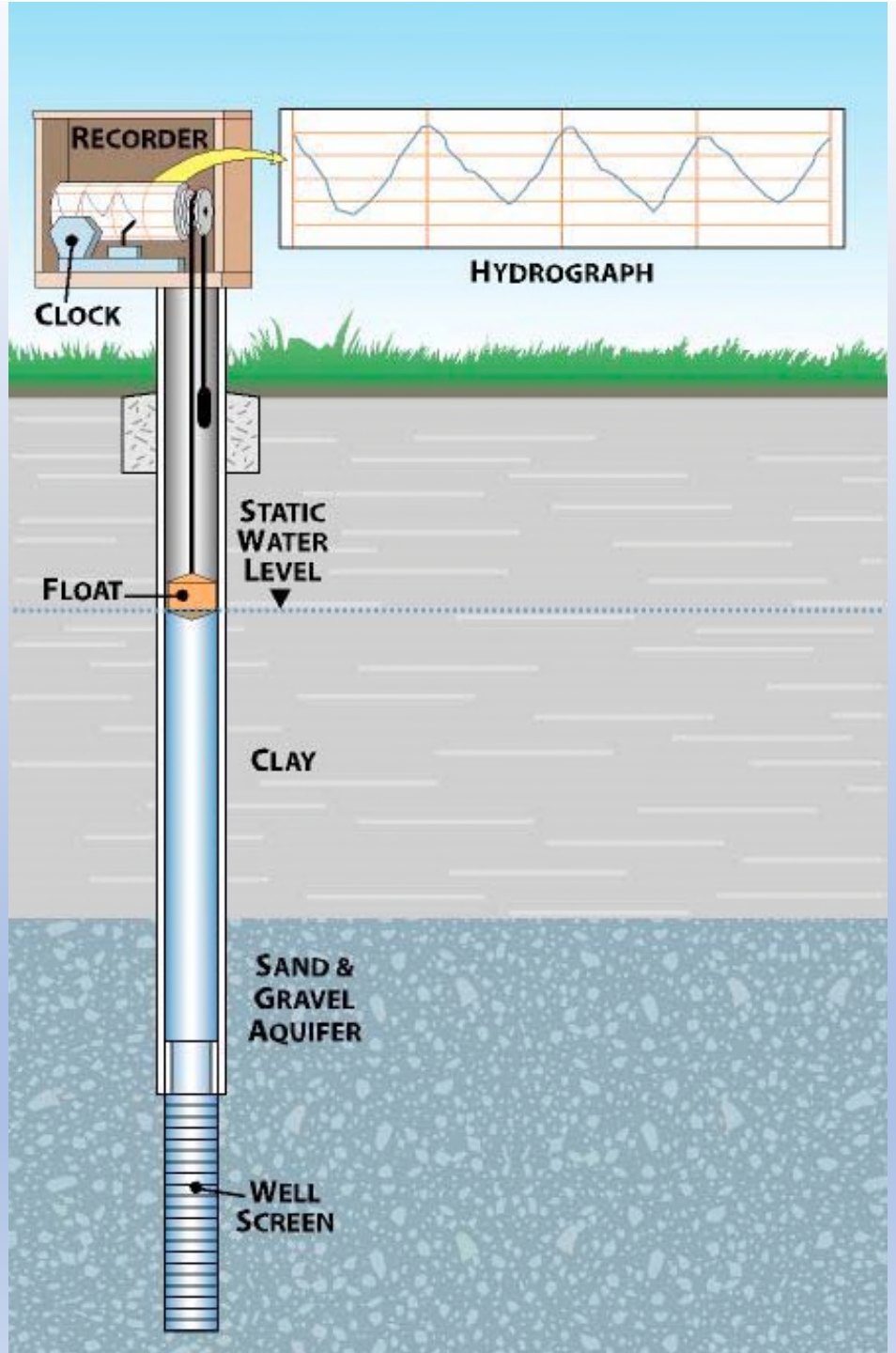
Solano County Water Agency
mstevenson@scwa2.org

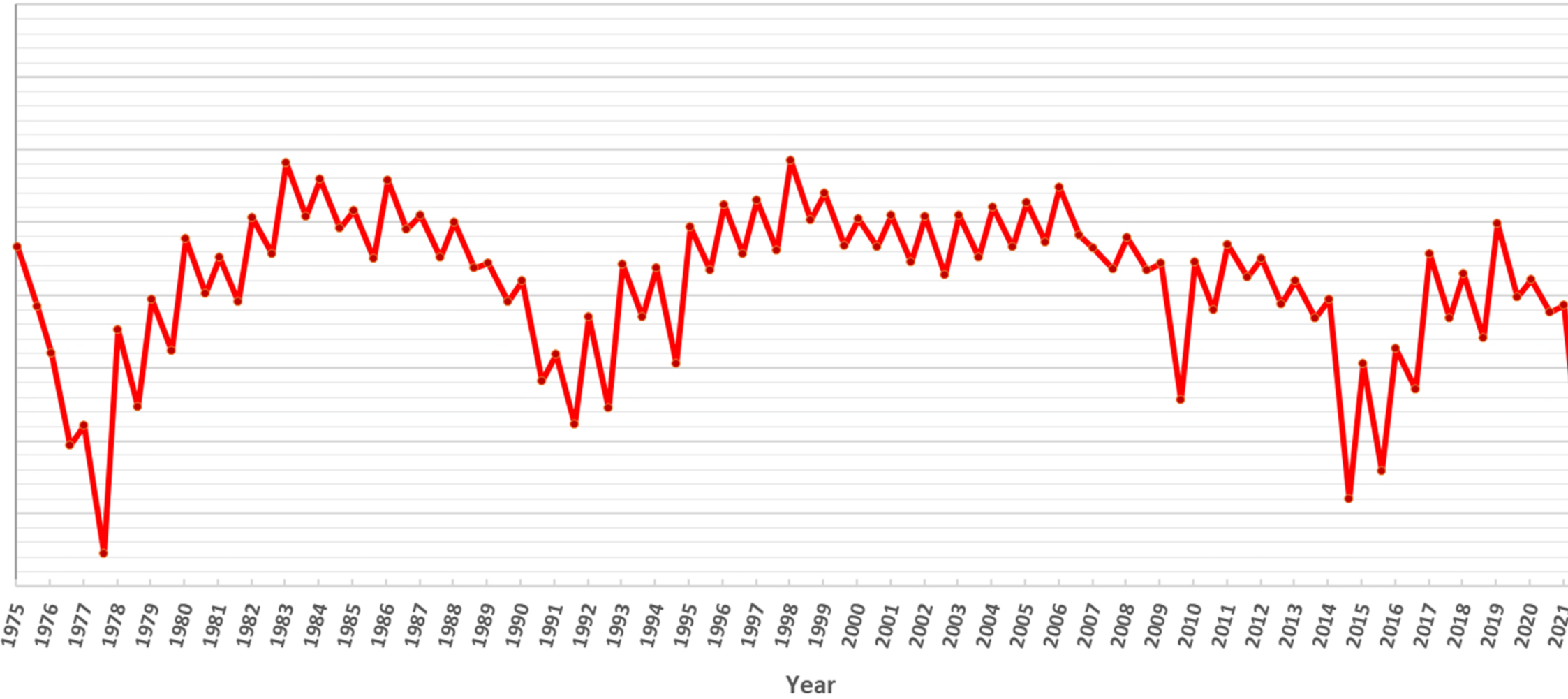
Yolo County Water Awareness Forum 5/16/2023


Woodland
1 inch equals 25,000 feet
0
25,000
50,000
Feet


RECORDER
HYDROGRAPH
CLOCK
STATIC
WATER
LEVEL
FLOAT
CLAY
SAND &
GRAVEL
AQUIFER
WELL
SCREEN

YCFCWCD Average Groundwater

Depth by Season *(Spring 2023 is 148 wells)***

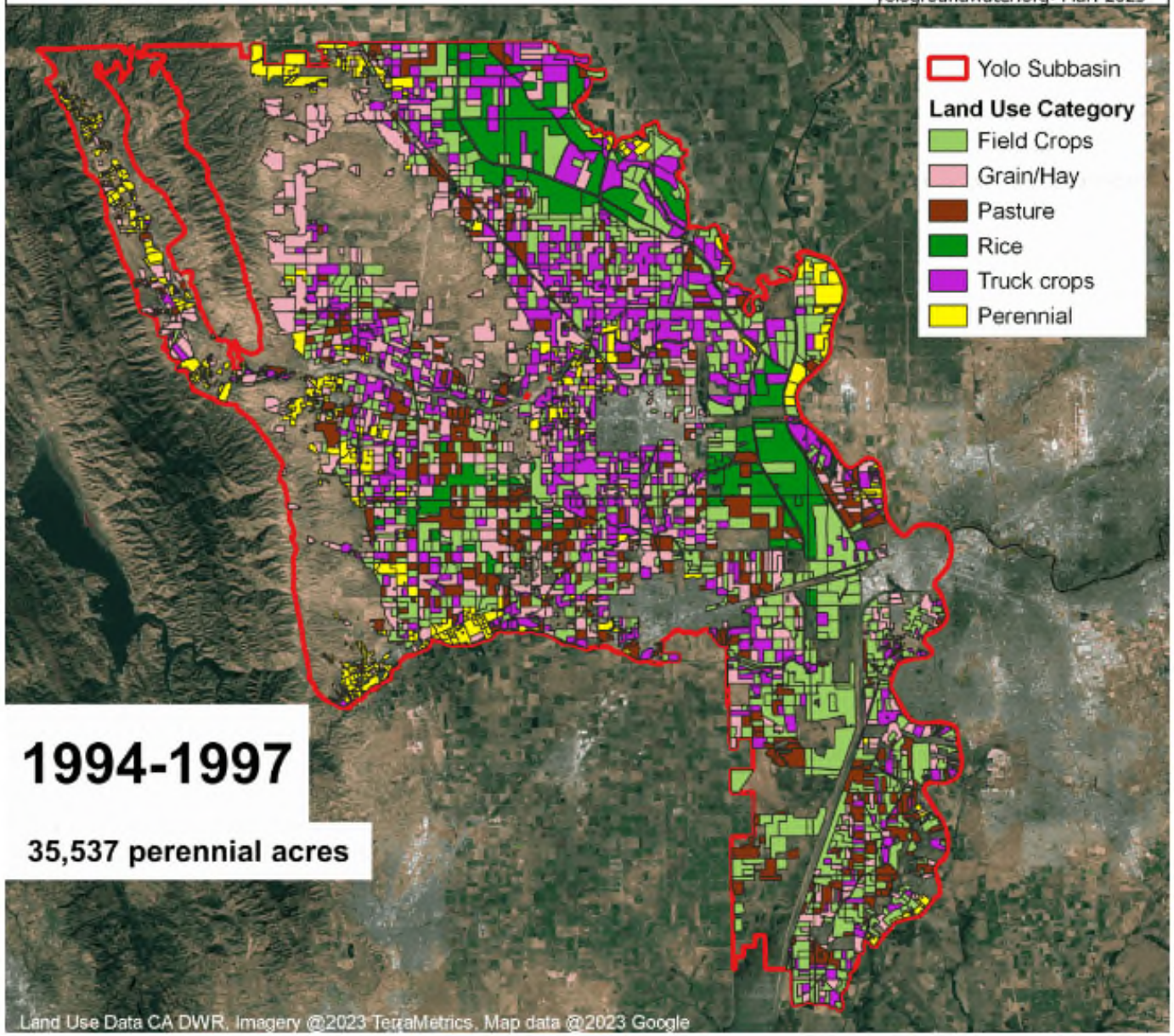


Yolo Subbasin

Increase in Permanent Crops

1994 - 2019

yologroundwater.org• Mar. 2023



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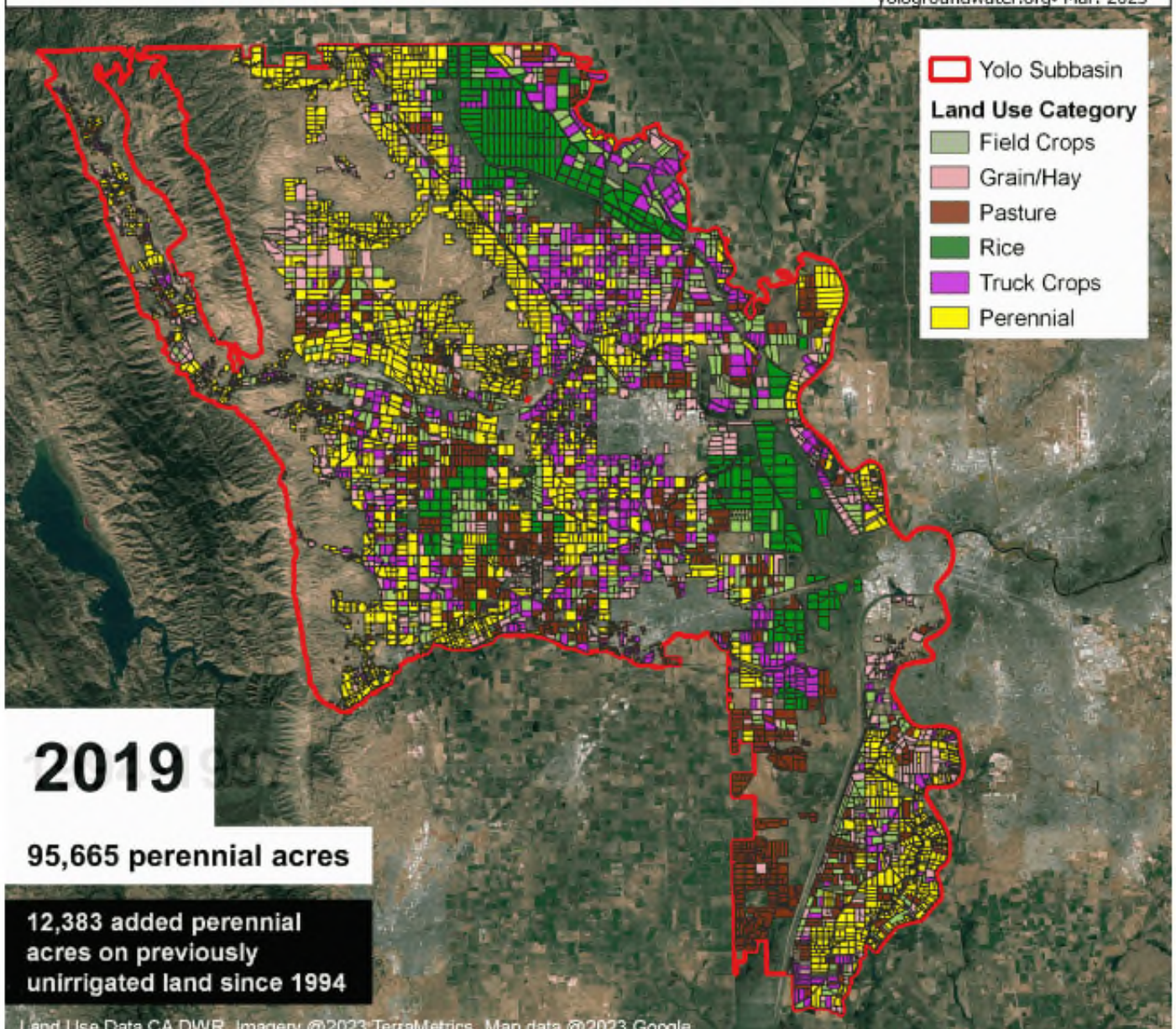
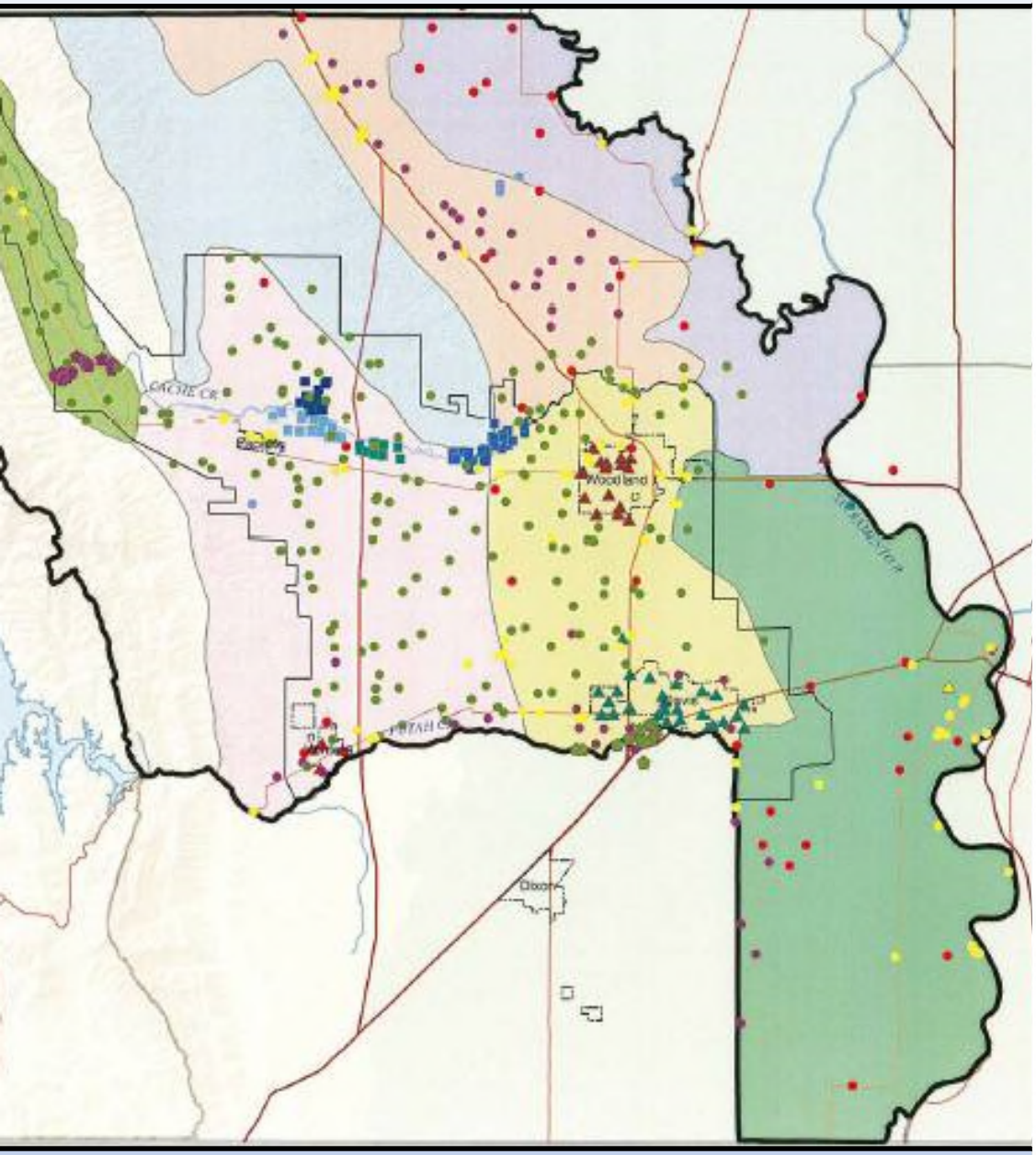
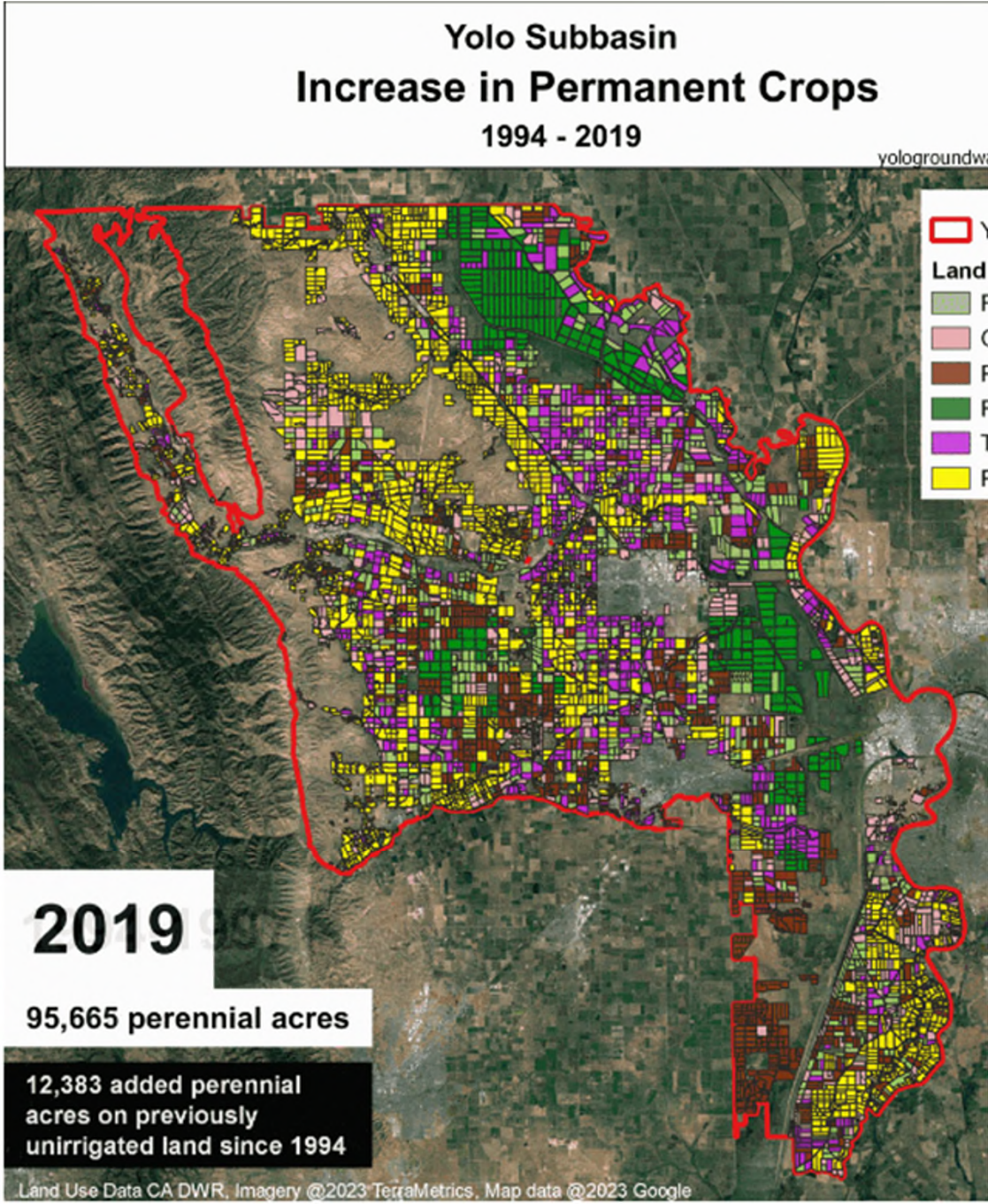


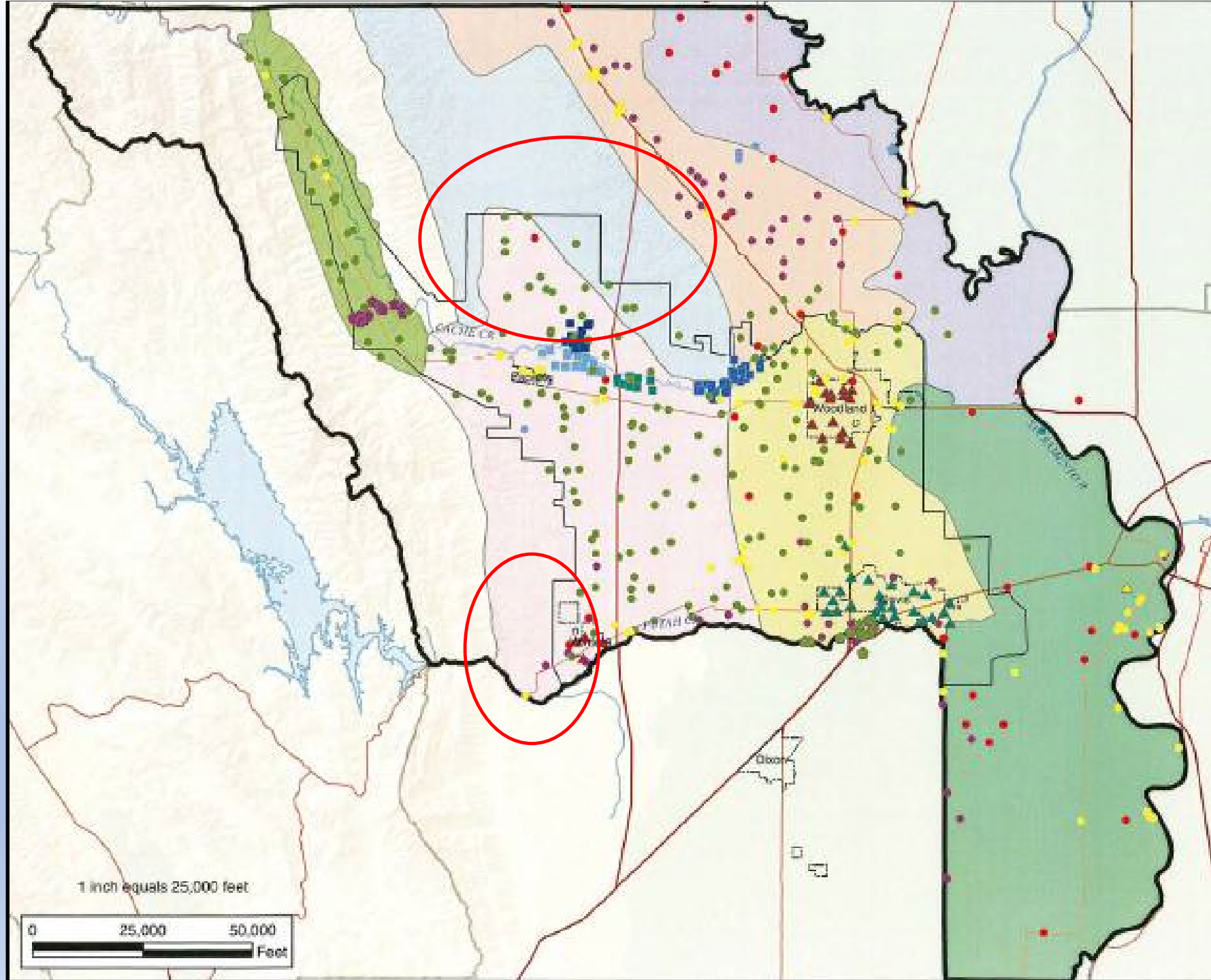




Agricultural land use within the Yolo Subbasin between 1994-1997, 2008, 2016

The first image uses 1997 Yolo County data and 1994 Solano County data. Da

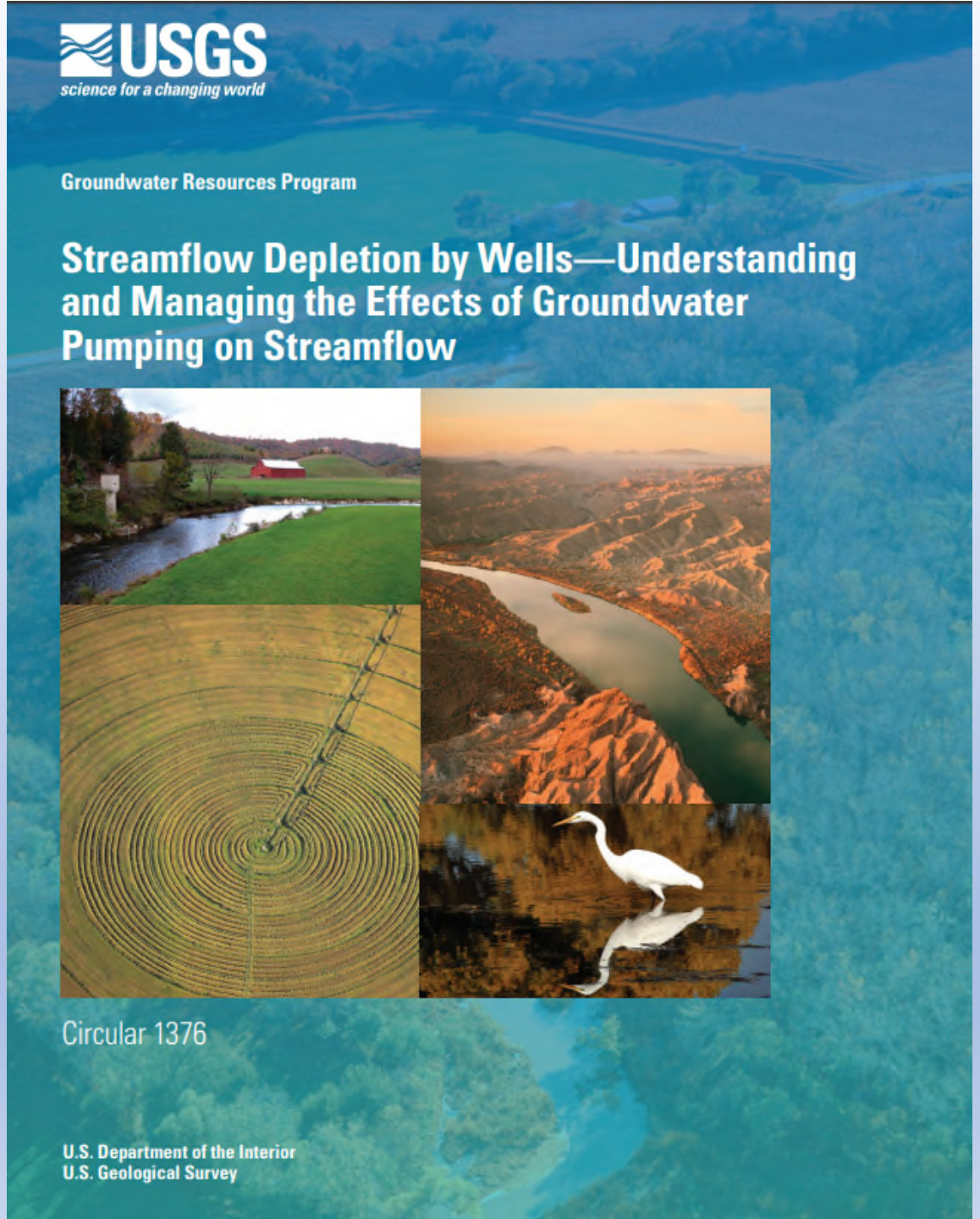
GSP Areas of Special Concern

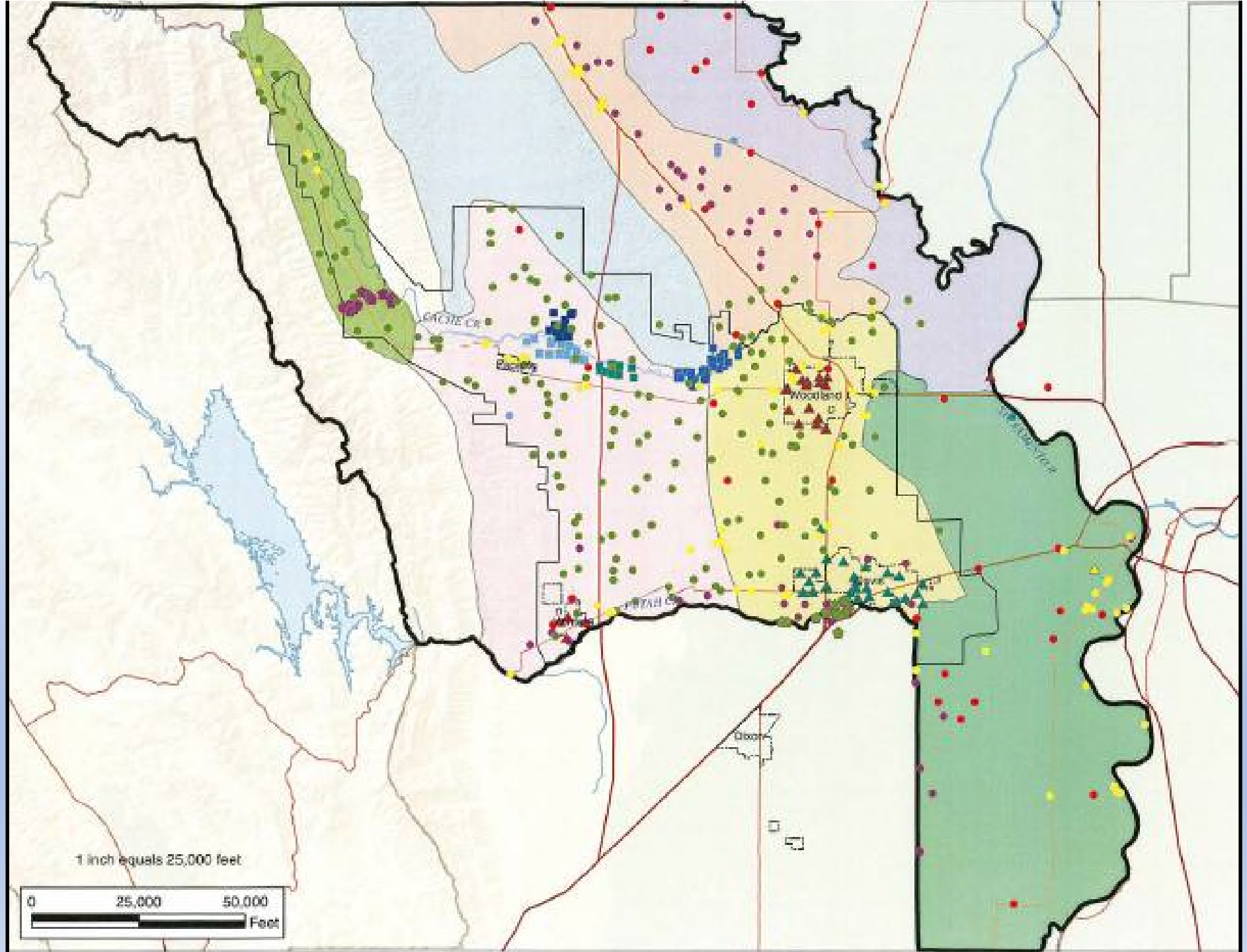


YSGA Areas of Special Concern

1. Newly developed/pumped (<25 years)
2. Hilly, pressurized irrigation required
3. No long-term history of groundwater level monitoring
4. Lack of surface water bodies (streams, canals, etc)

USGS
1376


USGS
science for a changing world
Groundwater Resources Program
Streamflow Depletion by Wells—Understanding and Managing the Effects of Groundwater Pumping on Streamflow
Circular 1376
U.S. Department of the Interior
U.S. Geological Survey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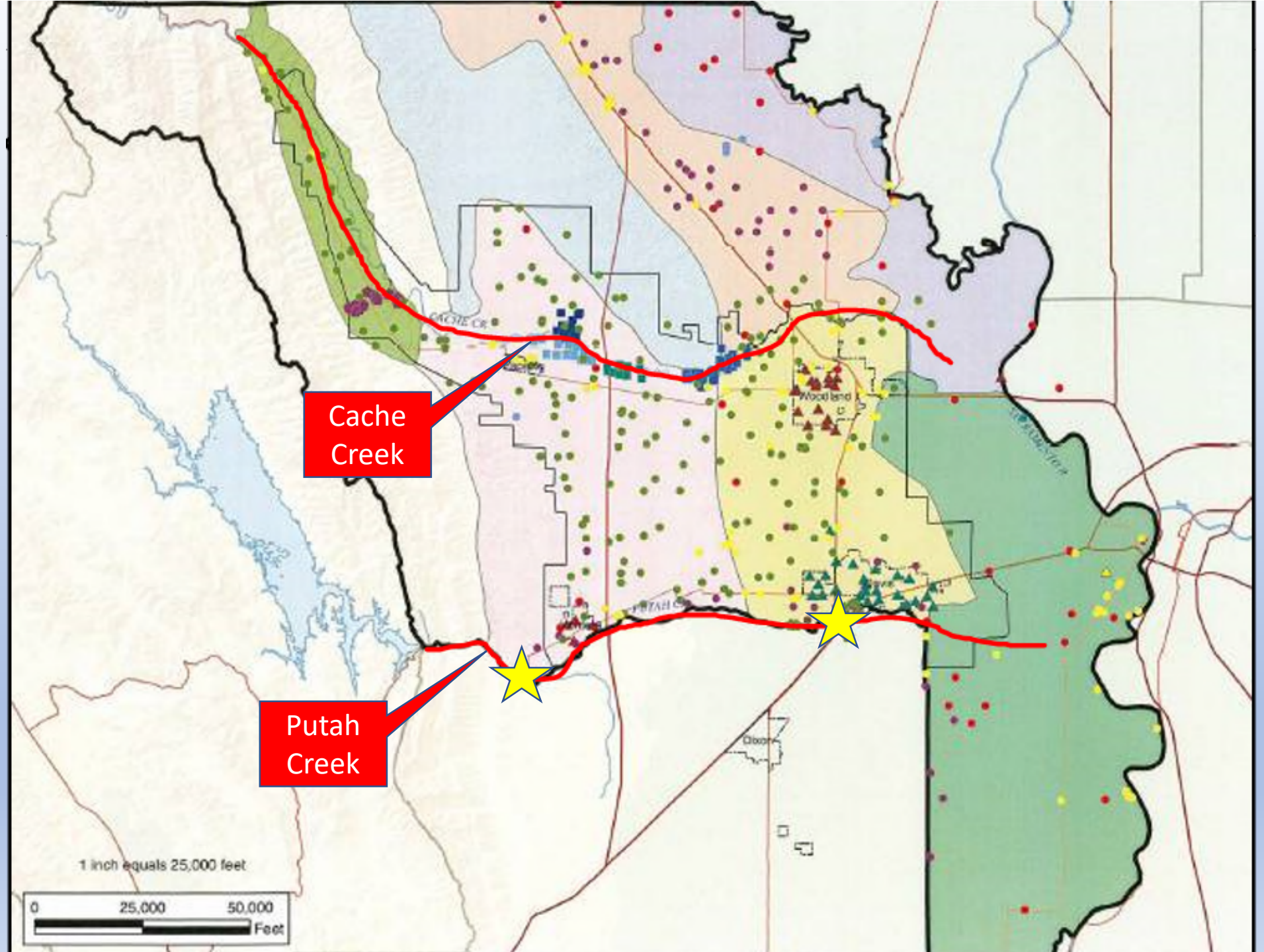
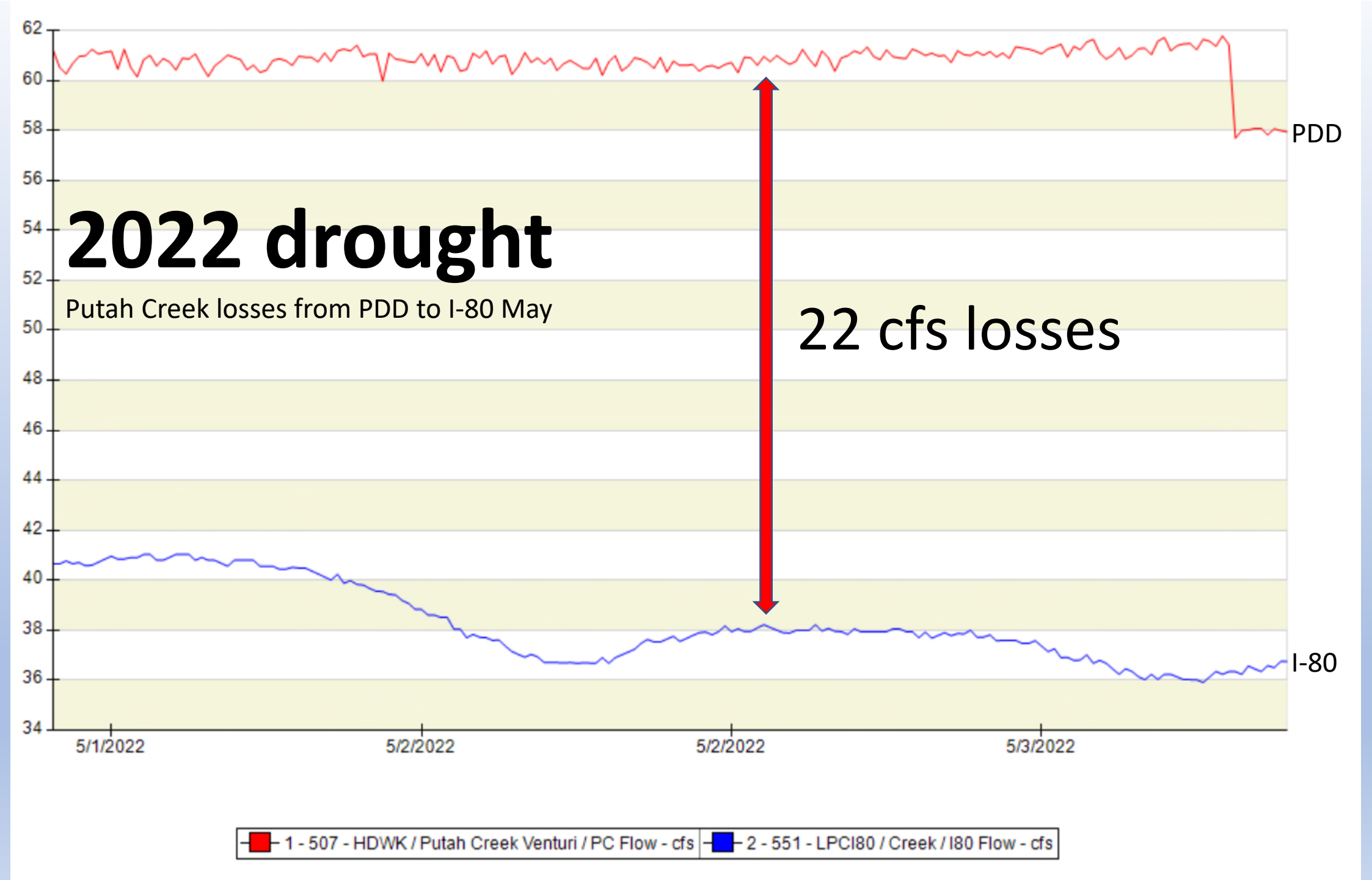
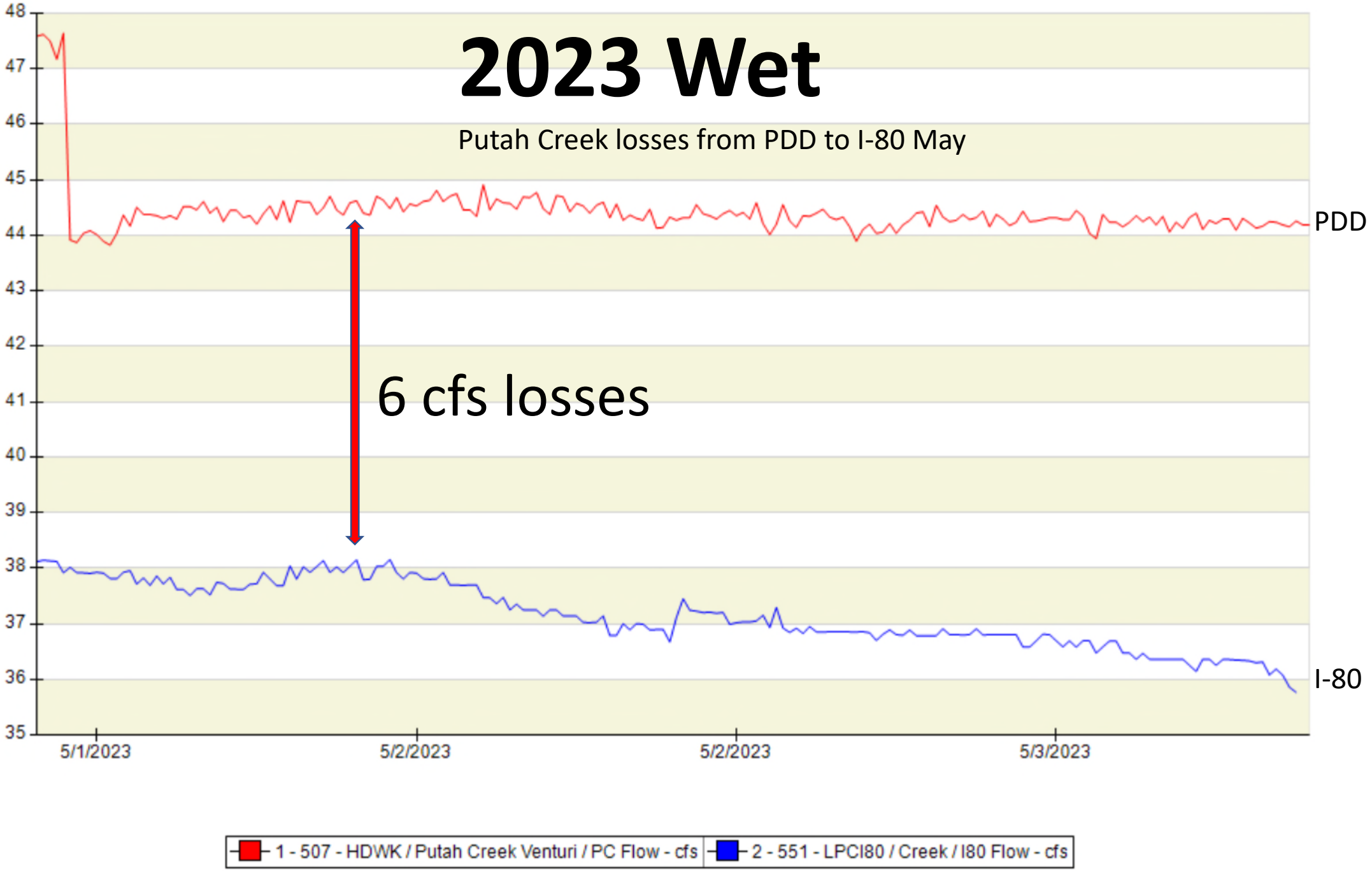
Feet

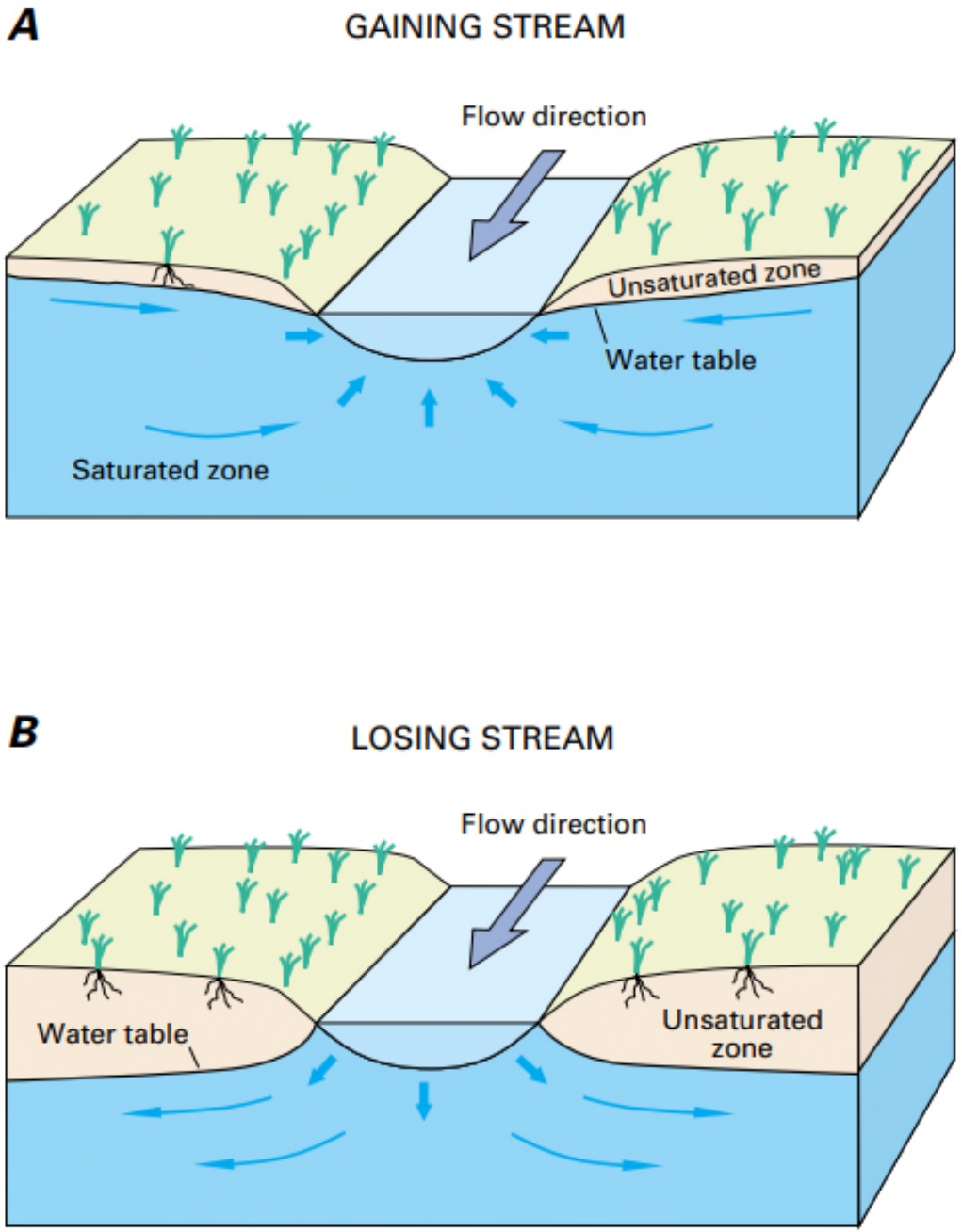

Cache Creek
Putah Creek
1 inch equals 25,000 feet
0
25,000
50,000
Feet

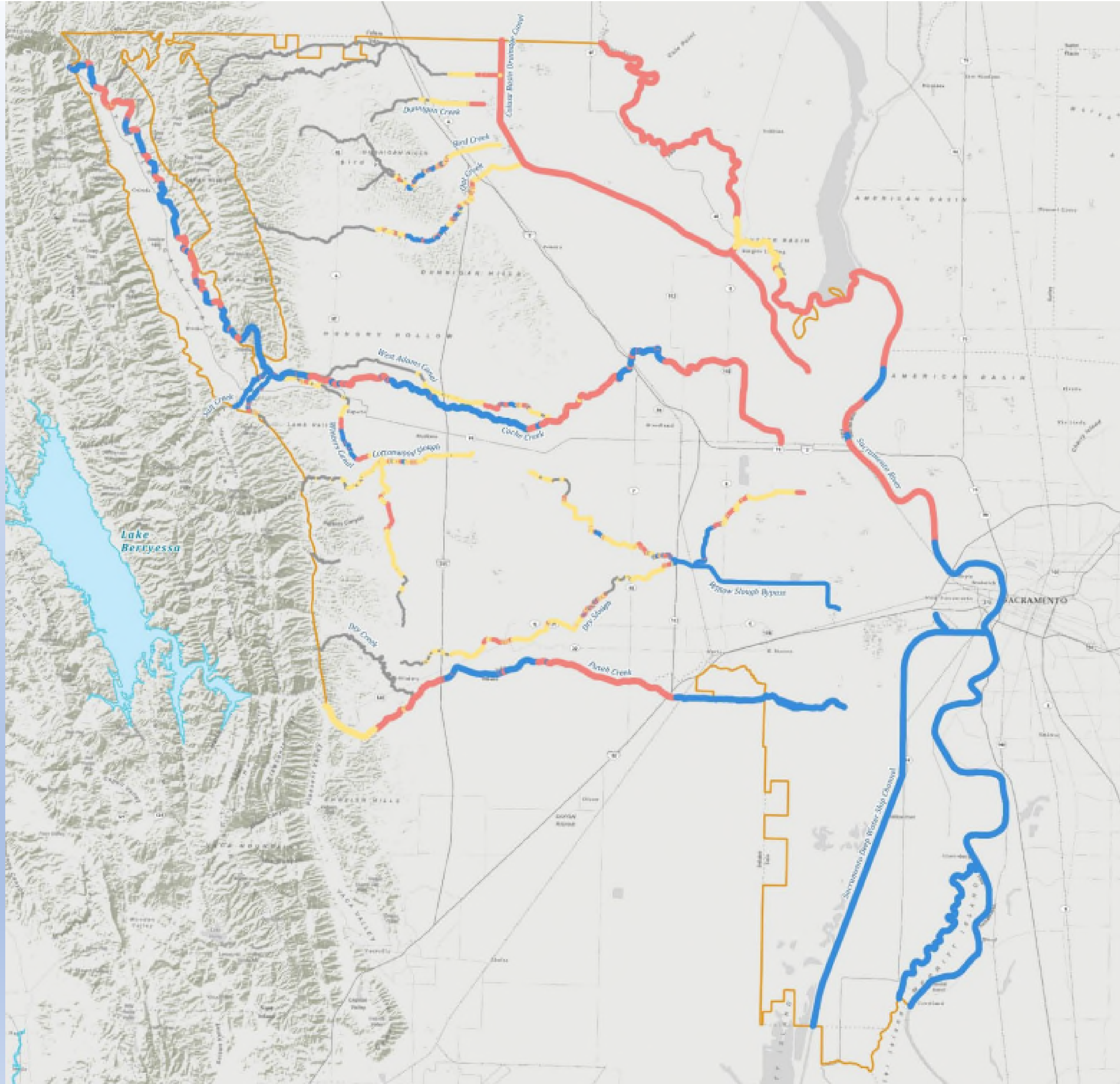

2022 drought
Putah Creek losses from PDD to I-80 May
22 cfs losses
PDD
I-80
62
60
58
56
54
52
50
48
46
44
42
40
38
36
34
5/1/2022
5/2/2022
5/2/2022
5/3/2022
1 - 507 - HDWK / Putah Creek Venturi / PC Flow - cfs
2 - 551 - LPCI80 / Creek / I80 Flow - cfs


2023 Wet
Putah Creek losses from PDD to I-80 May
PDD
6 cfs losses
I-80
48
47
46
45
44
43
42
41
40
39
38
37
36
35
5/1/2023
5/2/2023
5/2/2023
5/3/2023
1 - 507 - HDWK / Putah Creek Venturi / PC Flow - cfs
2 - 551 - LPCI80 / Creek / I80 Flow - cfs

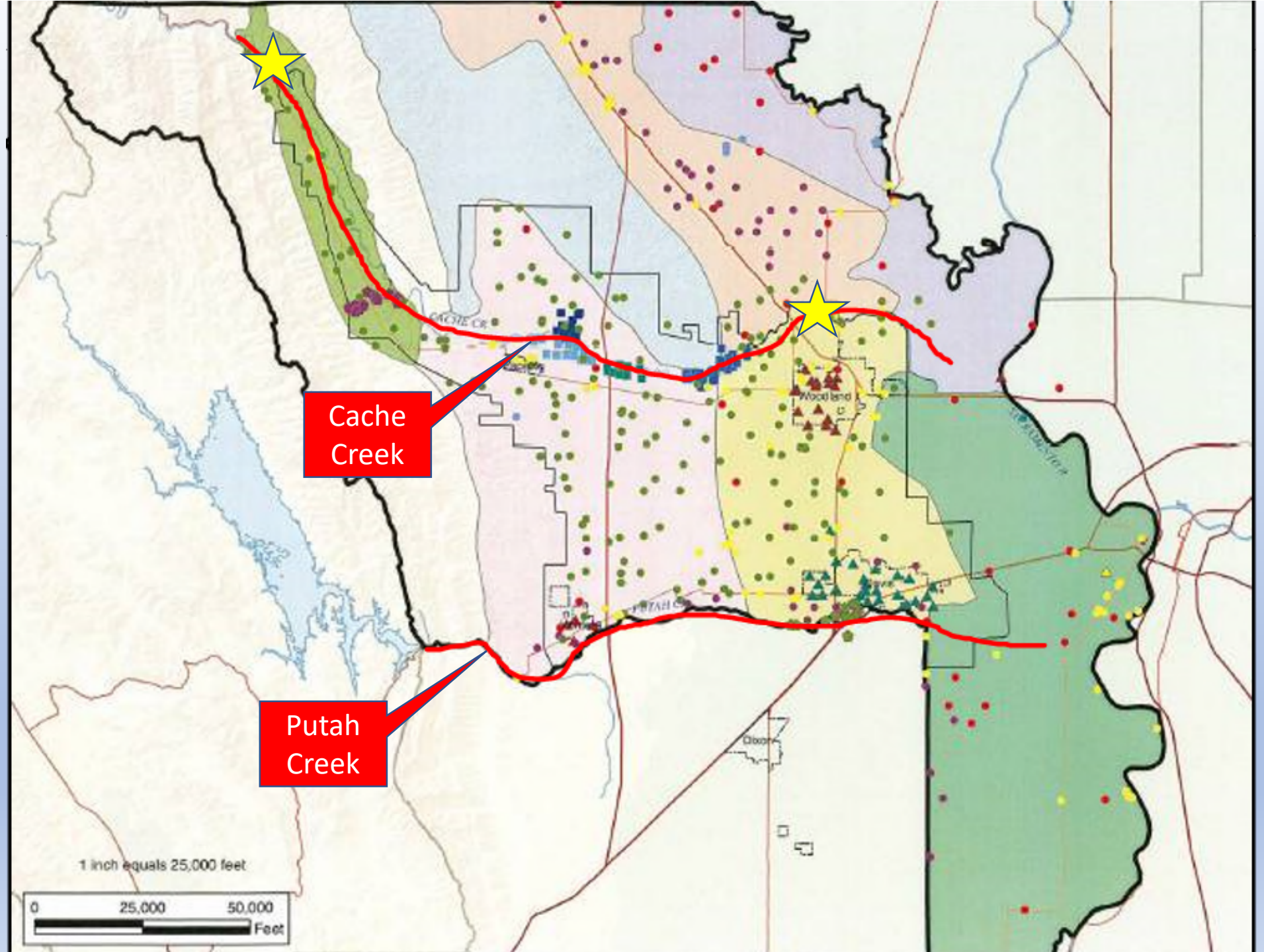
Why more losses during drought times?

- Shift to groundwater pumping during drought
- Lower groundwater levels due to extra pumping


A
GAINING STREAM
Flow direction
Unsaturated zone
Water table
Saturated zone
B
LOSING STREAM
Flow direction
Water table
Unsaturated zone



Lake Berryessa
Colusa Basin Drainage Canal
Dunnigan Creek
Bird Creek
Oat Creek
West Adams Canal
Cache Creek
Cottonwood Slough
Sacramento River
Willow Slough Bypass
SACRAMENTO
Dry Creek
Dry Slough
Putah Creek
Sacramento Deep Water Ship Channel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Cache Creek Annual Recharge

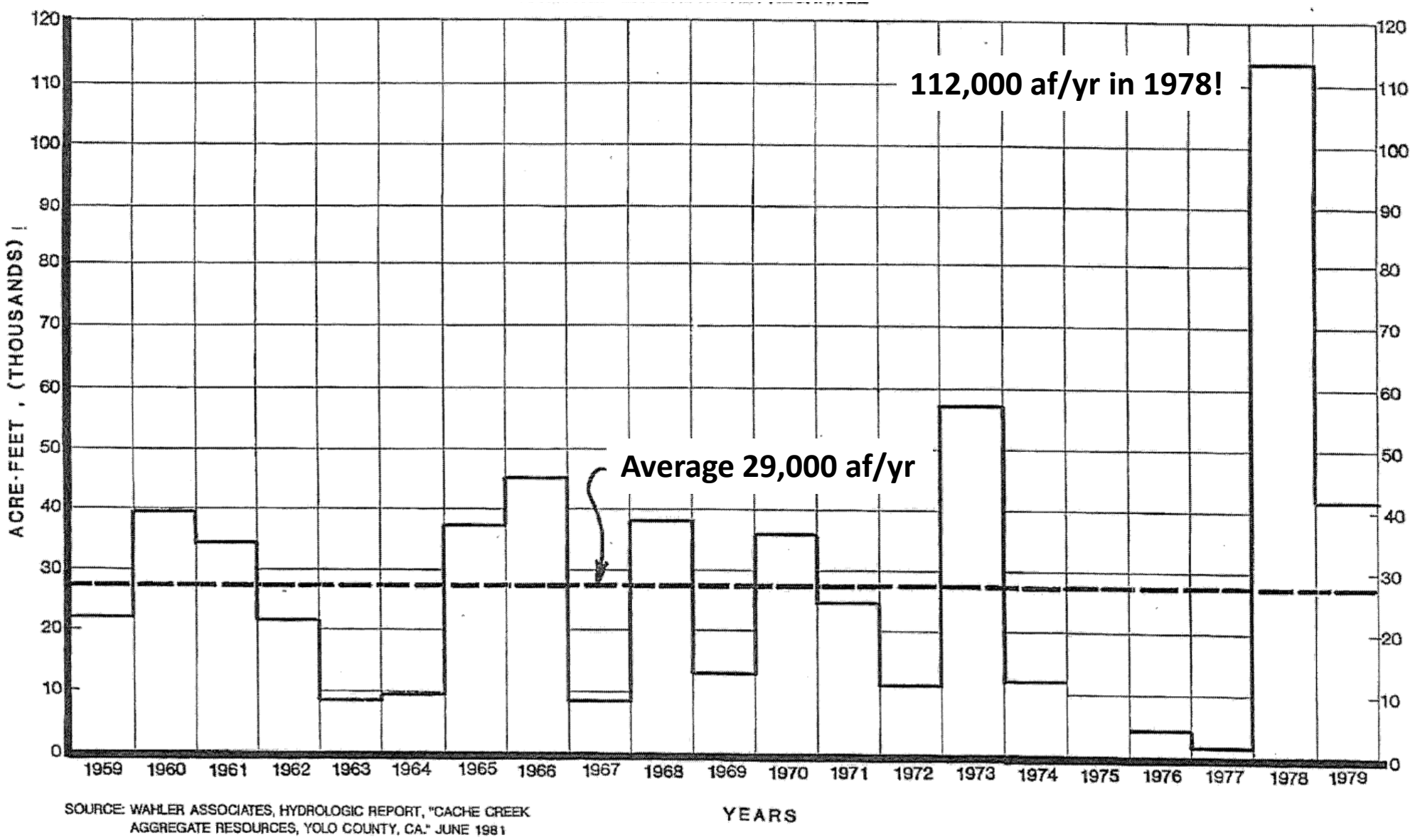
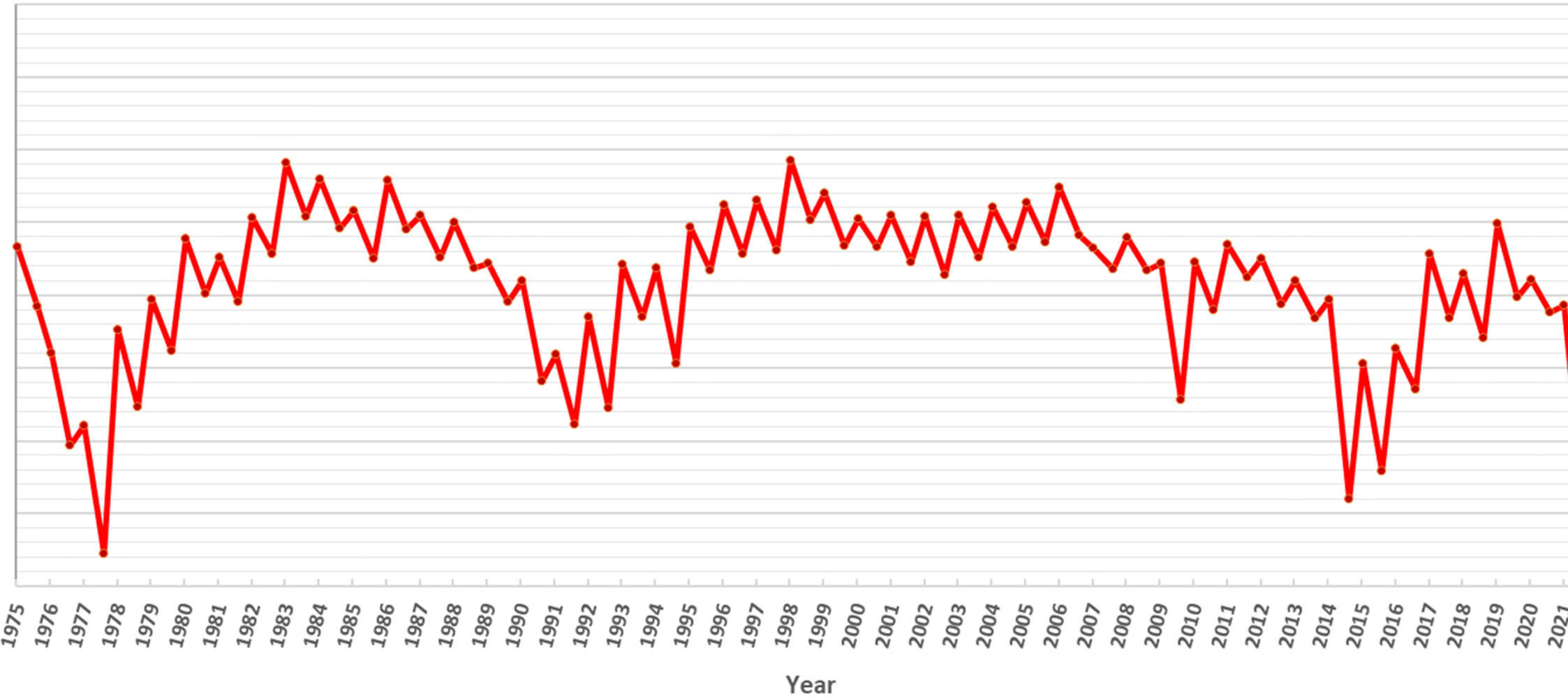


Figure 7. Historical Cache Creek Estimated Groundwater Recharge

YCFCWCD Average Groundwater

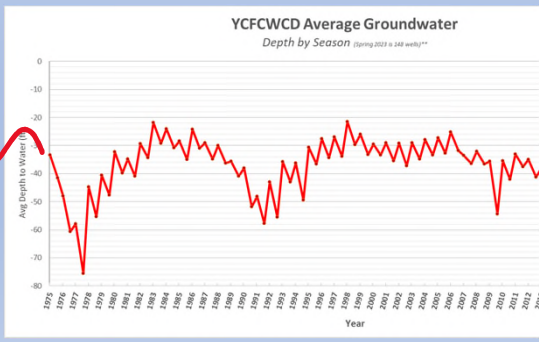
Depth by Season *(Spring 2023 is 148 wells)***



Back in Time

nt Steady State

New Steady State



Conclusion: YSGA Areas of Special Concern

- Previously rangeland (ie. not previously irrigated)
- Increased pumping from new wells will drop groundwater levels
- No ability to increase recharge from surface water
- New steady state will occur at downslope groundwater levels