Groundwater Update
Spring 2015

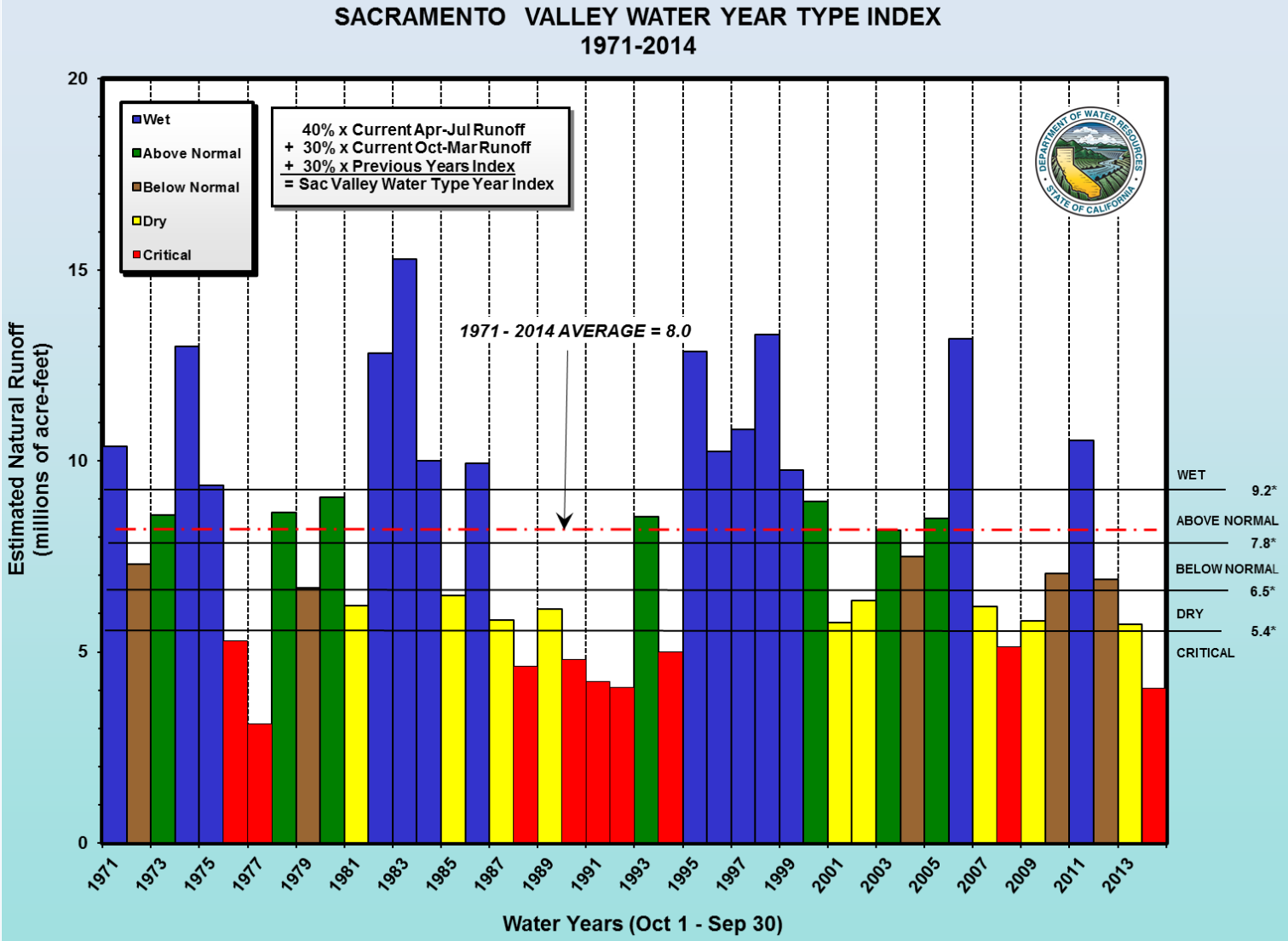
Northern Sacramento Valley Water Dialogue
April 30, 2015

Bill Ehorn, Senior Engineering Geologist
CA Department of Water Resources

Outline

1. Water year index and precipitation summary
2. Effects of declining groundwater levels
3. Groundwater monitoring overview
4. Spring 2015 groundwater level results
5. Summary

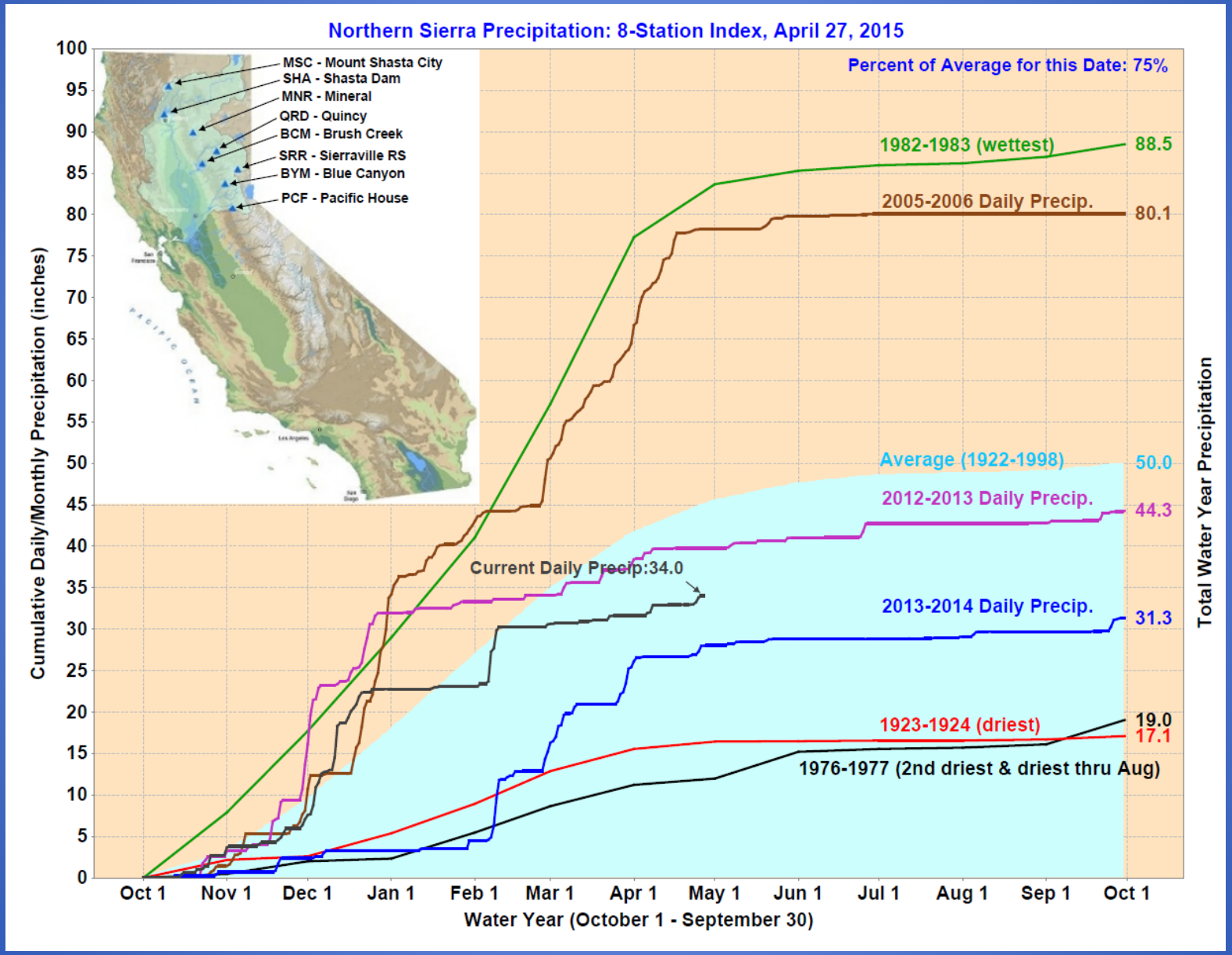
Water Year Index 1971-2014



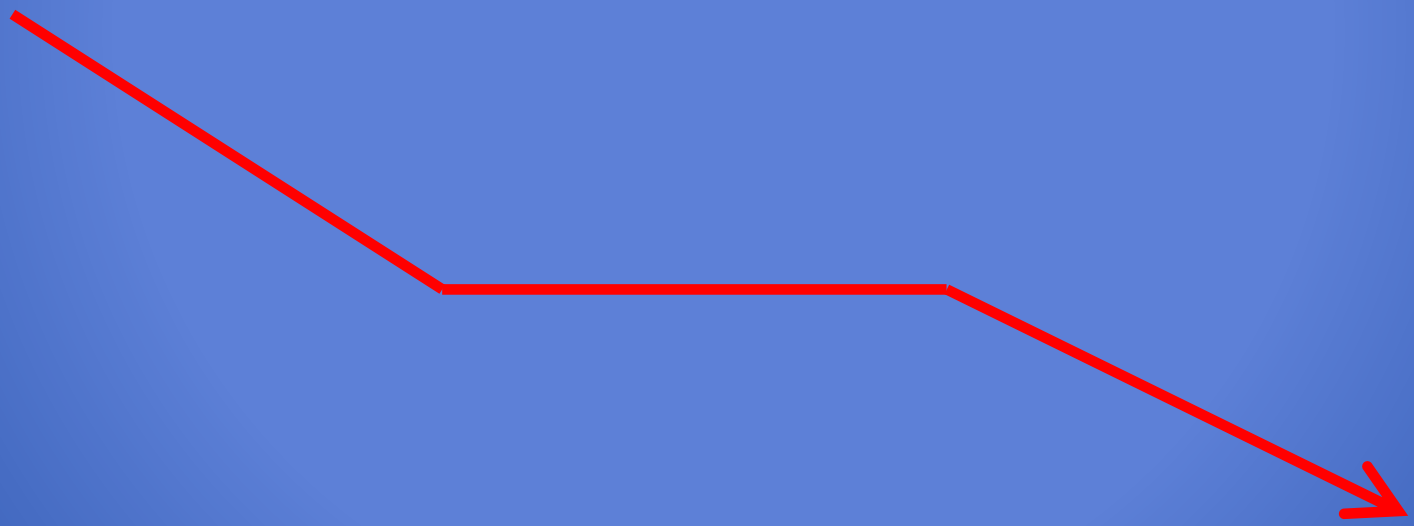
Source: California Department of Water Resources

* Index based on flow in the million acre-feet

Sacramento Valley Precipitation – 8-Station Index

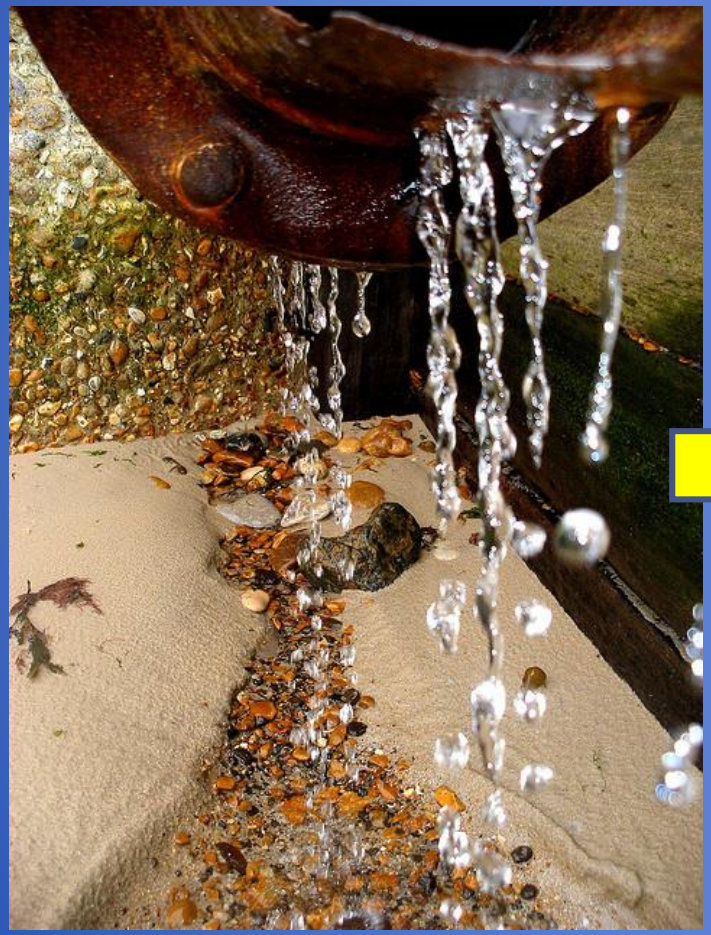


2. Effects of Declining Groundwater Levels

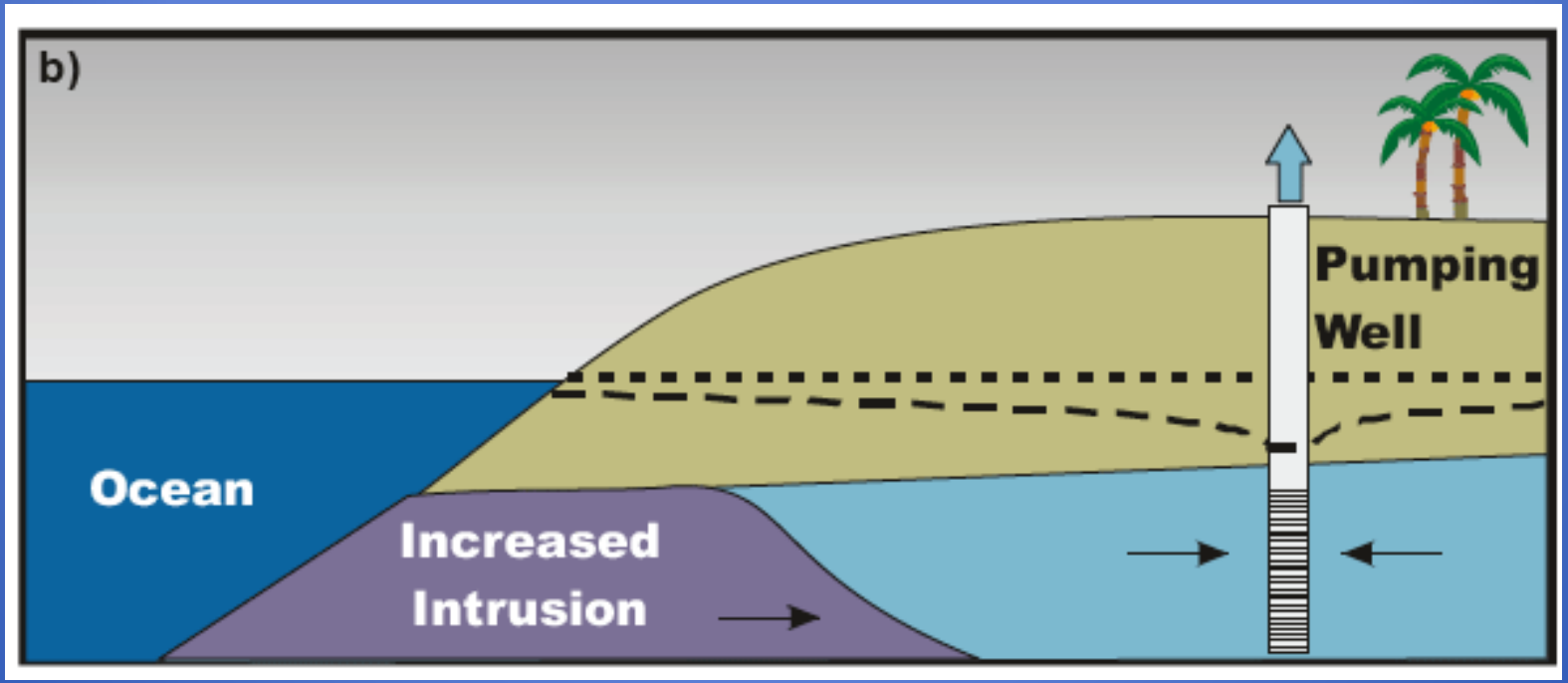


Wells Go Dry

Bad Groundwater Quality



This Includes Saltwater Intrusion

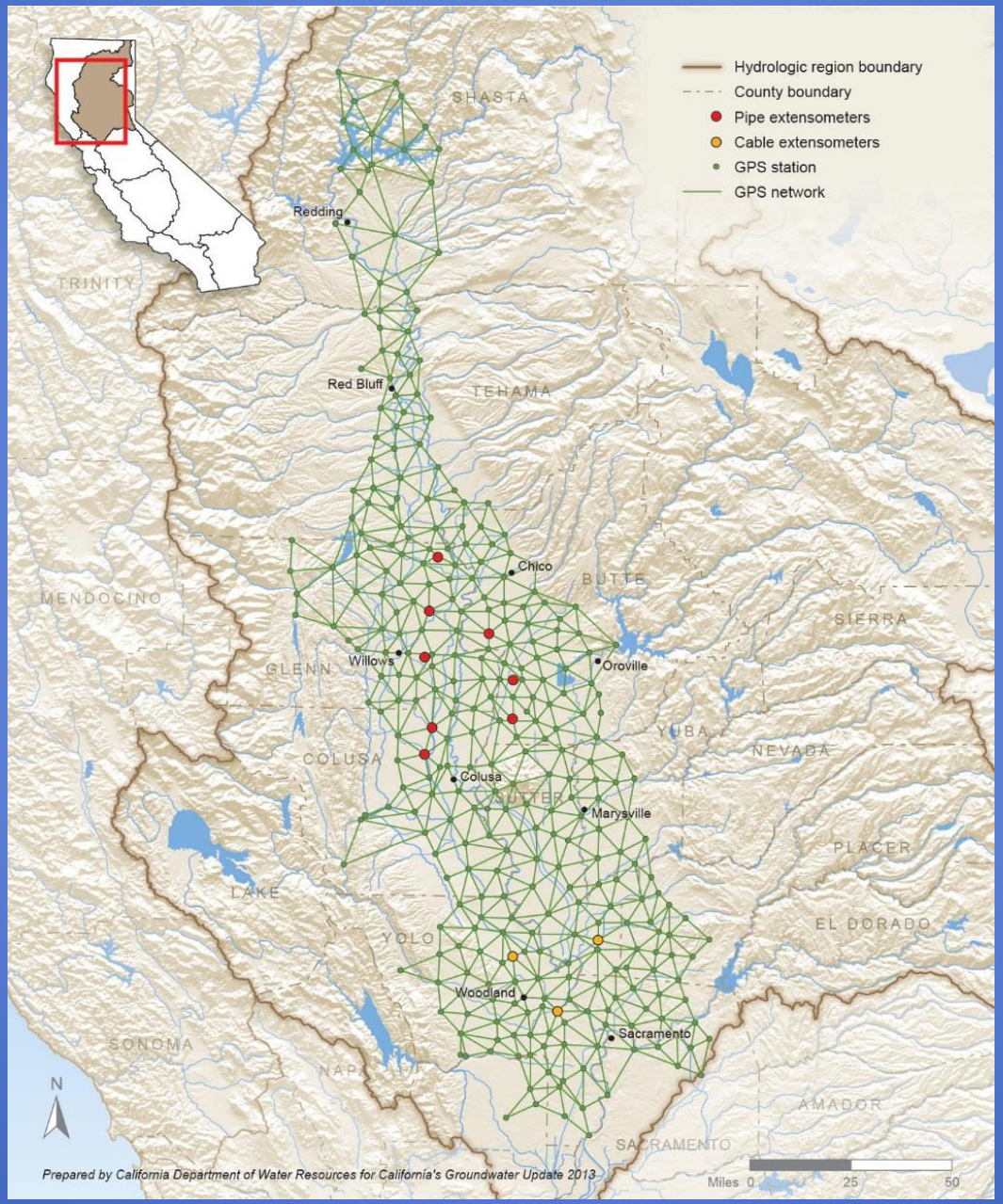


Stressed Vegetation

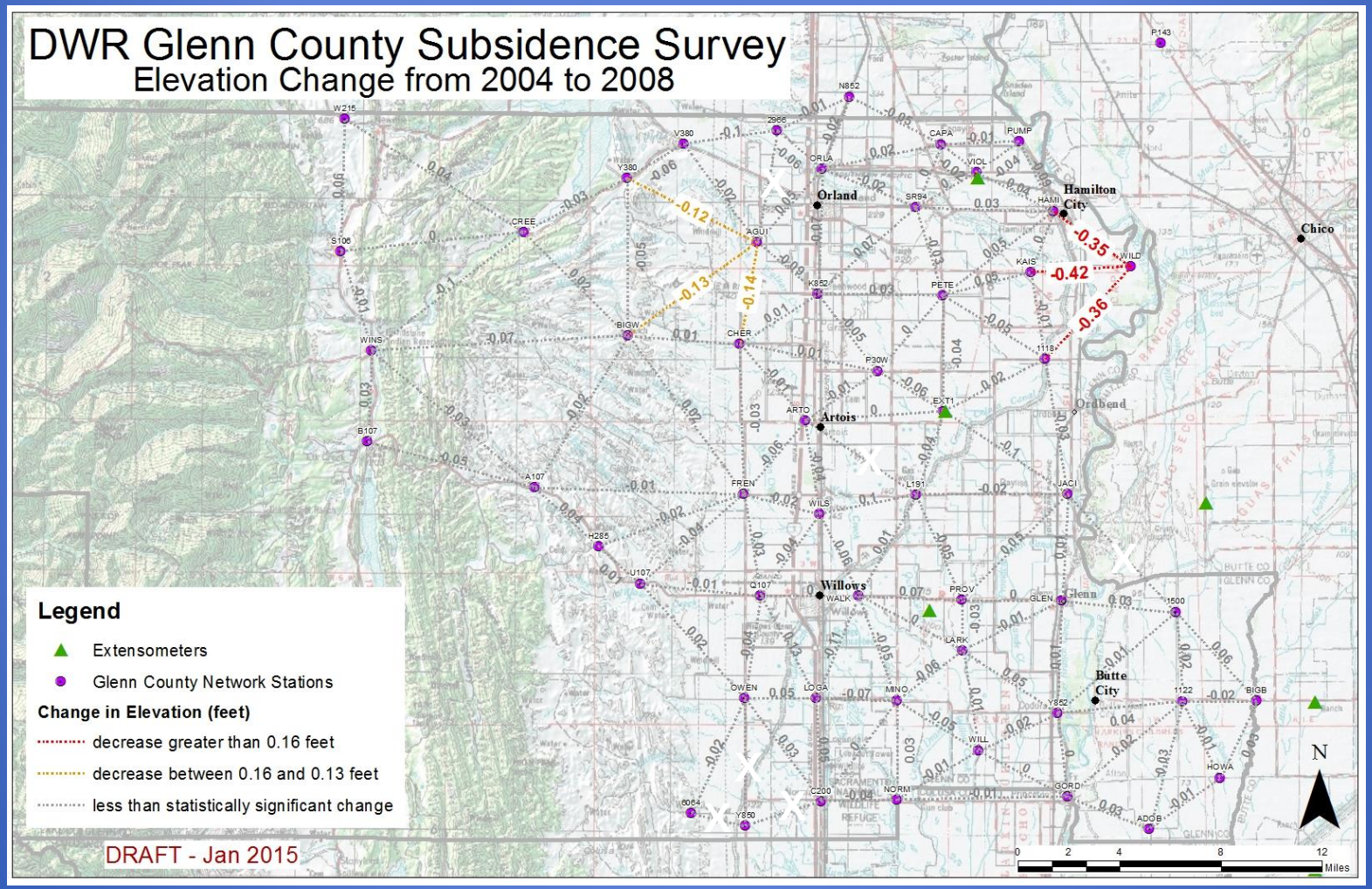
Land Subsidence

Land Subsidence

Land Subsidence - 2008 GPS Network



Glenn County Results

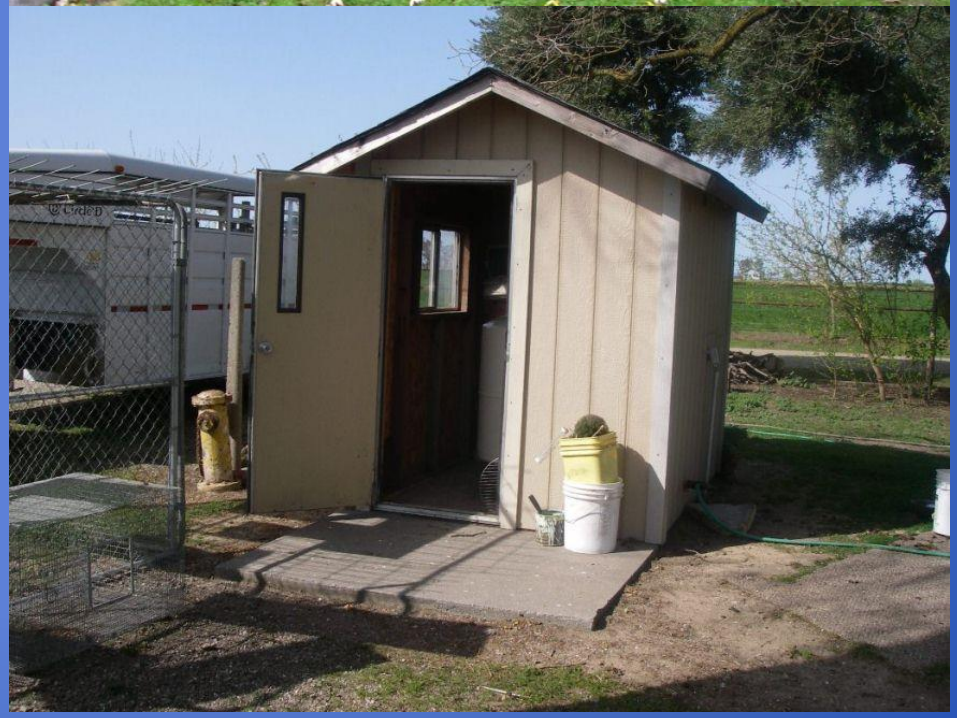


3. Groundwater Monitoring Overview

680 wells are measured every spring and fall and 590 are measured every summer in the Northern Sacramento Valley.

Well Types

Domestic Wells



Well Types

Irrigation Wells

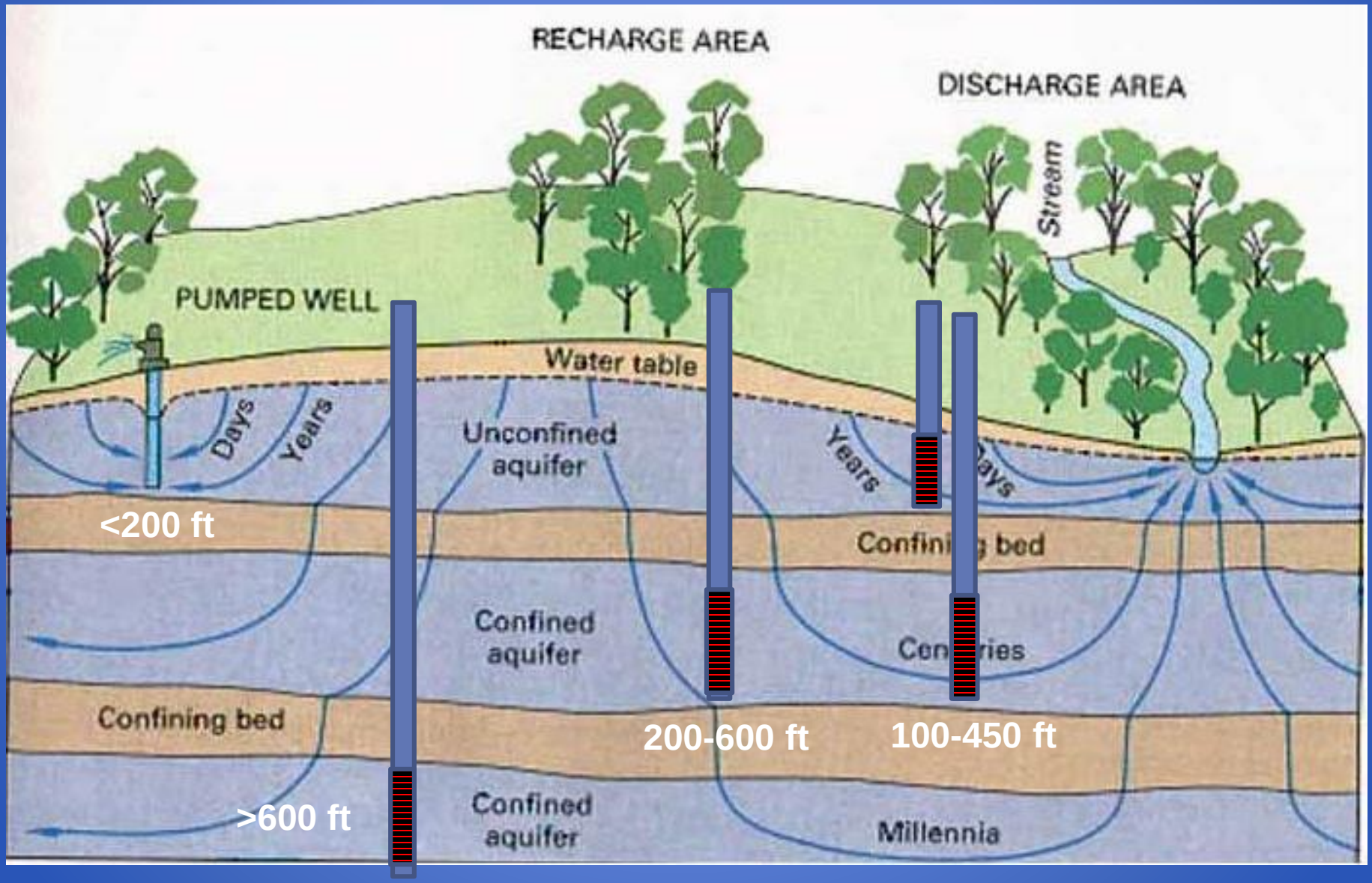
Well Types

Industrial/Stock Wells

Well Types

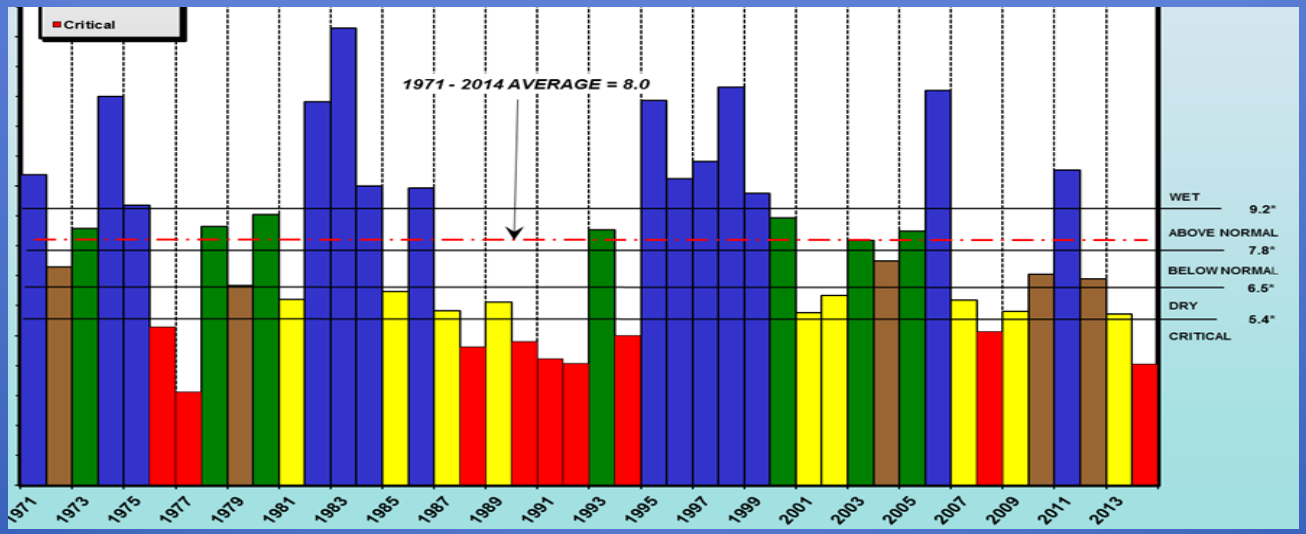
Observation Wells

Groundwater level data are grouped for analysis by well depth



Groundwater level maps compare the current period with 2004

- 2004 is considered a “normal” precipitation year is also recent enough that we have a fair amount groundwater level data. We use is for our baseline



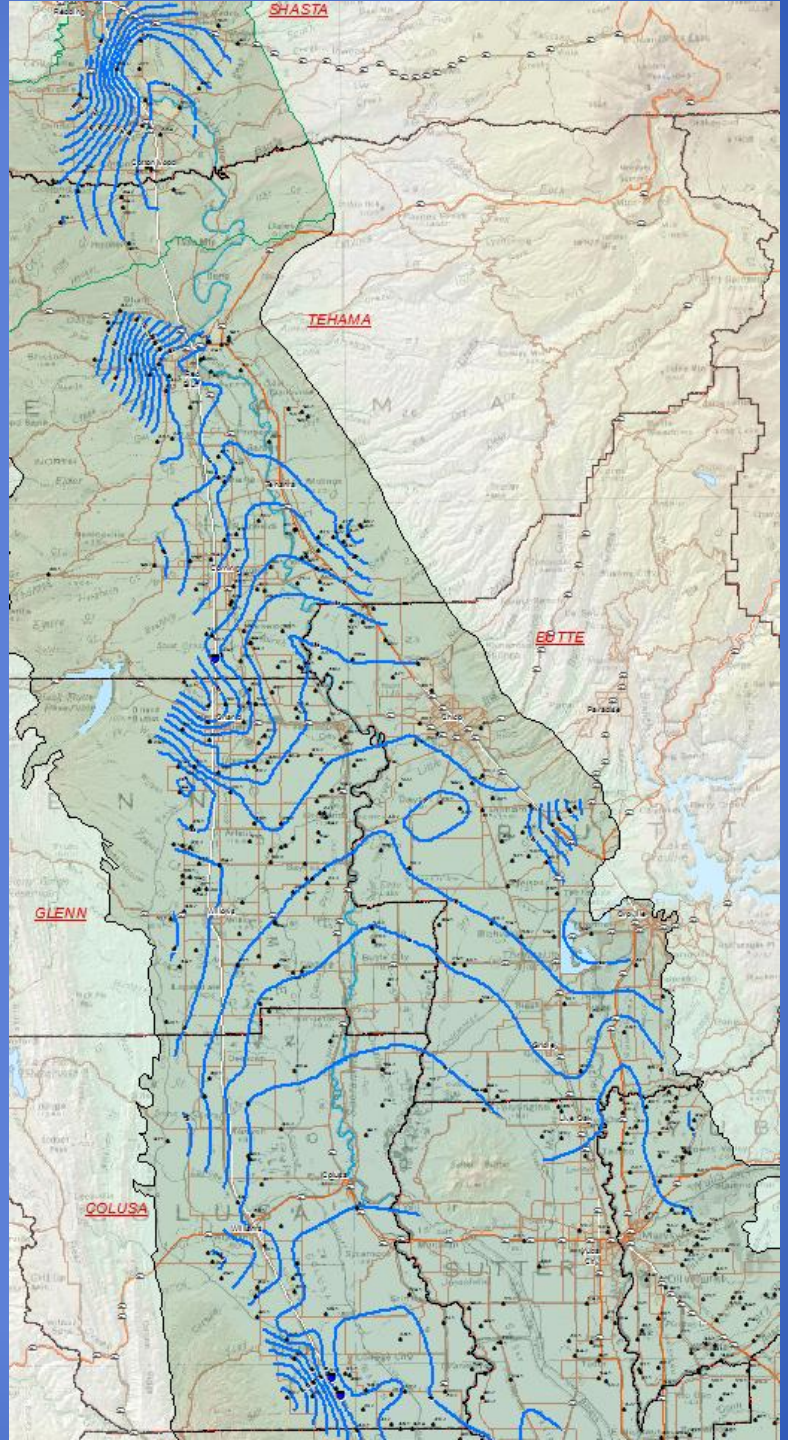
4. Spring 2015 Groundwater Level Results

Groundwater Contour Maps, Change Maps, and Hydrographs

Groundwater Elevation Contour Map

Spring 2015

Average Well Depths:
100 to 450 feet
below ground surface



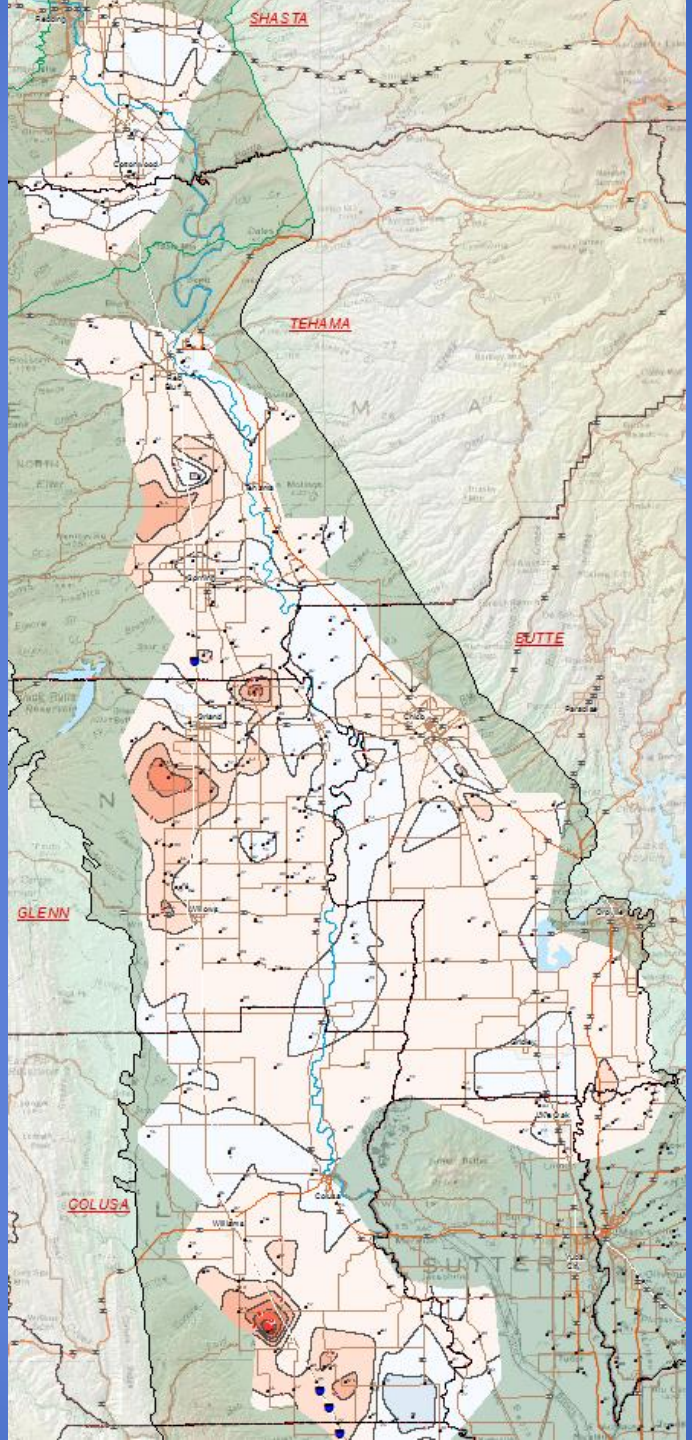
Groundwater Elevation Change Map

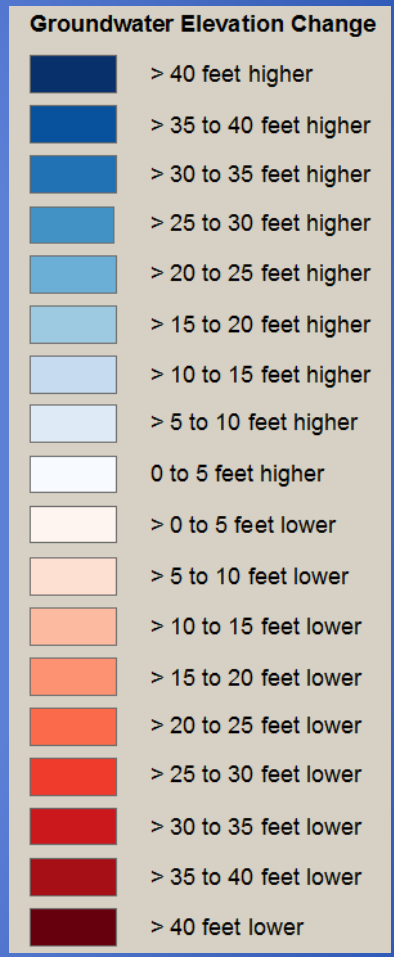
Spring 2014 to 2015

Average Well Depths:
100 to 450 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Number of wells: 282
Maximum decrease: -33 ft
Average change: -1.9 ft.





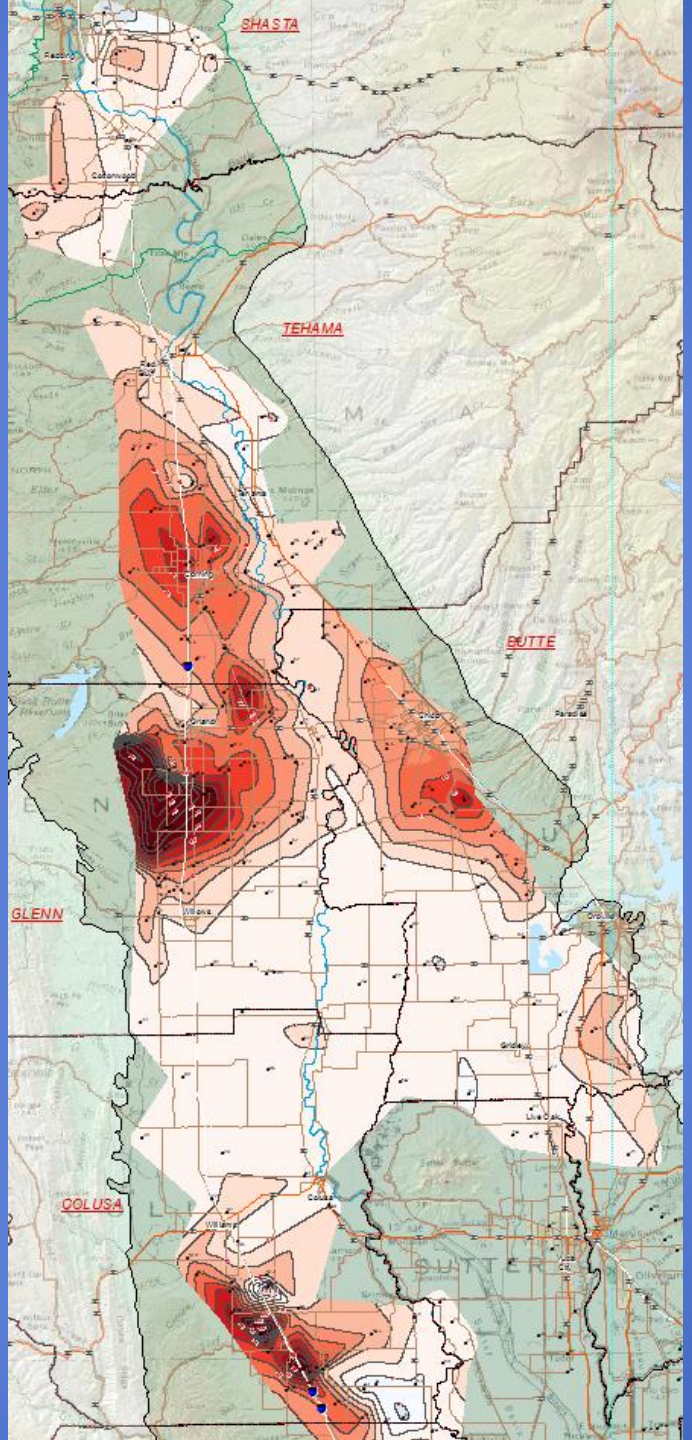
Groundwater Elevation Change Map

Spring 2004 to 2015

Average Well Depths:
100 to 450 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Number of wells: 201
Maximum decrease: -73.6 ft.
Average change: -13.2 ft.



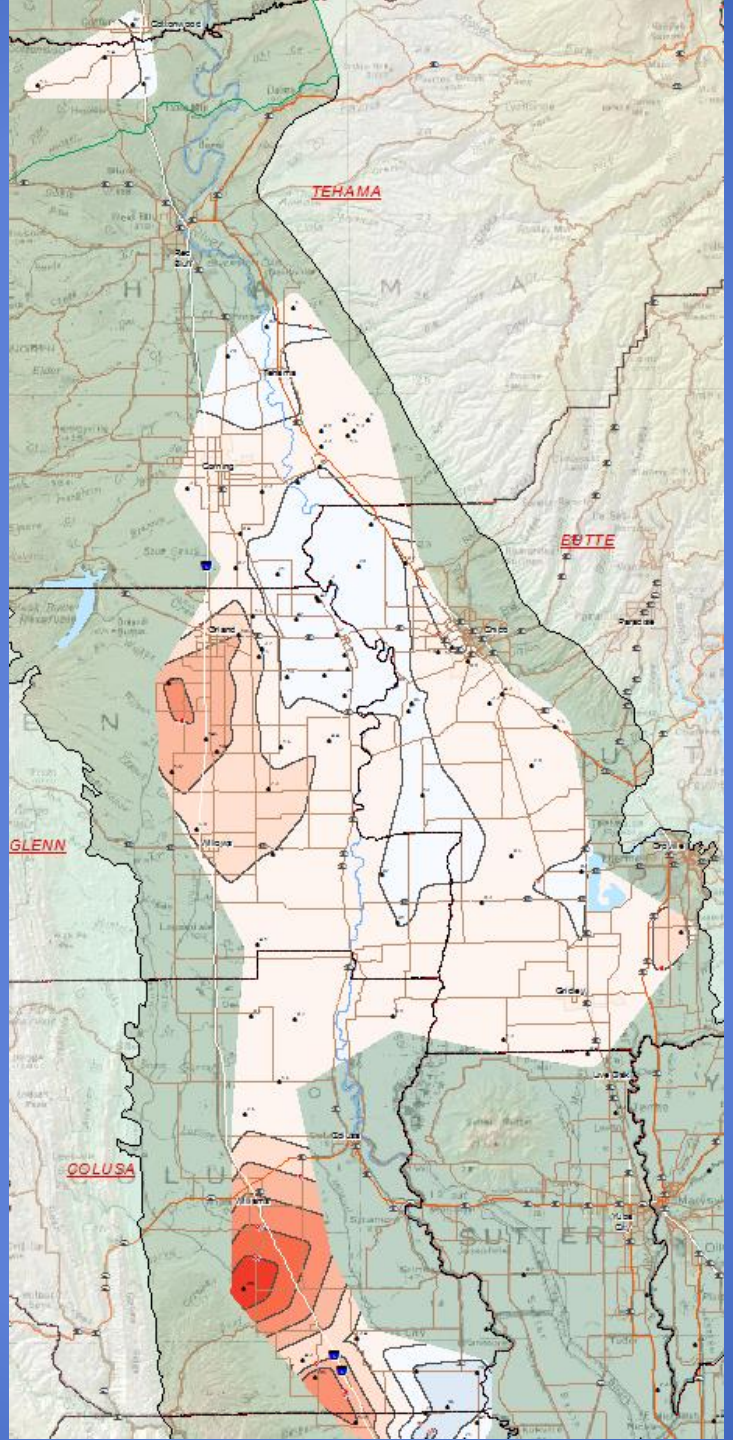
Groundwater Elevation Change Map

Spring 2014 to 2015

Average Well Depths:
> 600 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Number of wells: 78
Maximum decrease: -30.6 ft.
Average change: -1.8 ft.



Groundwater Elevation Change

- > 40 feet higher
- > 35 to 40 feet higher
- > 30 to 35 feet higher
- > 25 to 30 feet higher
- > 20 to 25 feet higher
- > 15 to 20 feet higher
- > 10 to 15 feet higher
- > 5 to 10 feet higher
- 0 to 5 feet higher
- > 0 to 5 feet lower
- > 5 to 10 feet lower
- > 10 to 15 feet lower
- > 15 to 20 feet lower
- > 20 to 25 feet lower
- > 25 to 30 feet lower
- > 30 to 35 feet lower
- > 35 to 40 feet lower
- > 40 feet lower

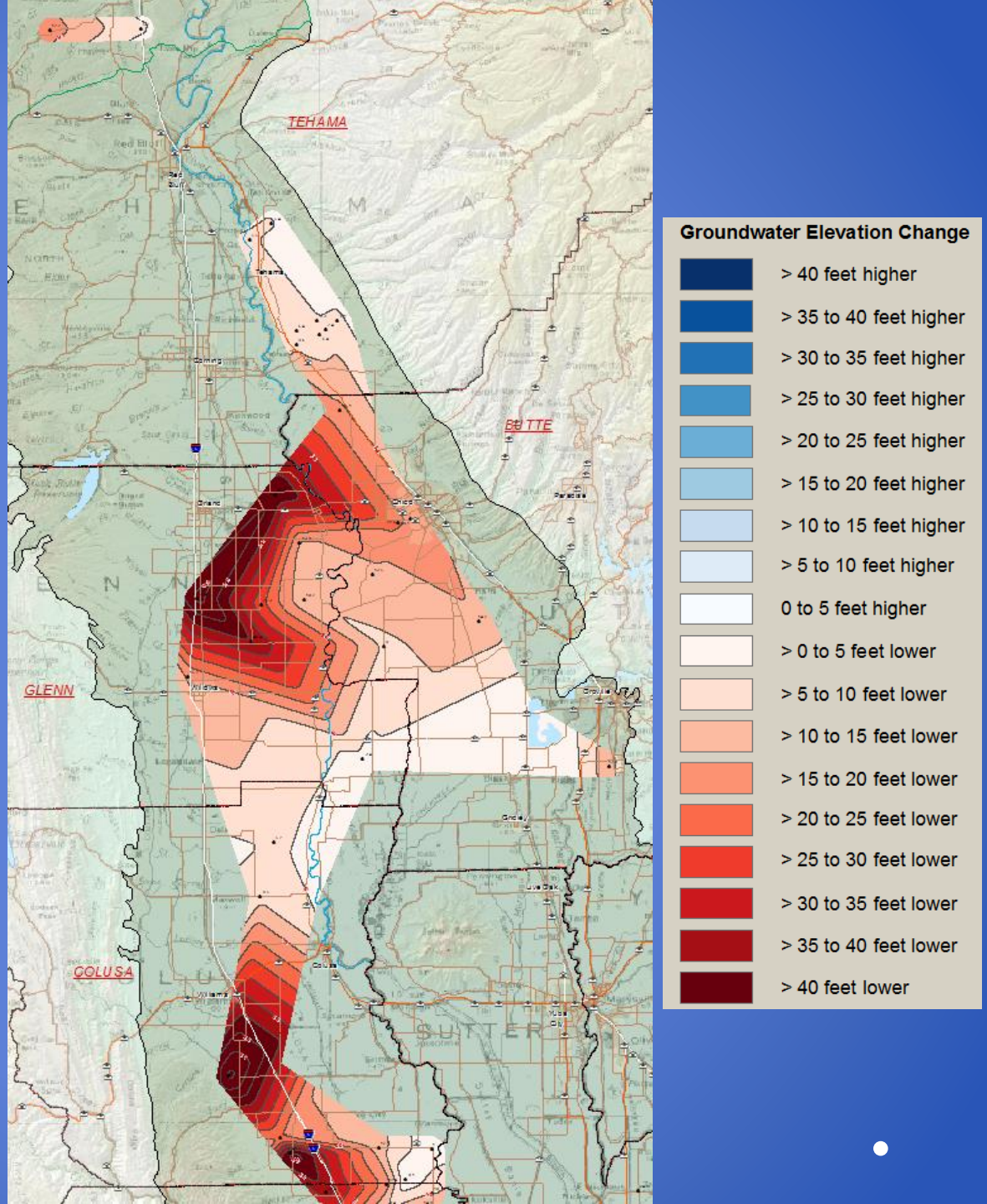
Groundwater Elevation Change Map

Spring 2004 to 2015

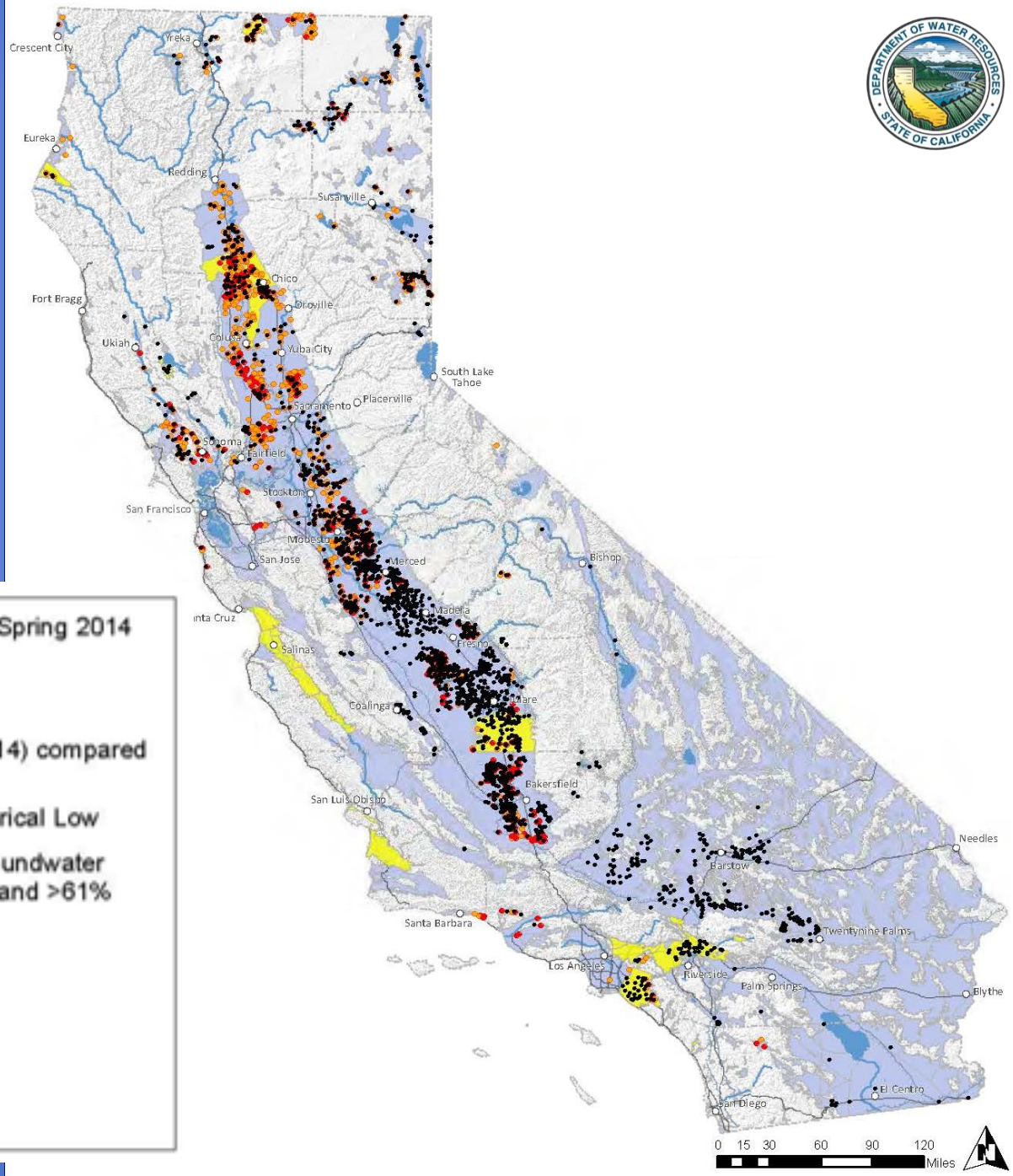
Average Well Depths:
> 600 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Number of wells: 33
Max. decrease: -57.5 ft.
Average change: -16.4 ft.



Black Dots = Groundwater Level at Lowest Recorded



Change in Groundwater Levels*-Spring 2010 to Spring 2014

- Decrease 2.5 to 10 feet
- Decrease > 10 feet

Current Drought Low (Spring 2008 to Spring 2014) compared to Historical Low (Spring 1900 to Spring 1998)

- Current Drought Low deeper than Historical Low

Basin with Moderately High to High Groundwater Reliance (use >0.61 acre-feet per acre and >61% total supply)

Groundwater Basin

Hydrologic Region Boundary

County Boundary

Major Highway

Major Canal

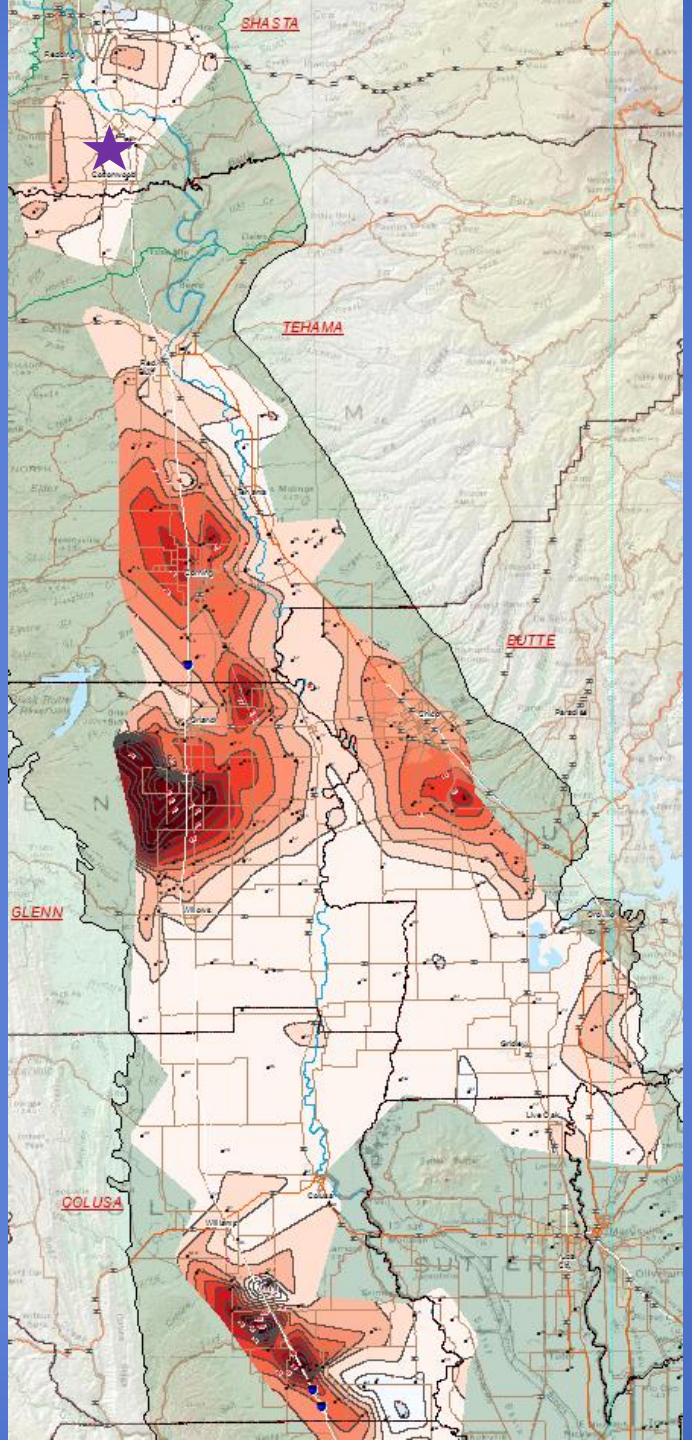
Groundwater Level Hydrograph Locations

Spring 2004 to 2015

Average Well Depths:
100 to 450 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Average Change: -13.2 ft.



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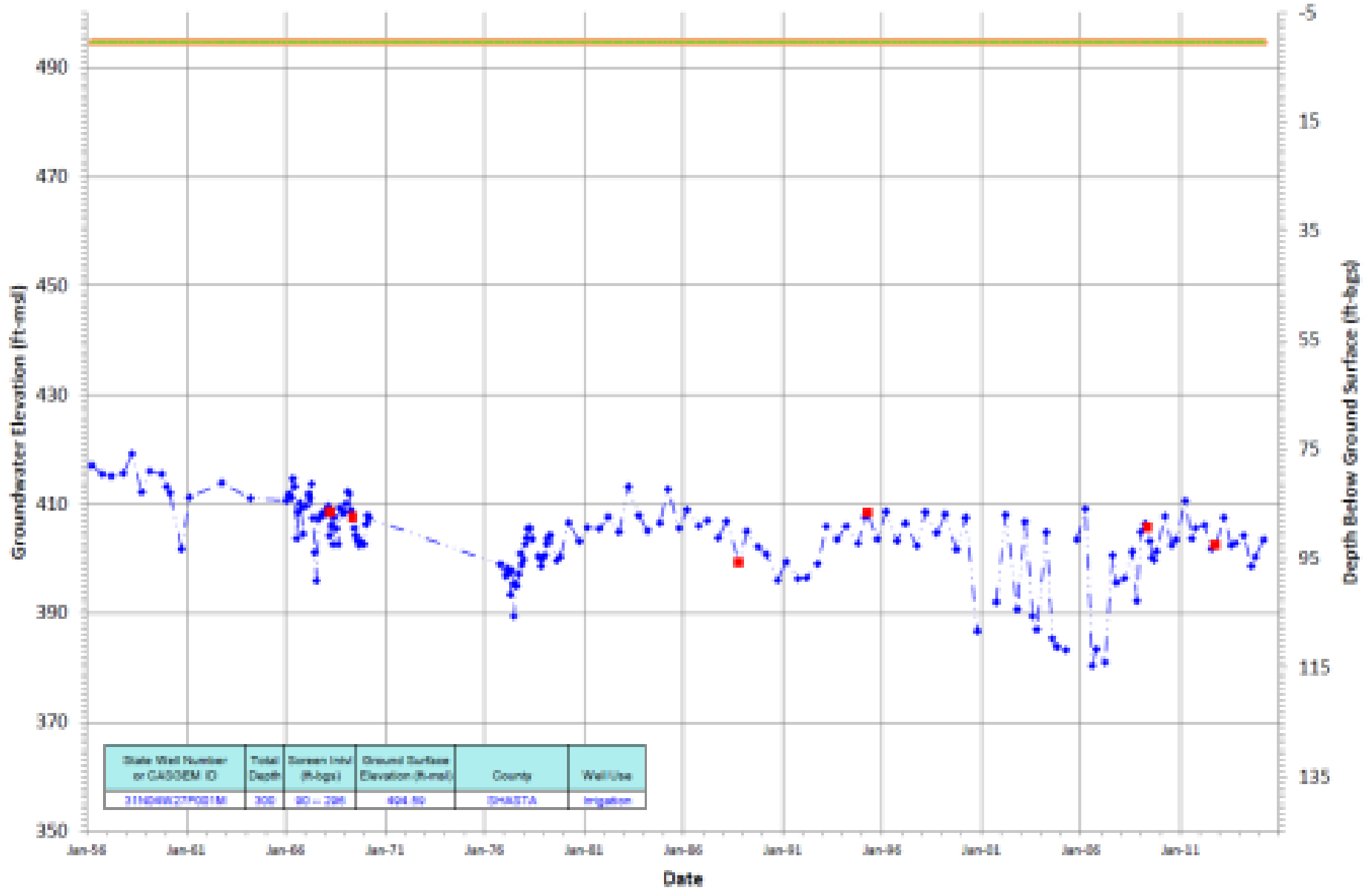
- > 35 to 40 feet lower
- > 40 feet lower

31N04W27P001M
Period Of Record: 04/05/1956 to 03/17/2015

Hydrograph Criteria
State Well Number contains '31n04w27p001'



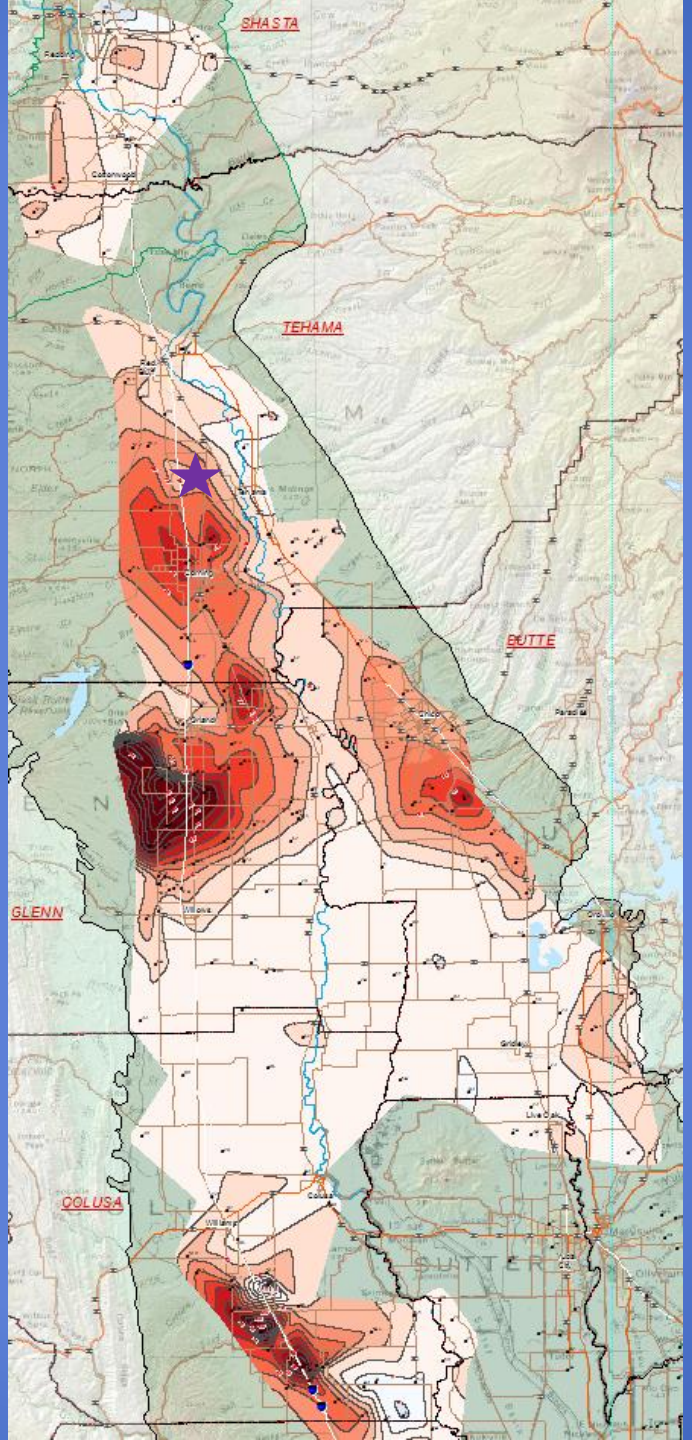
Groundwater Level Hydrograph Locations

Spring 2004 to 2015

Average Well Depths:
100 to 450 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Average Change: -13.2 ft.



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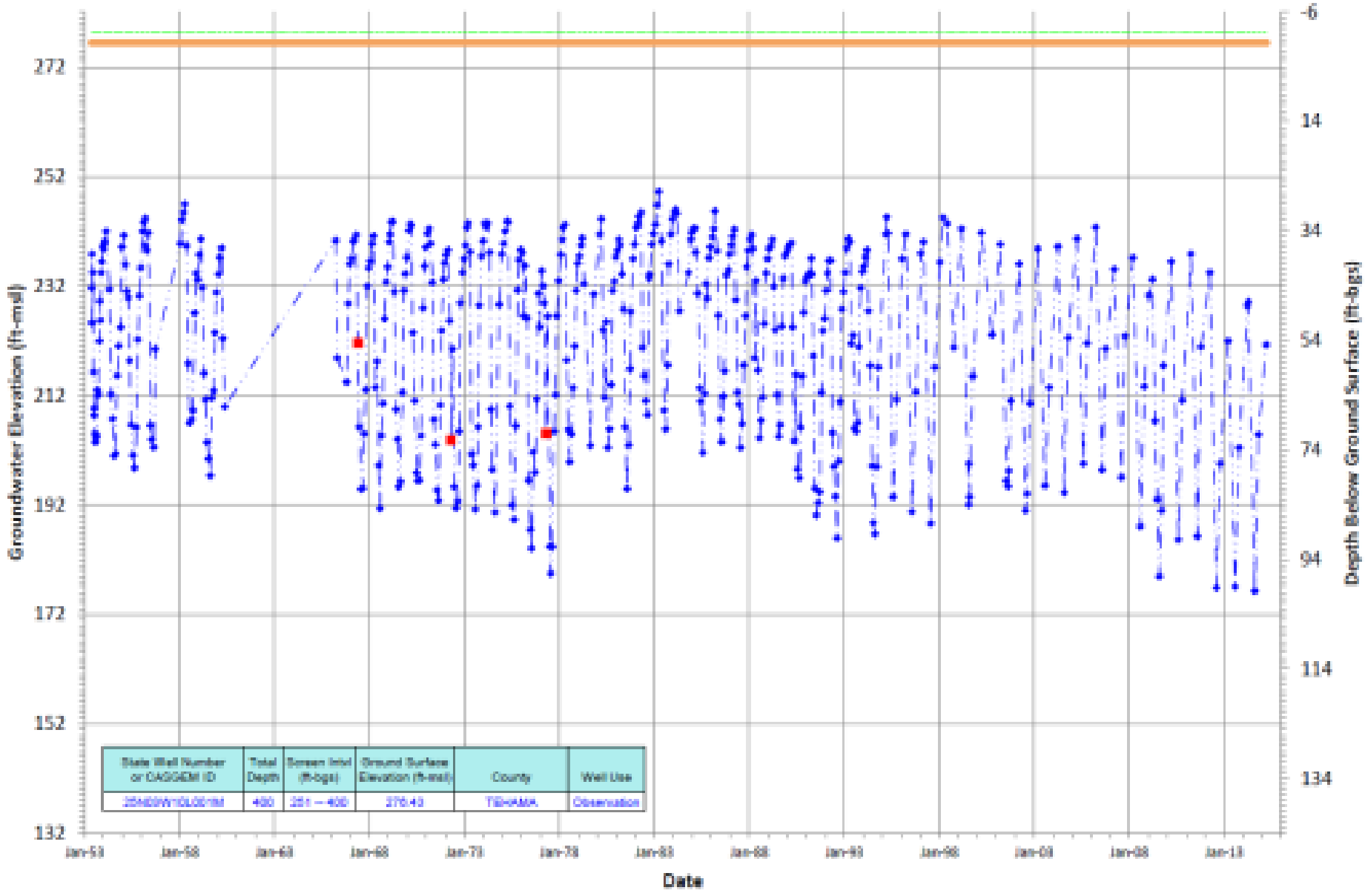
- > 30 to 35 feet lower
- > 35 to 40 feet lower
- > 40 feet lower

25N03W10L001M
Period Of Record: 05/19/1953 to 03/18/2015

Hydrograph Criteria
State Well Number contains '25n03w10l001'



State Well Number or CASGEM ID	Total Depth	Screen Intvl (ft-bgs)	Ground Surface Elevation (ft-msl)	County	Well Use
25N03W10L001M	400	251 – 400	270.43	TEHAMA	Observation

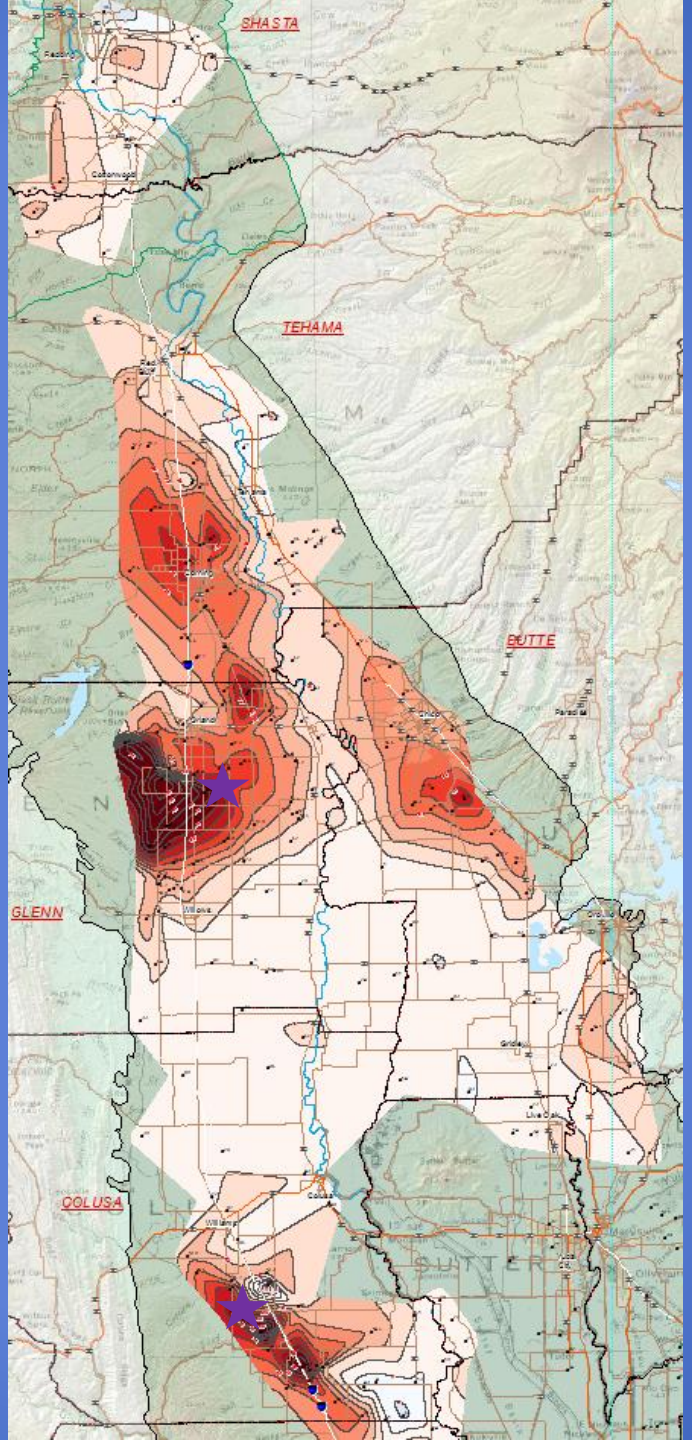
Groundwater Level Hydrograph Locations

Spring 2004 to 2015

Average Well Depths:
100 to 450 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Average Change: -13.2 ft.



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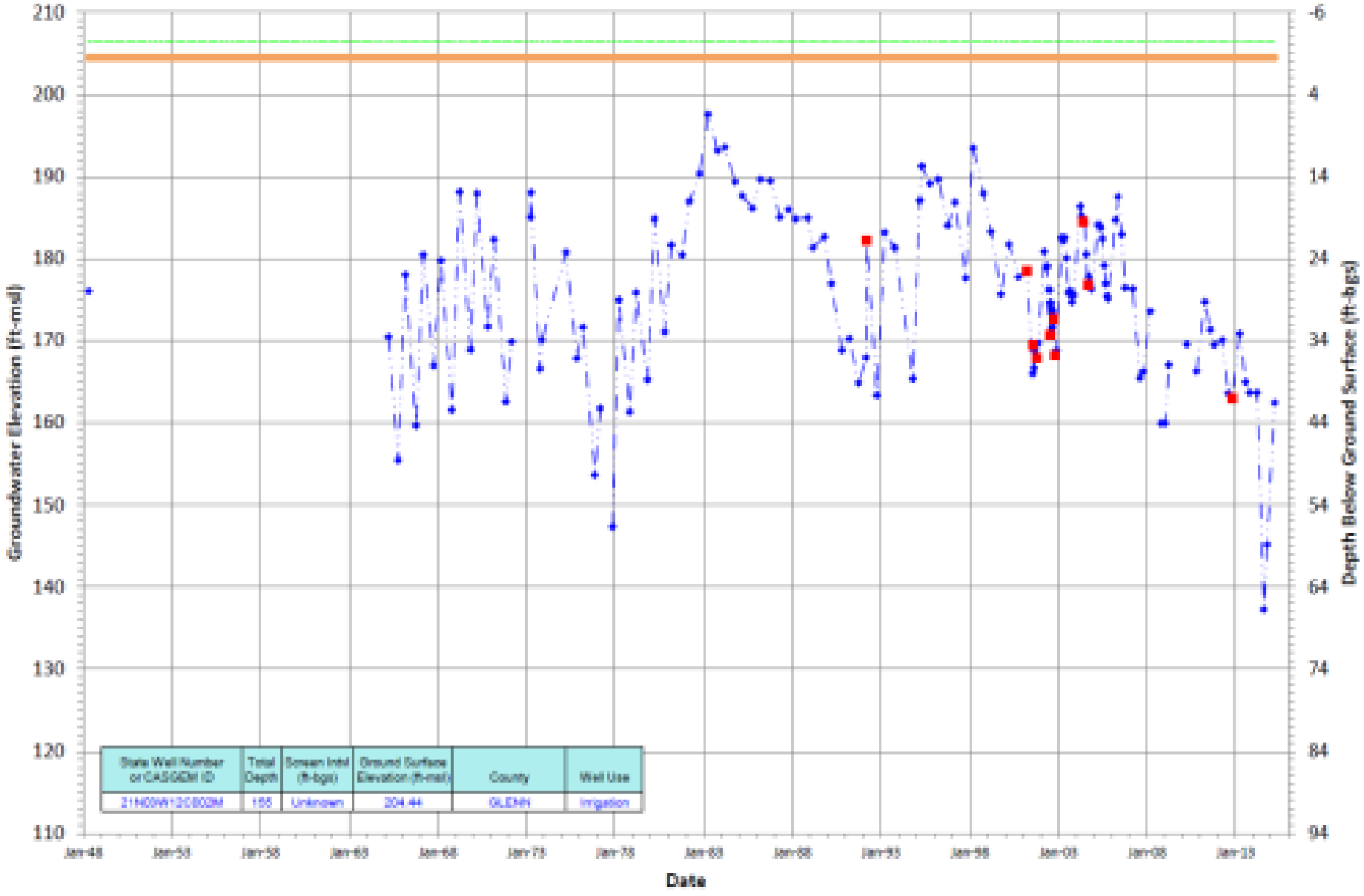
- > 25 to 30 feet lower
- > 30 to 35 feet lower
- > 35 to 40 feet lower
- > 40 feet lower

21N03W12C002M
Period Of Record: 04/22/1948 to 03/18/2015

Hydrograph Criteria
State Well Number contains '21n03w12c002'



State Well Number or CASGEM ID	Total Depth	Screen Intvl (ft-bgs)	Ground Surface Elevation (ft-msl)	County	Well Use
21N03W12C002M	155	Unknown	204.44	GLENN	Irrigation

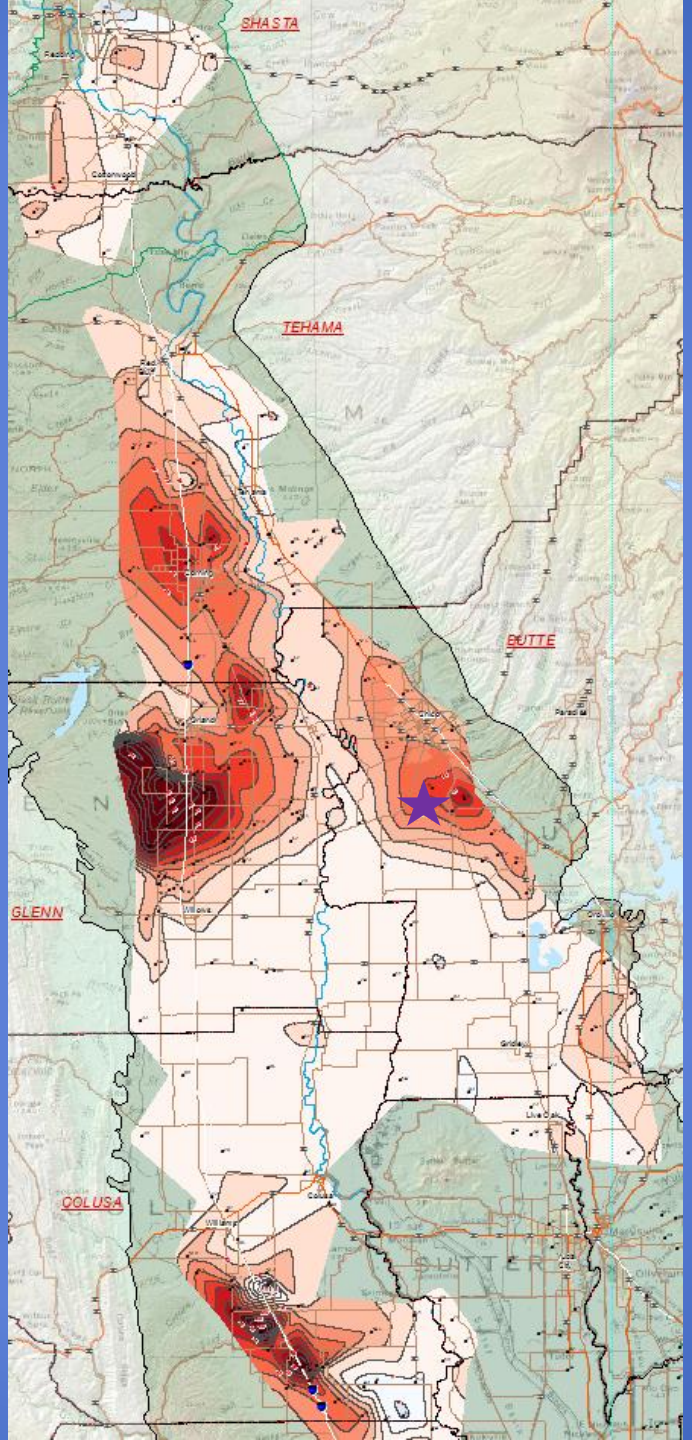
Groundwater Level Hydrograph Locations

Spring 2004 to 2015

Average Well Depths:
100 to 450 feet
below ground surface

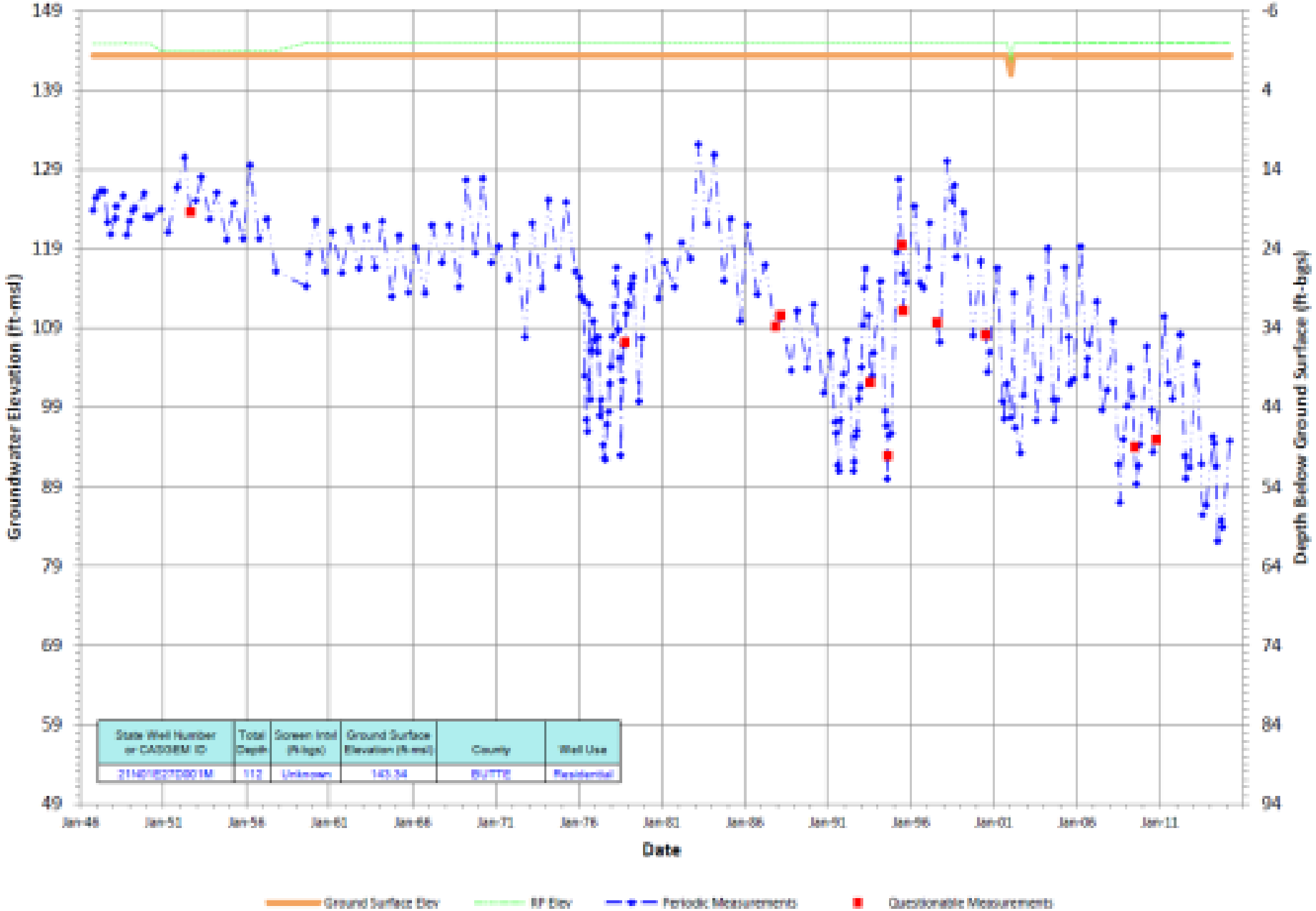
Sacramento Valley and Redding Groundwater Basins

Average Change: -13.2 ft.



21N01E27D001M
Period Of Record: 10/09/1946 to 03/19/2015

Hydrograph Criteria
State Well Number contains '21n01e27d'



State Well Number or CASGEM ID	Total Depth	Screen Intvl (ft-bgs)	Ground Surface Elevation (ft-msl)	County	Well Use
21N01E27D001M	112	Unknown	143.34	BUTTE	Residential

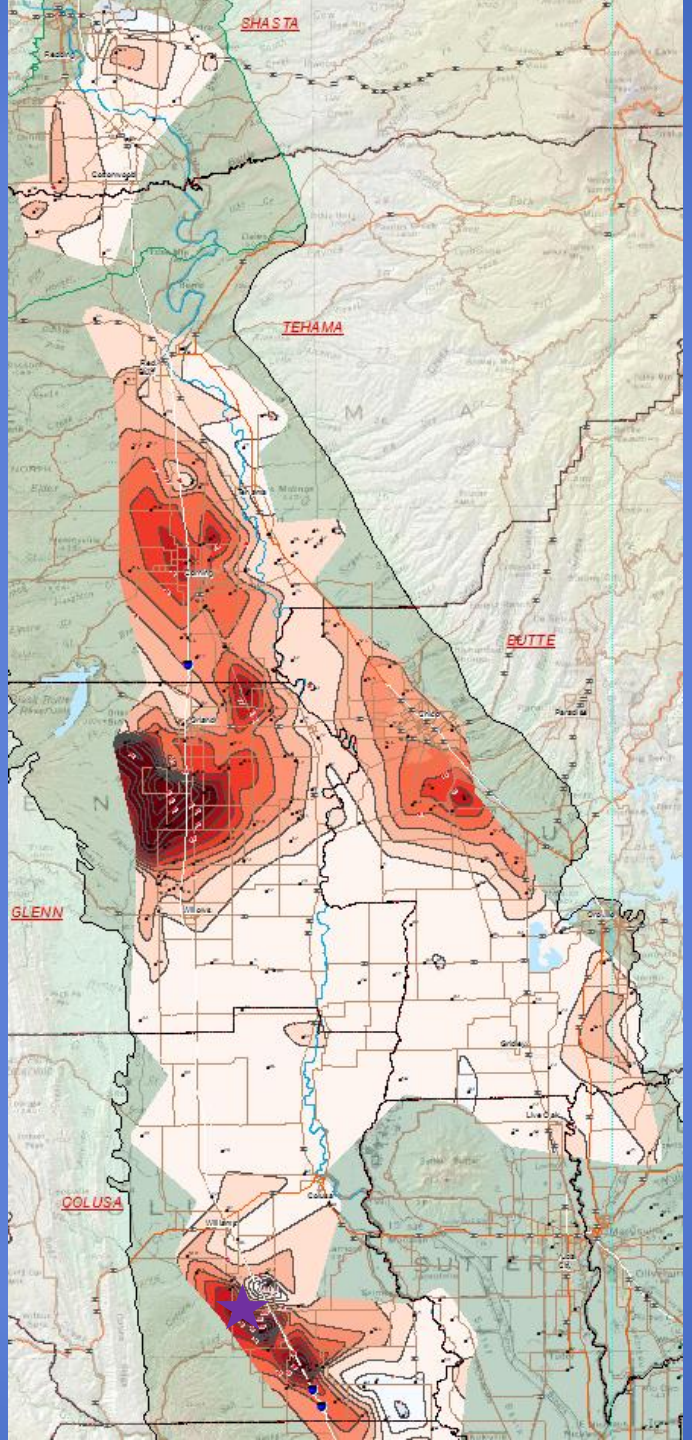
Groundwater Level Hydrograph Locations

Spring 2004 to 2015

Average Well Depths:
100 to 450 feet
below ground surface

Sacramento Valley and Redding Groundwater Basins

Average Change: -13.2 ft.

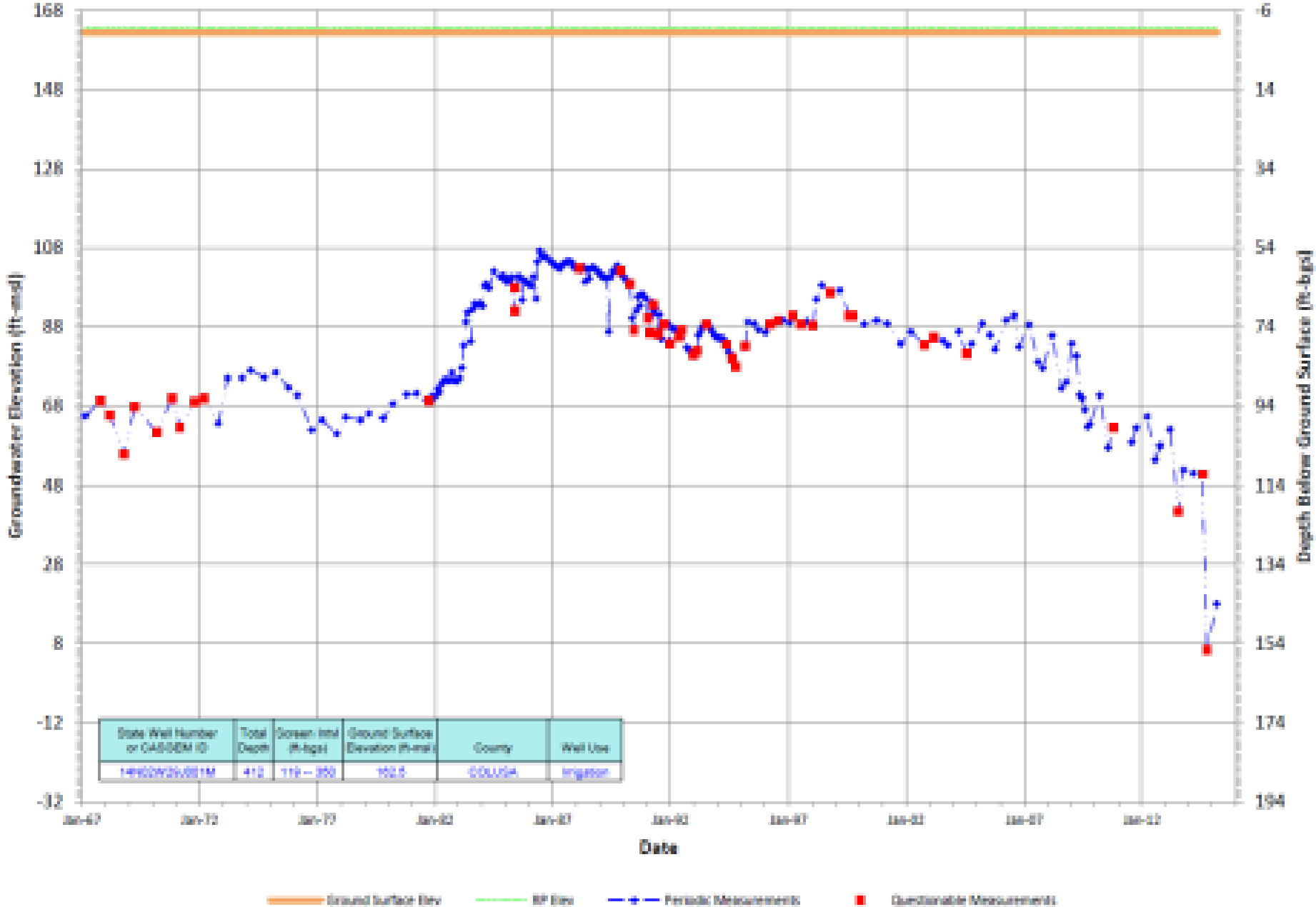


14N02W29I001M

Period Of Record: 02/28/1967 to 03/18/2015

Hydrograph Criteria

State Well Number contains '14n02w29i001'

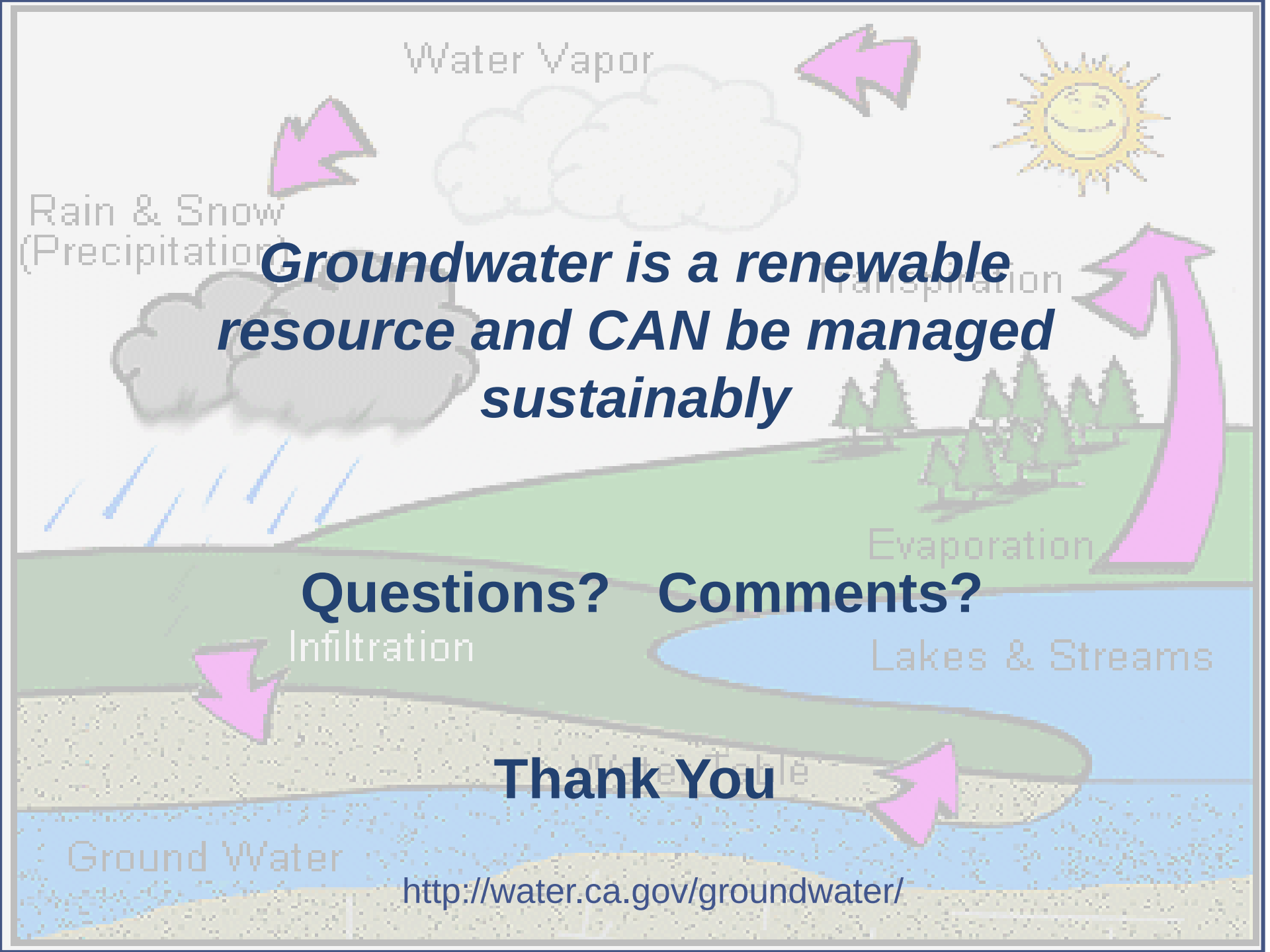


You can access all this data from our new Groundwater Information Center website

Just “Google” *DWR Groundwater Information Center*

5. Summary

- Groundwater levels in the Sacramento Valley are on a decline
- We could be starting to see land subsidence in the Sacramento Valley due to over pumping of groundwater
- New legislation requires sustainable groundwater levels and steps must be taken for sustainable groundwater management



Groundwater is a renewable resource and CAN be managed sustainably

Questions? Comments?

Thank You

http://water.ca.gov/groundwater/