



Butte County's Changing Land Use, Groundwater Conditions and Local SGMA Implementation

Water Education Foundation Northern California Water Tour

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Water Resources Scientist, Butte County

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Overview

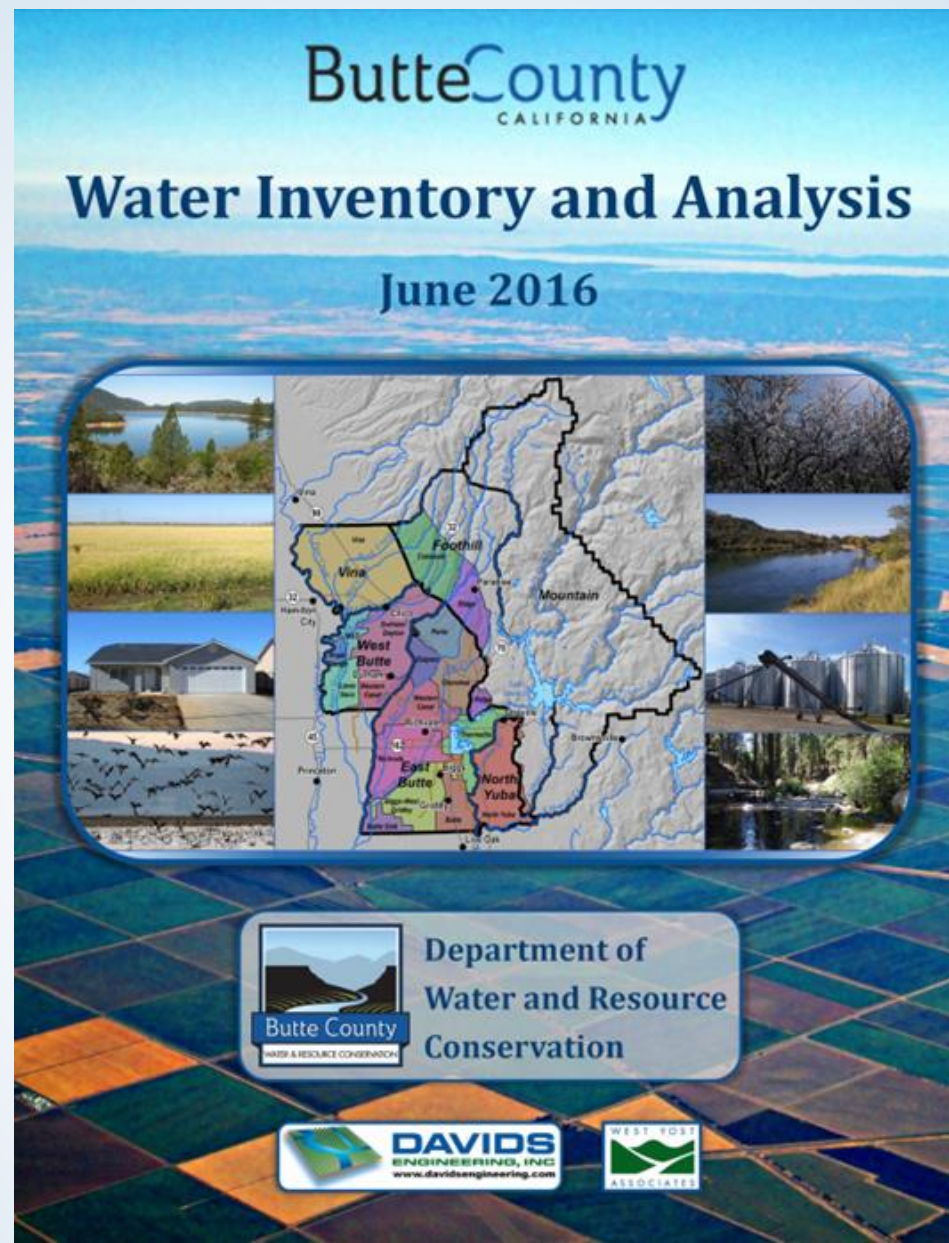
- ▶ **Land use in Butte County's subbasins**
 - ▶ Overview
 - ▶ Change 2000 to 2015

- ▶ **Water in Butte County**
 - ▶ Sources and Overview
 - ▶ Groundwater Conditions and Change
 - ▶ Dual Use Outreach Efforts

- ▶ **Local Implementation of the Sustainable Groundwater Management Act (SGMA)**
 - ▶ Governance
 - ▶ Basin Boundary Modifications
 - ▶ Groundwater Sustainability Plan Development

3

For more information:

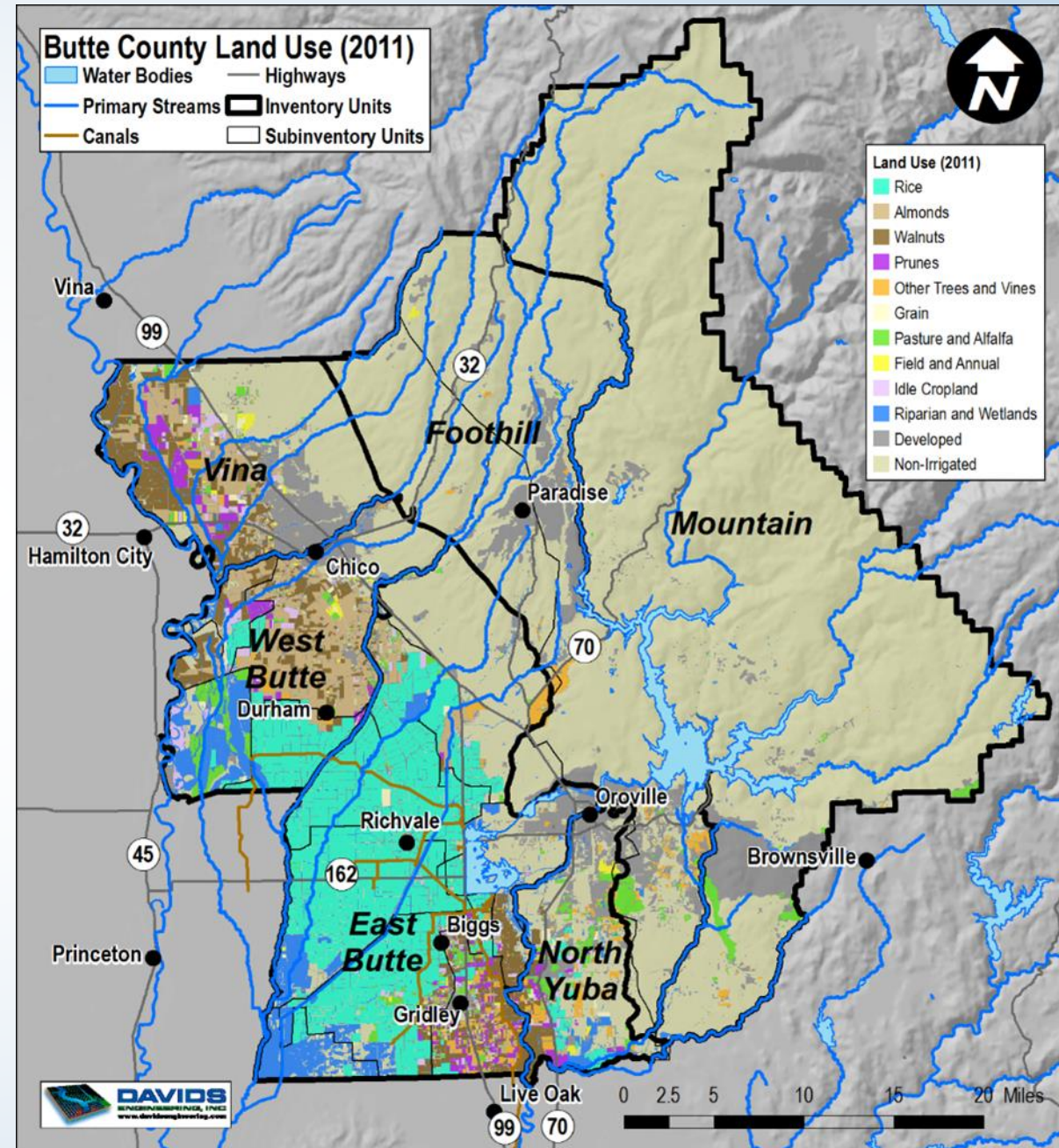


<https://www.buttecounty.net/wrcdocs/Reports/I&A/2016WI&AFINAL.pdf>

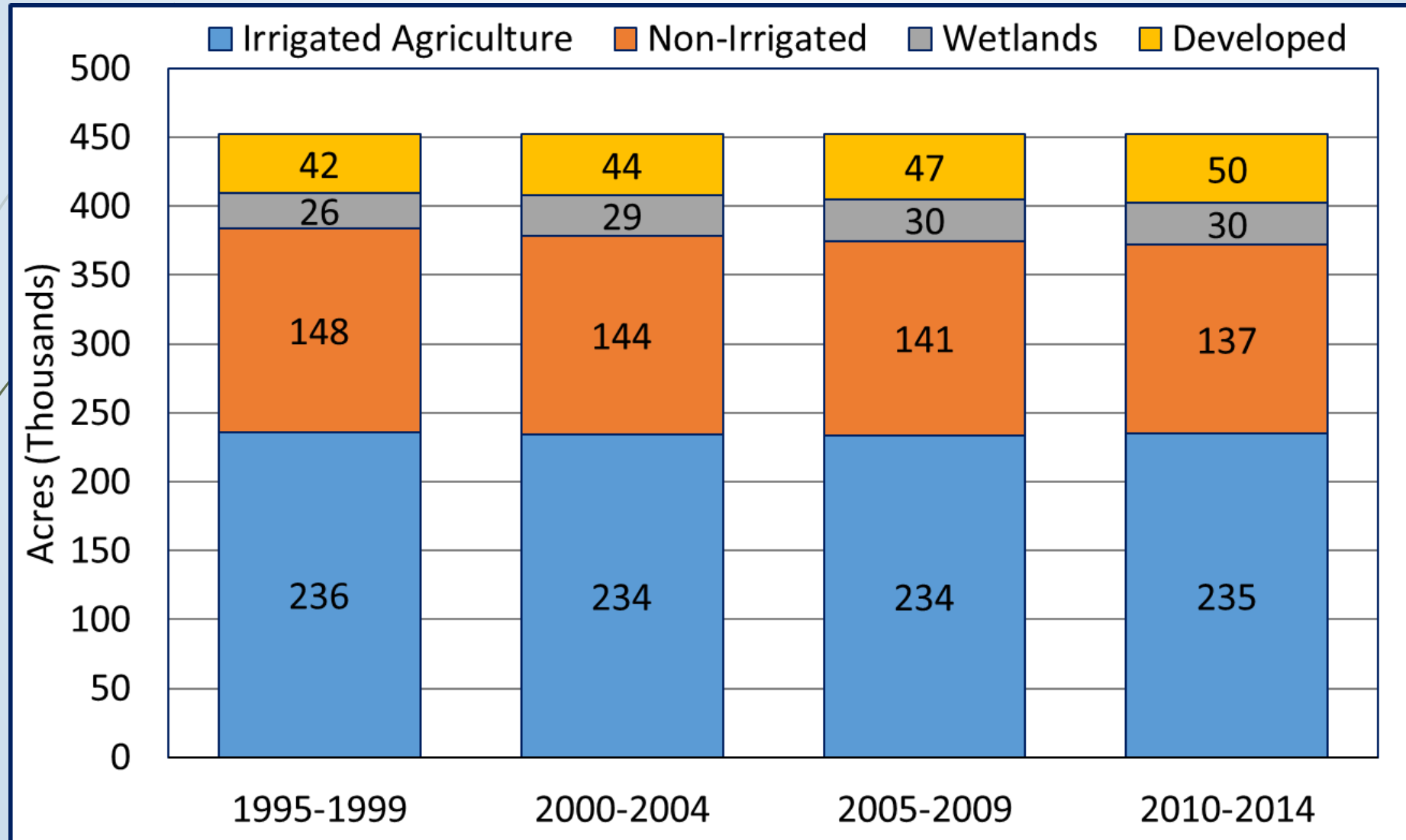
County-wide Land Use

4

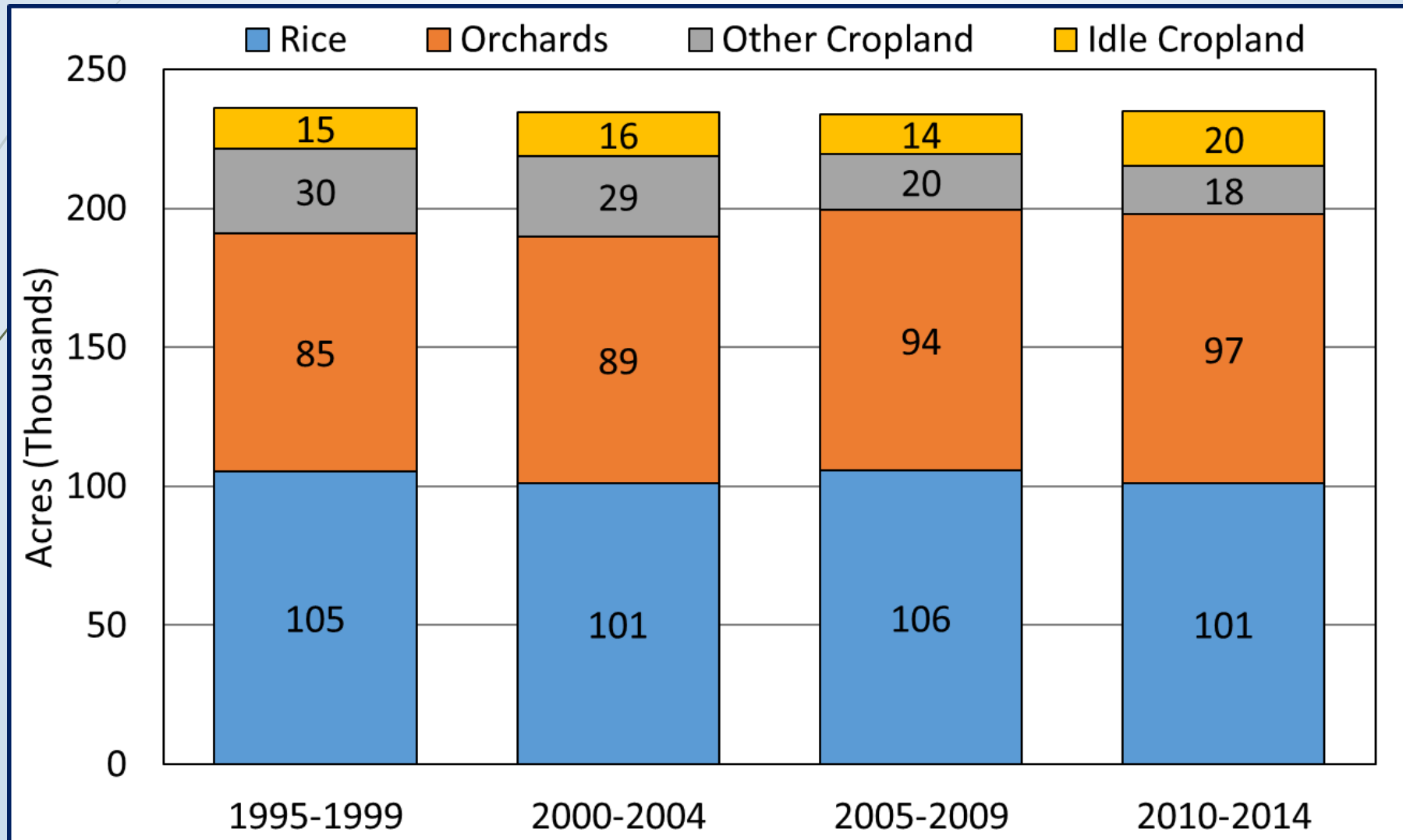
- DWR surveys from 1994, 1999, 2004, 2011
 - Identifies land use, water source, and other attributes
 - High spatial detail
- Annual changes estimated from ag. commissioner crop reports through 2014



Valley Floor General Land Use



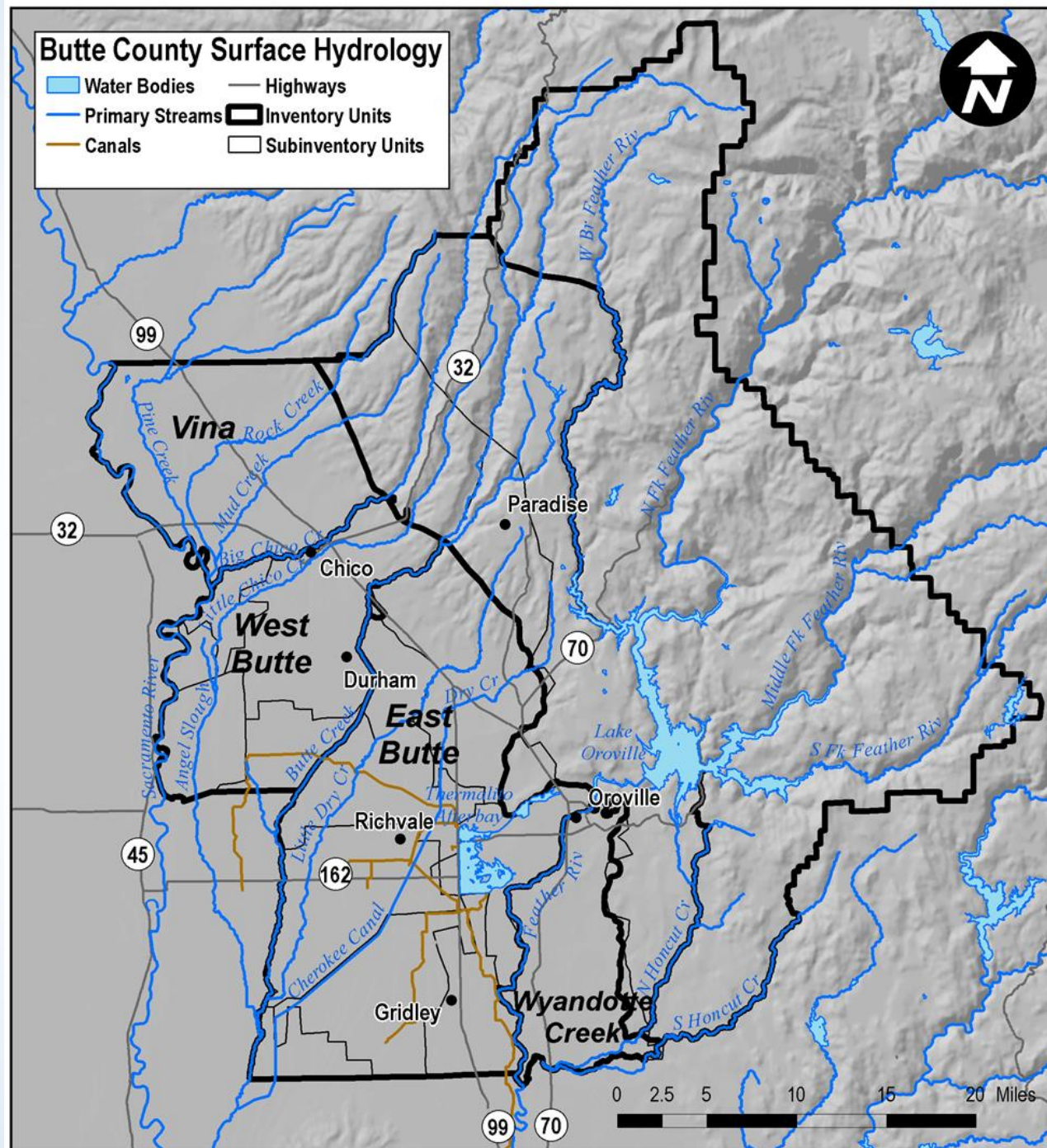
Total Irrigated Agricultural Acreage Relatively Stable Since 2000



Recent shifts
to walnuts

7

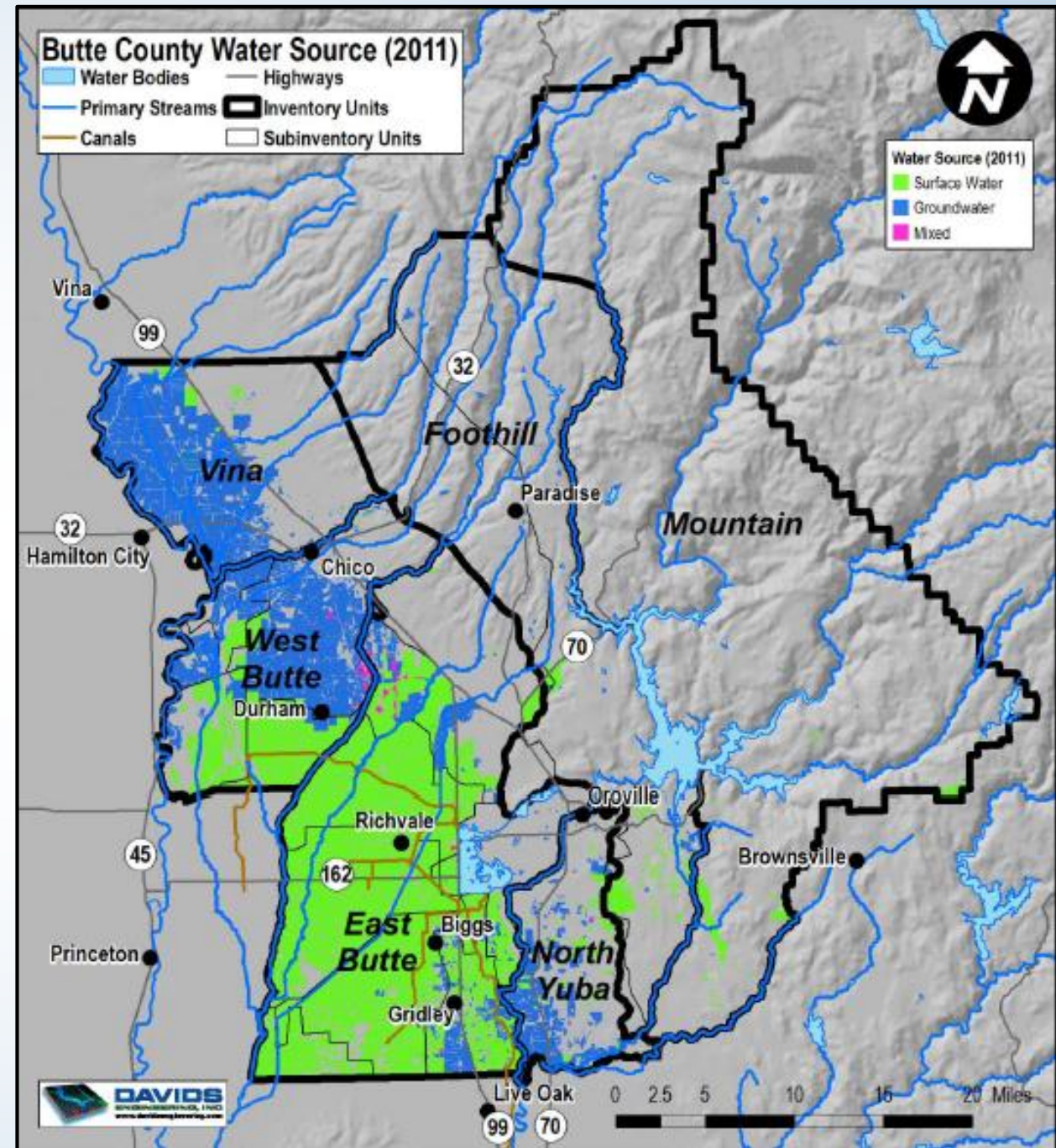
Butte County's Hydrology



Butte County Water Sources

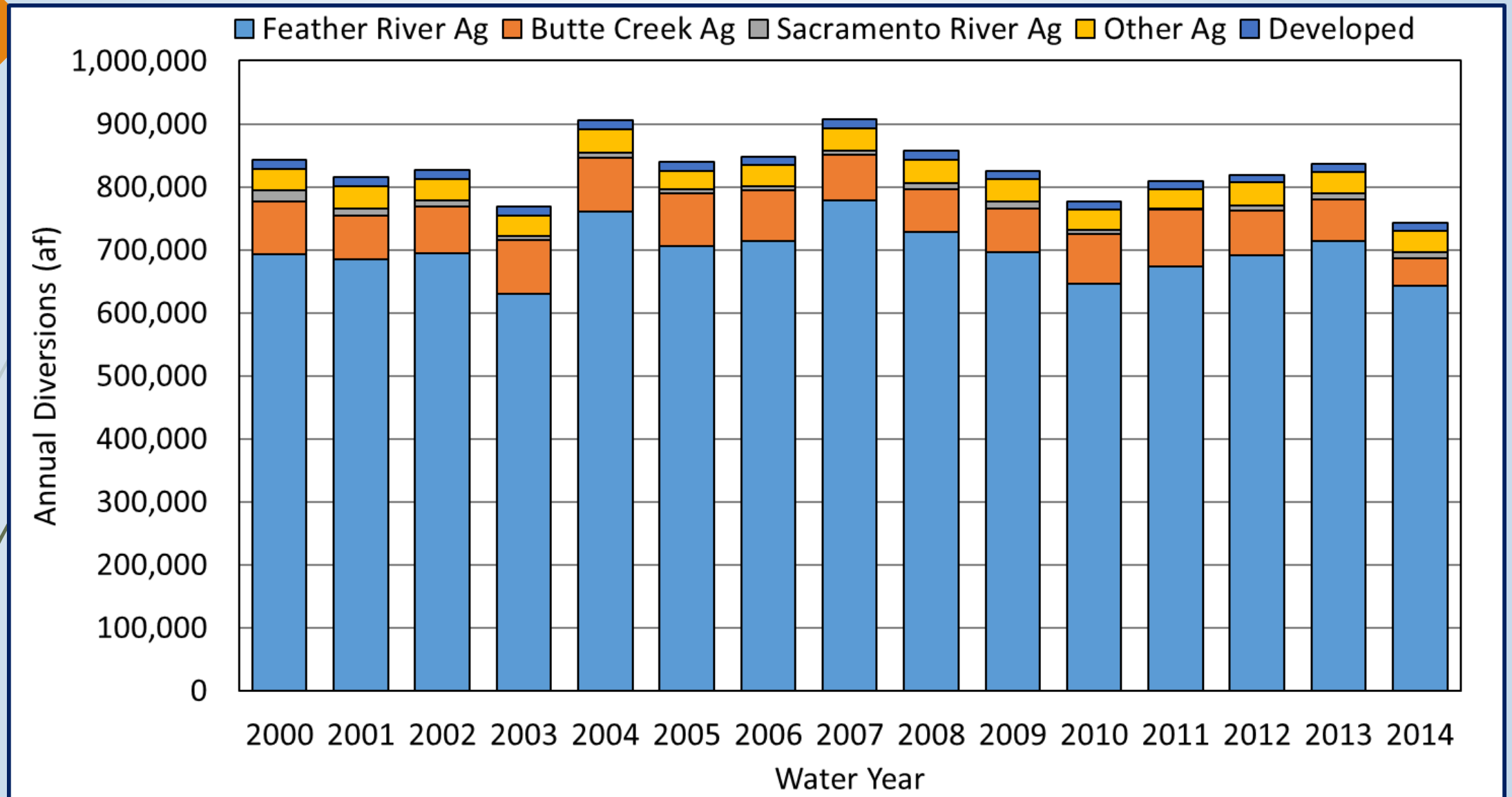
- Precipitation (914 TAF)
- Applied Surface Water (715 TAF)
- Groundwater Pumping (411 TAF)

= 2.04 MAF



Relatively Stable Surface Water Diversions

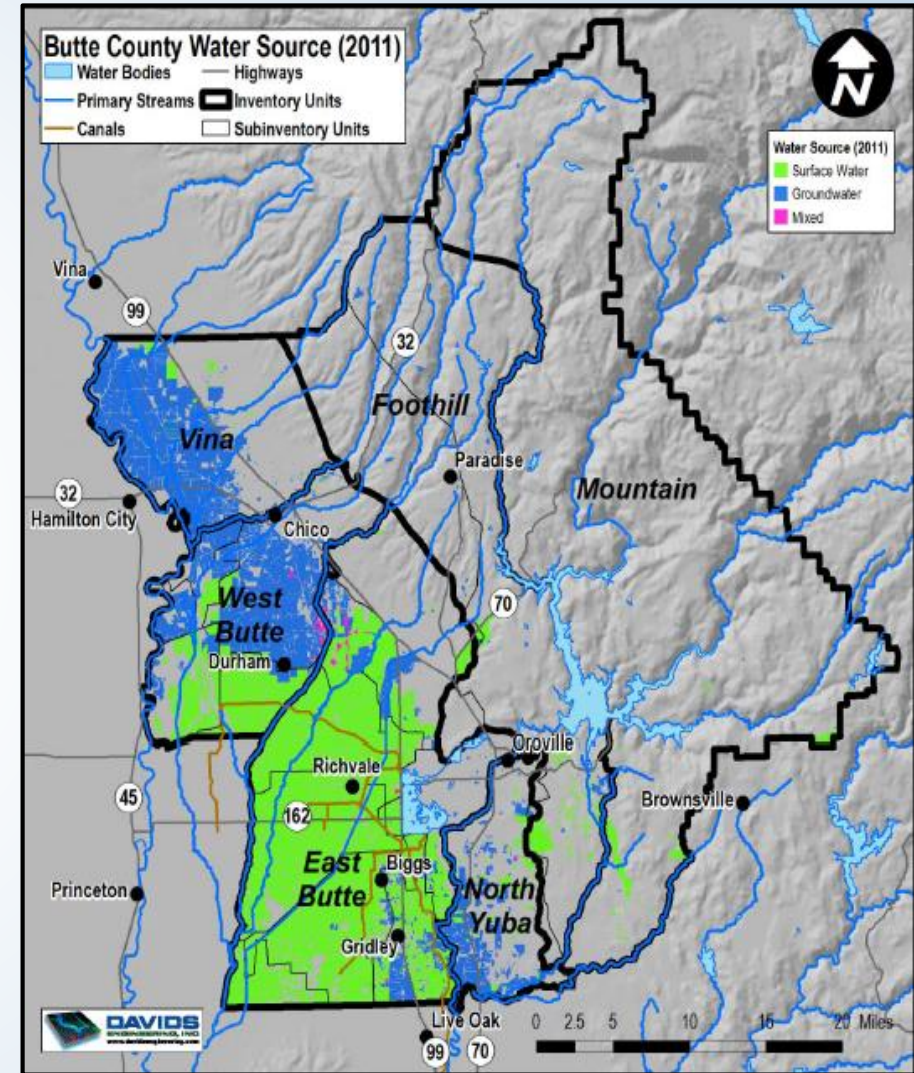
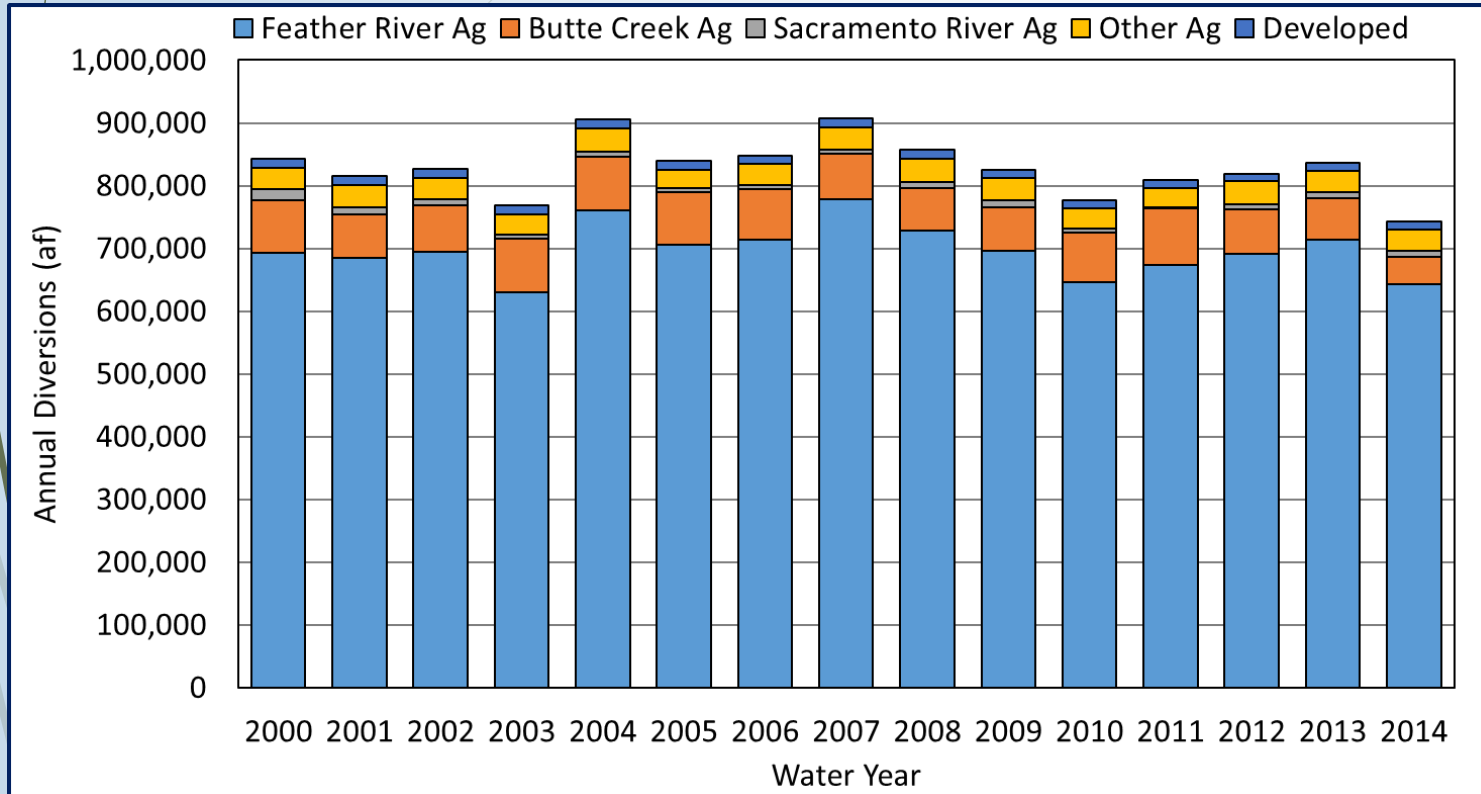
9



Relatively steady surface water supplies due to senior water rights and settlement contracts, despite year-to-year differences in precipitation

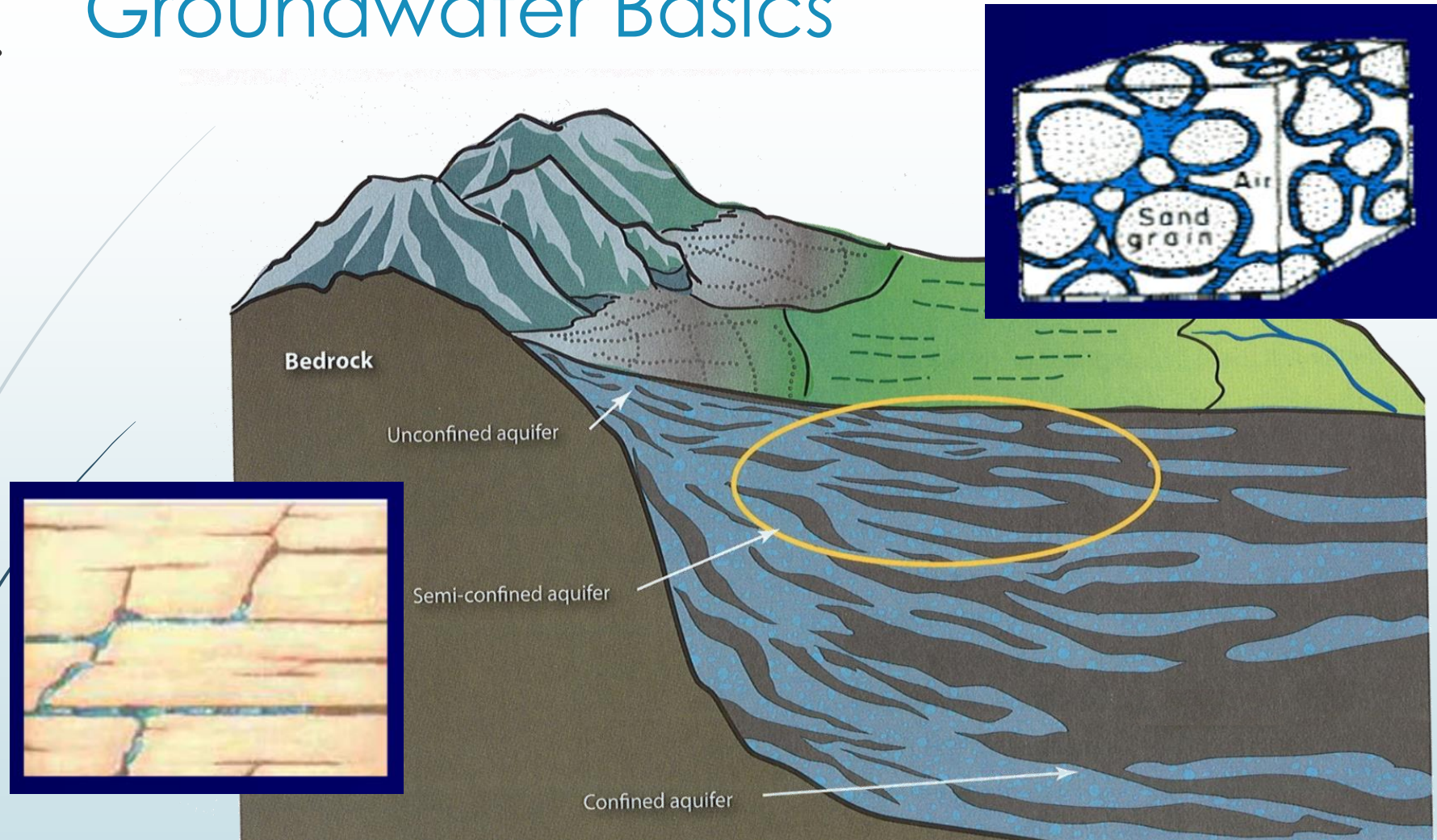
Relatively Stable Surface Water Diversions

10



Relatively steady surface water supplies due to senior water rights and settlement contracts, despite year-to-year differences in precipitation

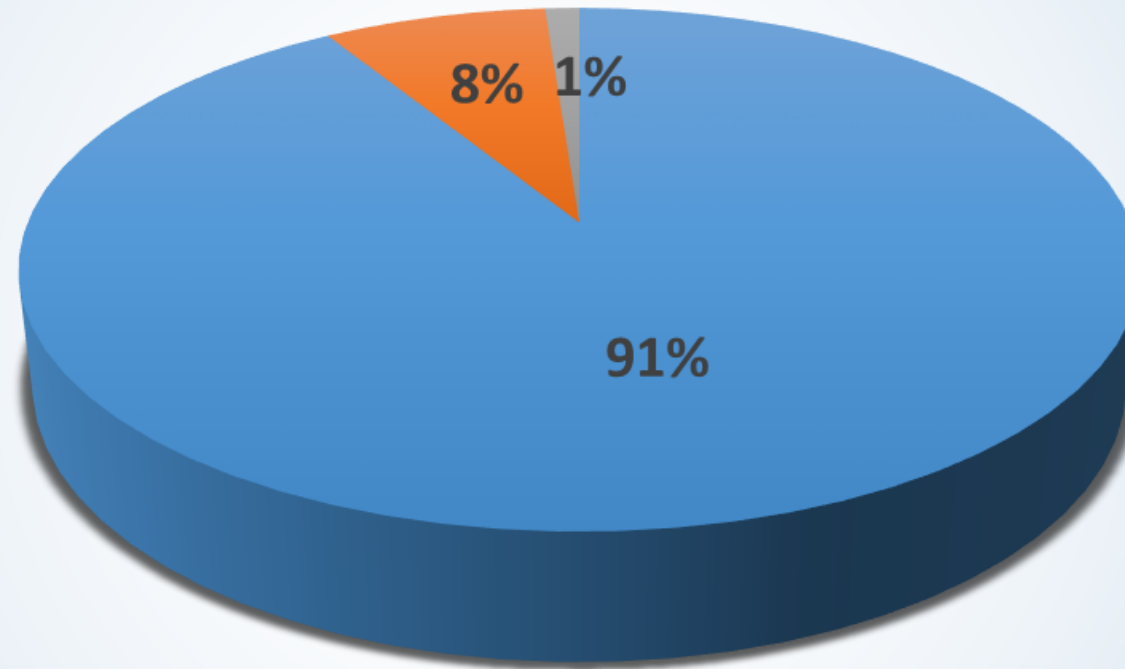
Groundwater Basics



Harter and Rollins 2008: ANR Publication 3497

Aquifer dynamics- How groundwater moves in, out, and through the system

Pumping by Water Demand Type: Valley Floor

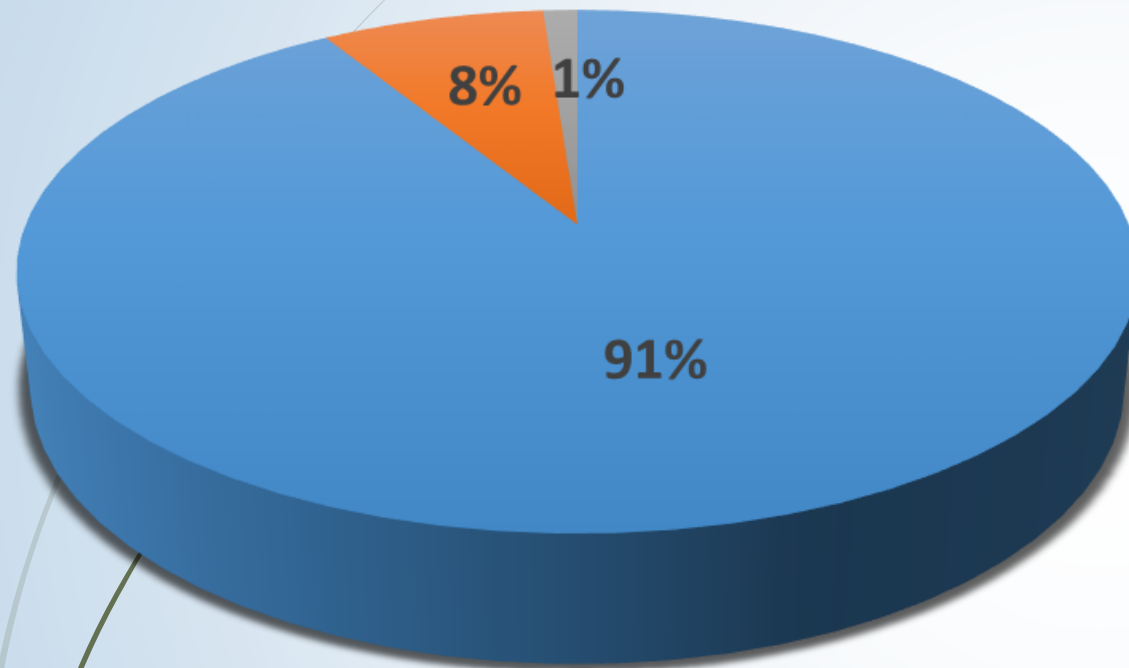


■ Irrigated Agriculture and Wetlands

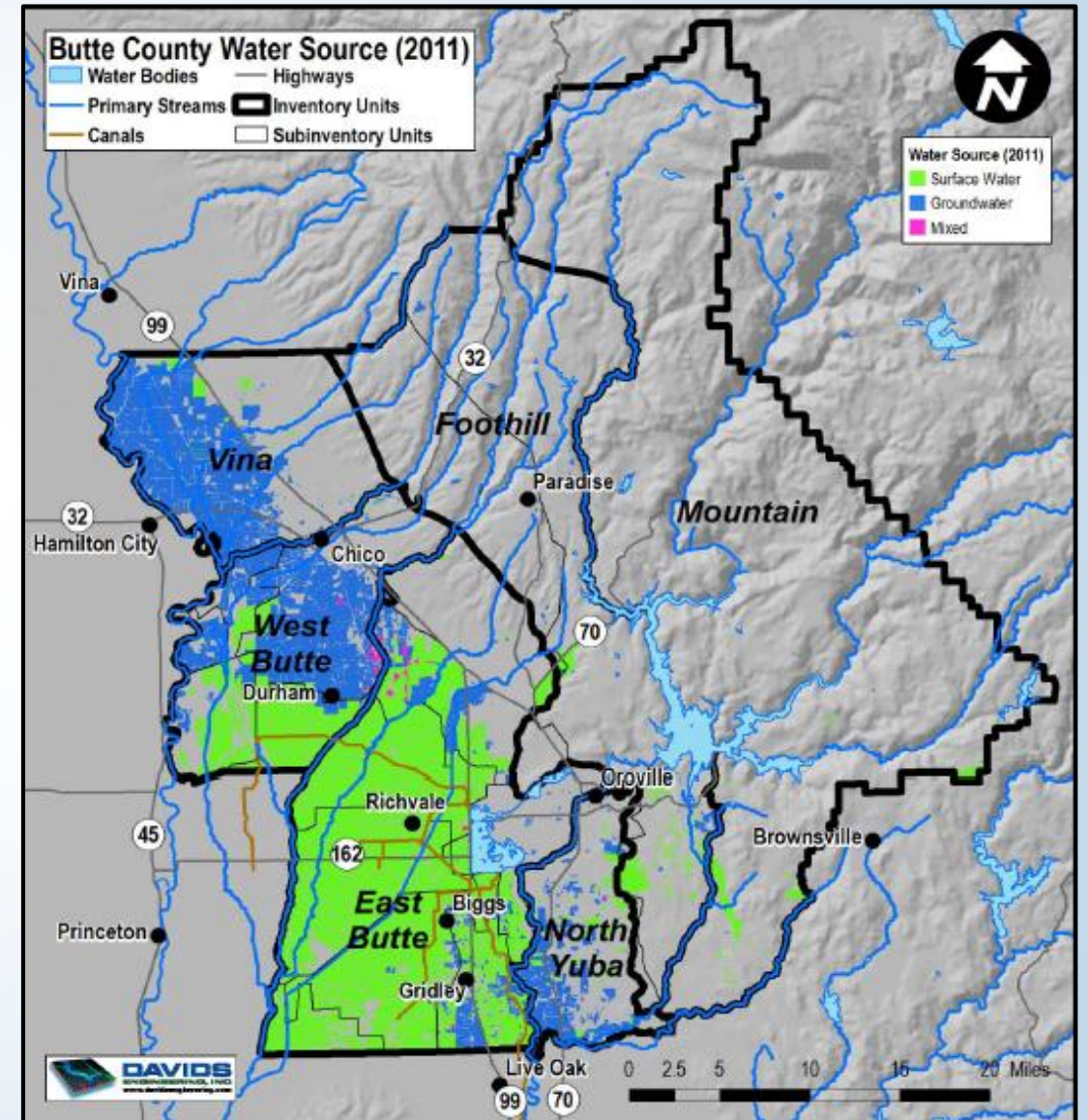
■ M&I

■ Rural Residential

Pumping by Water Demand Type: Valley Floor

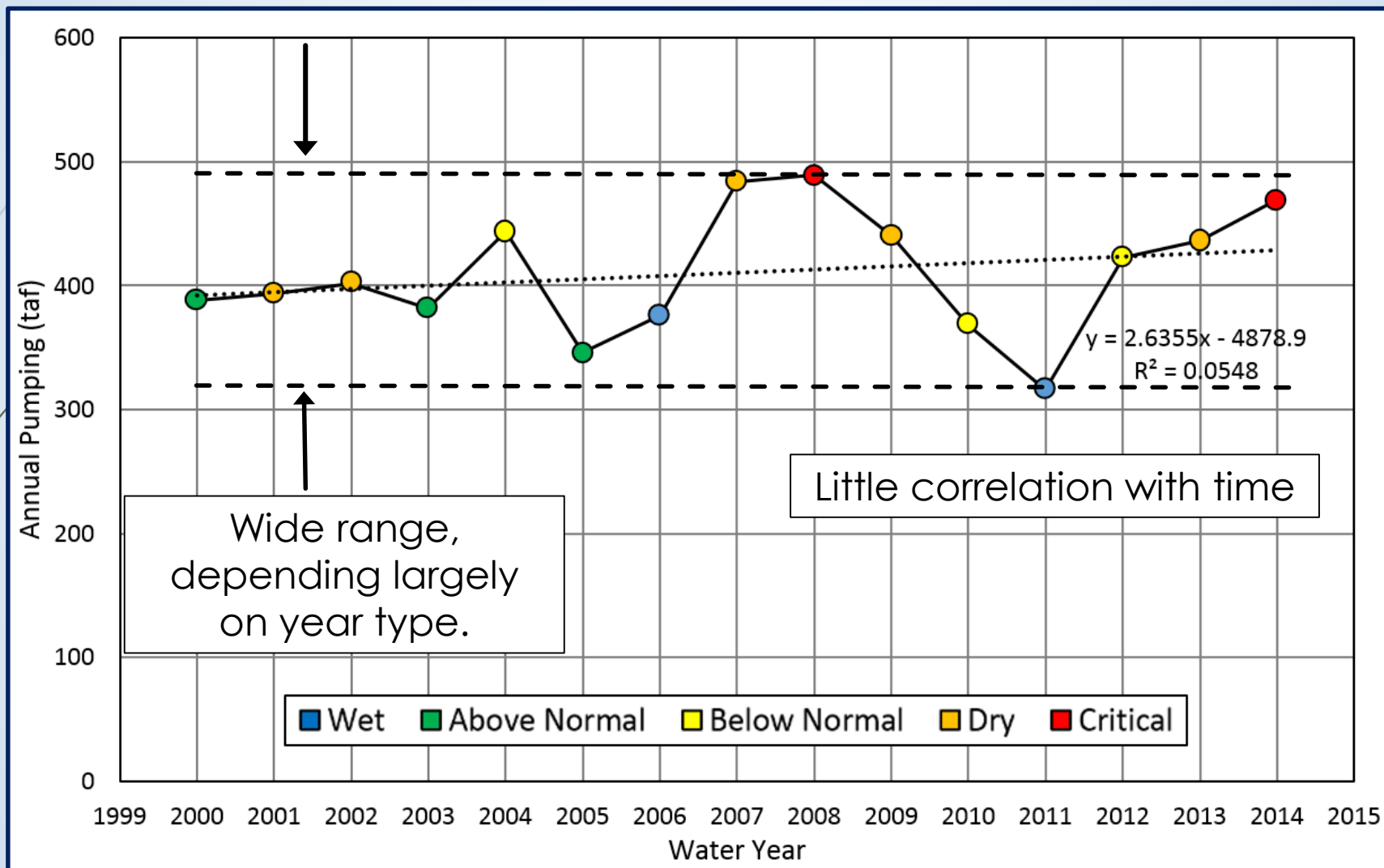


- Irrigated Agriculture and Wetlands
- M&I
- Rural Residential



Groundwater Pumping Varies by Water Year

14



Variability in precipitation is a driver of year-to-year differences in groundwater pumping

Groundwater Level Change in Butte County

- ▶ **Monitoring Program**
- ▶ **Contour Elevation Change Maps**

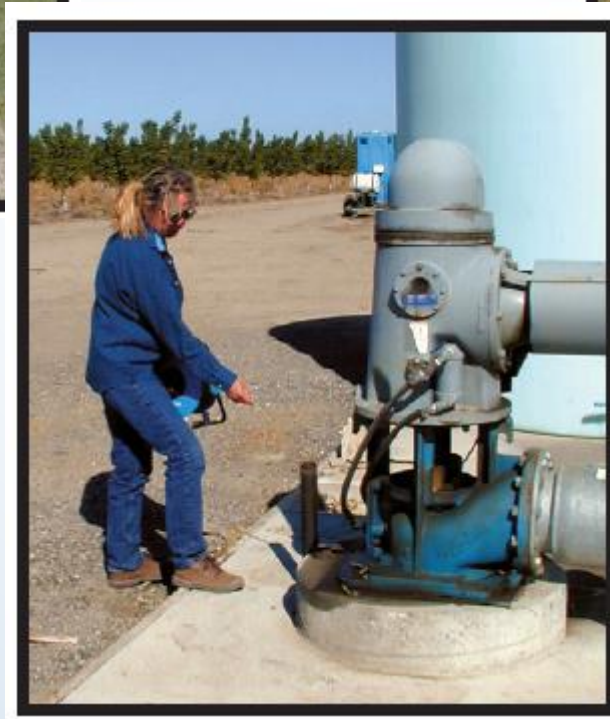
Groundwater Level Change in Butte County Monitoring Program

16



Domestic
well ↑

Irrigation
well →

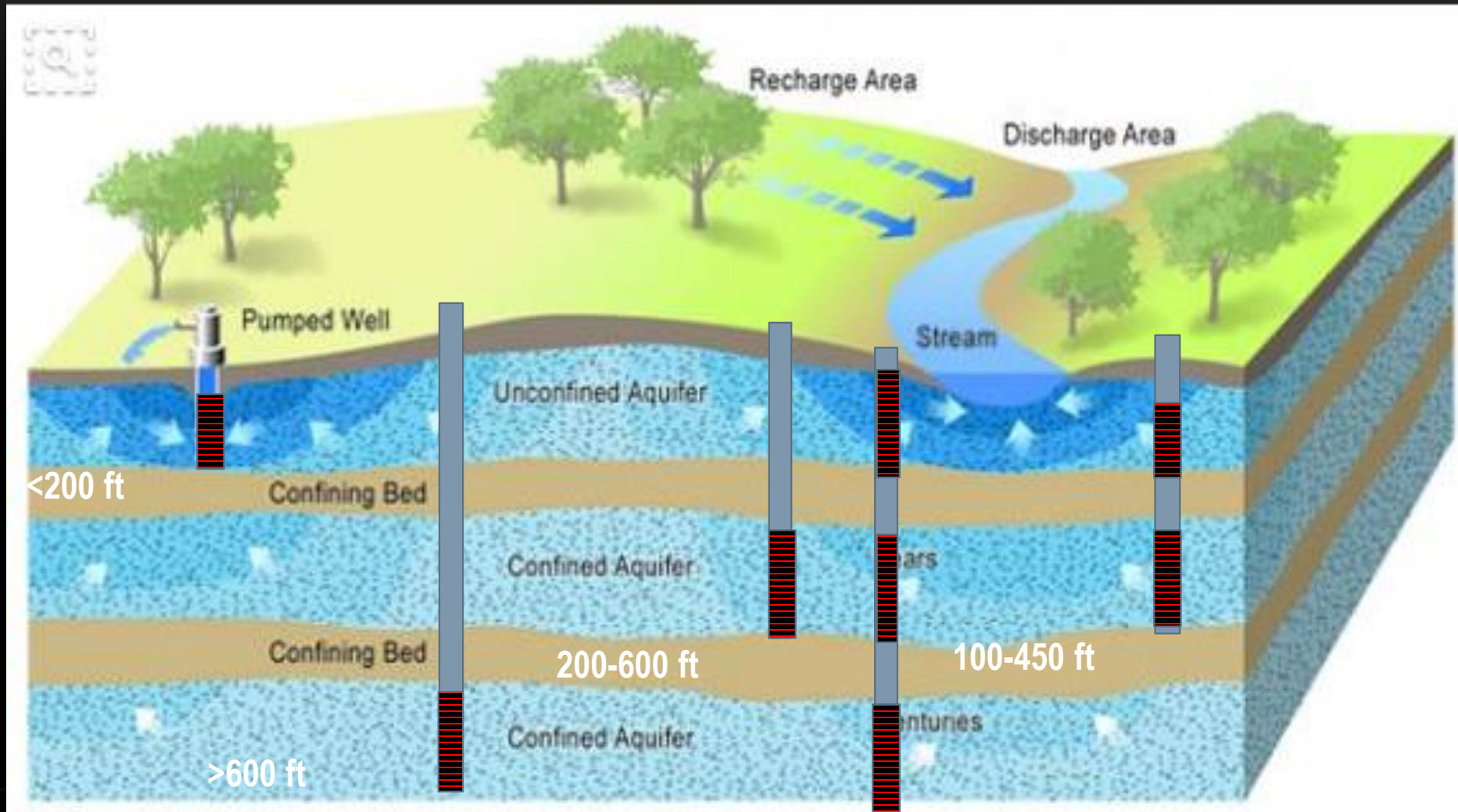


↑
Multi-completion
well

MULTI-COMPLETION OBSERVATION WELLS



Well Depth Example



Sacramento Valley Groundwater Monitoring and Groundwater Elevation Maps

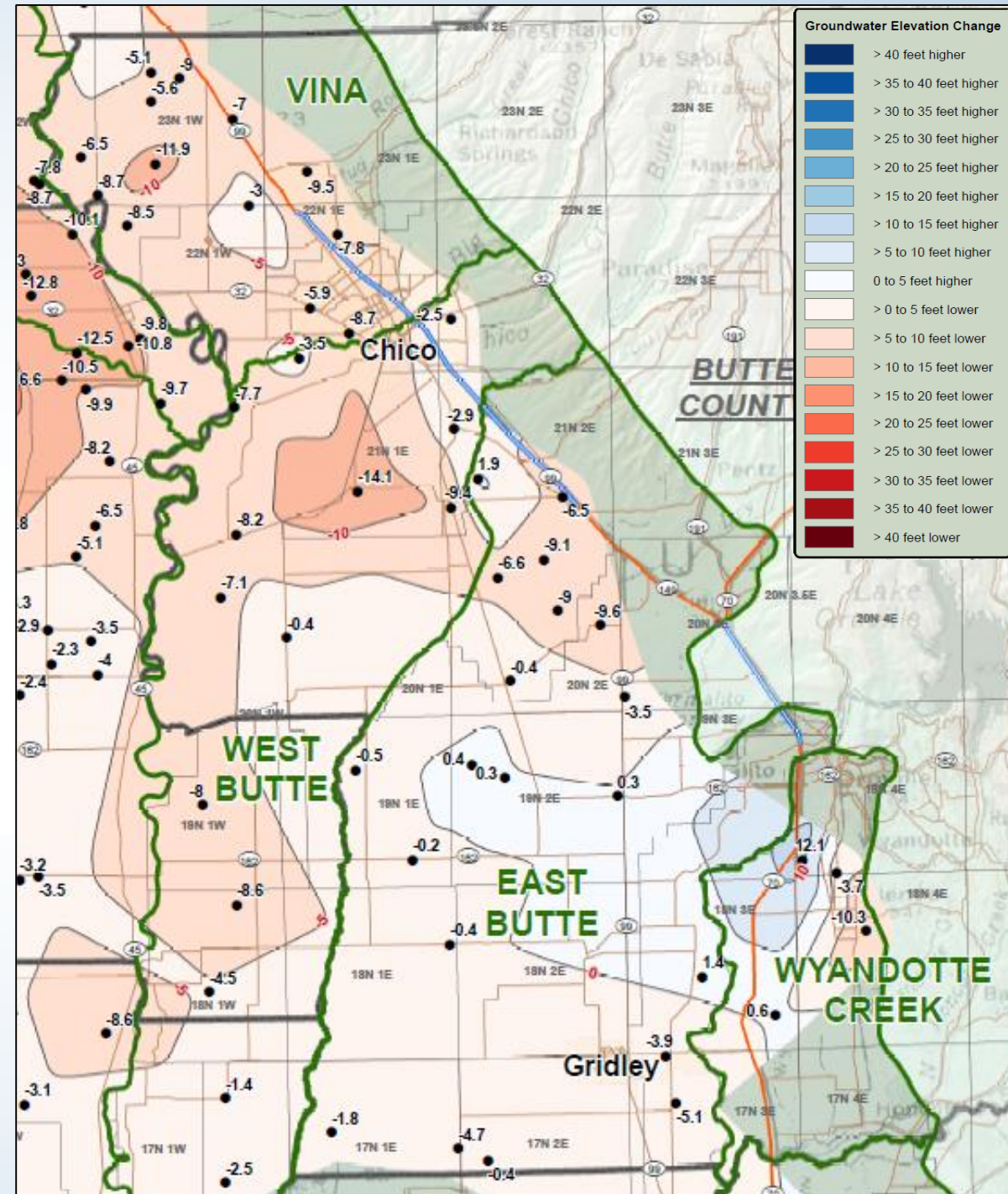
- ▶ **DWR / Butte County staff measure groundwater levels** in about 130 wells in Butte County, 4x/yr. minimum (spring, summer and fall)
- ▶ **Groundwater elevation change maps (DWR)** - compare the difference in groundwater level from one time period to another
- ▶ **Groundwater level data are then grouped for analysis by well depth:**
 - Average: 100 to 450 ft-bgs (feet below ground surface)
 - Shallow: less than 200 ft-bgs
 - Intermediate: 200 to 600 ft-bgs
 - Deep: greater than 600 ft-bgs

Groundwater Elevation Change Map Spring 2011 – 2018

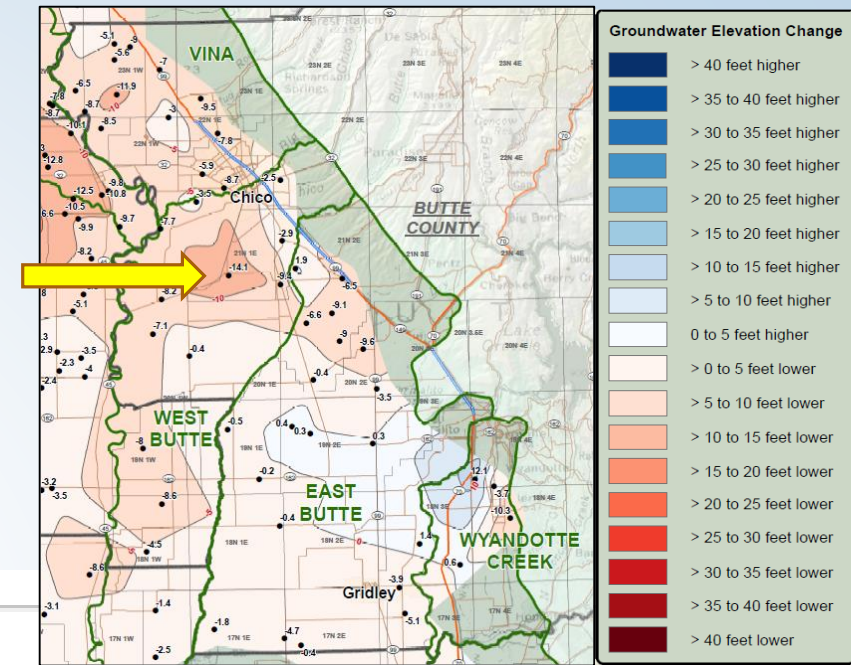
Wells 100' - 450' deep

Northern Sacramento Basin Groundwater Subbasins

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
East Butte	1.9	-9.6	-2.9	20
Vina	NA	-11.9	-5.9	28
West Butte	NA	-14.1	-5.8	14
Wyandotte Creek	12.1	-10.3	-0.3	4



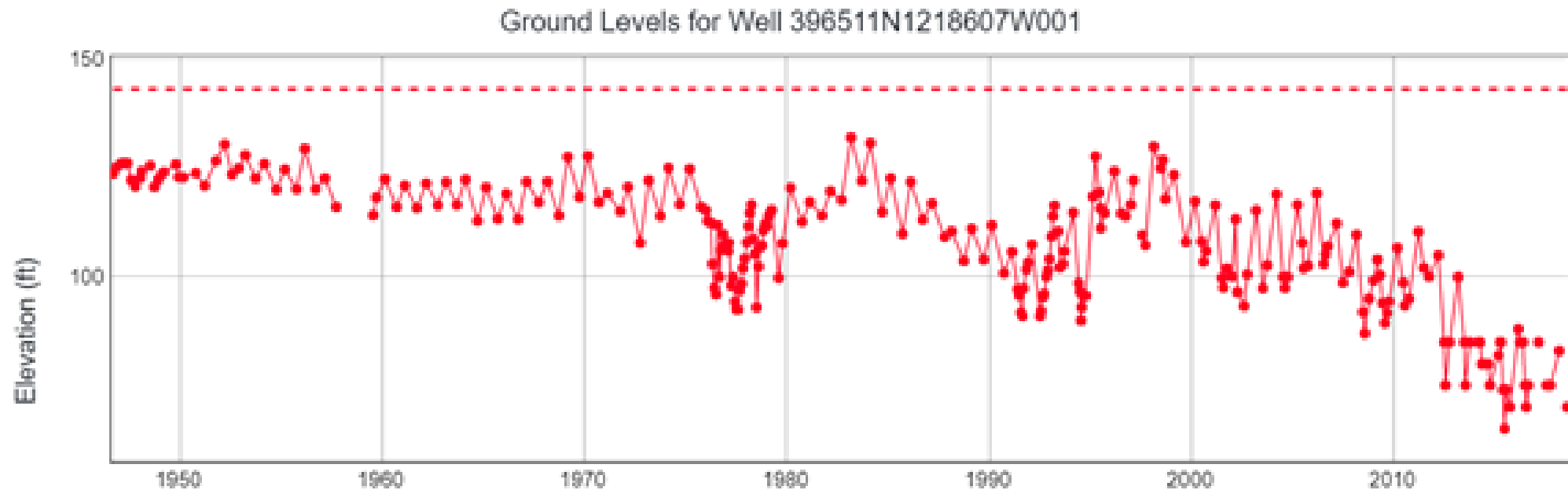
West Butte Well near Dayton 4 corners 112' deep – residential SWN: 21N01E27D001M



Date: (hover to see values)

GSE or Ground Surface Elevation

WSE 396511N1218607W001 : 112

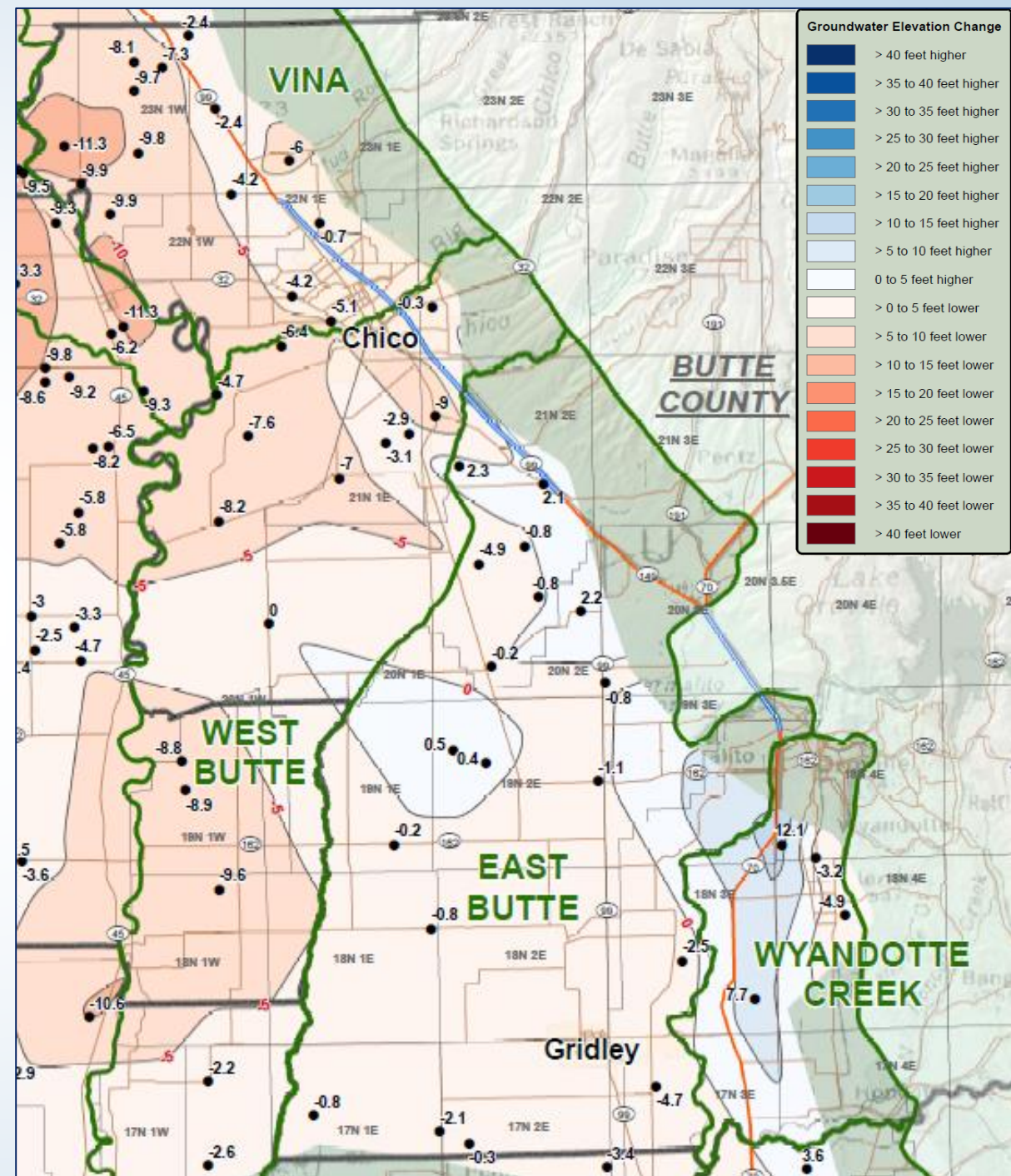


Groundwater Elevation Change Map Spring 2017 – 2018

Wells 100' - 450' deep

Northern Sacramento Basin Groundwater Subbasins

Subbasin Name	GWE Maximum Increase (ft)	GWE Maximum Decrease (ft)	GWE Average Change (ft)	Count
East Butte	2.3	-4.9	-0.8	19
Vina	NA	-11.3	-5.4	29
West Butte	NA	-9.6	-5.4	15
Wyandotte Creek	12.1	-4.9	2.9	4



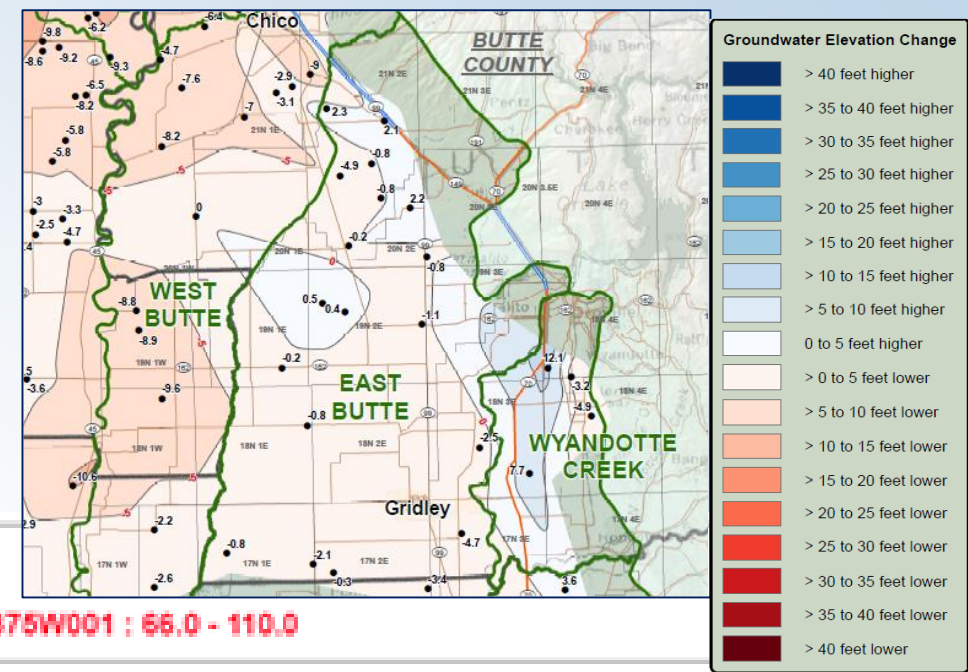
West Butte Well near Gray Lodge WA 110' deep – residential

State Well Number: 17N01E10A001M

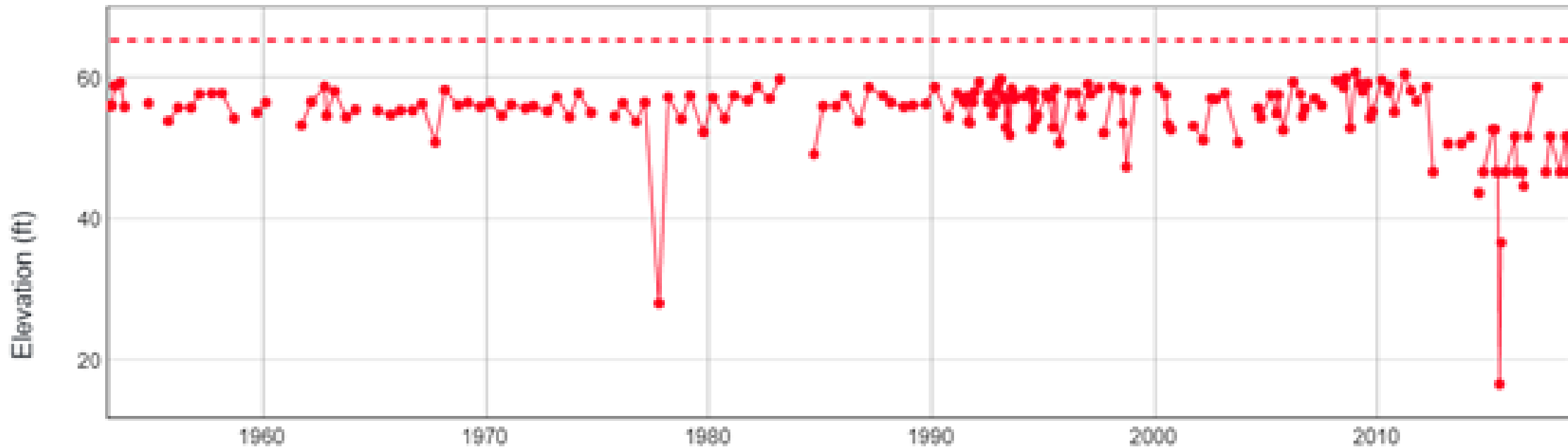
Date: (hover to see values)

-- GSE

— WSE 393457N1218375W001 : 66.0 - 110.0



Ground Levels for Well 393457N1218375W001



Sustainable Groundwater Management Act (SGMA)

Overarching Concepts of SGMA

SGMA Overview

Local Control



“A central feature of these bills is the recognition that groundwater management in California is best accomplished locally.”

Governor Jerry Brown, September 2014

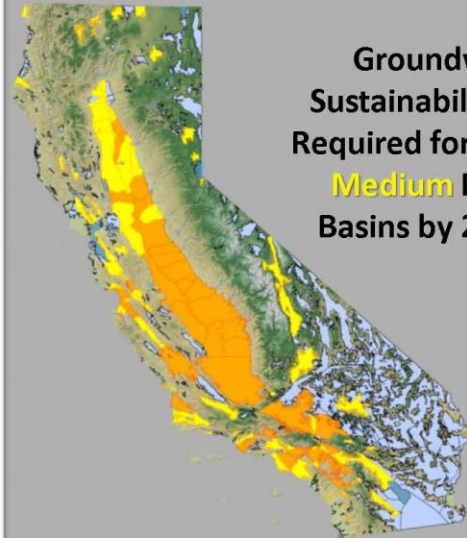


Sustainability

Avoid Six Undesirable Results



Lowering GW Levels Reduction of Storage Seawater Intrusion Degraded Quality Land Subsidence Surface Water Depletion



Groundwater Sustainability Plans Required for **High** and **Medium** Priority Basins by 2020/22

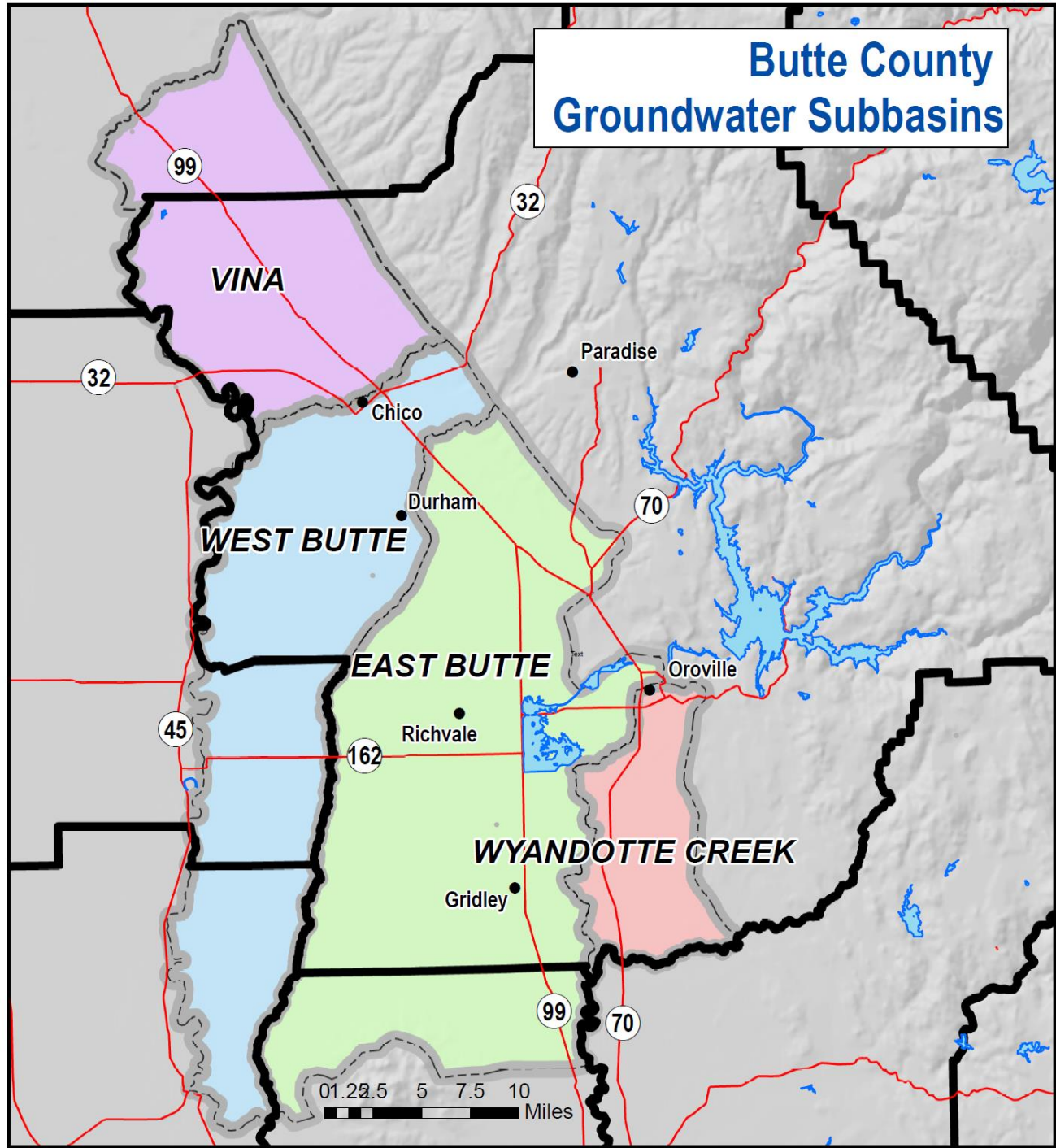
Local Management

- Groundwater Sustainability Agencies

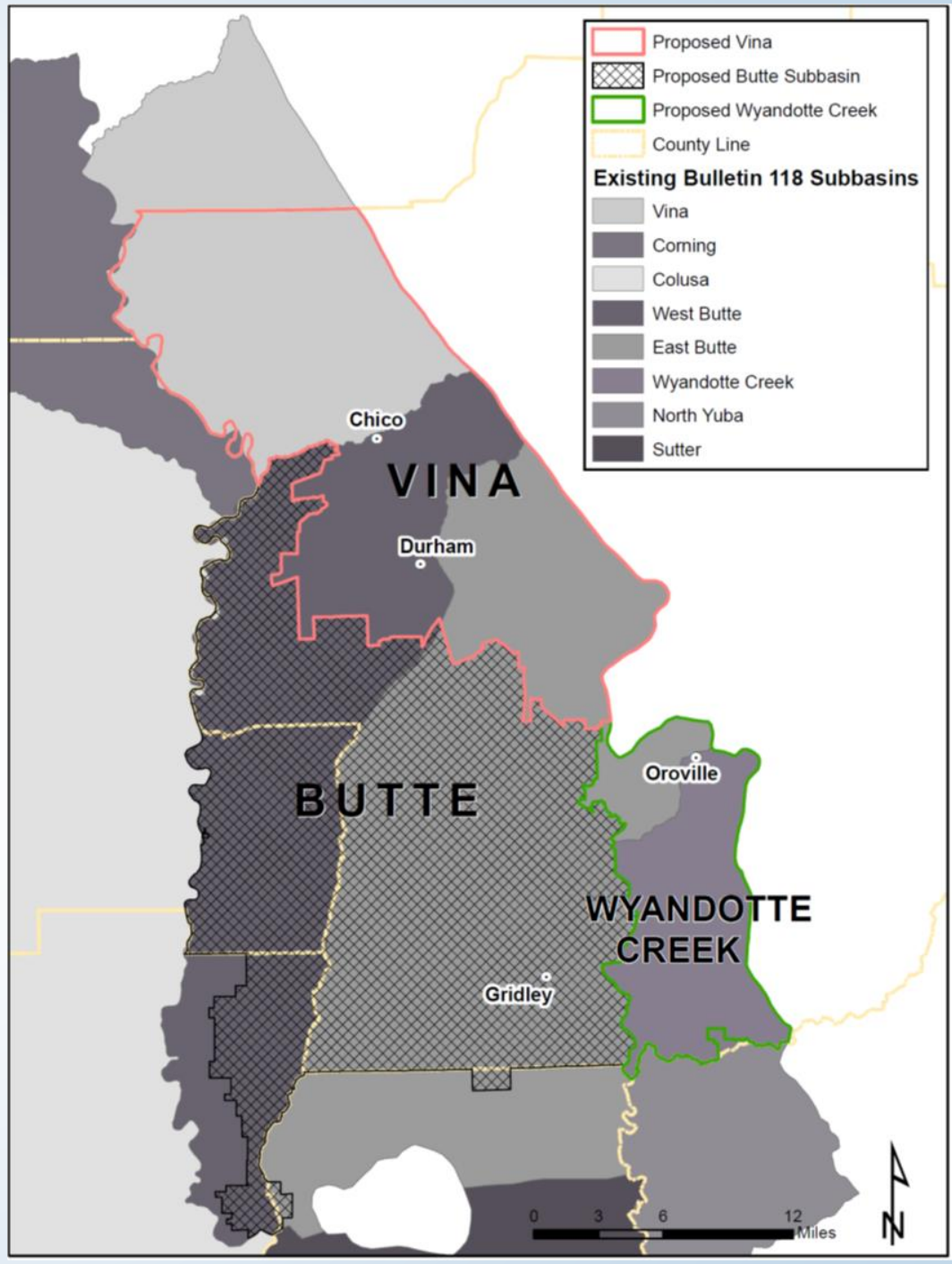
Groundwater Sustainability Plans (2022)

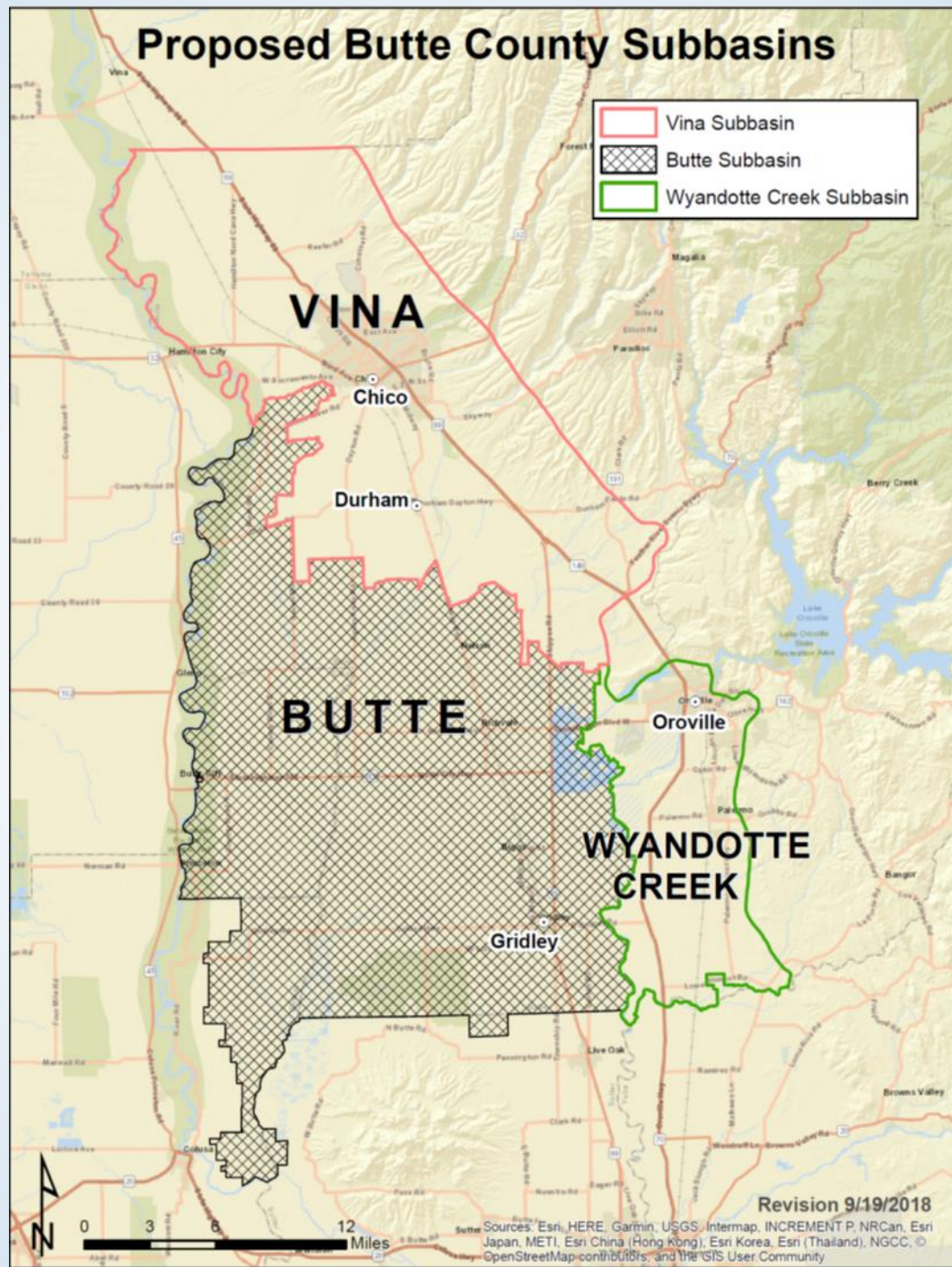
- Technical Data
- “Sustainability Goals”
- Achieve Sustainability in 20 years

Butte County Groundwater Subbasins



	Proposed Vina
	Proposed Butte Subbasin
	Proposed Wyandotte Creek
	County Line
Existing Bulletin 118 Subbasins	
	Vina
	Coming
	Colusa
	West Butte
	East Butte
	Wyandotte Creek
	North Yuba
	Sutter





Governance

- ▶ **Wyandotte Creek Subbasin (3 GSAs)**
 - ▶ JPA Approved, Member agency appointments underway, Mngt. Committee has scheduled 1st meeting (1 GSP)

- ▶ **Vina Subbasin (4 GSAs)**
 - ▶ Discussions Underway JPA (3) + 1 independent GSA (1 or 2 GSPs)

- ▶ **Butte Subbasin - (11 GSAs)**
 - ▶ Discussions Underway - JPA TBD (1 GSP)

GSP Development

- **Consultant Team**
- **Local Expert Groups**
- **Modeling Refinement / Updates by Summer 2019**
- **Basin Setting and Mon. Network tasks by Summer 2020**
- **Then..onto Monitoring Thresholds, Sustainable Criteria etc.**
- **Fall 2021 GSP Complete for Jan. 30, 2022 submittal deadline**

30

Thank you!

➔ Discussion & Questions?



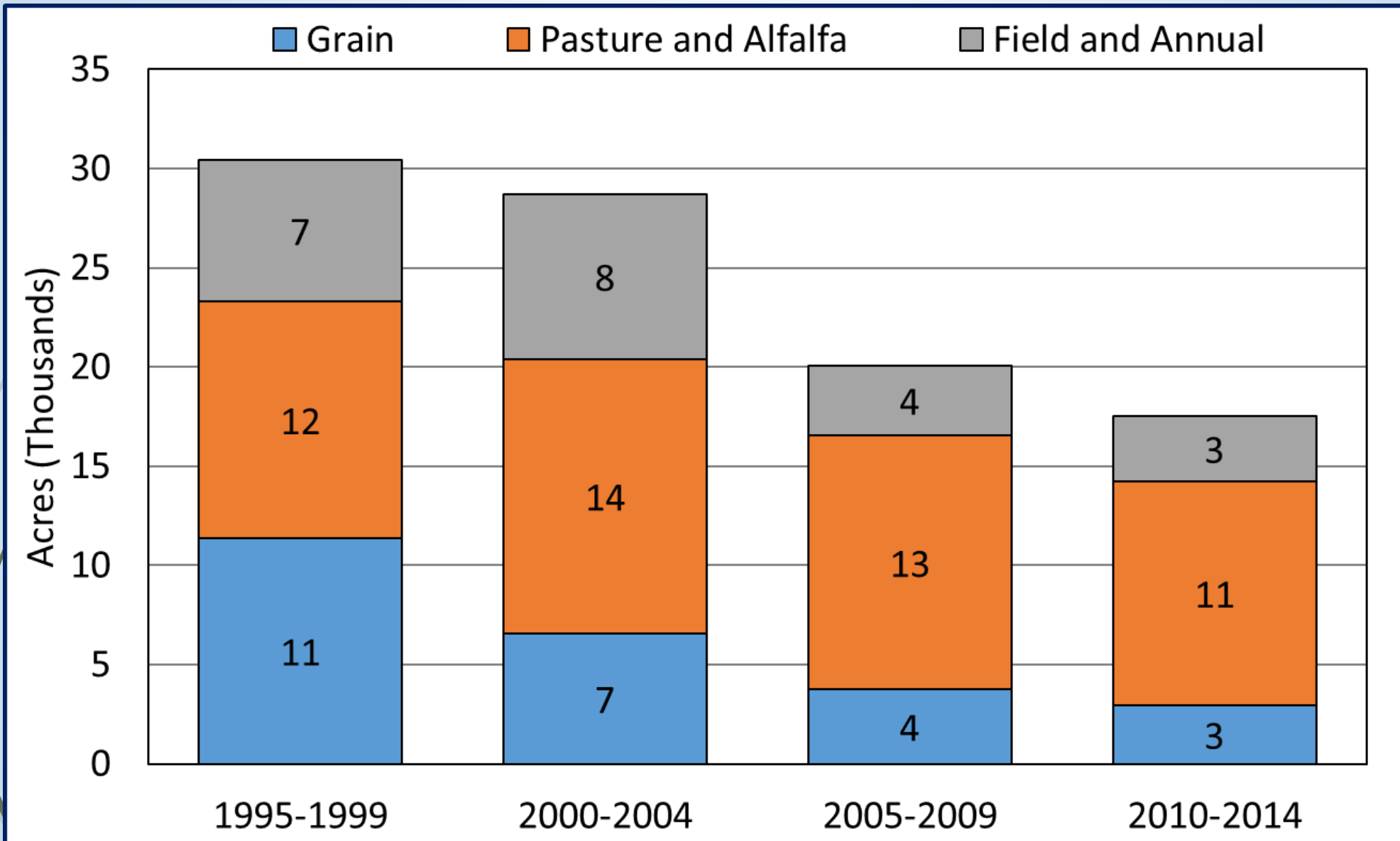
31

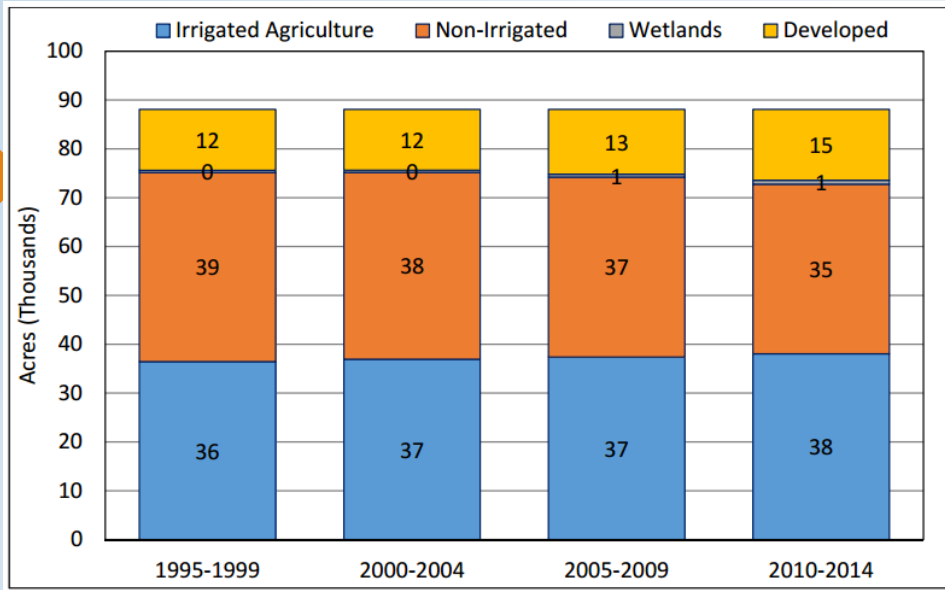
Extra slides



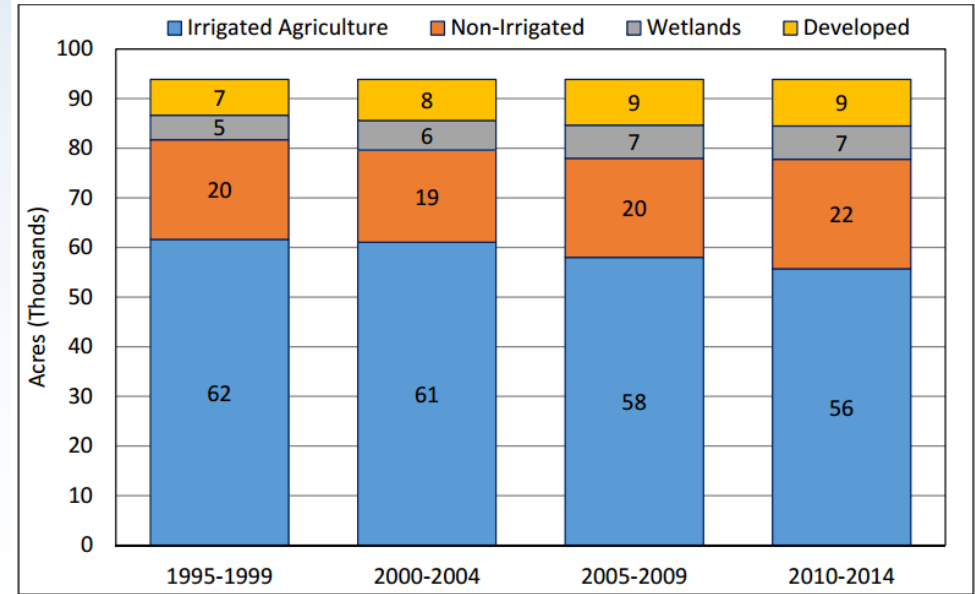
Orchards Replacing 'Other Crop' Acreage

32

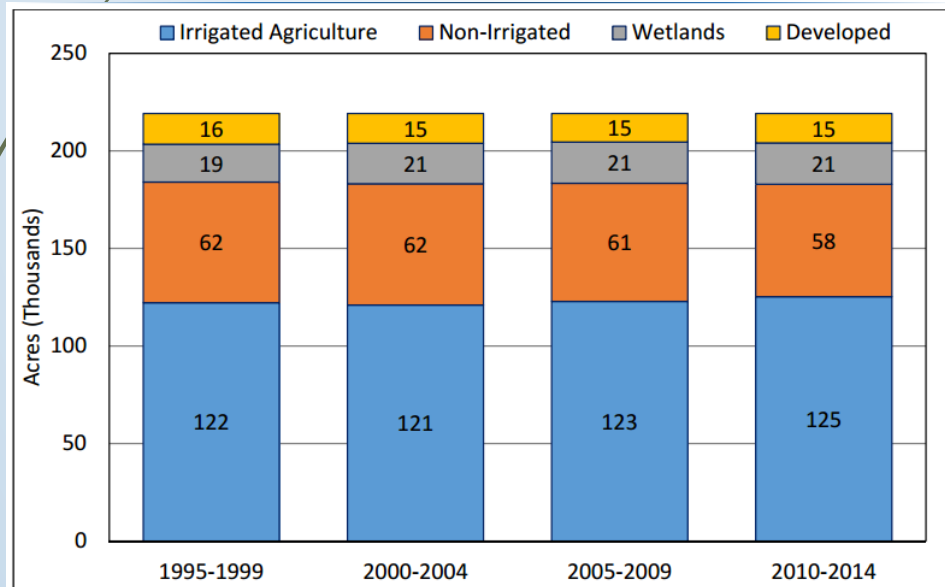




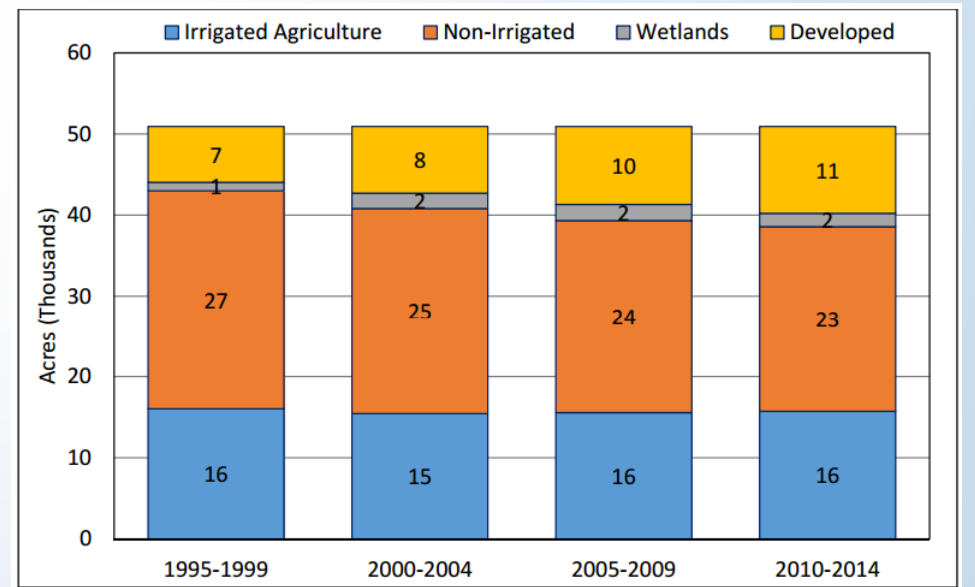
VINA



WEST BUTTE



EAST BUTTE



NORTH YUBA / Wyandotte Creek