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ECONOMIC IMPACTS OF WATER SCARCITY IN THE SAN JOAQUIN VALLEY

WATER AND AGRICULTURE

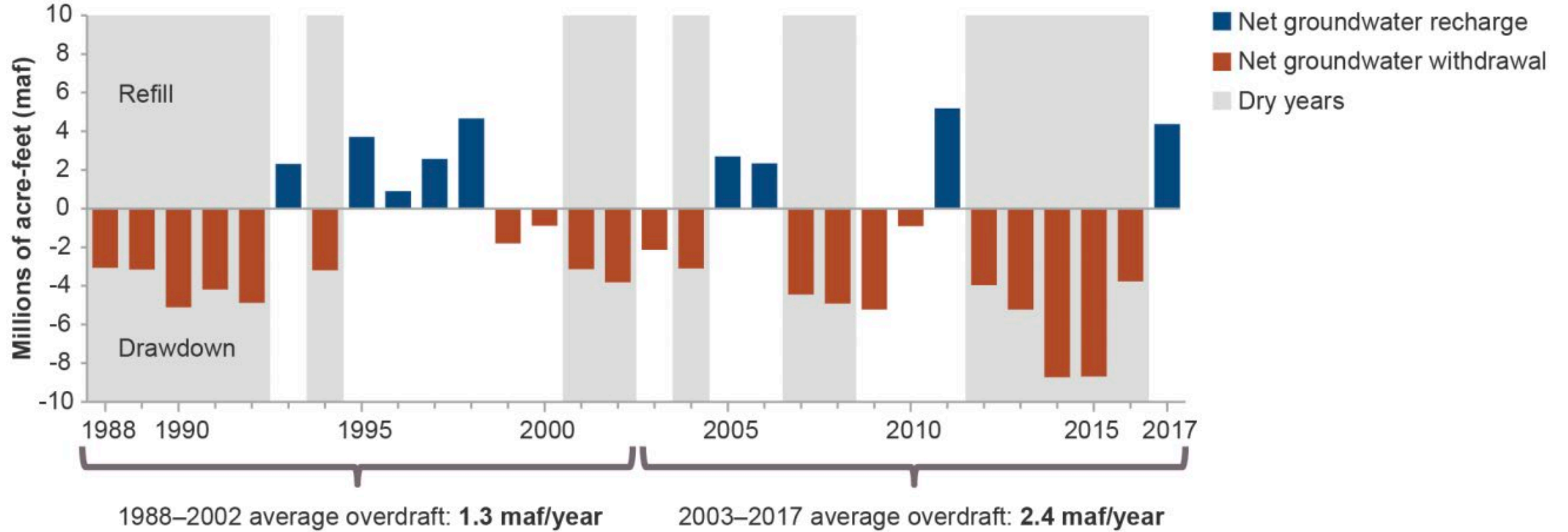
- **Agriculture is a major part of the San Joaquin Valley economy**
 - **4.4 million acres in production**
 - **\$20.4 billion in crop sales**
 - **Direct employment of 165,000 workers**
- **Irrigation drives these economic results**
- **Three main sources of farm water supply in the Valley:**
 - **Water imported from the Delta**
 - **Local surface water supplies (Kern River, etc.)**
 - **Groundwater**
- **All sources of water are expected to decline in the coming decades**

GROUNDWATER REGULATION

- **California has moved to begin regulating groundwater use**
- **Sustainable Groundwater Management Act**
 - **Passed in September 2014**
 - **Requires agencies managing groundwater basins to halt overdraft and bring basins into hydrologic balance by 2040**
 - **In January 2020, groundwater agencies submitted initial plans to the State**
- **Most groundwater basins in the San Joaquin Valley are classified as critically overdrafted**

FIGURE 1.4

Groundwater overdraft in the San Joaquin Valley has accelerated in recent years

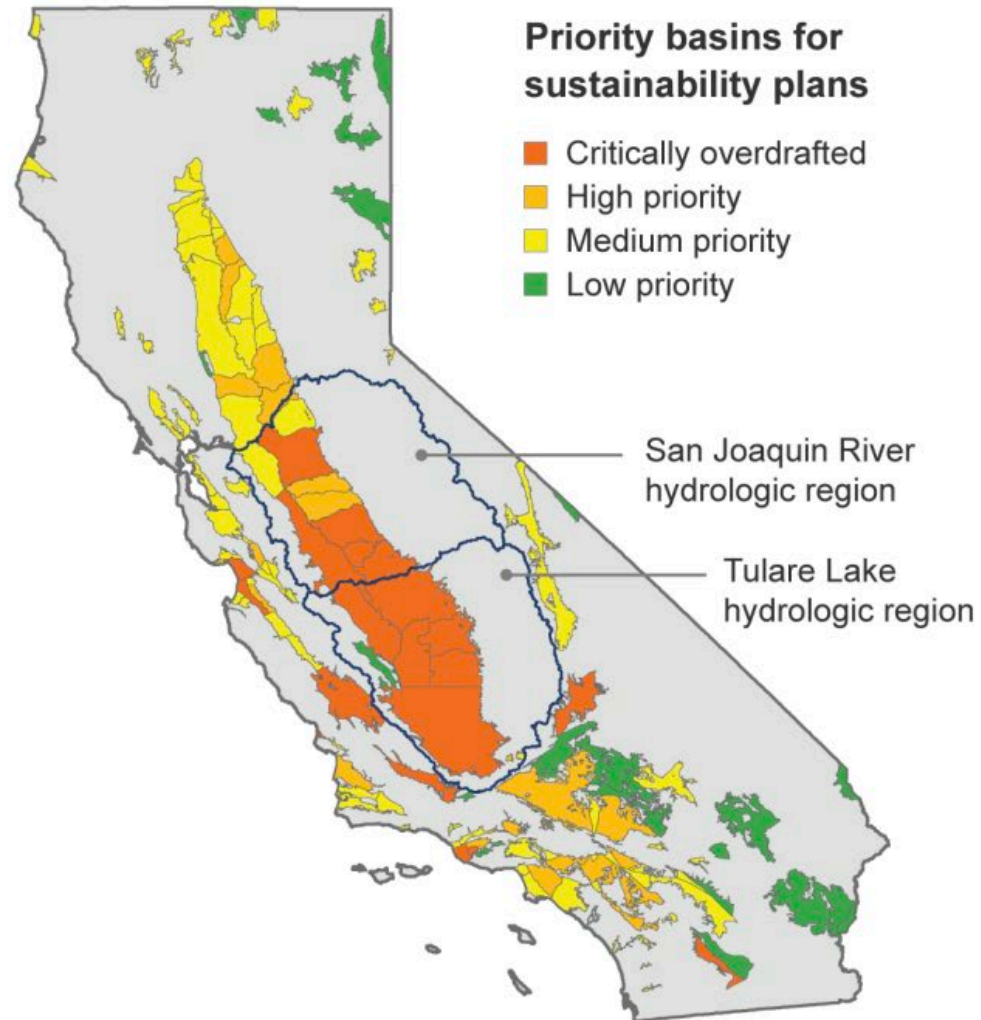


SOURCE: Author estimates using data from several sources (for details, see [Technical Appendix A](#)).

NOTE: "Dry years" are those classified as dry or critically dry for the San Joaquin Valley.

FIGURE 1.3

Most of the San Joaquin Valley's groundwater basins are critically overdrafted



SOURCE: California Department of Water Resources.

NOTES: Due to a basin prioritization update, some changes to basin boundaries and priority levels are likely to occur in spring 2019. One relatively saline basin on the San Joaquin Valley's west side was ranked as low priority in DWR's initial classification, and not required to prepare a sustainability plan.

REDUCED SURFACE WATER DELIVERIES

- **There are several efforts that will reduce the amount of surface water available to Valley farmers**
 - **San Joaquin River Restoration Plan**
 - **Changes to the operations of the State Water Project and Central Valley Project**
 - **Sea level rise**
 - **State's Bay Delta Plan**
- **These assumptions are all consistent with the Governor's Water Resilience Portfolio released last month**

CHANGE IN WATER AVAILABLE TO VALLEY FARMERS

- **Total farm water use is 17 million acre-feet at present**
- **SGMA will reduce groundwater pumping by 2.4 maf on average**
- **Surface water supplies will go down by 838,000 acre-feet on average**
- **Total water use by Valley farmers will need to go down by roughly 22%**

- **What will this reduced water availability mean for Valley farmers, and for the Valley's economy?**
- **Are there ways to reduce these impacts?**

“WHITE” AREAS

- **There are many farms in the Valley that rely completely on groundwater**
- **These are the so-called “white areas”**
- **Much debate about the amount and location of white areas**

- **As part of our effort to measure economic impacts of SGMA, we worked with growers to identify white areas**
- **Our estimate: 820,000 acres**
- **Somewhat less than previous estimates**
- **These white areas will be the most impacted by SGMA**

FALLOWING

- **We modeled how farmers in the San Joaquin Valley will respond to reduced ground and surface water availability**
- **Recall: 2.4 maf reduced groundwater use and 838,000 af reduction in surface water use in an average year**
- **22% reduction in total water use**

- **We predict there will be roughly one million acres fallowed as a result of these reductions in water available to Valley farmers**
- **Recall: 4.4 million acres are farmed at present**
- **More than 1 acre in 5 will come out of production in the San Joaquin Valley by 2040**

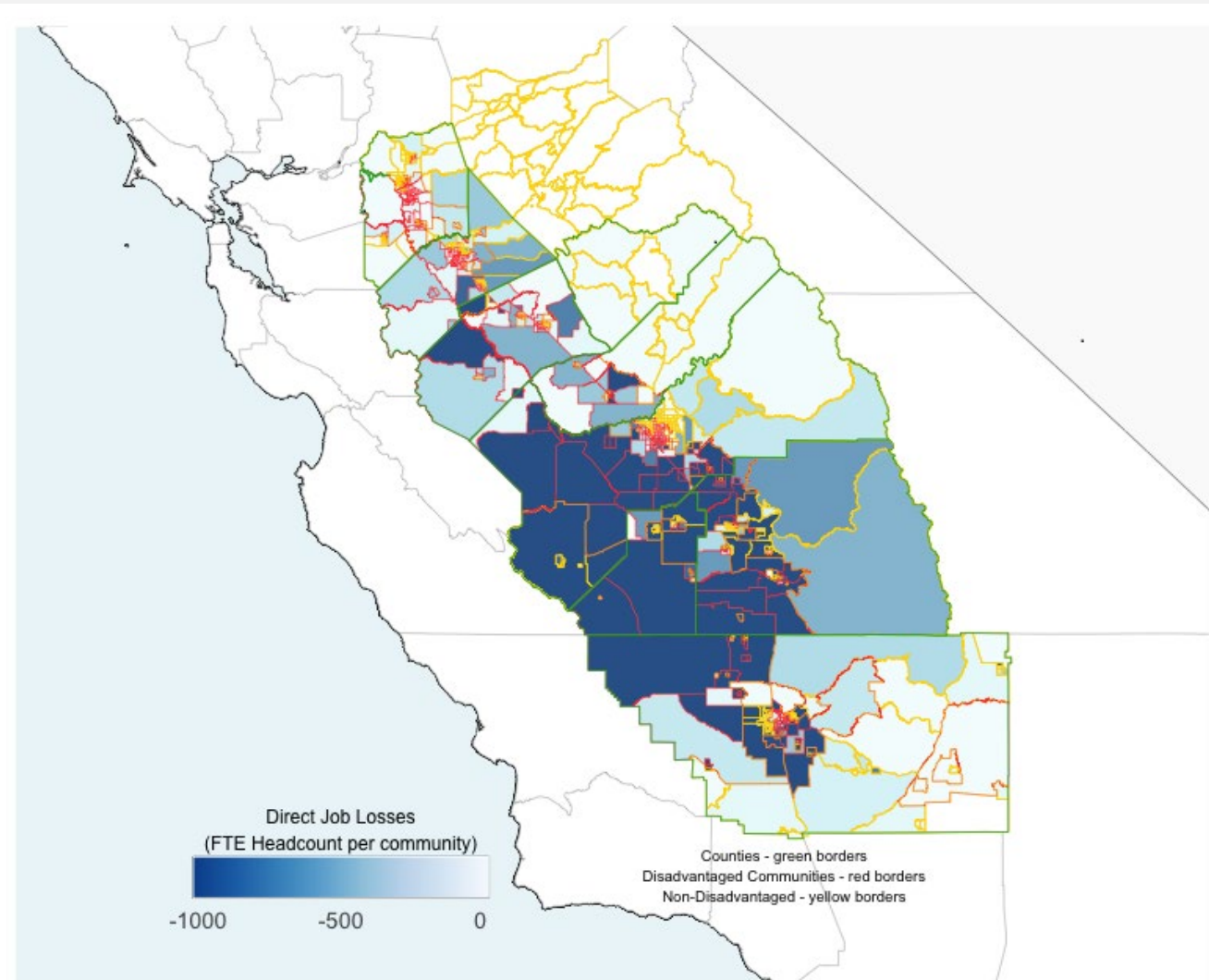
IMPACTS TO FARMS AND OTHER STATE BUSINESSES

- **Fallowed acres: 992,000 in an average year**
- **Crop revenue lost: \$7.2 billion**
- **Lost operating income in Valley agriculture: \$1.9 billion**
- **Total statewide impacts to business owners**
 - **\$3.3 billion in lost operating income**
- **Lost state and local tax revenues: \$580 million annually**
- **Lost federal tax revenues: \$780 million annually**

LABOR MARKET IMPACTS

- **Farm job impacts**
 - **42,000 lost farm jobs across the San Joaquin Valley**
 - **\$1.1 billion in lost employee income annually**
- **Total job losses**
 - **65,000 in the San Joaquin Valley**
 - **85,000 statewide**
 - **\$1.7 billion in lost employee income in the San Joaquin Valley**
 - **\$2.1 billion statewide**

LOCATION OF JOB LOSSES



IMPACTS ON DISADVANTAGED COMMUNITIES

- **Used the state's environmental justice screening tool to measure impacts on the poorest communities in the Valley**
- **Defined as communities where 75% of households are under the poverty line**
- **These communities are most impacted by reduced water availability**
- **Some of the Valley's poorest communities will lose more than a quarter of all their jobs**

MITIGATING IMPACTS

- **Several tools can be used together to mitigate economic impacts and improve environmental outcomes**
 - **Increased groundwater recharge**
 - **Land fallowing**
 - **What happens to abandoned farmland?**
 - **Renewable energy?**
 - **Expand wildlife refuges?**
 - **Urban development?**
 - **More trading of water among users to ensure water gets to its highest and best use**
 - **More surface water supplies from the Delta and elsewhere**
 - **Use of reclaimed water for agriculture**