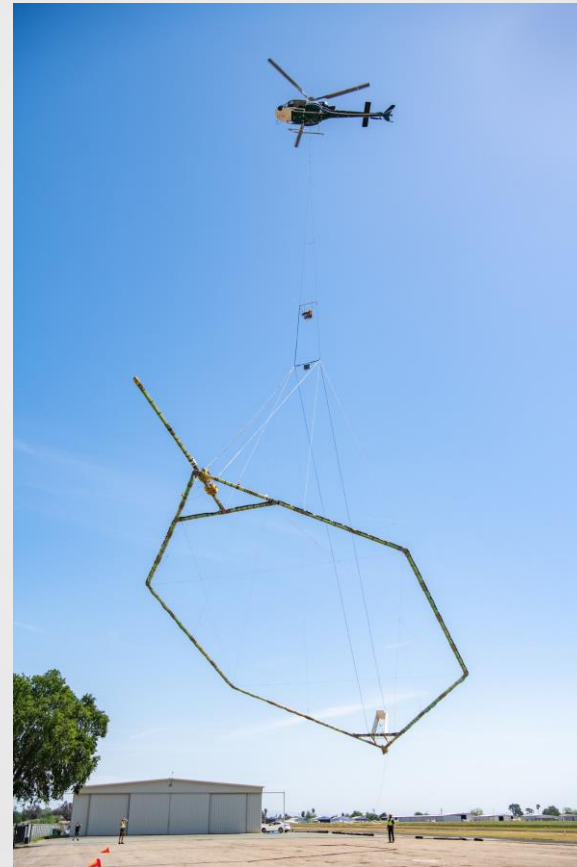


CALIFORNIA DEPARTMENT OF WATER RESOURCES

# Groundwater Awareness

## Week 2024



03/11/2024

# State of Groundwater Management

*Progress since signing of SGMA  
in 2014*



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MANAGEMENT OFFICE

# Day 1 **Speakers**

**Karla Nemeth, *DWR Director***

**E. Joaquin Esquivel, *Chair of SWRCB***

**Paul Gosselin, *DWR Deputy Director SWM***

**Steven Springhorn, *SGMO***

**Heather Shannon, *SGMO***



# OPENING REMARKS

*Karla Nemeth*

*Director of California Department of Water Resources*



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# OPENING REMARKS

*E. Joaquin Esquivel*

*Chair of State Water Resources Control Board*



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# SGMA Accomplishments

*Paul Gosselin*

*DWR, Sustainable Water Management  
Deputy Director*



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# Groundwater Sustainability Plans (GSPs) & Alternative Periodic Evaluation Submittals

- January 31, 2020: Critically Overdrafted Basin GSPs were submitted -**21 basins/46 GSPs**
- January 1, 2022: **9 Alternative Periodic Evaluations** were submitted
- January 31, 2022: High and Medium Priority GSPs were submitted - **63 basins/65 GSPs**
- January 18, 2024: DWR completed all the reviews before the 2-year statutory deadline!

# Groundwater Sustainability Plan Determinations

**71**  
Basins

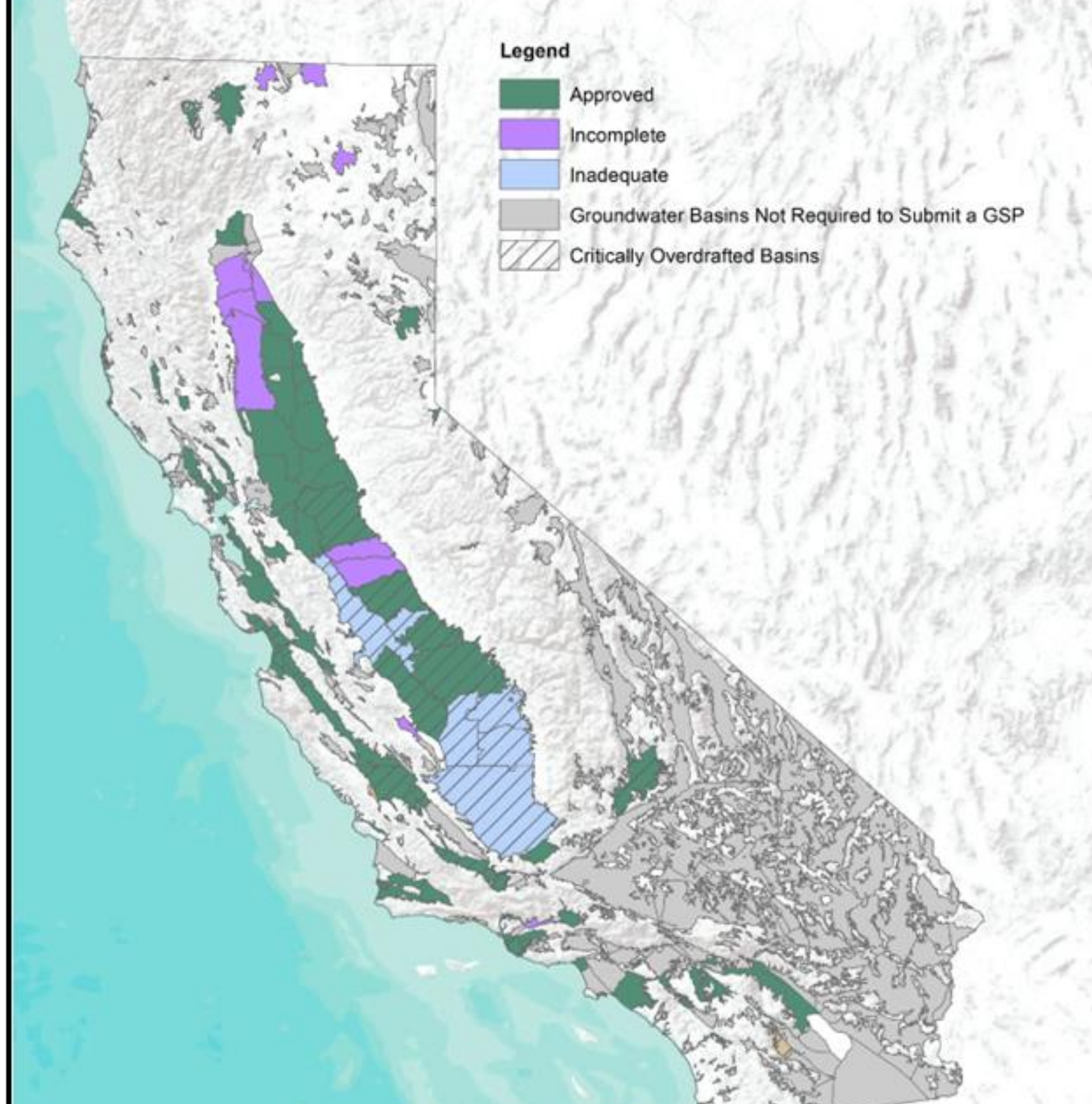
APPROVED BASINS

**13**  
Basins

INCOMPLETE BASINS

**6**  
Basins

INADEQUATE BASINS

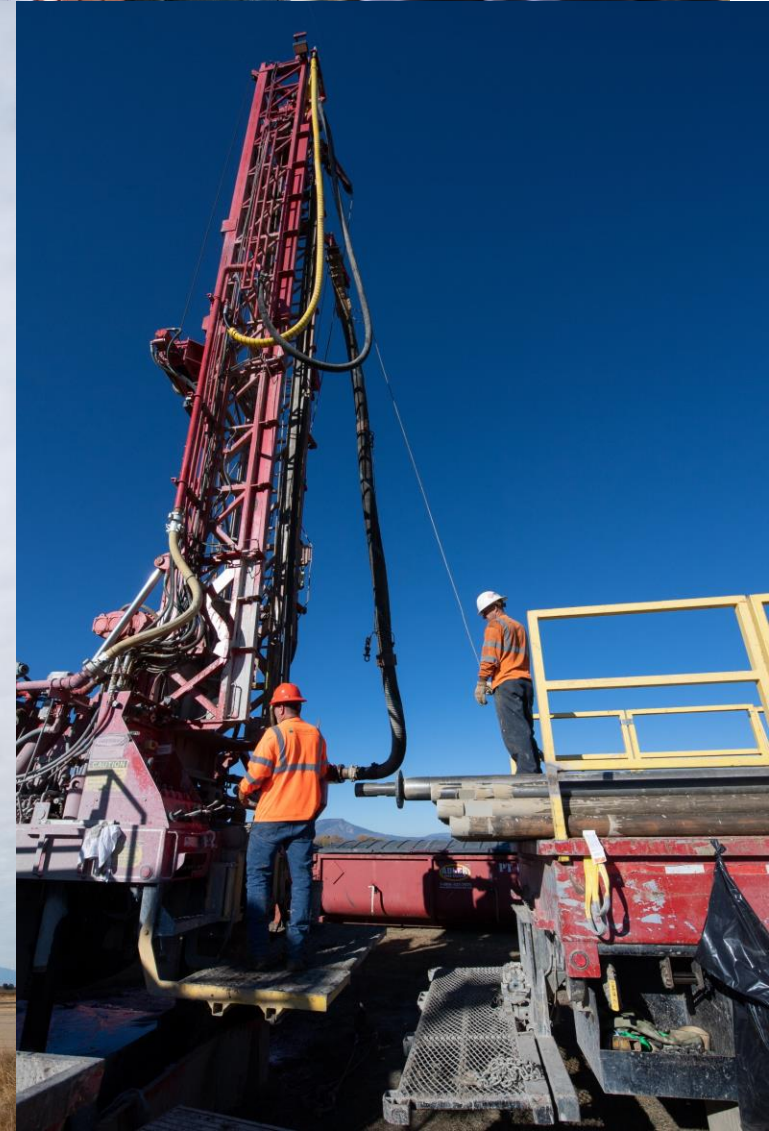


Map updated January 2024



# Transitioning to Implementation: Basin Stewardship

- Support & Track GSP Implementation
- Engage with Groundwater Sustainability Agencies
- Facilitate Intra- and Inter-Basin Coordination
- Release New Guidance
- Collect and Distribute Transparent Data
- Conduct Basin Characterization
- Advance Modeling Resources
- Develop Adaptation Strategies
- Collaborate with State and Federal Agencies



# State of California's Groundwater

*Progress Made Yet Work Remains on the Journey to Sustainability*

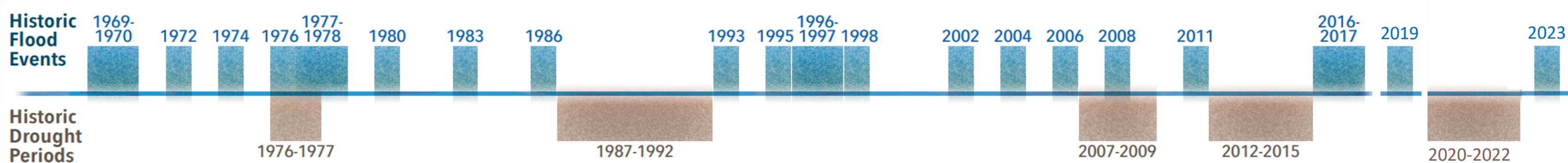
*Steven Springhorn*

*DWR, Sustainable Groundwater Management Office*



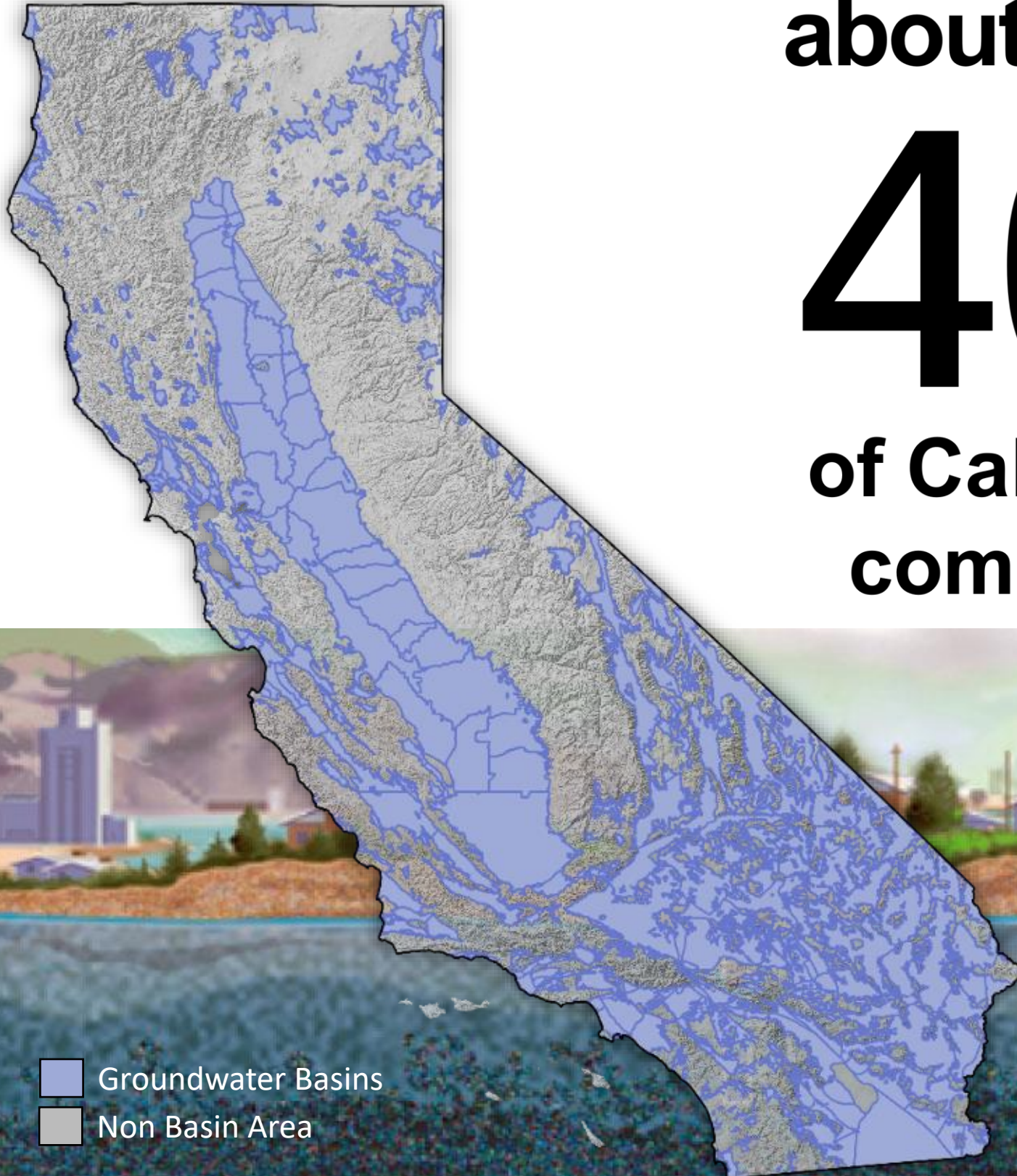
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# California's Water Extremes



# California's Groundwater Overview

515 GW Basins



In an average year,  
**about**

**40%**

**of California's water supply  
comes from groundwater**

In dry years,  
**up to**

**60%**

**Over**  
**80%**  
**of Californians  
rely on groundwater**



# California's Water Storage – Current Conditions

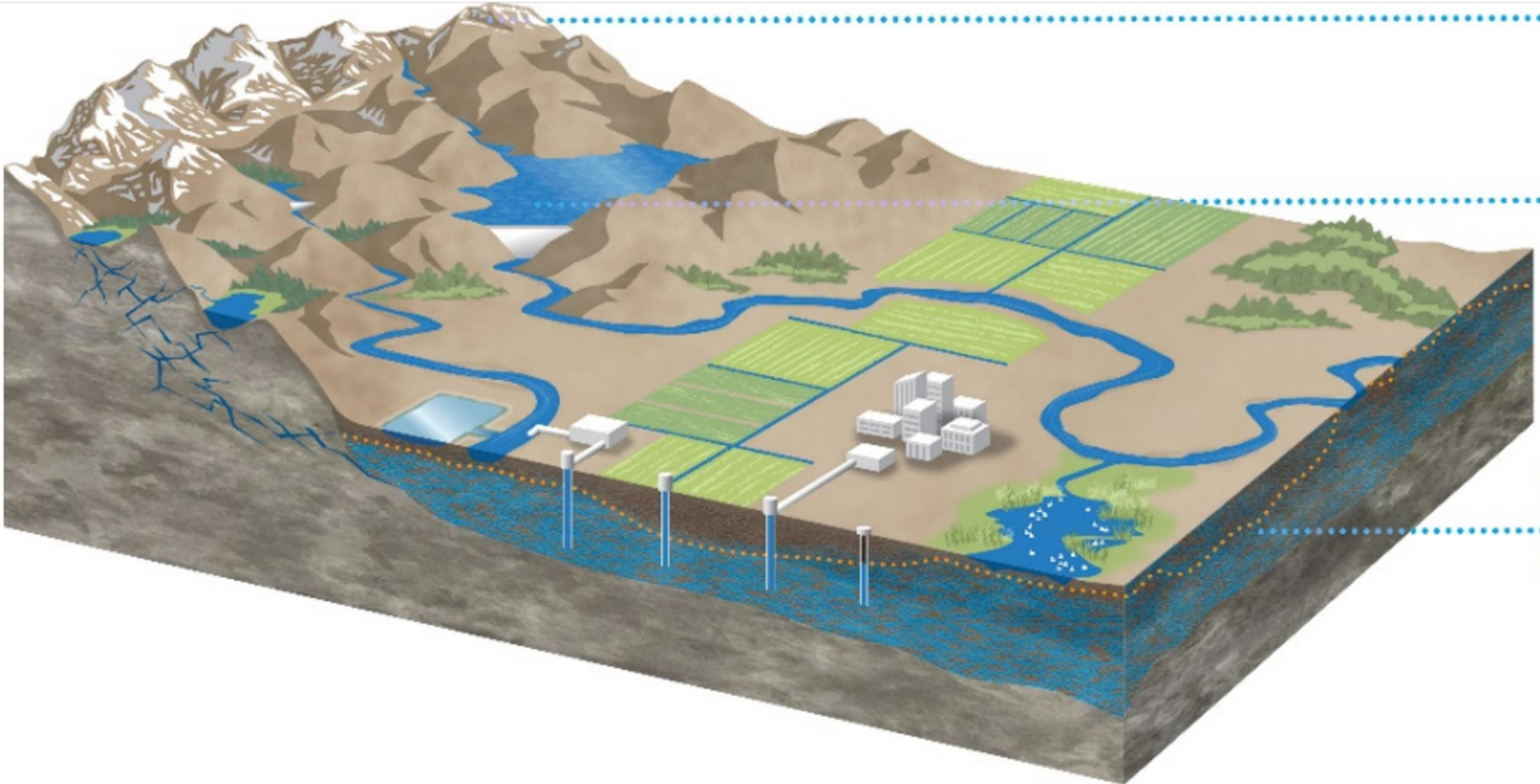
## Statewide Status – WY 2024

Total Storage	WY2024 Storage (March 11, 2024)	Percent Normal (March 11, 2024)
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Snowpack 15 MAF	16 MAF	109% of average Above Normal
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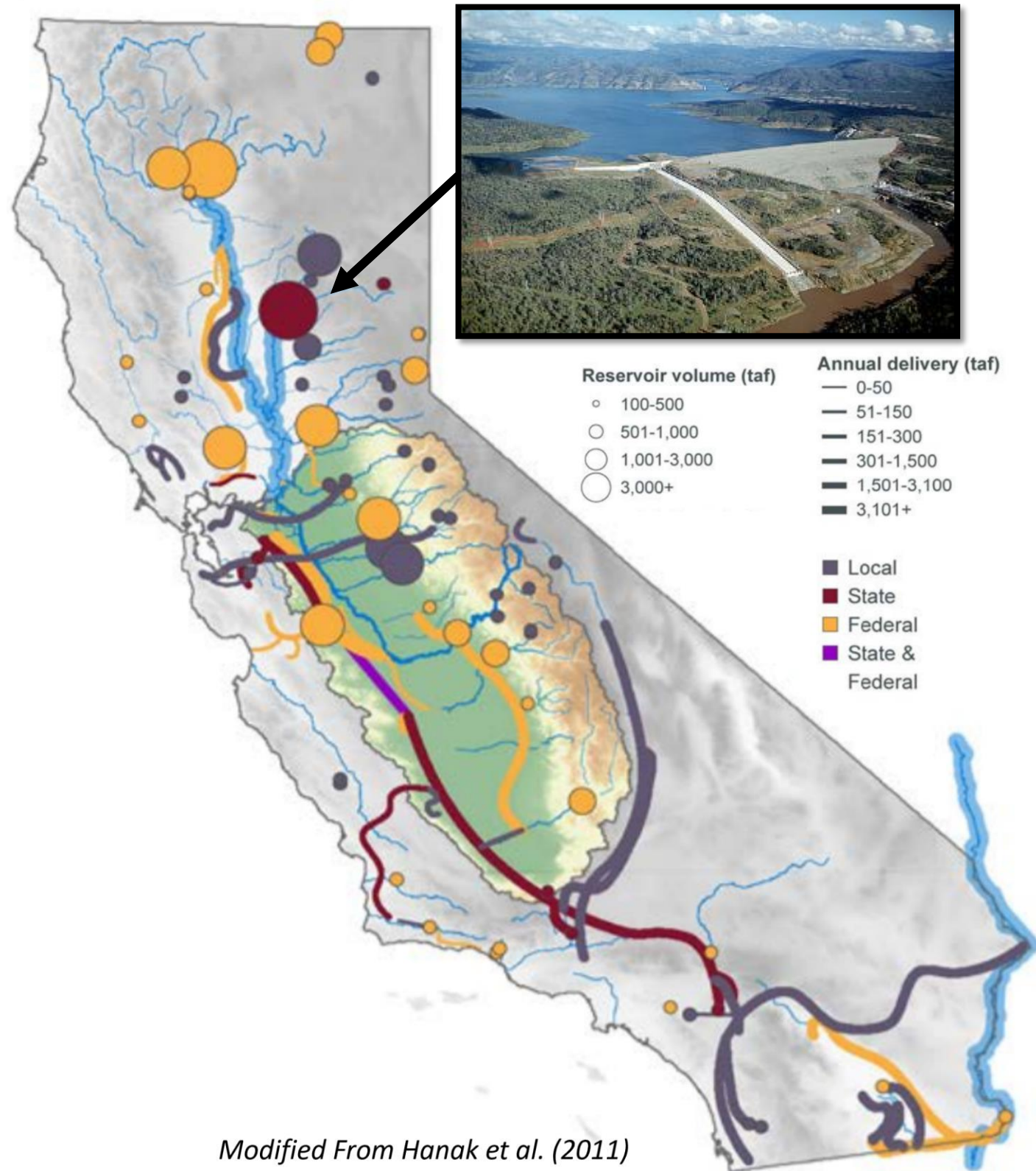
Reservoirs 30 MAF	24 MAF	114% of average Above Normal
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Groundwater 850 MAF to 1,300 MAF	>17 MAF Decline in Groundwater Storage in Central Valley (WYs 2020, 2021, 2022) >40 MAF Decline in Groundwater Storage in Central Valley (1974 to 2021)	Much Below Normal
----------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------

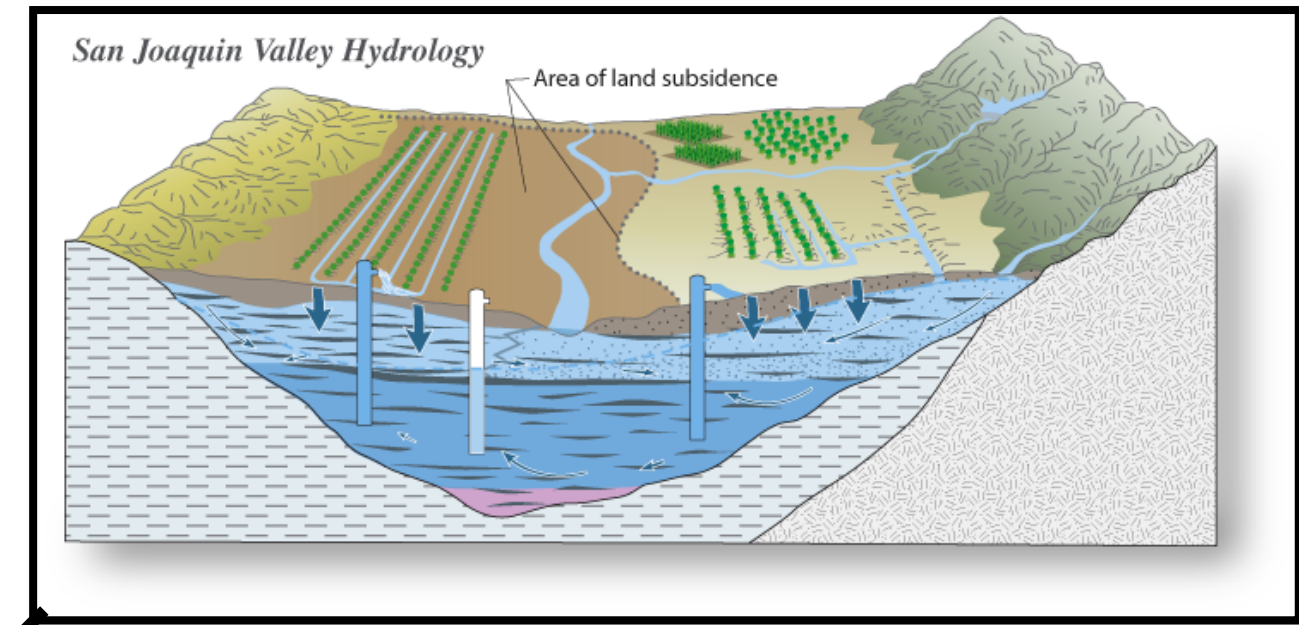
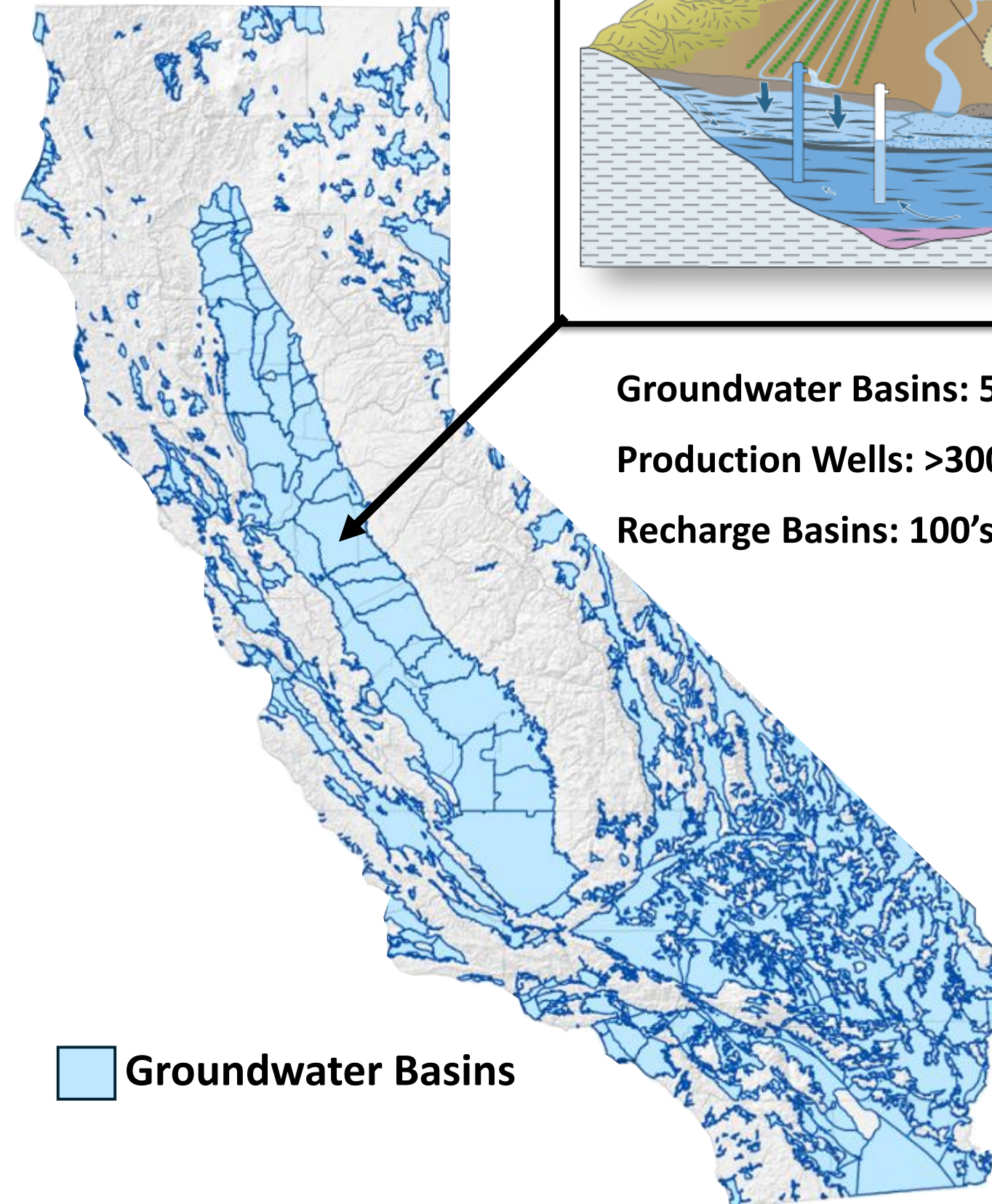


# California's Water Storage and Infrastructure

## Natural and Built SW Infrastructure



## Natural and Built GW Infrastructure



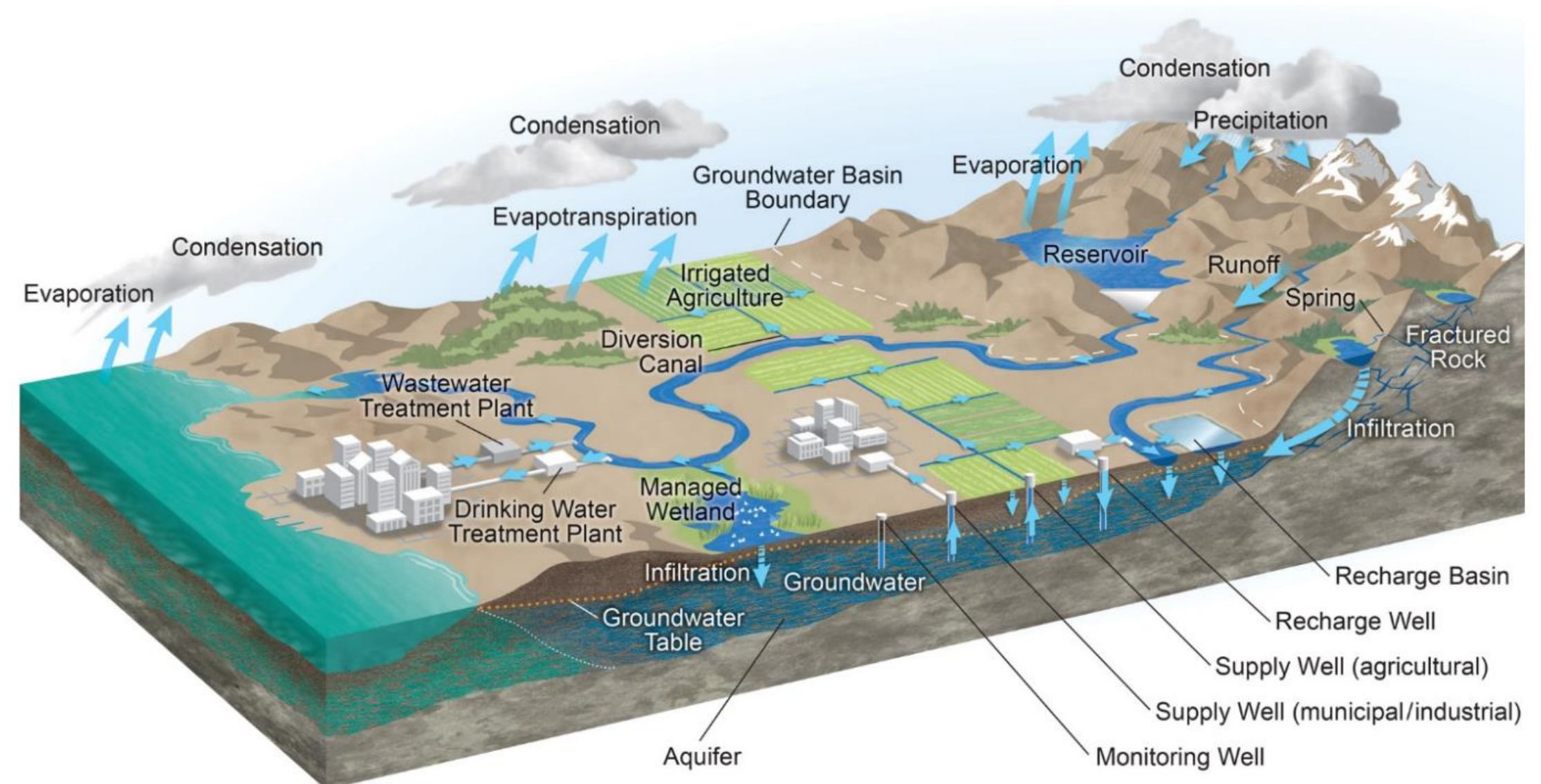
**Groundwater Basins: 515**  
**Production Wells: >300K**  
**Recharge Basins: 100's**



# State of California's Groundwater

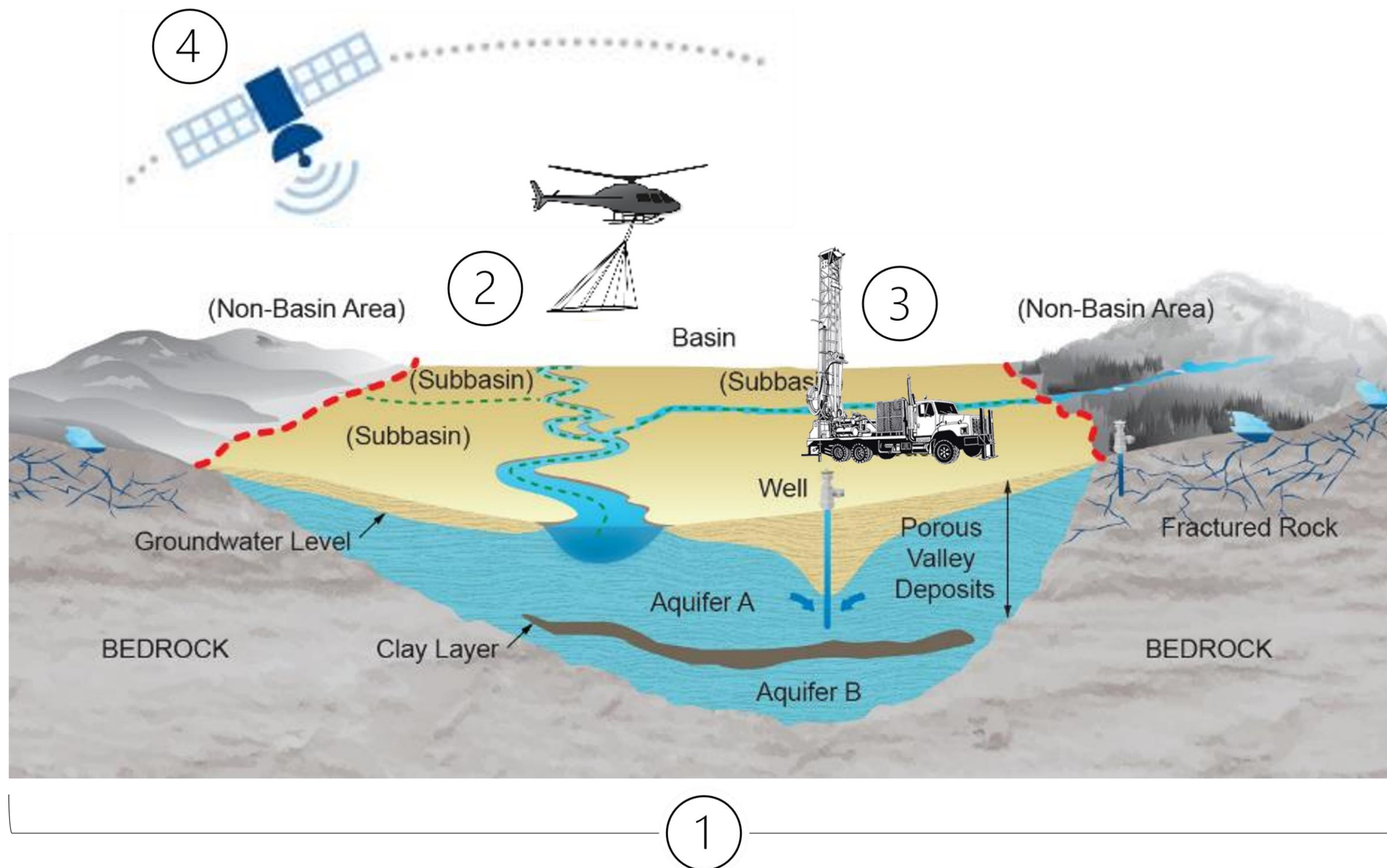
- State of Groundwater Knowledge
- State of Groundwater Governance
- State of Groundwater Management
- State of Groundwater Conditions Related to SGMA's Sustainability Indicators

1. Groundwater Storage
2. Groundwater Levels
3. Land Subsidence
4. Water Quality
5. Seawater Intrusion
6. Interconnected Surface Water



# State of Groundwater: Knowledge

- Local and State groundwater characterization and investigations are underway
  - California's Groundwater (Bulletin 118): <https://water.ca.gov/calgw>



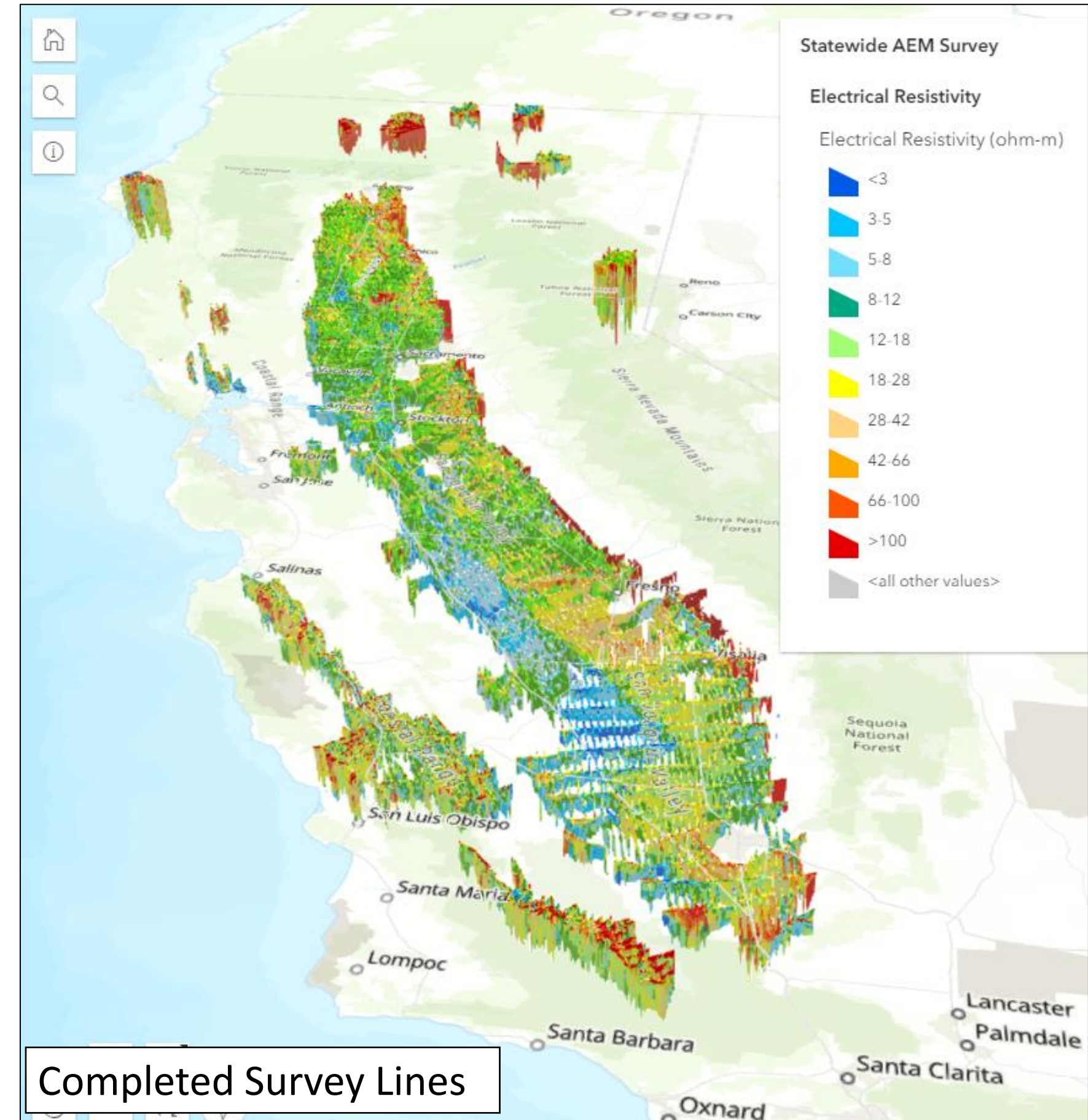
- 1. Groundwater Information & Access**
  - >130 Basins Actively Investigating
  - Regional and Statewide Reports
  - >1m Well Reports accessible since 2015
  - Open Water Data Act passed in 2016
- 2. AEM & GW Basin Characterization**
  - Statewide AEM surveys complete
- 3. Statewide GW Monitoring Enhancement**
  - Hundreds of New Monitoring Wells
- 4. Satellite-Based Subsidence Data**
  - Statewide coverage, increased frequency



# State of Groundwater: Knowledge

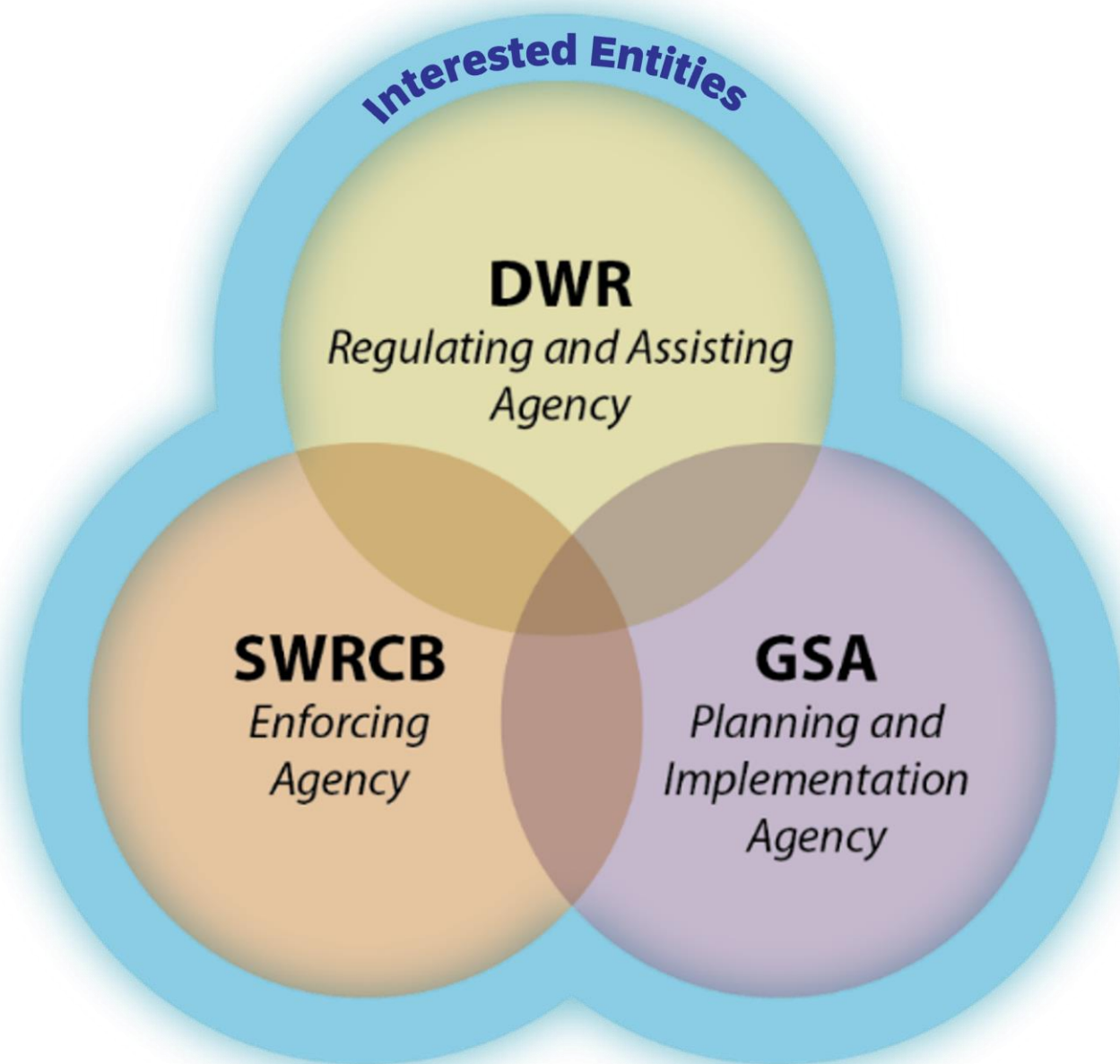
## Statewide Airborne Electromagnetic (AEM) Surveys:

- Surveys conducted between 2020 and 2023
- 130,000 letters or postcards sent to parcel owners
- AEM data collected: 16,000 line-miles
- Surveyed Groundwater Basins: 95
- High-quality, digitized lithology logs: >13,000
- High-quality, digitized geophysical logs: >1,200
- Open Data Access: <https://data.cnra.ca.gov/dataset/aem>
- Next Phase DWR's Basin Characterization [Webpage](#)
  - Basin characterization pilots have started



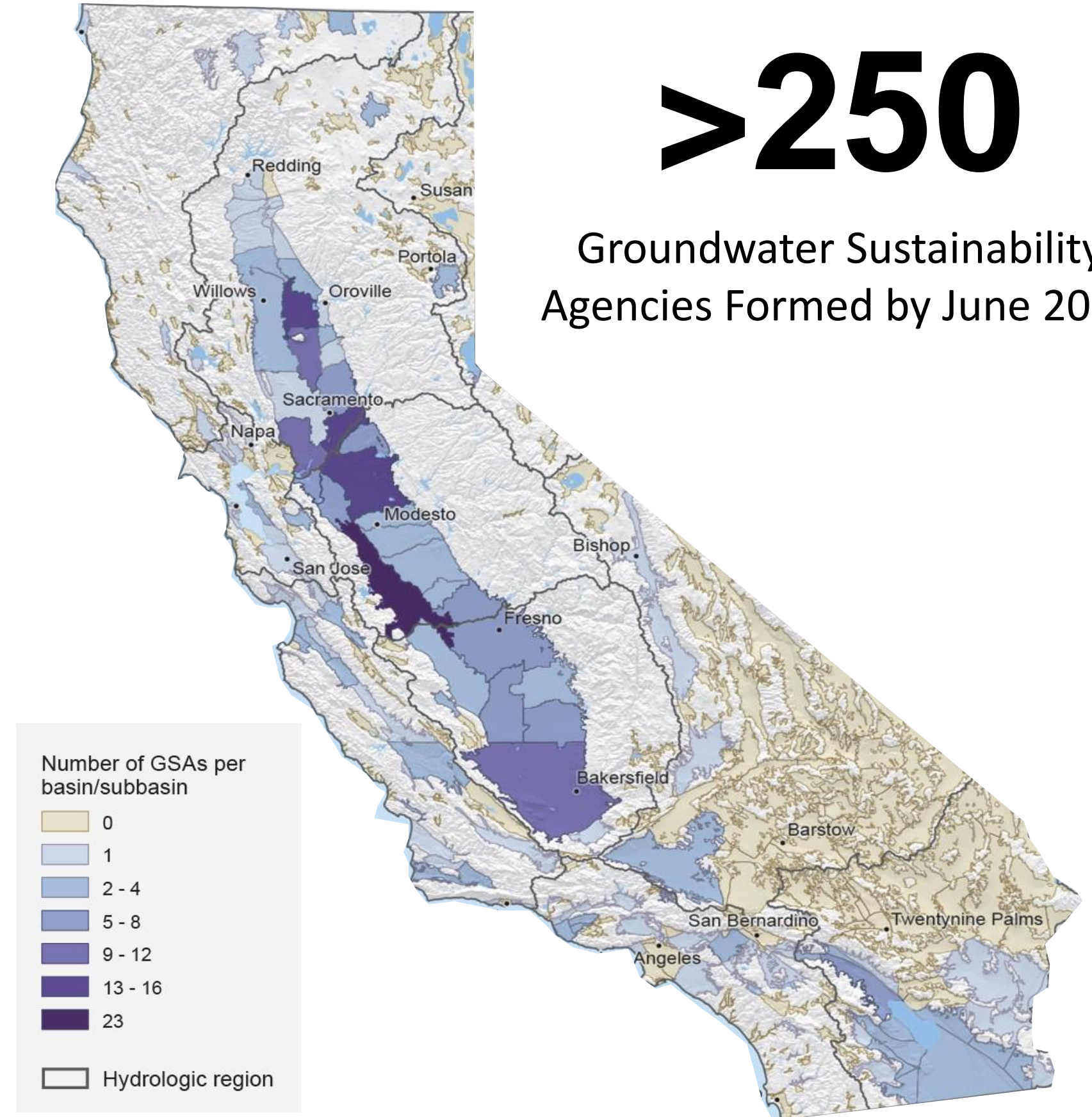
# State of Groundwater: Governance

Local and State Governance Systems in Place and Active



>250

Groundwater Sustainability Agencies Formed by June 2017



# State of Groundwater: Management

- **Over 130 Basins Being Managed**

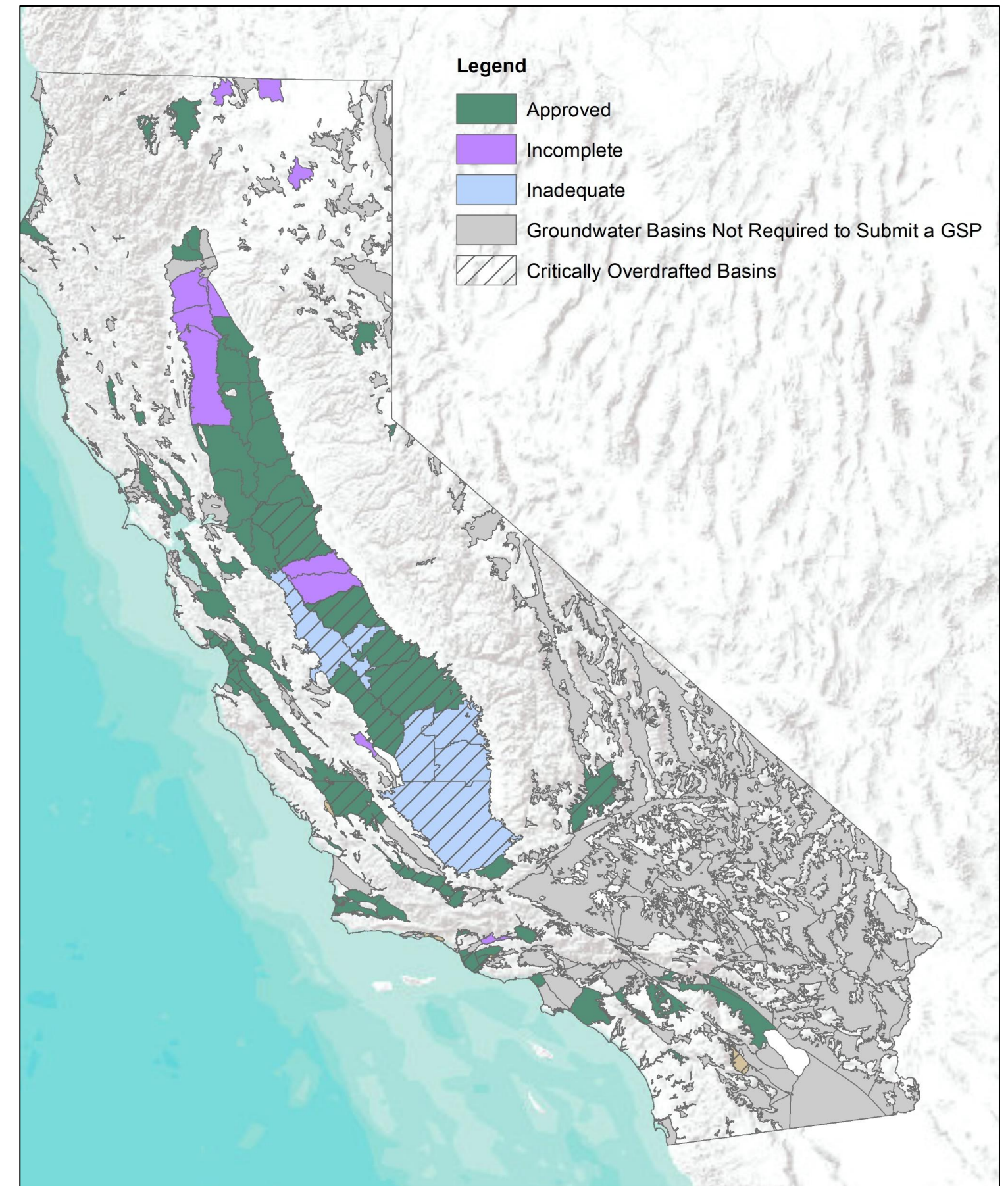
- Represent 98% of all groundwater pumped in California

- **101 Basin Implementing SGMA**

- 71 Approved Basins
  - Achieve sustainability by 2040 and beyond
  - Submitting Annual Reports every April 1<sup>st</sup>
- 13 Incomplete Basins
- 6 Inadequate Basins
  - State intervention with SWRCB
- 4 Other Basins

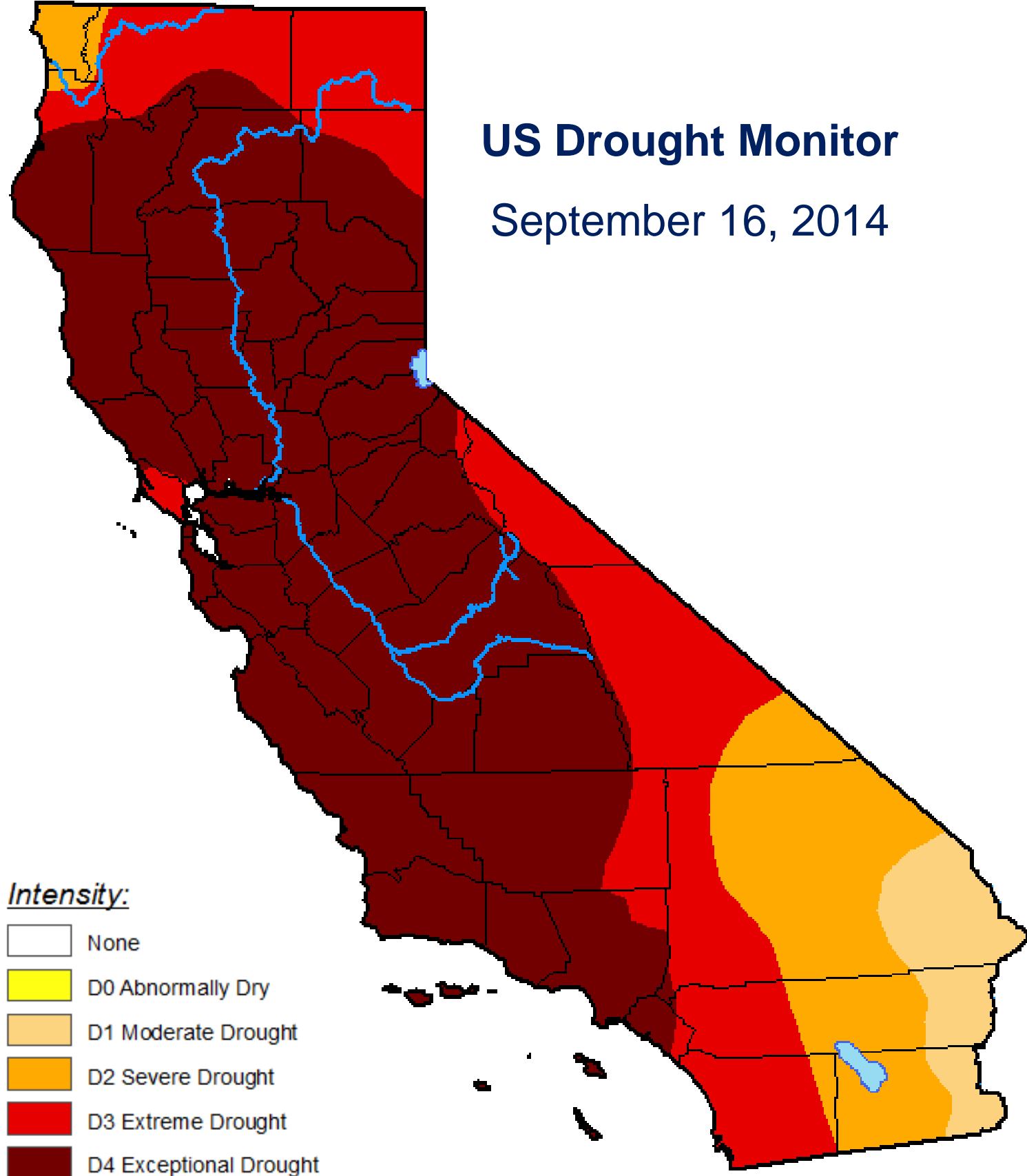
- **30 Adjudicated Basins**

- Active Management
- Submitting Annual Reports



# State of Groundwater: Conditions

US Drought Monitor  
September 16, 2014

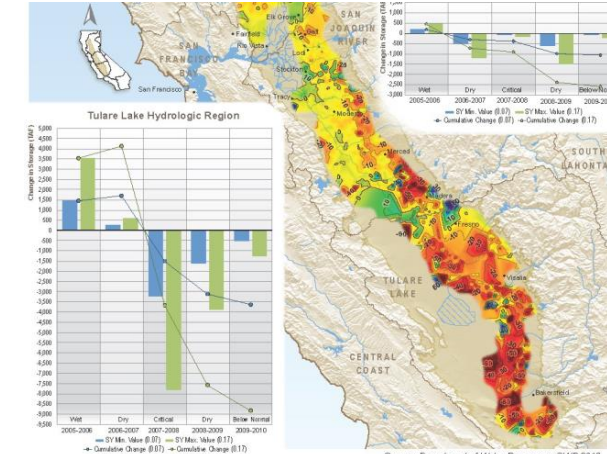


## SGMA Defined Sustainability and How It's Monitored

*Avoid Six Undesirable Results*



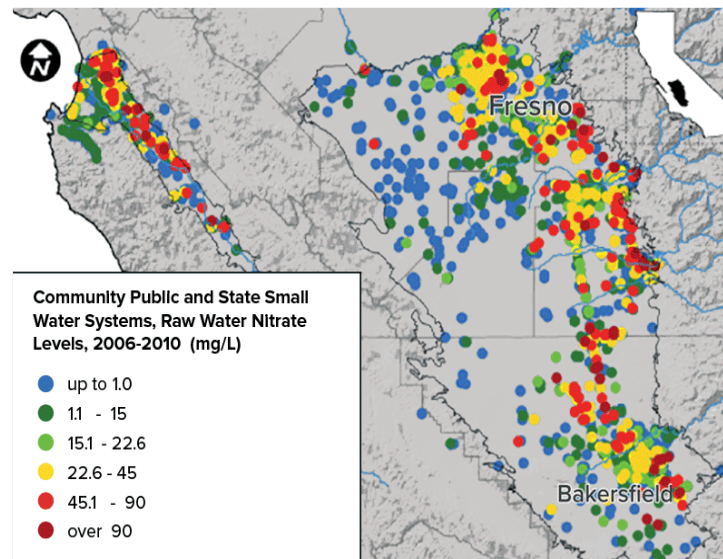
Lowering of GW Levels



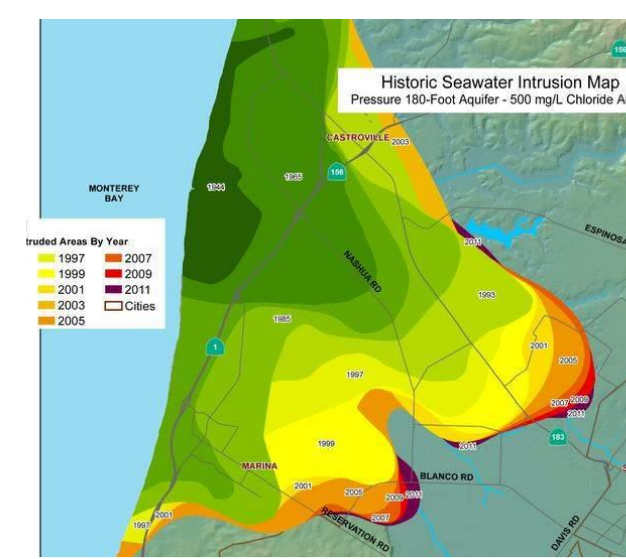
Reduction of GW Storage



Land Subsidence



Water Quality Degradation



Seawater Intrusion

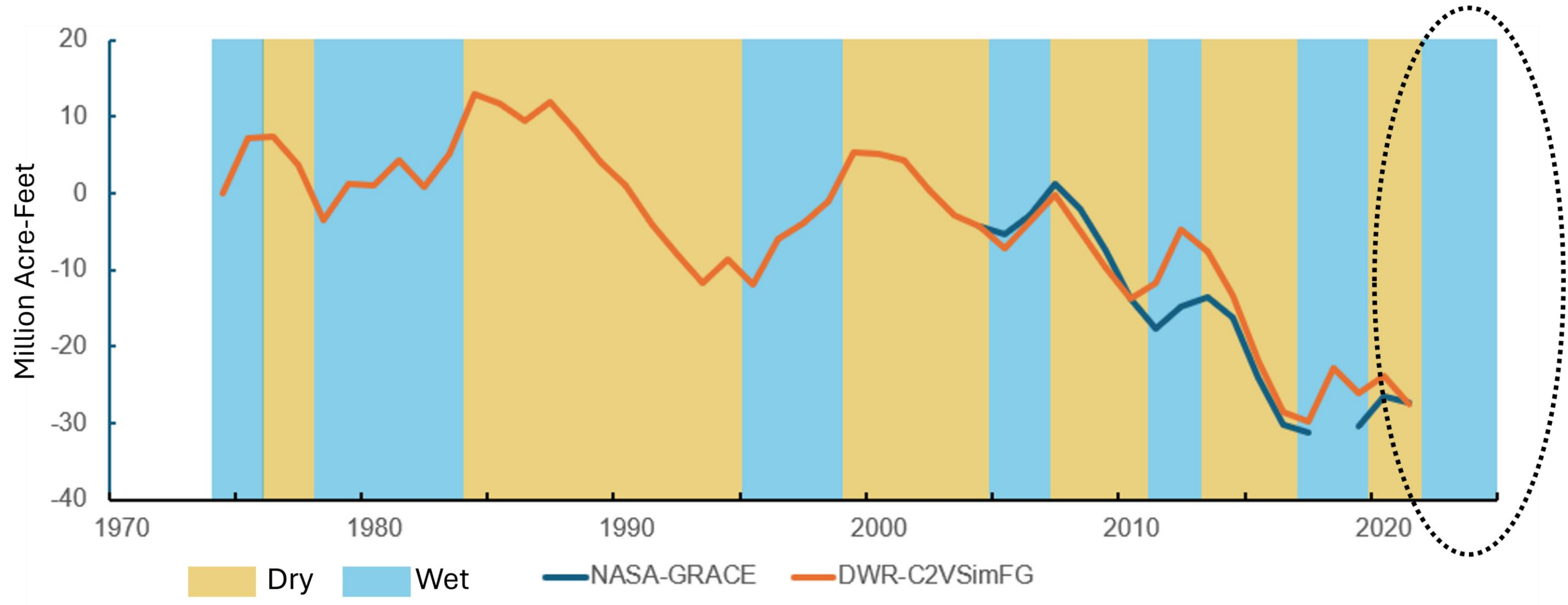


Depletion of Interconnected Streams

# State of Groundwater: Conditions



## Reduction in Groundwater Storage



1974 to 2021 Total Groundwater Change in storage in Central Valley

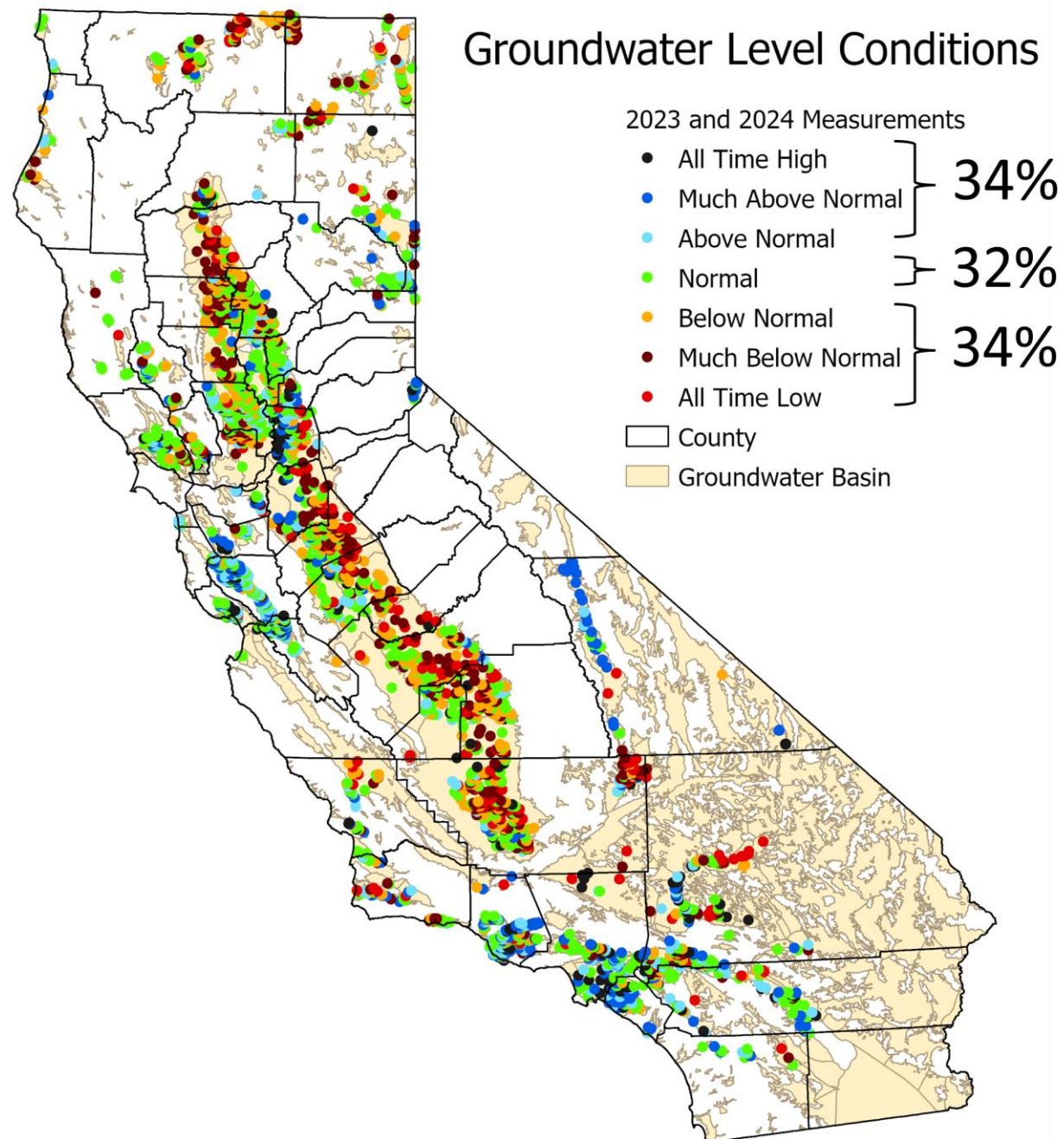
➤ **>30 MAF** = Large groundwater storage deficit in Central Valley

# State of Groundwater: Conditions

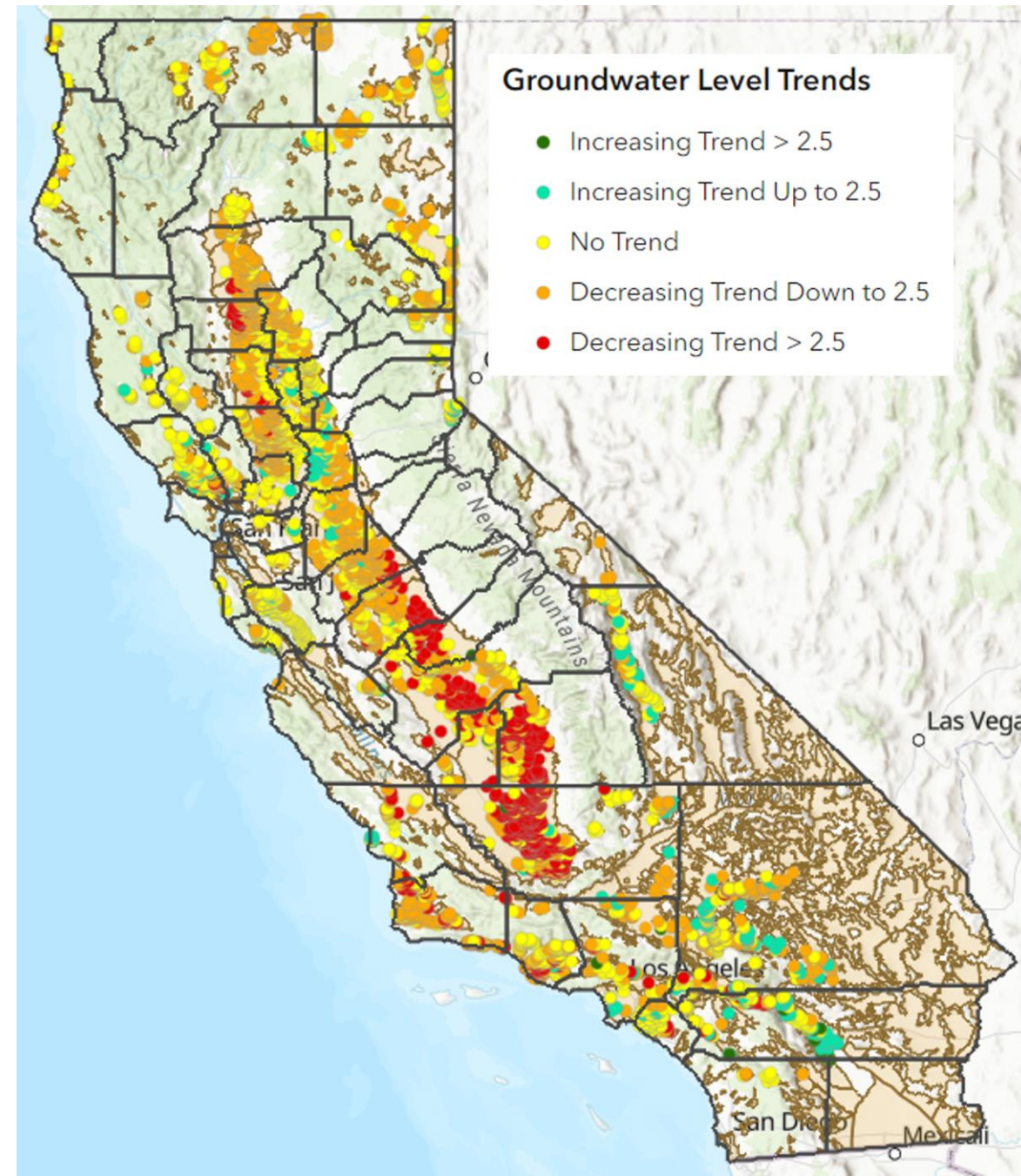


## Lowering of Groundwater Levels

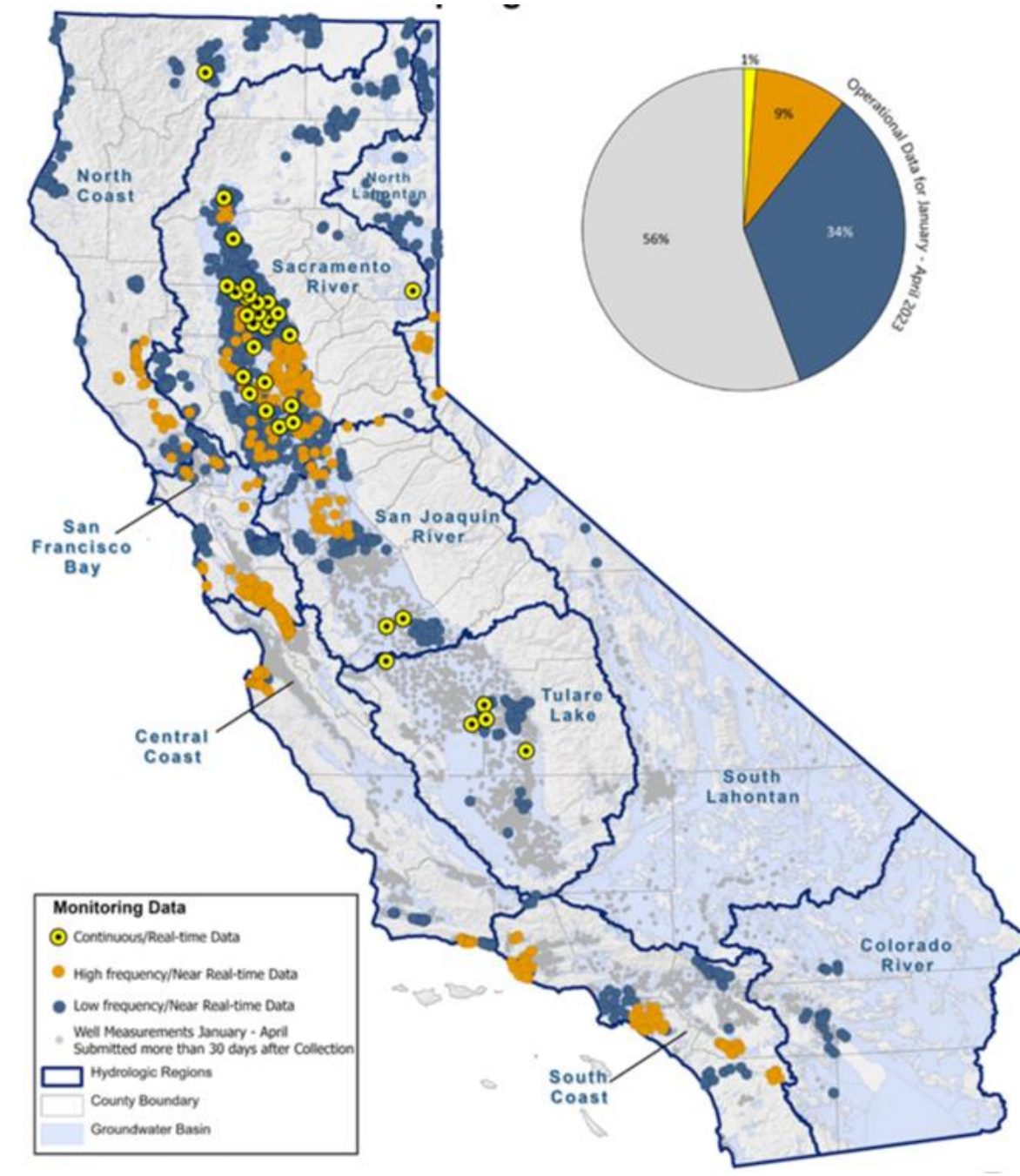
**Active Groundwater Level Network**  
(3,700 Monitoring Wells 10+ yrs of Record)



**Long-term Groundwater Level Trends**  
(20 years – 2004 to 2024)



**Future: Operational Groundwater Data**  
(Need Higher Frequency for Management/Response)



# State of Groundwater: Conditions



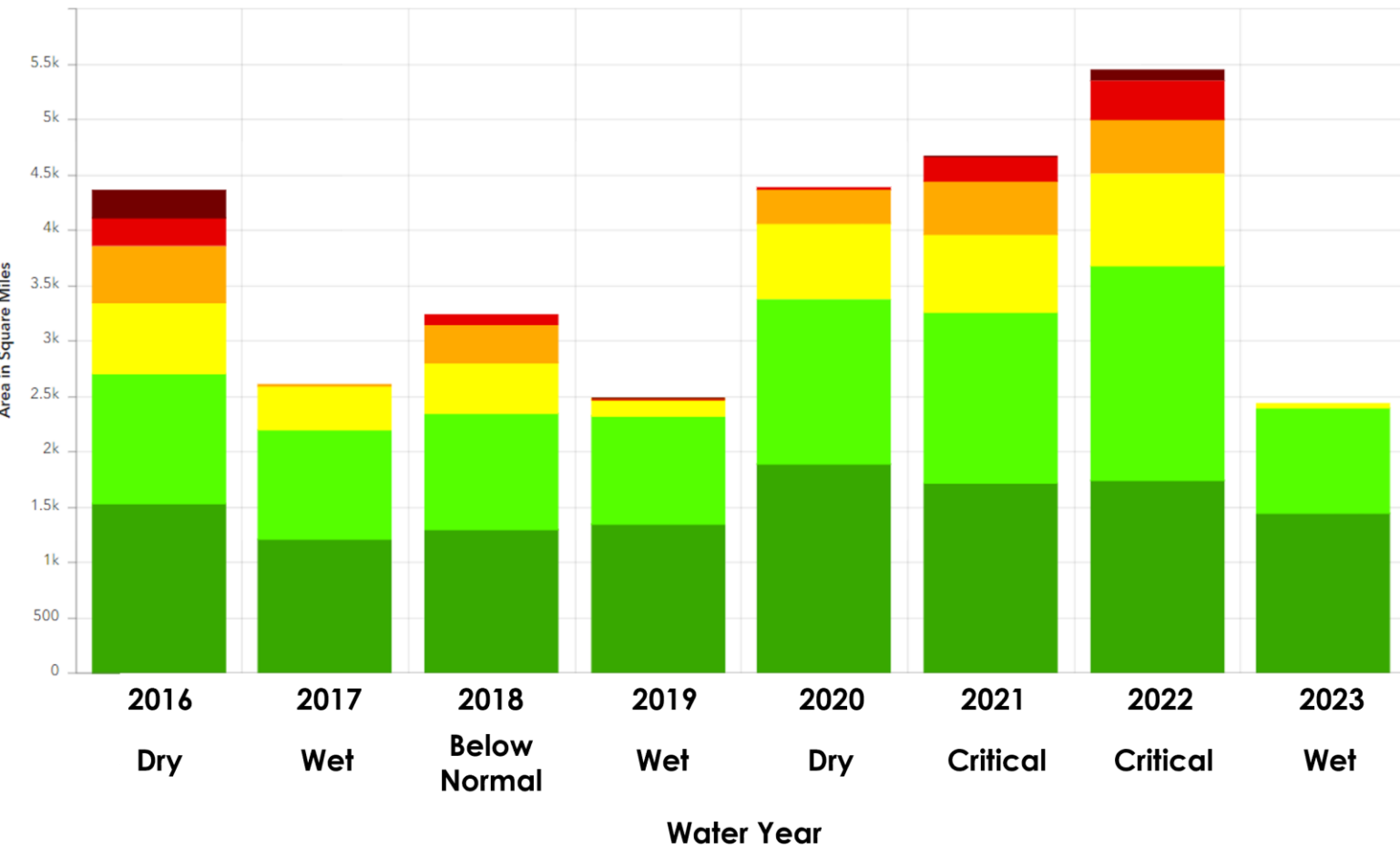
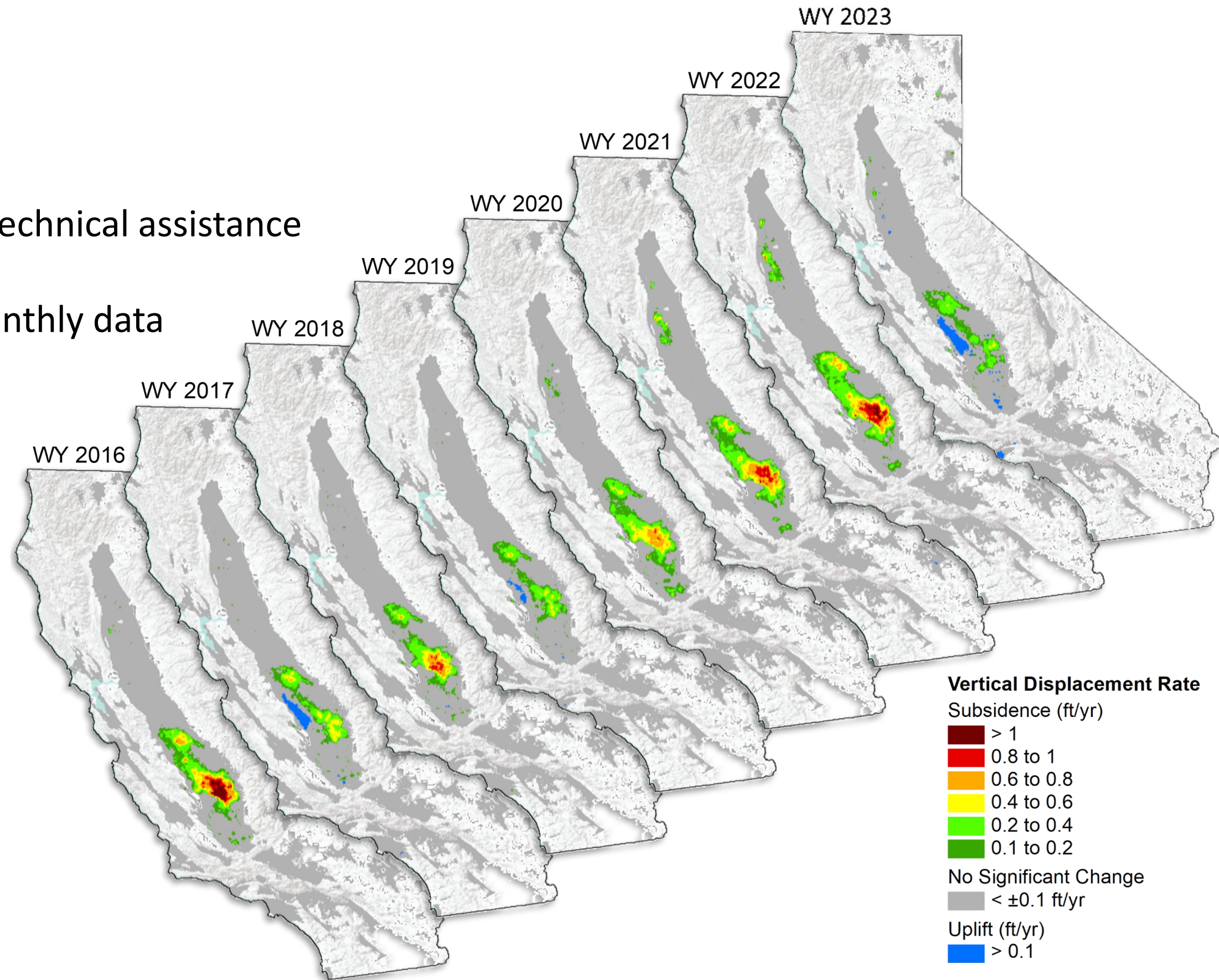
## Land Subsidence

### Statewide Land Subsidence Monitoring:

- Significant Improvement, part of DWR's SGMA technical assistance
- Data [available](#) in over 150 groundwater basins
- Data Coverage: 40,000 mi<sup>2</sup>, 2015 to Current, monthly data

### Statewide Land Subsidence Management:

- Evolving regulatory and guidance space



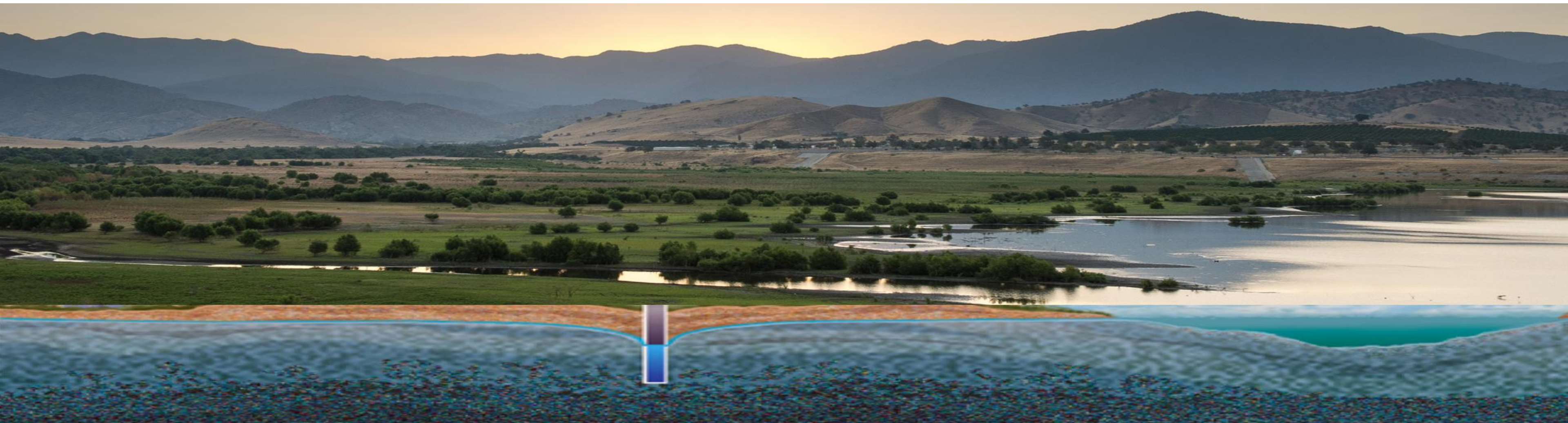
# State of California's Groundwater

- Summary: Significant progress has been made, yet work remains to achieve sustainability

For more information contact: [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov)

Additional Resources:

- <https://water.ca.gov/Programs/Groundwater-Management>
- <https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118>





# DWR Financial and Planning Assistance

*Heather Shannon*

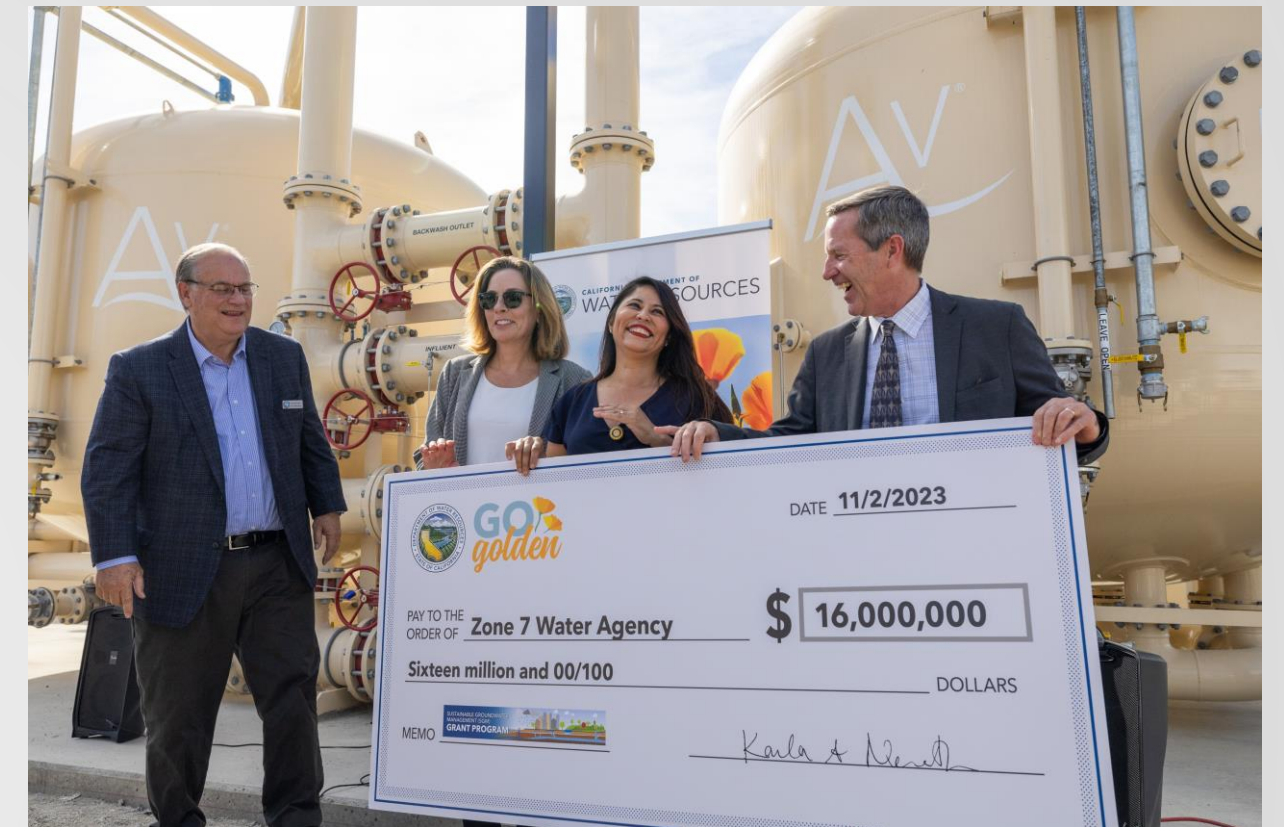
*DWR, Sustainable Groundwater Management Office*



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# Financial Assistance (2016-present)

- Awarded over \$500M
  - ~\$139M Planning Grants
  - ~\$363.7M Implementation Grants
- *Round 2 Awarded in September 2023 (Implementation)*
  - 82 applications requesting over \$780M
  - A total award of \$187.3M
- \$25M awarded for LandFlex Initiative



# Planning Assistance

- Communication and Engagement Toolkit
- Facilitation Services
- Written Translation Services
- Verbal Interpretive Services
- Events – GSA Forum
- Guidance, Resources, Best Management Practices

<https://water.ca.gov/Programs/Groundwater-Management/Assistance-and-Engagement>



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# Communication and Engagement Toolkit

- Guidance document for Groundwater Sustainability Plan – Stakeholder Communication and Engagement
  - Communication and Engagement Plan Outline
  - Guidance on Engaging and Communicating with Underrepresented Groundwater Users
  - Guidance Document for the Sustainable Management of Groundwater – Engagement with Tribal Governments
- Tips and Tactics for Online Meetings



# Facilitation Support Services

- Services Offered through DWR-funded Professional Facilitators:
  - Stakeholder assessments
  - Governance development
  - Stakeholder communication and engagement planning and support
  - Public outreach
  - Targeted outreach to underrepresented groundwater users
  - Tribal government outreach and engagement
  - Identification and engagement of interested parties
  - Meeting facilitation
  - Intra-basin and inter-basin coordination support
  - Interest-based negotiation/consensus building



# Written Translation Services

- Examples: written notices, letters, forms, presentations, fact sheets, pamphlets, leaflets, and brochures
- Languages available:
  - Chinese, Hmong, Korean, Laotian, Punjabi, Spanish, Tagalog, Vietnamese



# Verbal Interpretation Services

- Completed a pilot program in 2023
- Website with application link to be updated soon
- For questions or more information, email [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov)



# Events – GSA Forum

- Upcoming GSA Forum will be held virtually
  - May 23, 2024, 8:30am – noon
- Registration will open to public at the end of March
- For questions or more information, email [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov)



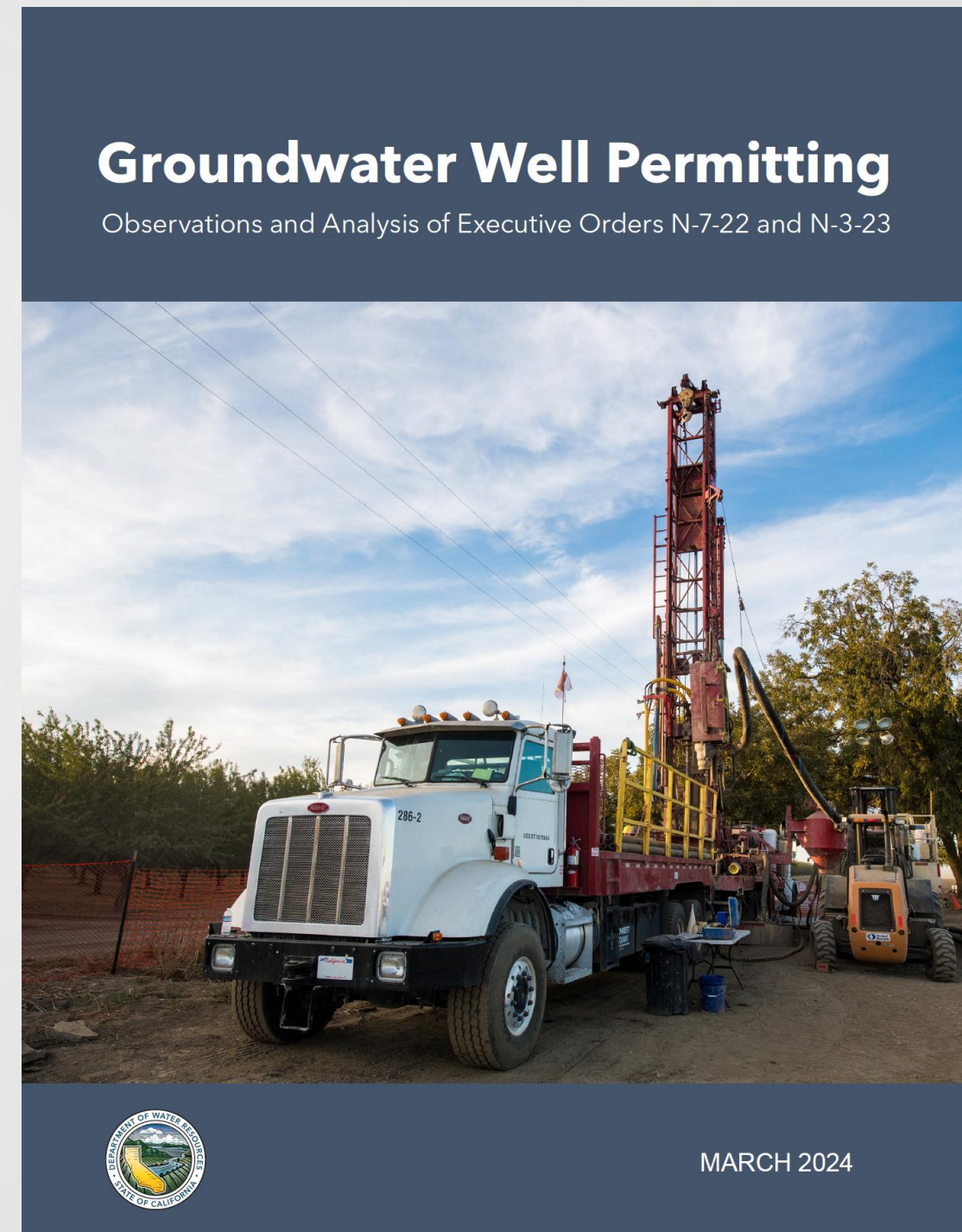


# Well Permitting Observations & Analysis Report

- DWR conducted a survey of both GSAs and Counties from mid-April to the end of May 2023
- DWR and NGOs participated in a community listening session in September 2023
- DWR developed an analysis report of the Executive Orders addressing:
  - What challenges and successes have there been in implementing the EOs?
  - What are the long-term recommendations once EOs are no longer in place?
- Observations of dry well, well permitting, and subsidence conditions



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# CLOSING REMARKS

*Heather Shannon*

*DWR, Sustainable Groundwater Management Office*



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# What's Next

- 3/12 – Outreach & Engagement Training for Groundwater Sustainability Agencies: **How to Re-engage Interested Parties**; Time: 10:00-11:30 a.m.
- 3/13 - Outreach & Engagement Training for Groundwater Sustainability Agencies: **How to Have the “Hard Conversations”**; Time: 10:00-11:30 a.m.
- 3/14 - GSA Reporting: Annual Reports, Periodic Evaluations, and Amendments to GSPs; Time: noon -1:00 p.m.
- 3/15 - Planning Ahead: Data Collection and Groundwater Modeling; Time: noon – 1:00 p.m.



# GWAW 2024 Next Steps

- Attend virtual talks and webinars later this week!
- Questions? Contact [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov)





**THANK  
YOU**