Groundwater Trading Safeguards for Vulnerable Users Workshop

October 28, 2021, 2:30-5:00 pm
October 29, 2021, 9:30-12:00 pm

California WATER COMMISSION

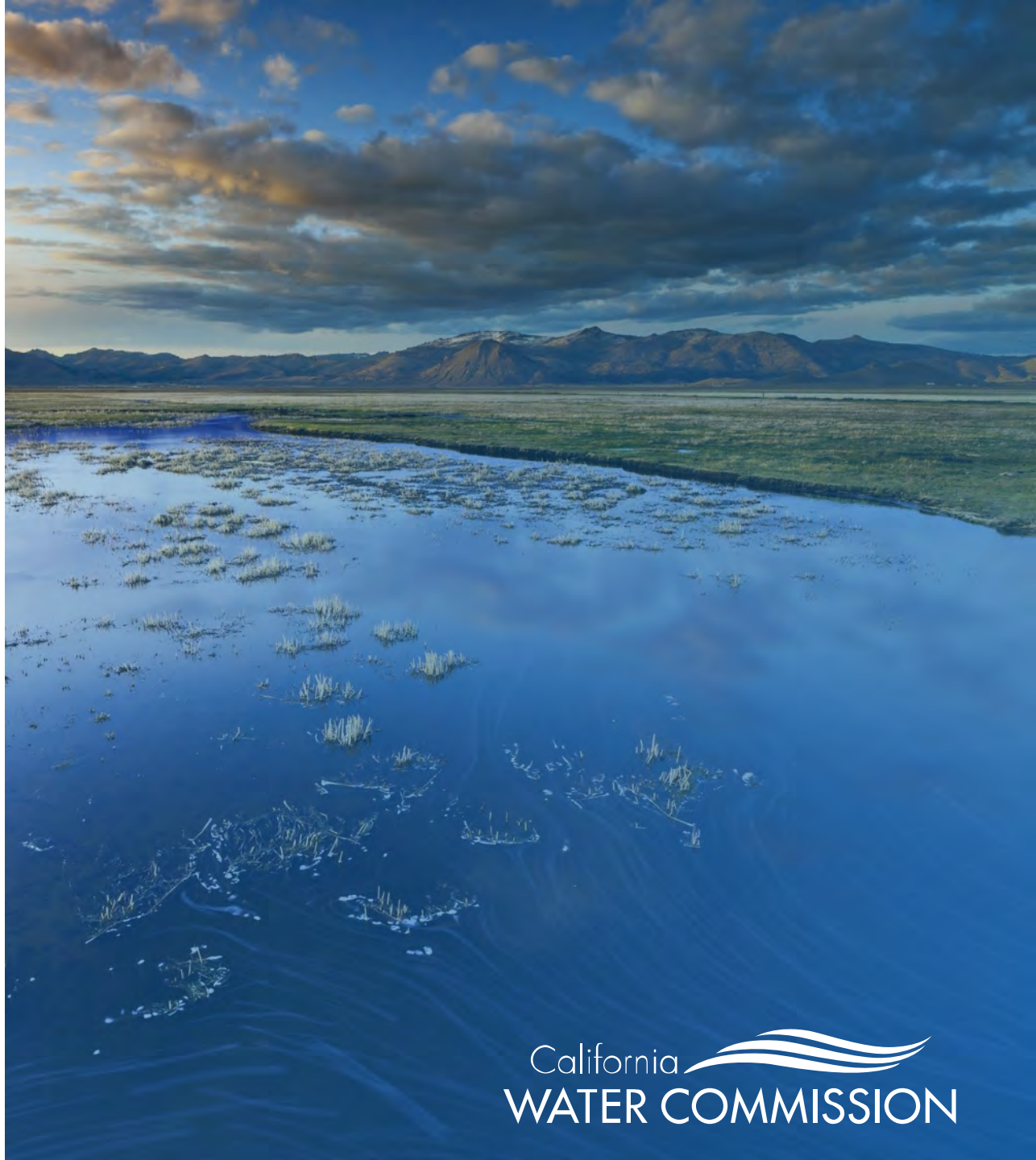
Where are you from?

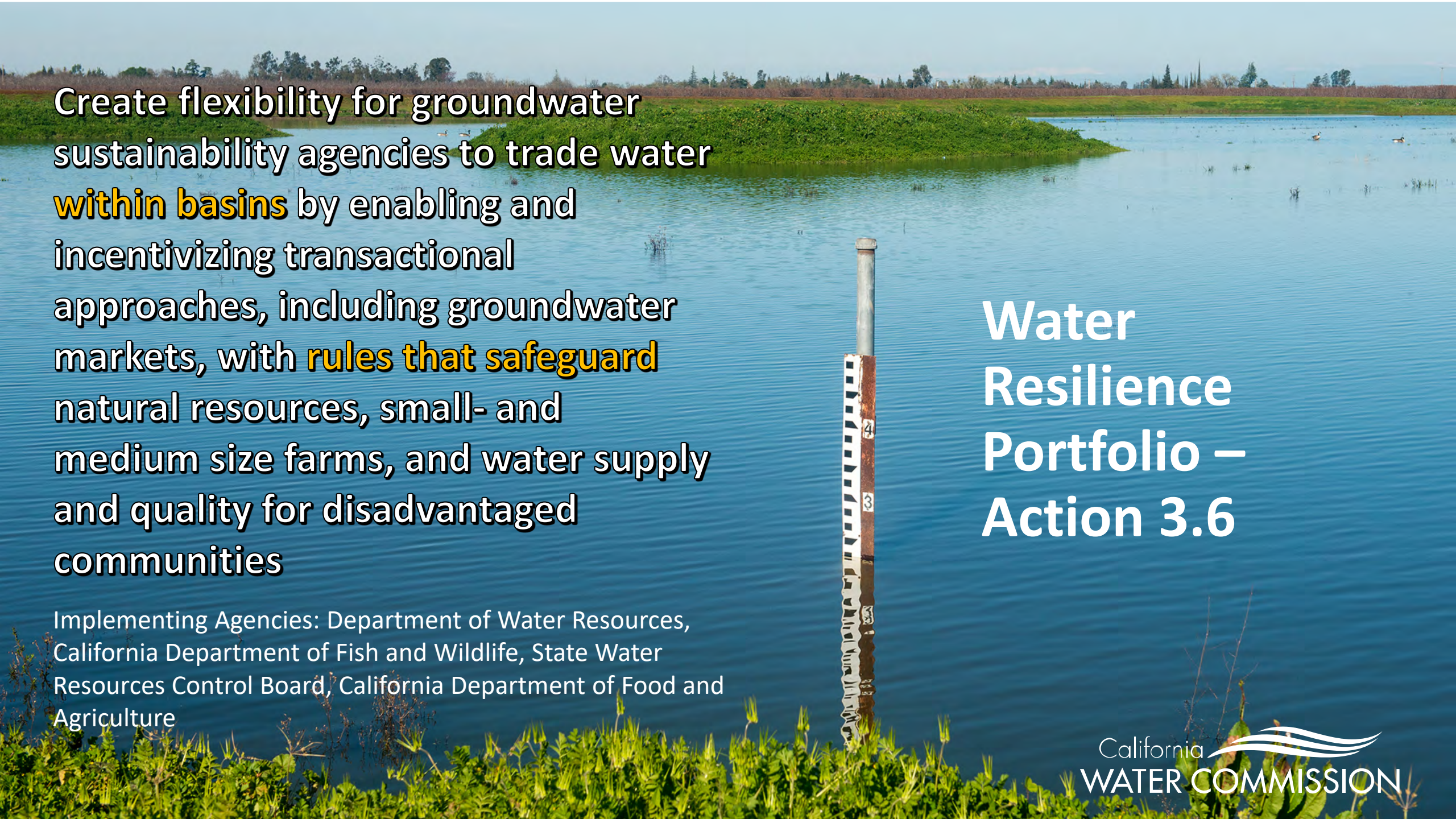
https://pollev.com/lisabeutler208

California WATER COMMISSION

Agenda

1. Login, Handouts, and Meeting Logistics
2. Welcome and Greetings
3. Panel Discussion
4. Whiteboard Exercise
5. Presentation: Cross-Cutting Themes and Points of Divergence
6. Breakout: Points of Divergence
7. Presentation: The Role of the State
8. Large Group Discussion: The Role of the State
9. Next Steps
10. Closing Remarks
11. Adjourn





Water Resilience Portfolio – Action 3.6

Create flexibility for groundwater sustainability agencies to trade water **within basins** by enabling and incentivizing transactional approaches, including groundwater markets, with **rules that safeguard** natural resources, small- and medium size farms, and water supply and quality for disadvantaged communities

Implementing Agencies: Department of Water Resources, California Department of Fish and Wildlife, State Water Resources Control Board, California Department of Food and Agriculture

California WATER COMMISSION

Commission timeline

Frame the Issue

- Expert Panels
- Small Group Conversations

June - September 2021

Hold Public Discussions

- Localized Outreach
- Public Workshops

September - November 2021

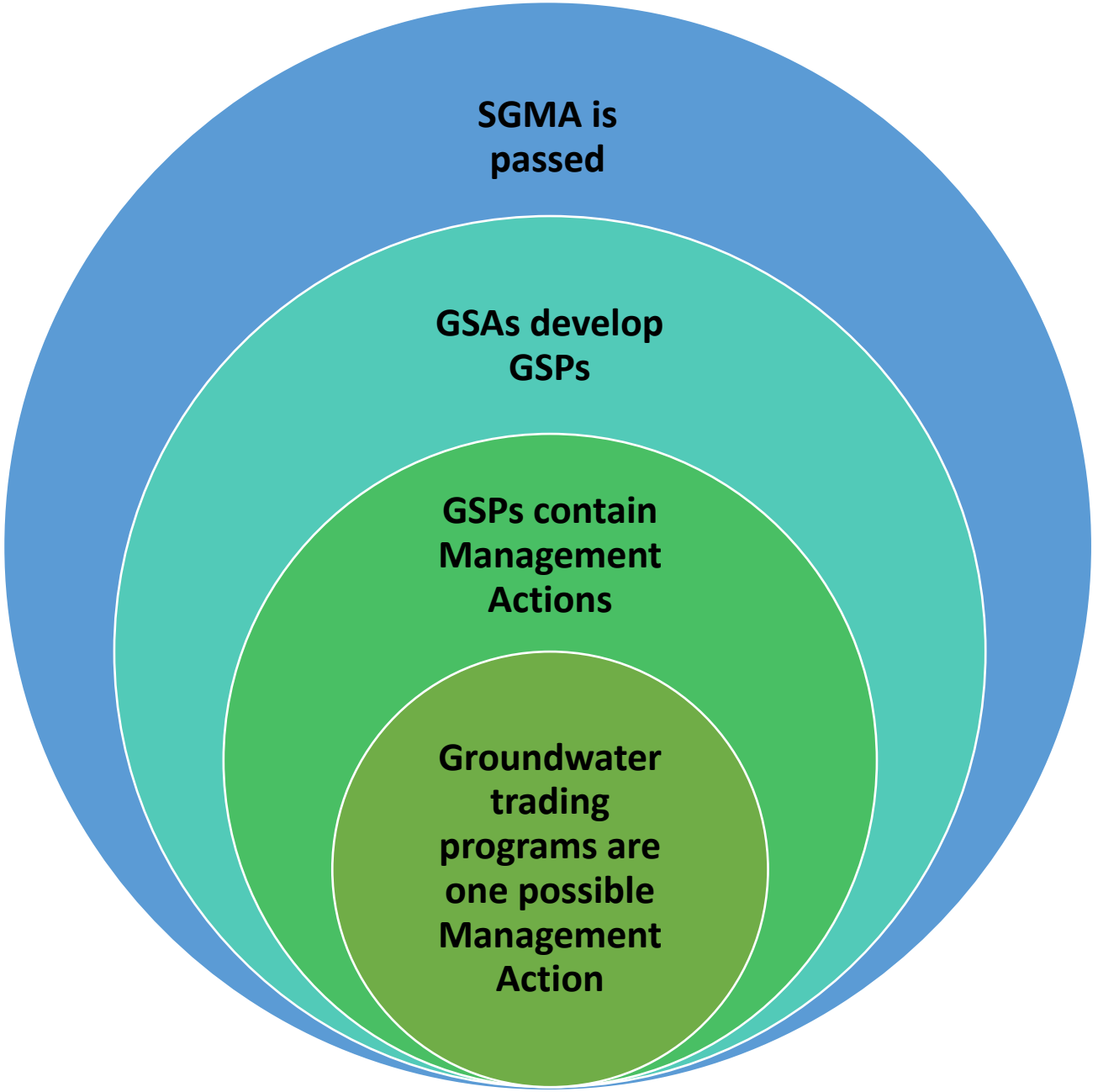
Draft White Paper

- Present Draft
- Present Final

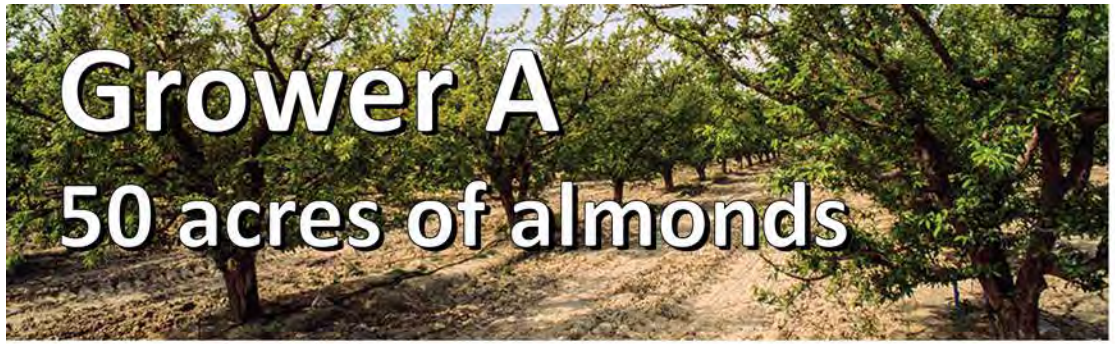
January - March 2022

How is Groundwater Trading Related to SGMA?

- **GSAs** have the authority to allocate and manage groundwater.
- **The state** ensures that GSAs are compliant with SGMA by reviewing GSPs to make sure that they are adequate.



What is Groundwater Trading?



Requires:
150 AF

Allocation:
50 AF

Requires:
200 AF

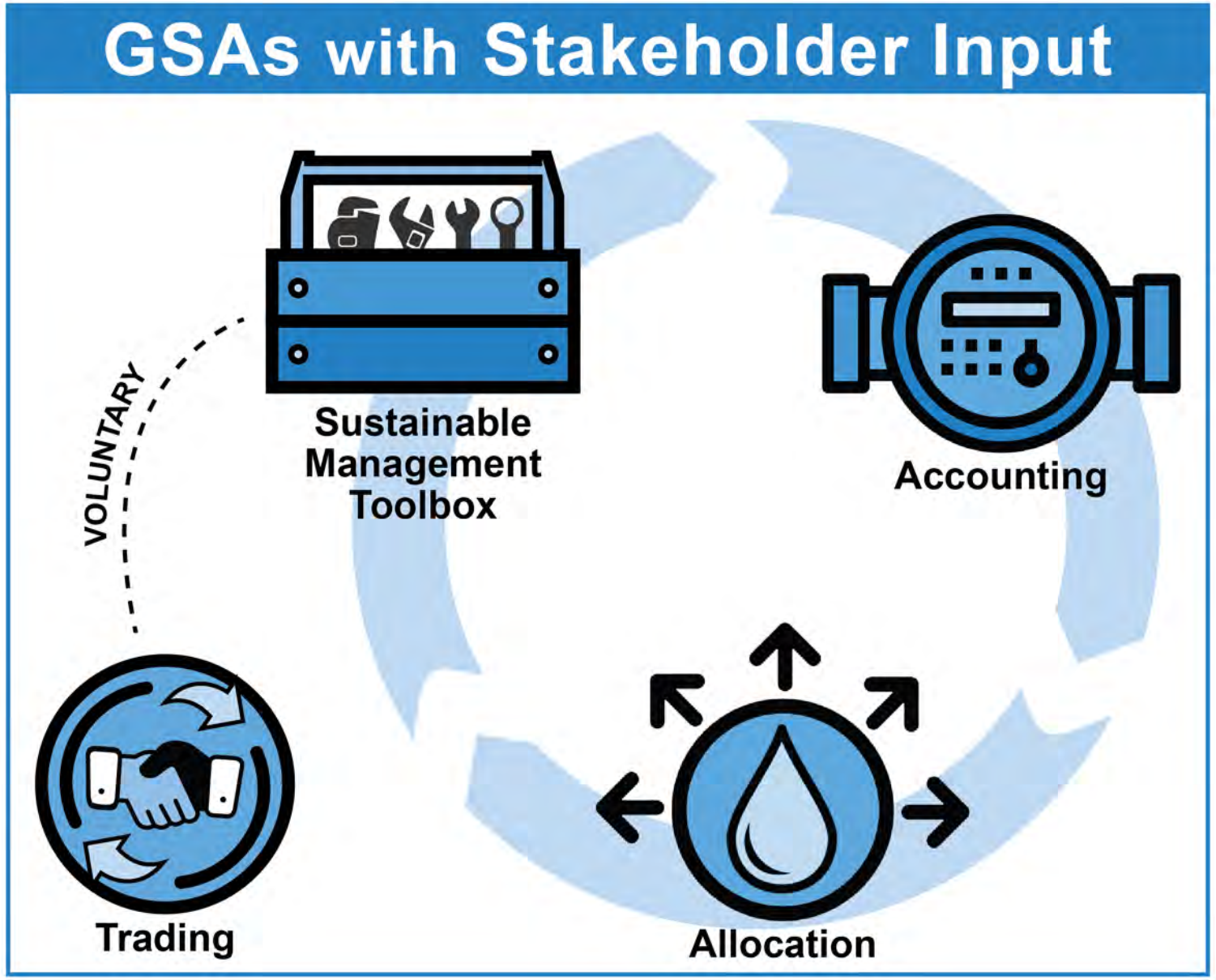
Allocation:
100 AF

Purchased the ability to pump more water

$$

Sold allocation to
Grower A, fallowed crop

Accounting & Allocations: Building Blocks for Groundwater Trading



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Groundwater trading: Best case scenario

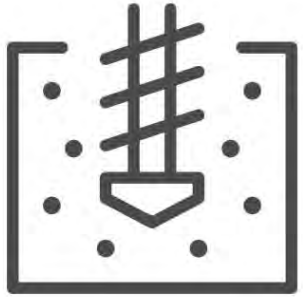
- Flexible, efficient approach to reduction of groundwater use
- Reduced economic impact to individuals, communities, region
- No negative impacts on third parties
- Opportunities for diverse water users to participate in ways that benefit them

Examples of trading impacts relevant to small farmers, community drinking water, and ecosystems:

SGMA undesirable results

Potential Impacts

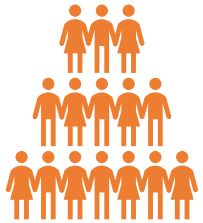
Wells go dry



Contaminated wells

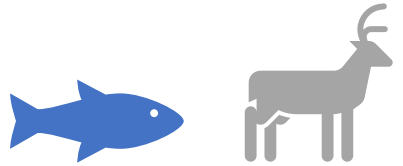
Reduced Surface Water

Impacted Users



Communities

Small farms



Fish and wildlife

Examples of trading rules that could help minimize impacts to small farmers, community drinking water, and ecosystems:

Impacts	Trading rules
Pumping effects can cause nearby shallow wells to go dry	• Spatial concentration limits • Pumping schedules
Contaminant migration can impact well water quality	• Pumping restrictions to prevent migration • Requirements to provide substitute water
Excessive pumping near a river drops its level too low, imperiling fish	• Directional restrictions (”sell-only” zone) • Closure dates
Landowners selling extraction allocations out from under tenant farmers	• Notice requirements • Consent requirements
Various	• Mitigation / compensation requirements

Slide credit: Nell Green Nylen, Wheeler Water Institute, Center for Law, Energy & the Environment (CLEE), UC Berkeley School of Law

Panel Discussion: How will groundwater trading impact different stakeholders?

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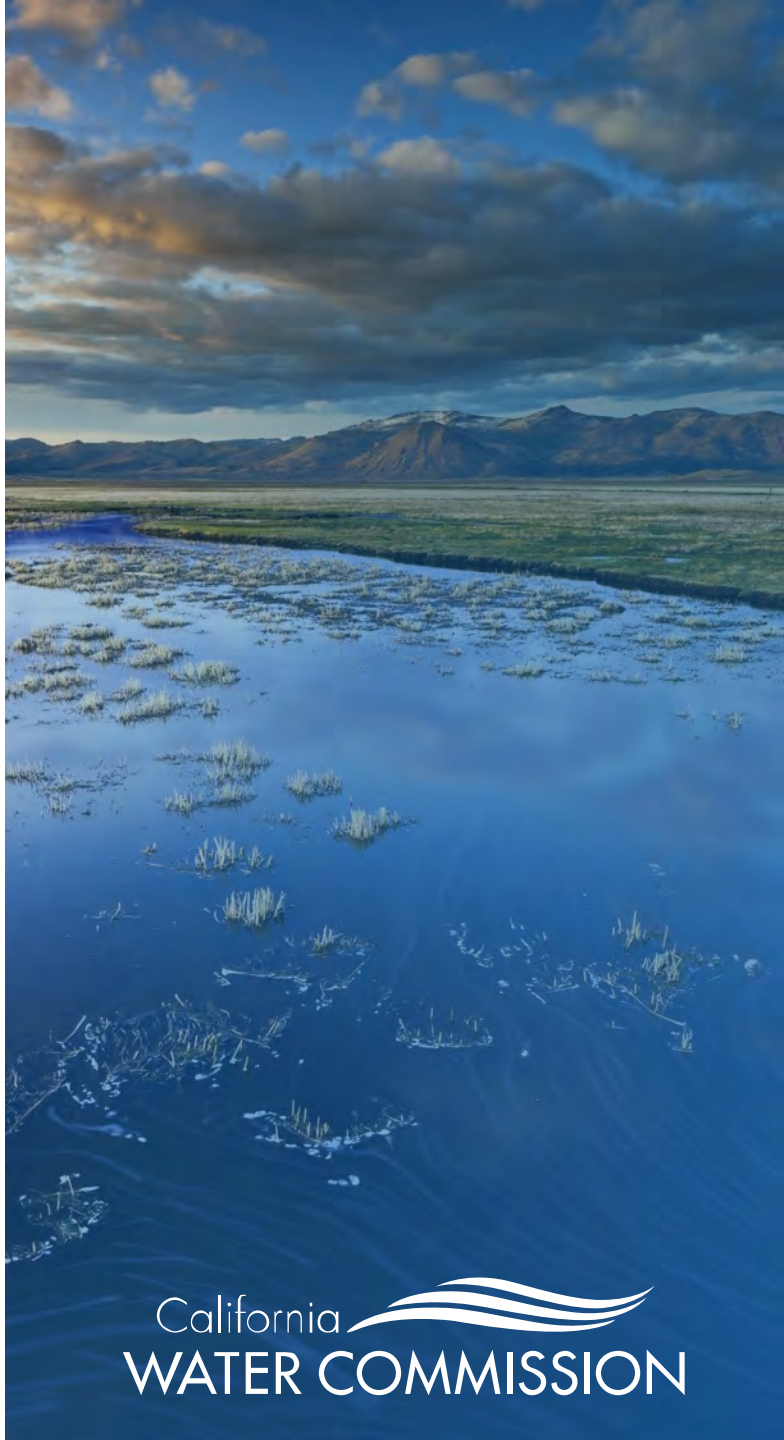
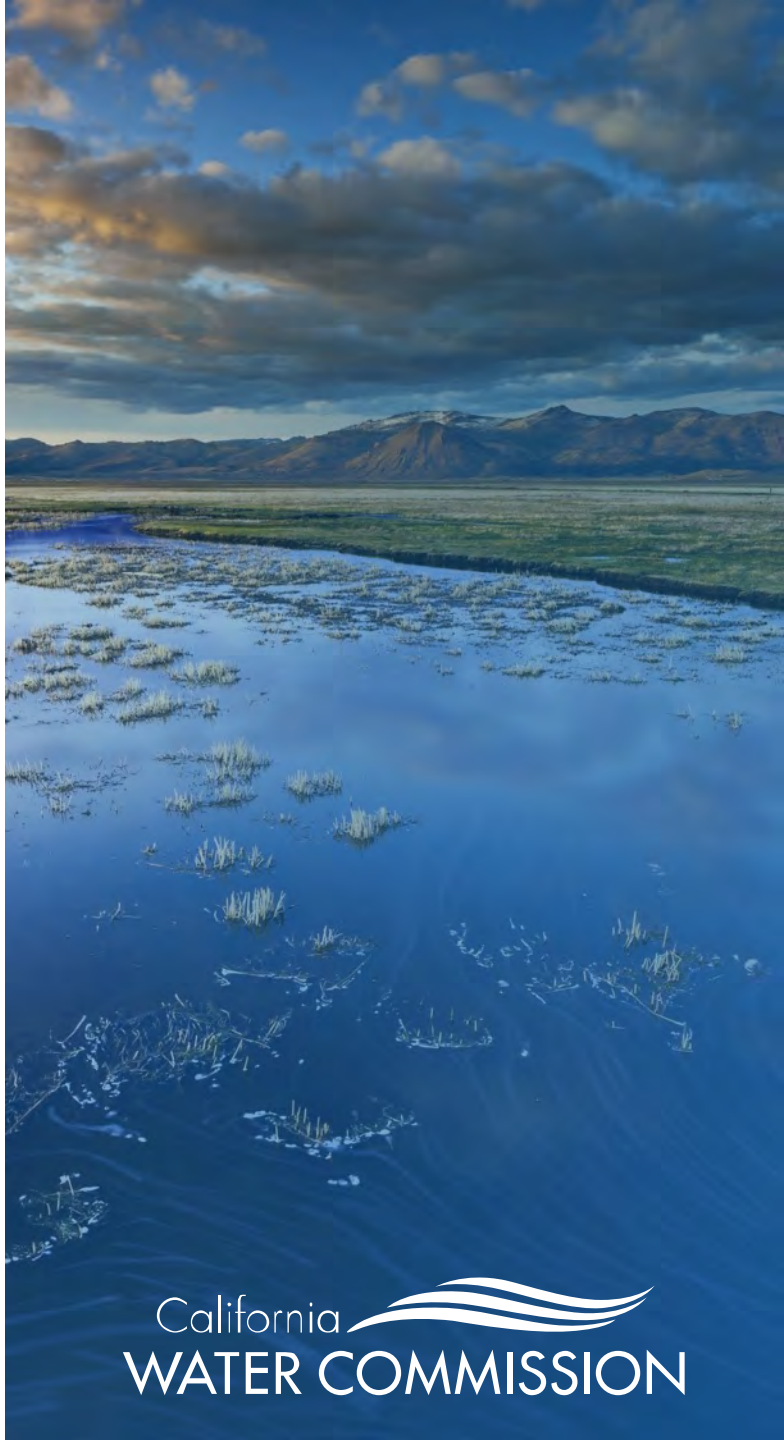
Lightning Round Questions

1. What stakeholders do you represent?
2. How is groundwater trading likely to impact or benefit the stakeholders you represent?
3. What needs to be in place for well-managed groundwater trading to happen successfully while protecting vulnerable users?



Presenters

- **Sarah Heard**, The Nature Conservancy
- **Dave Runsten**, Community Alliance with Family Farmers
- **Aaron Fukuda**, Tulare Irrigation District
- **Eddie Ocampo**, Self-Help Enterprises
- **Christina Babbitt**, Environmental Defense Fund
- **Ruth Dahlquist-Willard**, UC Cooperative Extension
- **Stephanie Anagnoson**, Madera County
- **Amanda Monaco**, Leadership Counsel



The Nature Conservancy

Groundwater Trading: Safeguards for Vulnerable Water Users

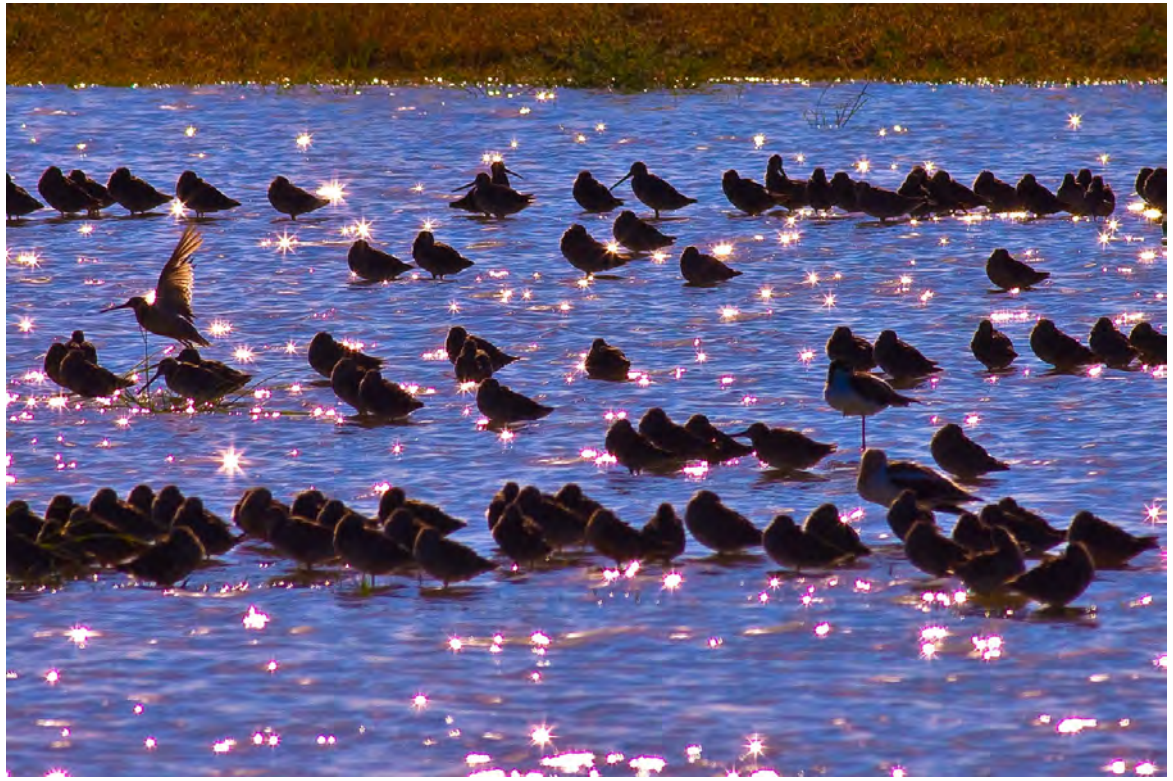
California Water Commission Workshop

Sarah Heard, Director, MarketLab | October 28, 2021

Central Valley's vulnerable environmental resources

90% of groundwater dependent ecosystems have disappeared

Wetlands rely on pumping



Carefully designed markets have several key elements

Sound Groundwater Sustainability Plan (GSP)

Open, public process

Mitigation of 3rd party impacts

Protections against market power

Accurate monitoring of pumping

Market testing + adaptation

Carefully designed markets have several key elements

Sound GSP

Open, public process

Mitigation of 3rd party impacts

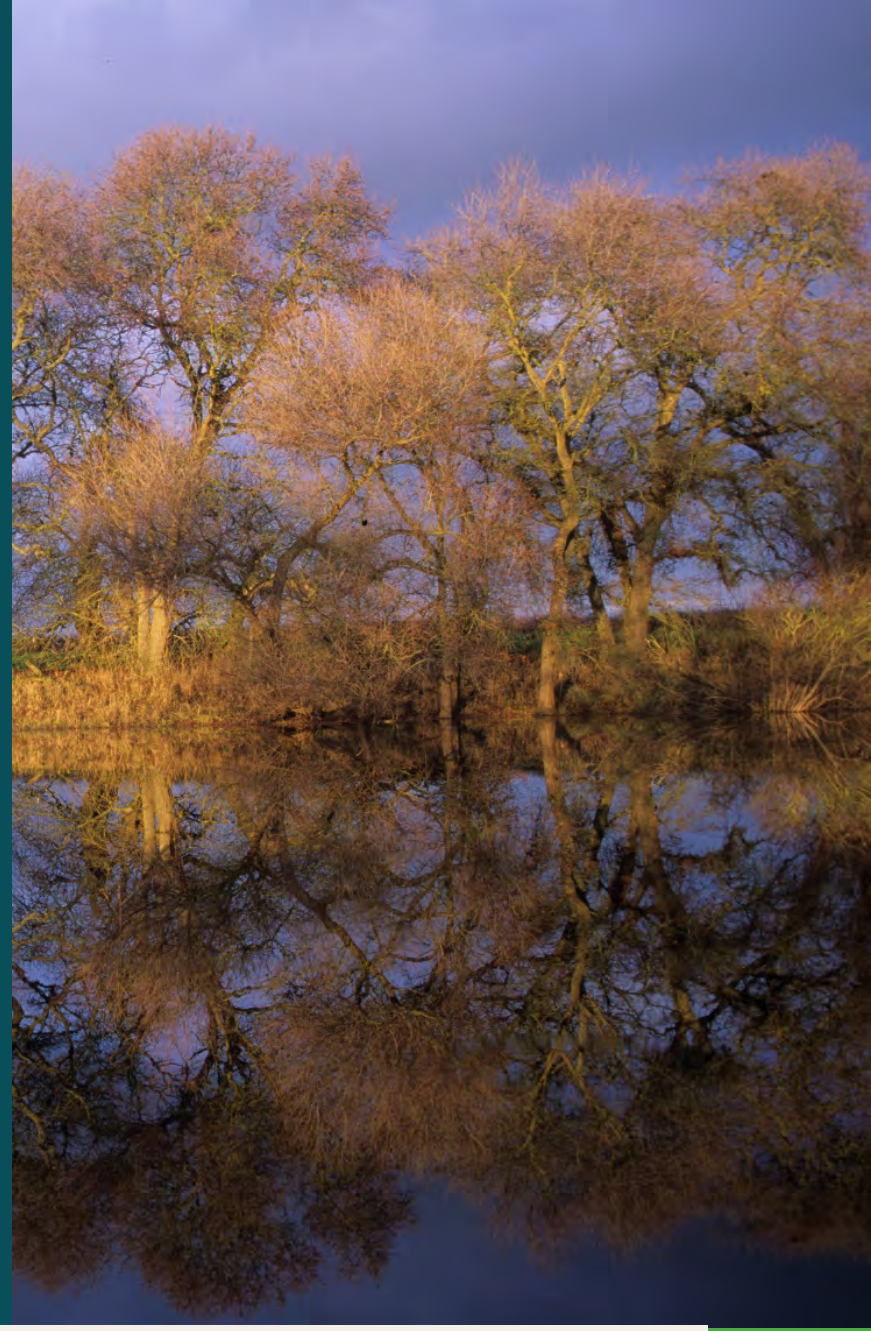
Protections against market power

Accurate monitoring of pumping

Market testing + adaptation

GSPs should provide adequate water for nature

Buying water should not be essential for their survival



A fair, functioning market requires an open process

Environmental stakeholders should be included in market design

Trading can concentrate pumping + impact sensitive resources

Special Management Areas are a tool to mitigate this risk

Dave Runsten
Community Alliance with Family Farmers (CAFF)

CAFF represents small- and medium-scale family farms, from urban gardens to 400-acre diversified organic farms. We also work with larger farms on climate smart practices.

Groundwater trading in overdrafted basins will be necessary for small farms to have access to additional water when they need it, such as during droughts. But it must be managed in such a way that it does not disadvantage small farms or incentivize landowners to sell the water out from under tenant farmers

Small farms cannot be expected to purchase additional water in a groundwater market on an ongoing basis

Small farms are not in a position to idle large parts of their land, so unless they are given a higher per acre allocation in areas solely dependent on groundwater, they are unlikely to survive.

CAFF
COMMUNITY ALLIANCE with FAMILY FARMERS

Groundwater trading that protects small farms

In the allocation process, create allocations for drinking water and small farms that provide them the water they need in a normal year

- Small farms should be declared de minimis and need to purchase groundwater from a water market only during drought conditions, i.e. if surface water is cut or pumping allowances are reduced.
- How do we define small farms? Acreage? Sales? Local markets? Crop? Socially disadvantaged?

Market design:

• Neutral third-party administrator • Anonymous users • Metered wells • Start small and evaluate frequently, limiting trading initially • Adaptive management
• Transparency of data • Stakeholder participation • Special management areas to avoid dry wells or environmental impacts • Limit trading to ag-to-ag only

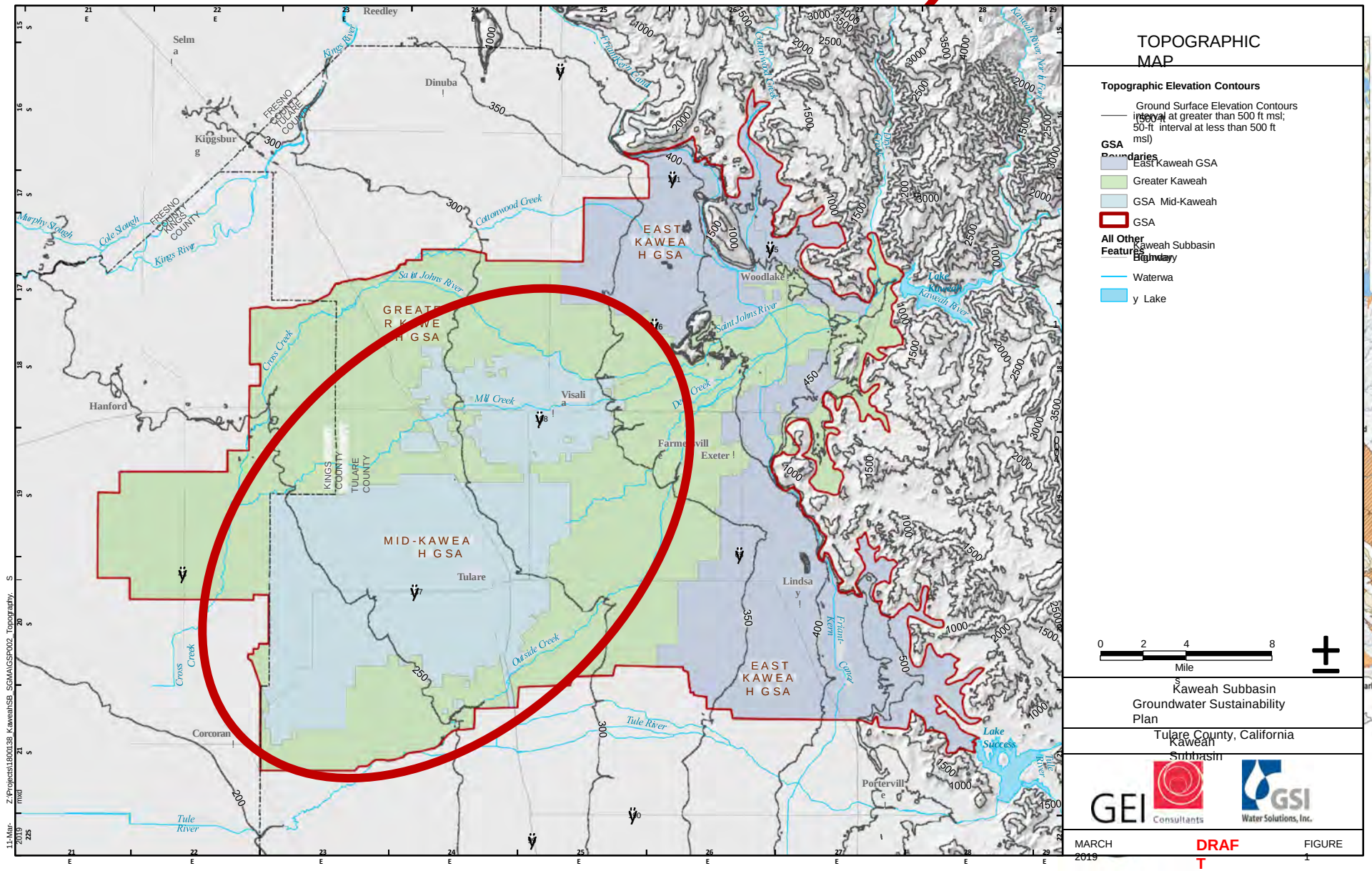
CAFF
COMMUNITY ALLIANCE with FAMILY FARMERS

Kaweah Subbasin Water Marketing Strategy

A Local Perspective on Groundwater Markets

Kaweah Sub Basin

Mid-Kaweah GSA



TOPOGRAPHIC MAP

Topographic Elevation Contours

Ground Surface Elevation Contours interval at greater than 500 ft msl; 50-ft interval at less than 500 ft msl)

GSA Boundaries

East Kaweah GSA

Greater Kaweah

GSA Mid-Kaweah

GSA

All Other Features

Kaweah Subbasin Boundary

Waterwa

y Lake

0 2 4 8

Miles

Kaweah Subbasin Groundwater Sustainability Plan

Tulare County, California

Kaweah Subbasin

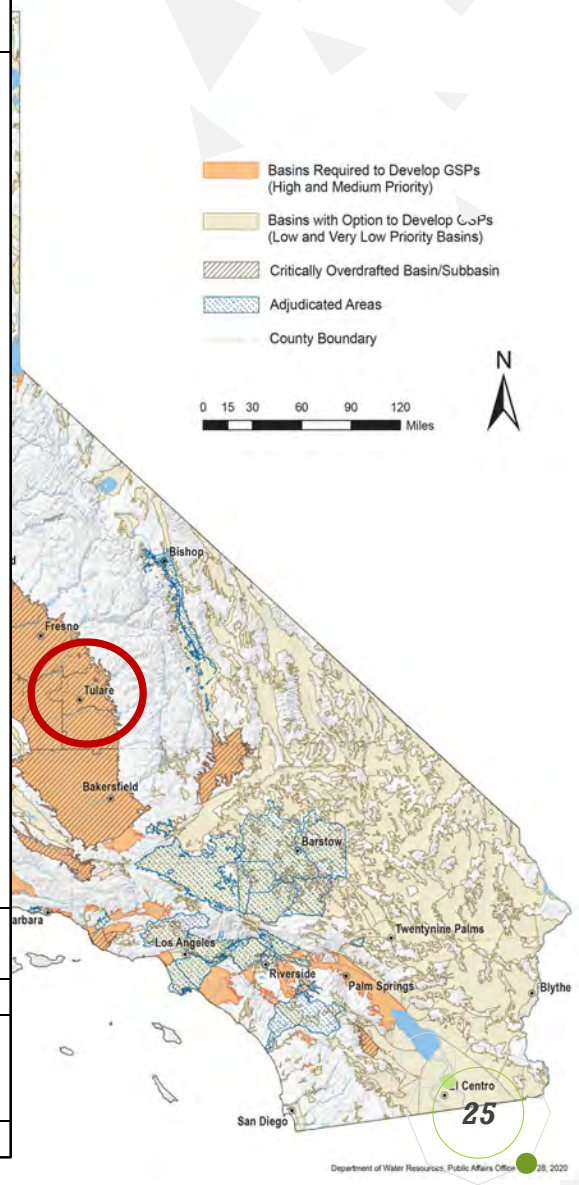
GEI Consultants

GSI Water Solutions, Inc.

MARCH 2019

DRAFT

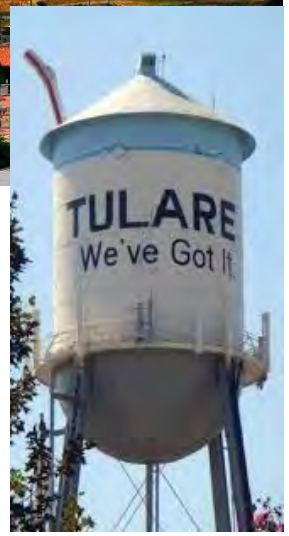
FIGURE 1



Kaweah Subbasin

Agriculture

Urban



Industrial

Disadvantaged Communities

Environmental

Goal of the Kaweah Subbasin Water Marketing Strategy

Allow for the transfer of water resources to assist beneficial users with securing reliable water supplies

- Without impacting beneficial users
- Keeping the local agricultural economy vibrant and active
- Retaining the social fabric of the area
- Enhancing local communities including the environment
- Achieving sustainability goals required under SGMA

Kaweah Subbasin Marketing Strategy

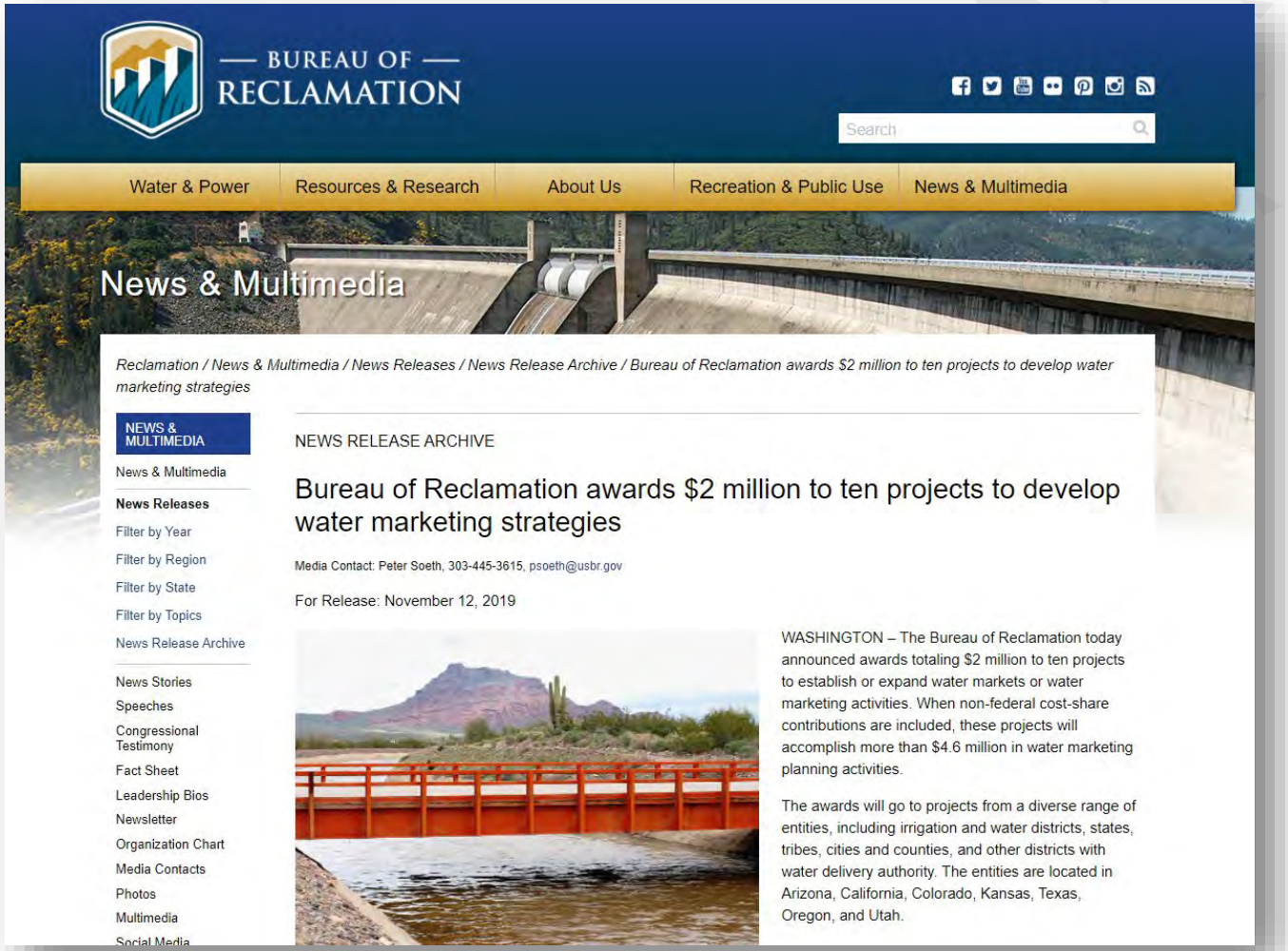
RECLAMATION
Managing Water in the West

Funding Opportunity Announcement No. BOR-DO-19-F006

WaterSMART Grants: Water Marketing Strategy Grants for Fiscal Year 2019

U.S. Department of the Interior
Bureau of Reclamation
Policy and Administration
Denver, Colorado

May 2019



Manager's Corner – Market Thoughts

Accelerated Development

With back-to-back dry years the GSAs and WMS Committee have accelerated the timeframe to develop the WMS

Accelerated Water Allocation Process

Market is for Kaweah Subbasin

The WMS is intended to serve the needs of beneficial users in the Kaweah Subbasin.

The Market is NOT:

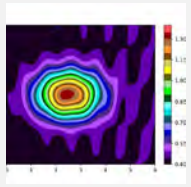
For investors/landowners outside of the Kaweah Subbasin

To monetize water for investment by outsiders

DACs and Environmental

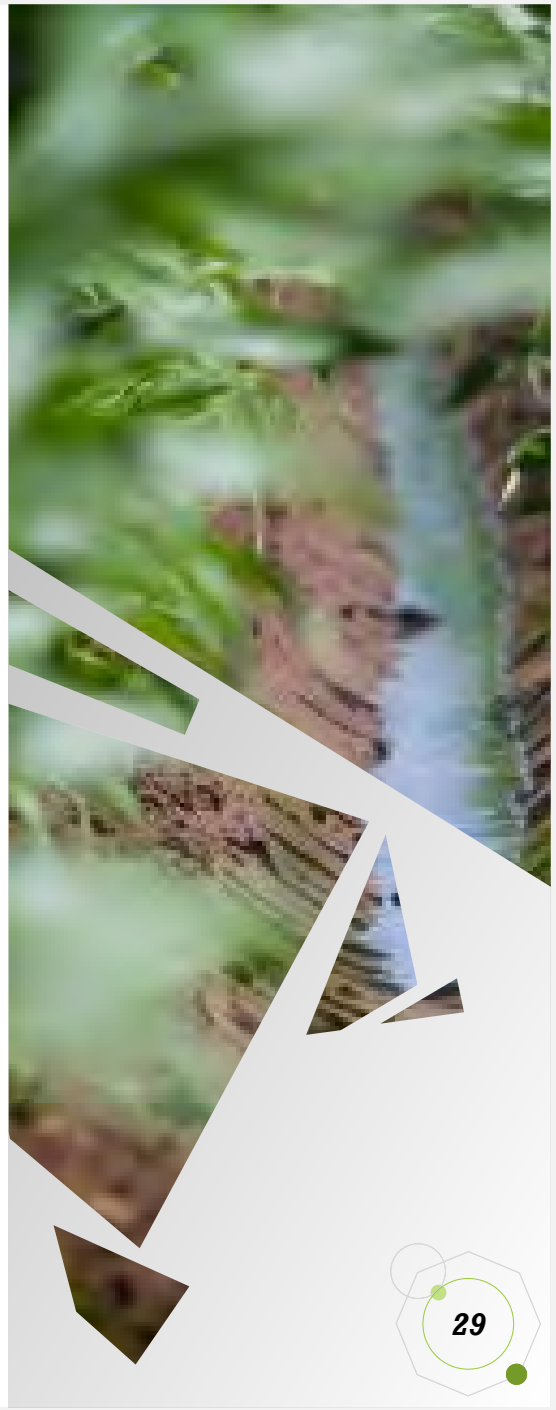
The needs of our DACs and Environment should be considered in the WMS

Can they be part of the market rather than just protected from the market?

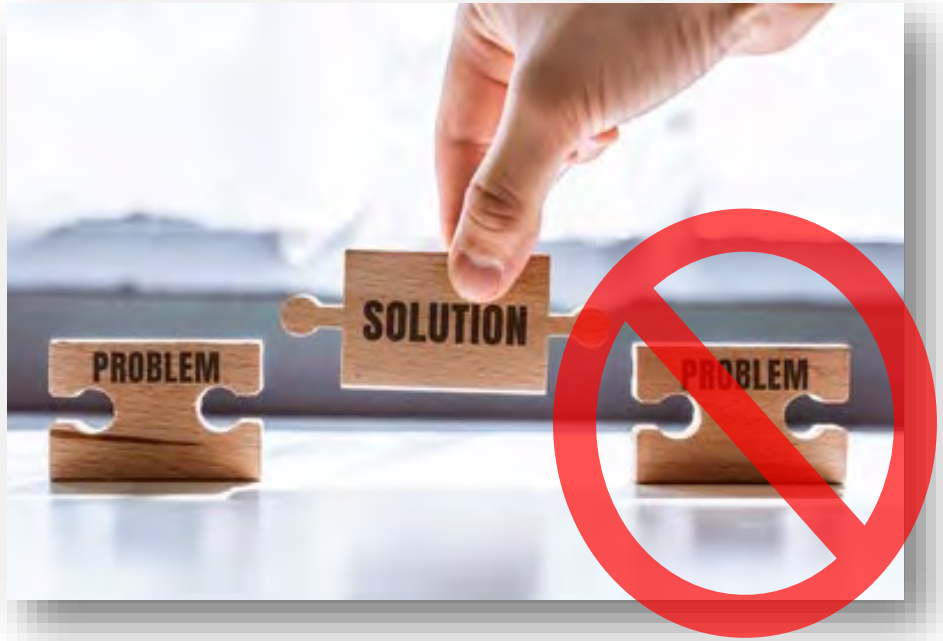


Trading is Localized

Trading is localized such that it will not impact local groundwater levels



Conclusion



Groundwater Markets will not solve all of our problems.

Thank You

Aaron Fukuda – Tulare Irrigation District / Mid-Kaweah GSA

(559) 686-3425

akf@tulareid.org

www.tulareid.org

October 28 Groundwater Trading Workshop

Eddie Ocampo
Director, Community Sustainability
Self-Help Enterprises

What stakeholders does your organization represent?

How is groundwater trading likely to impact or benefit the stakeholders you represent?

Potential Benefits

- Assurance that no over-pumping is occurring near or by domestic wells
- Creation of protected areas (i.e. Buffer Zones)
- Incentivizing projects that achieve multiple benefits
- Encourage conservation and efficient practices for all users of groundwater
- Enable cooperation, transparency, mutual benefits, and cost effectiveness of a market

Potential Impacts

- Localized drying of community and domestic wells
- Increased contamination levels
- Unaffordable water rates

What needs to be in place for well-managed groundwater trading to happen successfully while protecting vulnerable users?

1. Establishing extraction limit.
2. Creating Management Areas
3. Setting up monitoring networks and triggers
4. Emergency drinking water mitigation plans
5. Engaging community stakeholders (i.e. small community water systems and domestic well owners)

Thank you!

Eddie Ocampo
Director, Community Sustainability
Self-Help Enterprises
EddieO@selfhelpenterprises.org
(559) 802-1683

Advancing Well-Designed Water Trading Programs in California

Christina Babbitt, Environmental Defense Fund
California Water Committee Meeting

October 29, 2021

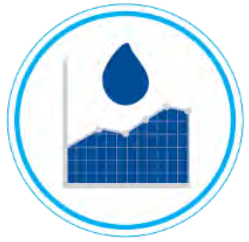
EDF
ENVIRONMENTAL DEFENSE FUND
Finding the ways that work


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

Well-designed water trading programs include…

Community engagement

Allocations to meet diverse needs



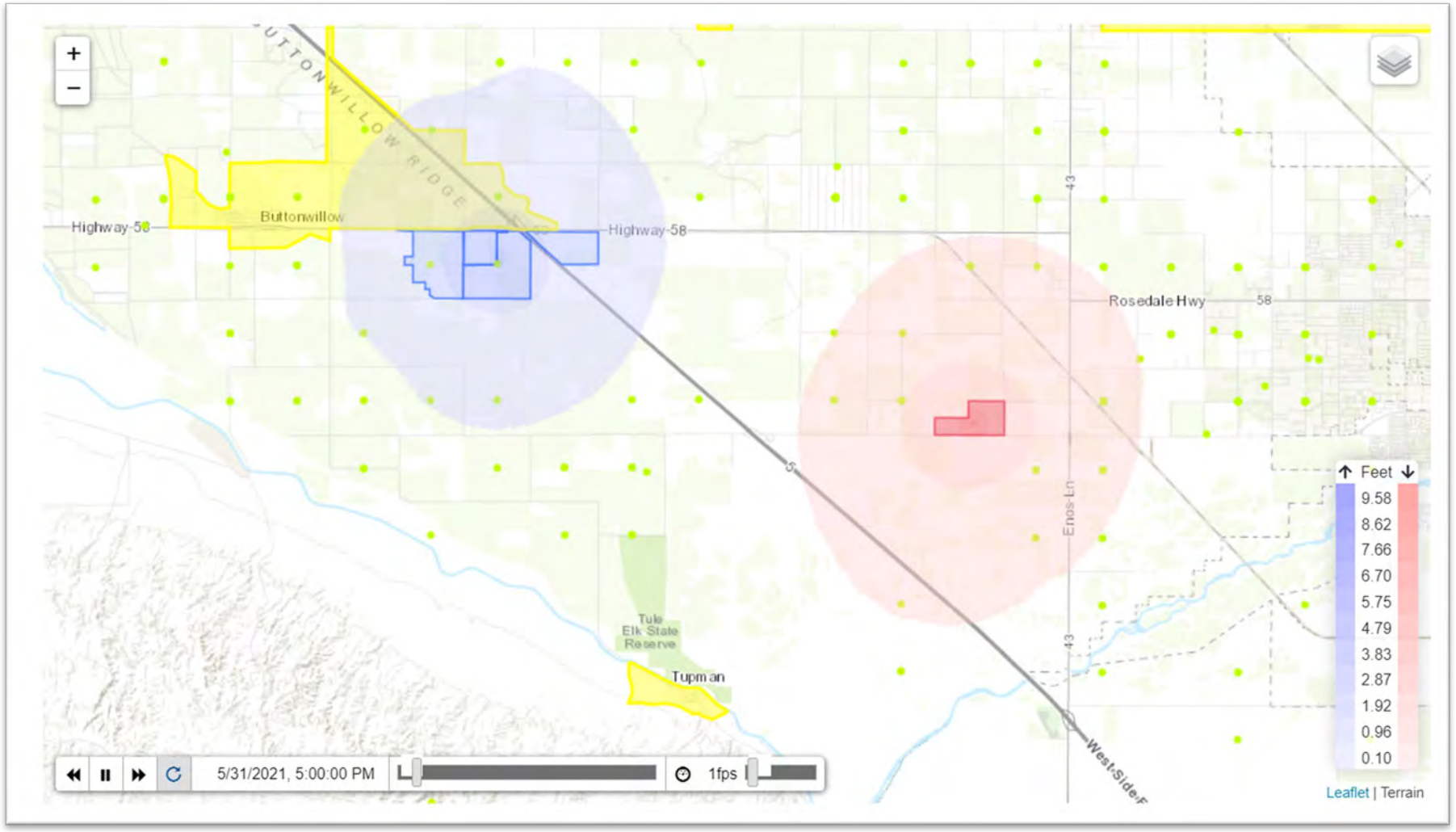
Water budget & accounting

Well-designed trading rules

Monitoring & reporting

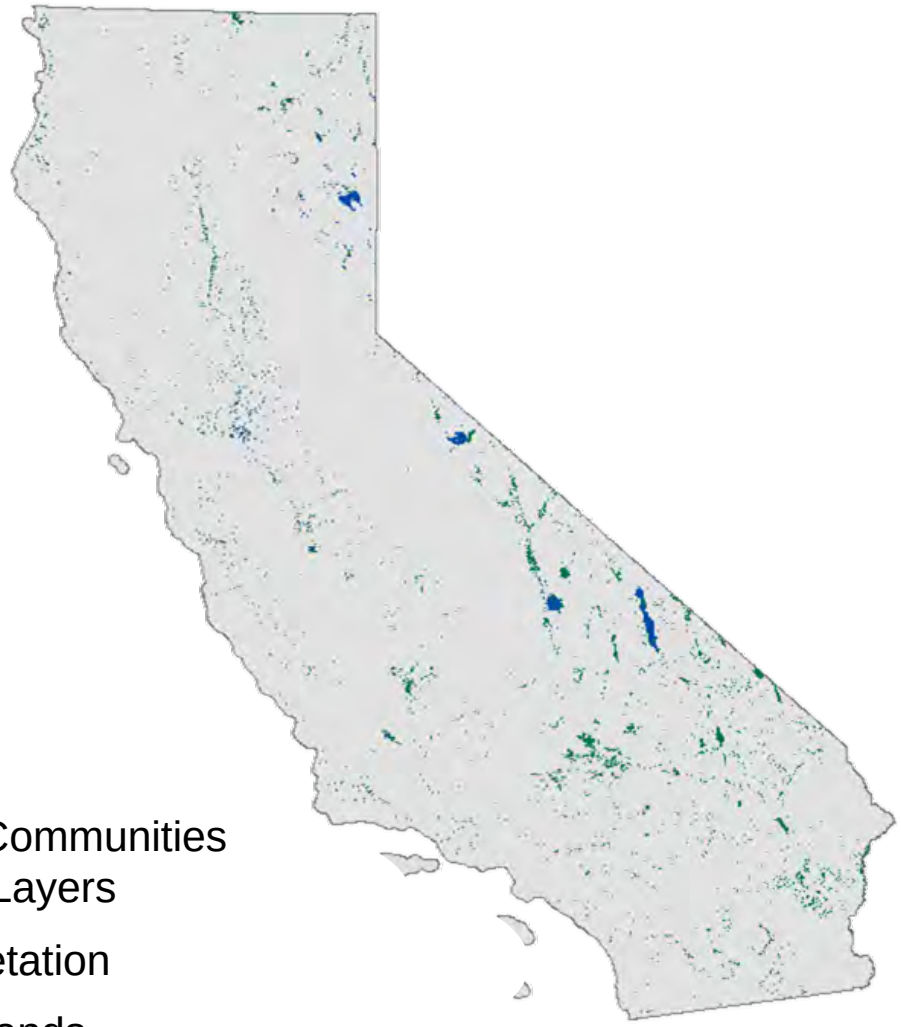
Flexibility & adjustment

Understanding how a water trading program can affect groundwater levels



- Seller parcel
- Buyer parcel
- Disadvantaged community
- Domestic well

Groundwater Dependent Ecosystems



Natural Communities Dataset Layers

- Vegetation
- Wetlands

Ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface

GDE Resources: https://groundwaterresourcehub.org/

Small-scale, socially disadvantaged farmers in the San Joaquin Valley

SJV Region	Farms < $100,00 in sales	Socially disadvantaged operators	Socially disadvantaged and < $100,00
Merced, Stanislaus, San Joaquin	6,682	2,972	2,167
Fresno, Tulare	4,918	4,798	3,518

"Socially disadvantaged" includes African American, Native Indian, Hispanic, and Asian American farmers under the Farmer Equity Act of 2017 (AB-1348)

USDA-NASS, 2017
Molinar and Yang, 2007
Sowerwine and Getz, 2013

How is groundwater trading likely to impact small farms in the SJV?

- Higher transaction costs to participate
- Small farms often not involved in decision-making
- Possibility of exclusion from trades within existing networks
  - e.g. groups of farmers selling to same buyer
- Lack the flexibility of larger farms and owners of multiple parcels
- Shallower wells, more vulnerable to local decreases in GW levels
- High risks for tenant farmers
  - Price of water compared to amount of yearly lease
  - Length of lease and security of land tenure
  - Fallowing programs and incentives also have this risk

Valerie Shelton

Protecting small farms in groundwater markets:

Market design:

- Neutral third-party administrator
- Anonymous users
- Start small and evaluate frequently
  - Adaptive management
  - Transparency of data
- Stakeholder participation
- Restrictions on trading
  - Special management areas
  - Limit trading to ag-to-ag only

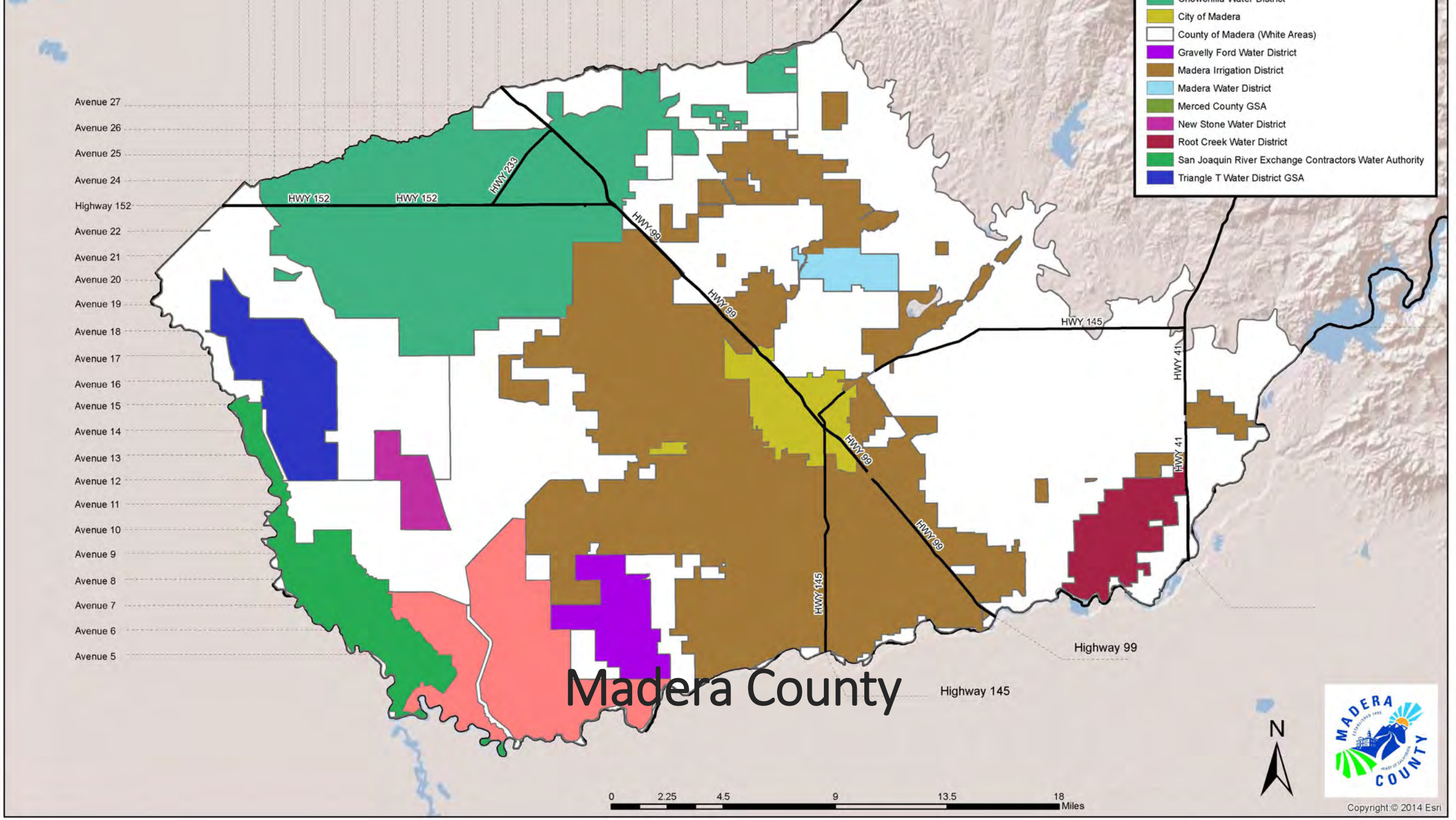
SGMA allocations by GSAs:

- Define exceptions for vulnerable communities
- Structure allocations to protect these groundwater users

Assistance:

- Fund third-party organizations to facilitate market access
  - Technical assistance
  - Outreach and education
  - Managing groundwater trades for groups of small farms


MADERA
ESTABLISHED 1893
HEART OF CALIFORNIA
COUNTY


City of Madera
County of Madera (White Areas)
Gravelly Ford Water District
Madera Irrigation District
Madera Water District
Merced County GSA
New Stone Water District
Root Creek Water District
San Joaquin River Exchange Contractors Water Authority
Triangle T Water District GSA
Avenue 27
Avenue 26
Avenue 25
Avenue 24
Highway 152
Avenue 22
Avenue 21
Avenue 20
Avenue 19
Avenue 18
Avenue 17
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HWY 41
Highway 99
Highway 145
Madera County
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2.25
4.5
9
13.5
18
Miles
N
MADERA COUNTY
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Bureau of Reclamation WaterSMART Water Market Strategy Grant

Strong grower interest in a water market led Madera County to apply for the grant in 2018

Grant tasks include:

- Stakeholder Interviews
- Workshops
- Creation of Rules
- Creation and Operation of a Pilot Program: Simulation

Pilot Project: A Simulation

A simulation of a groundwater market

- 9-month period of real time simulated 9 years between 2020 and 2040
- Trades of sustainable yield allocation water occurred each month
- 58 people signed up; 25 people reliably participated each month
- Crops and zones were assigned to growers
- Variable hydrology including lengthy dry periods
- Feedback was provided during the trade once a month

Challenges in Simulation

- Growers reduced their acreage rather than sold water
- Permanent crops and their high demand made for a less flexible market
- Expectation from ranchers of the ability to sell groundwater that they were not using
- Expectation from growers that this was the entire solution to water scarcity
- Learning curve for market function
- Administration of the market

LEADERSHIP COUNSEL FOR JUSTICE & ACCOUNTABILITY

Disadvantaged Unincorporated Communities & Groundwater Markets in the San Joaquin Valley

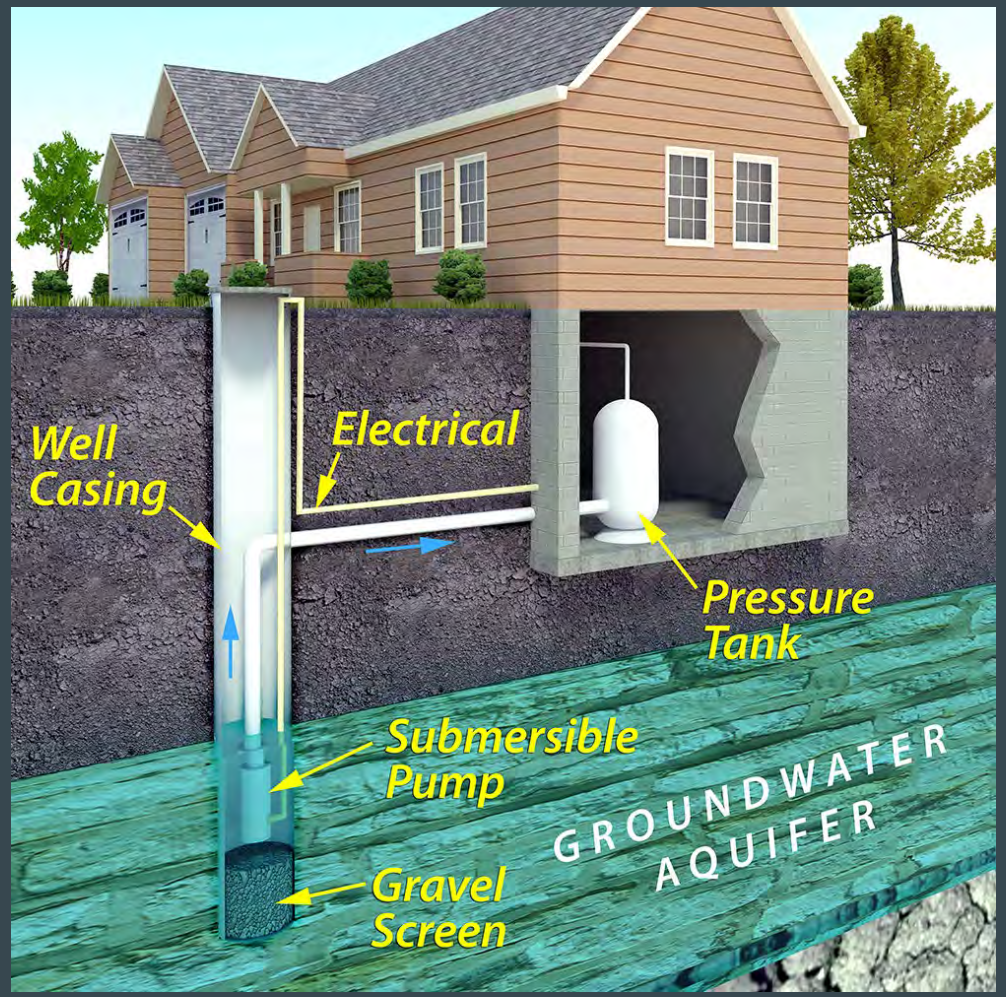
Presentation by Amanda Monaco

for the

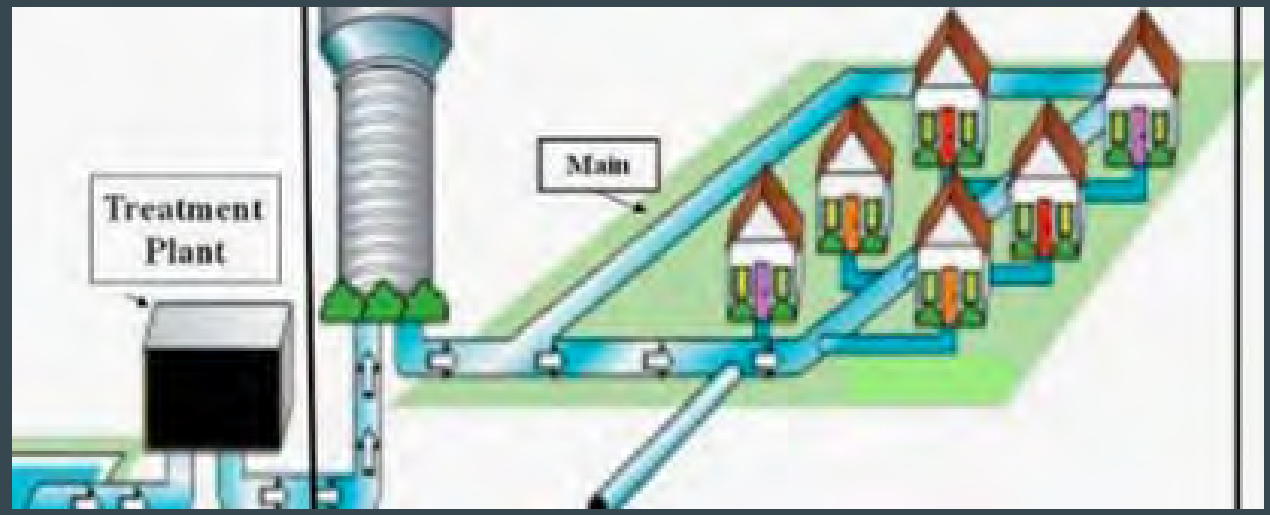
California Water Commission Groundwater Trading Workshop

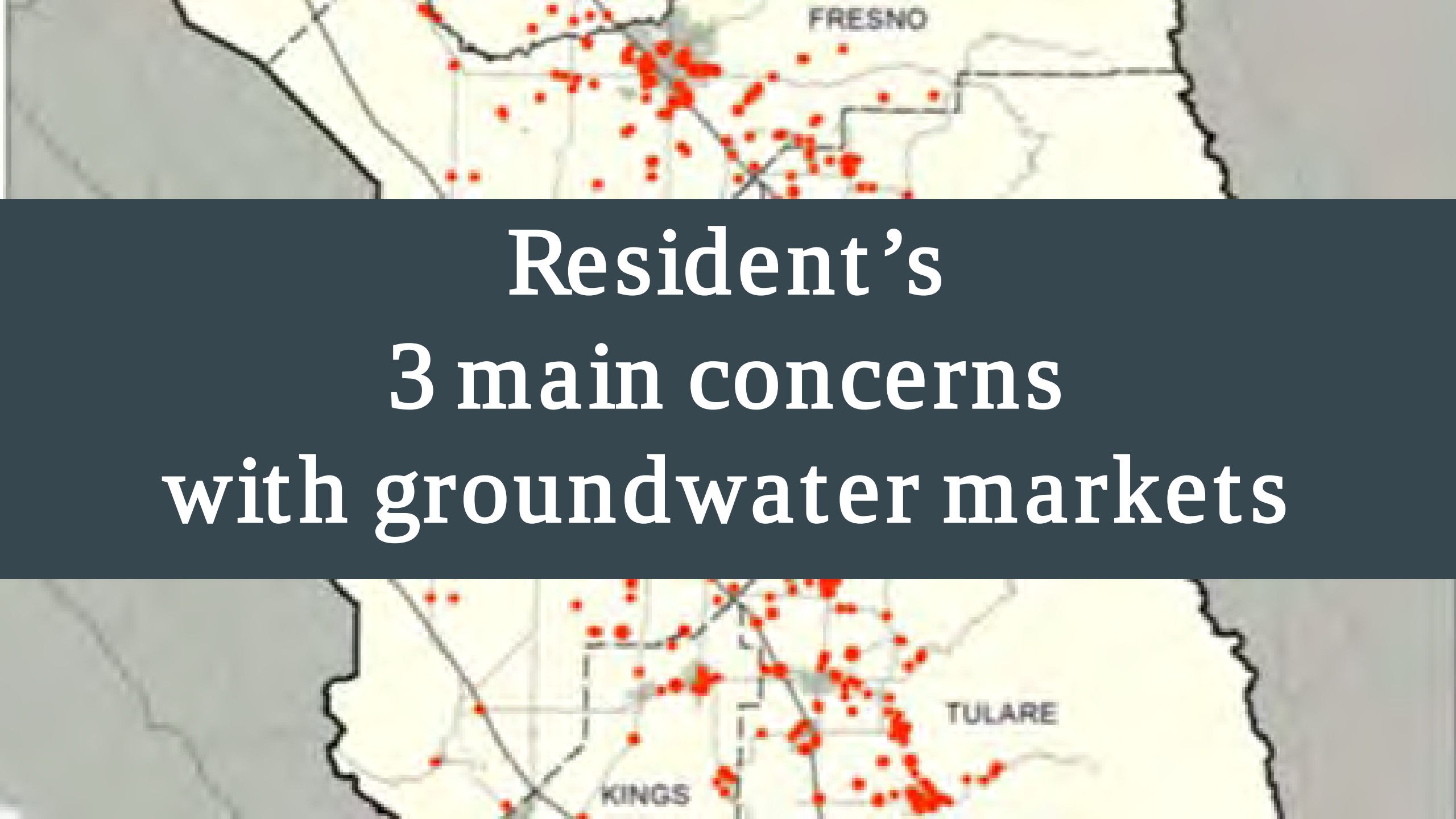
October 29th, 2021

Leadership Counsel &our community partners

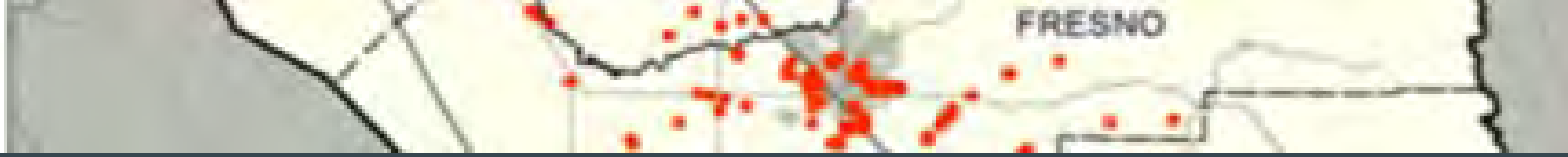


Disadvantaged communities in the San Joaquin Valley are the most vulnerable to falling groundwater levels, since they depend on shallow domestic wells and small community water systems.





Resident's 3 main concerns with groundwater markets

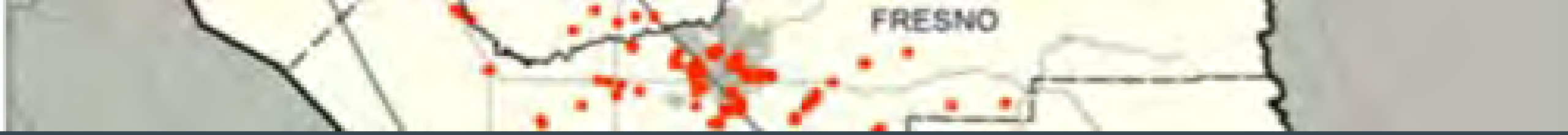


1. Exacerbating existing inequities in water management

More financial power = more water

Technical and financial barriers to participating in market

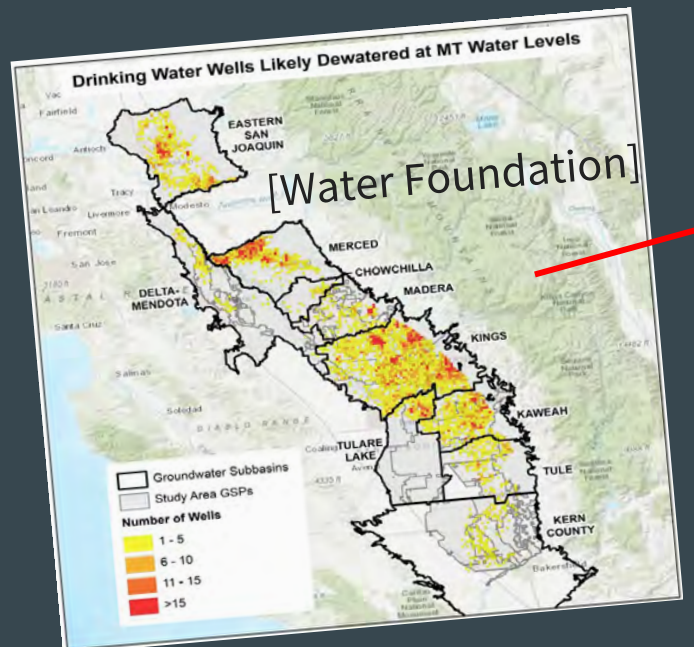
Localized impacts from concentrated pumping



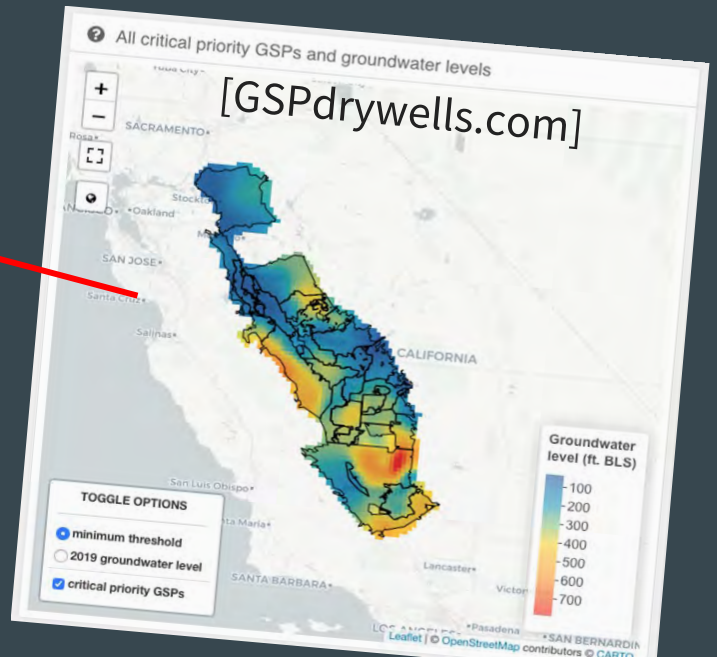
2. Concerns about governance: lack of trust in GSAs to protect drinking water.

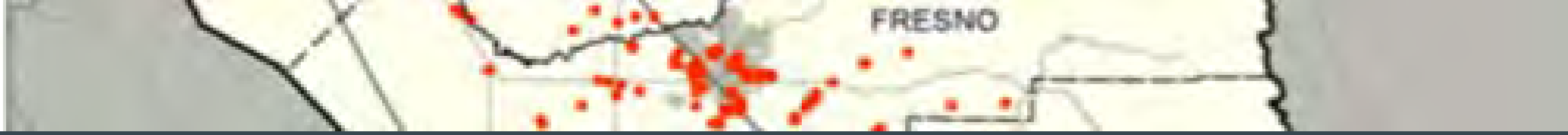
Wells continually going dry, even without drought

GSPs plan for up to 12,000 more wells to go dry in the SJV



9,200 – 12,000 dry wells from allowed groundwater decline in GSPs in the SJV





3. Water is essential to life.

We should manage it as a public trust for everyone's benefit regardless of ability to pay, and not put it up for sale. #HumanRight2Water

Instead of markets, use other tools to protect groundwater:

1. **Many other tools to influence individual behavior:** allocations, incentives/credits, fees
2. Set **management goals (SMC)** that protect drinking water access and quality
3. Help **connect vulnerable homes** to reliable water supplies.
4. Gather **complete data** about vulnerable drinking water users
5. Tight **monitoring** of drinking water impacts

Thank you!

Amanda Monaco
Water Policy Coordinator
Leadership Counsel for Justice & Accountability
amonaco@leadershipcounsel.org

Discussion: Thoughts, Opinions, and Concerns about Groundwater Trading

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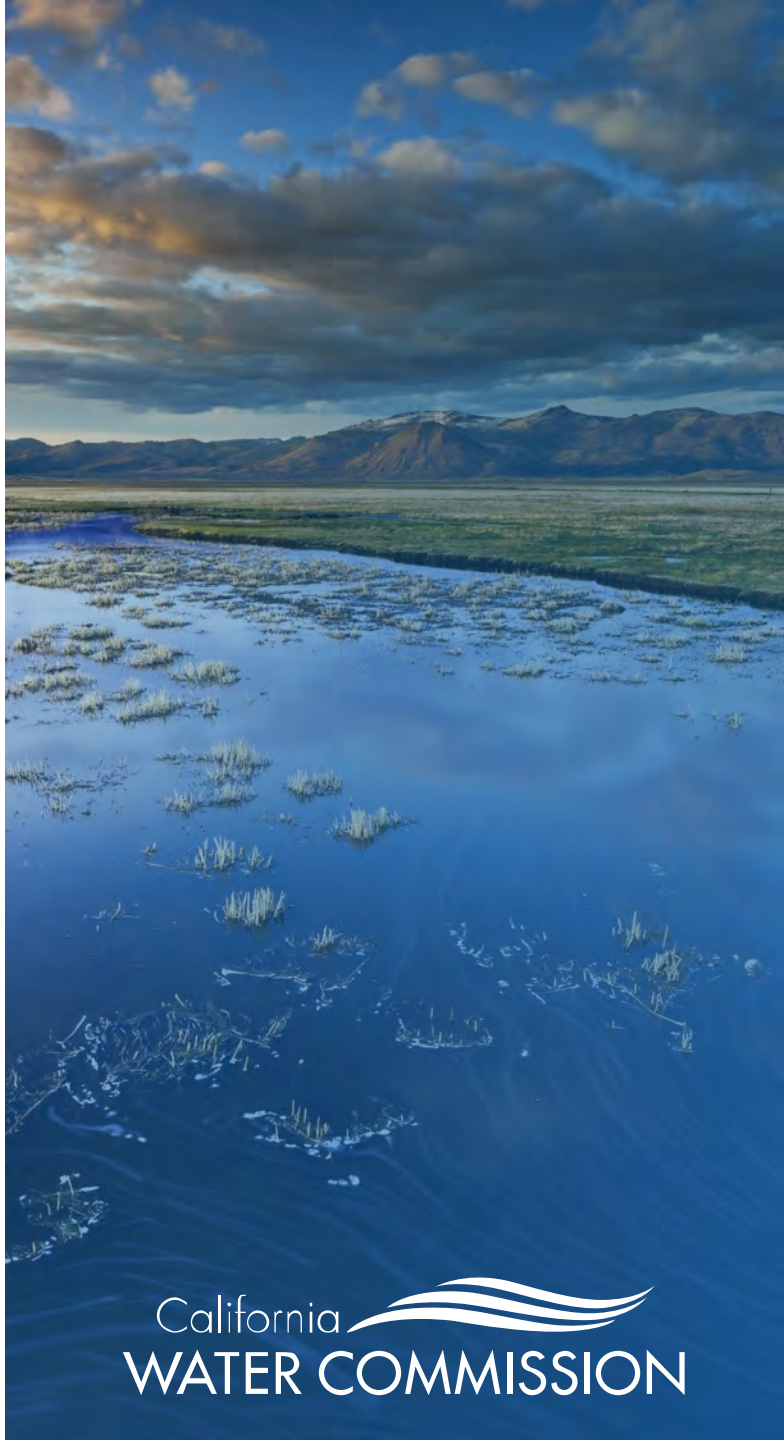
We’d Love to Hear What You Are Thinking About Groundwater Trading in California.

Two Options

- Raise Hand to Offer a Verbal Comment
- Make Comments in Chat Box



Presentation: Cross-Cutting Themes and Points of Divergence

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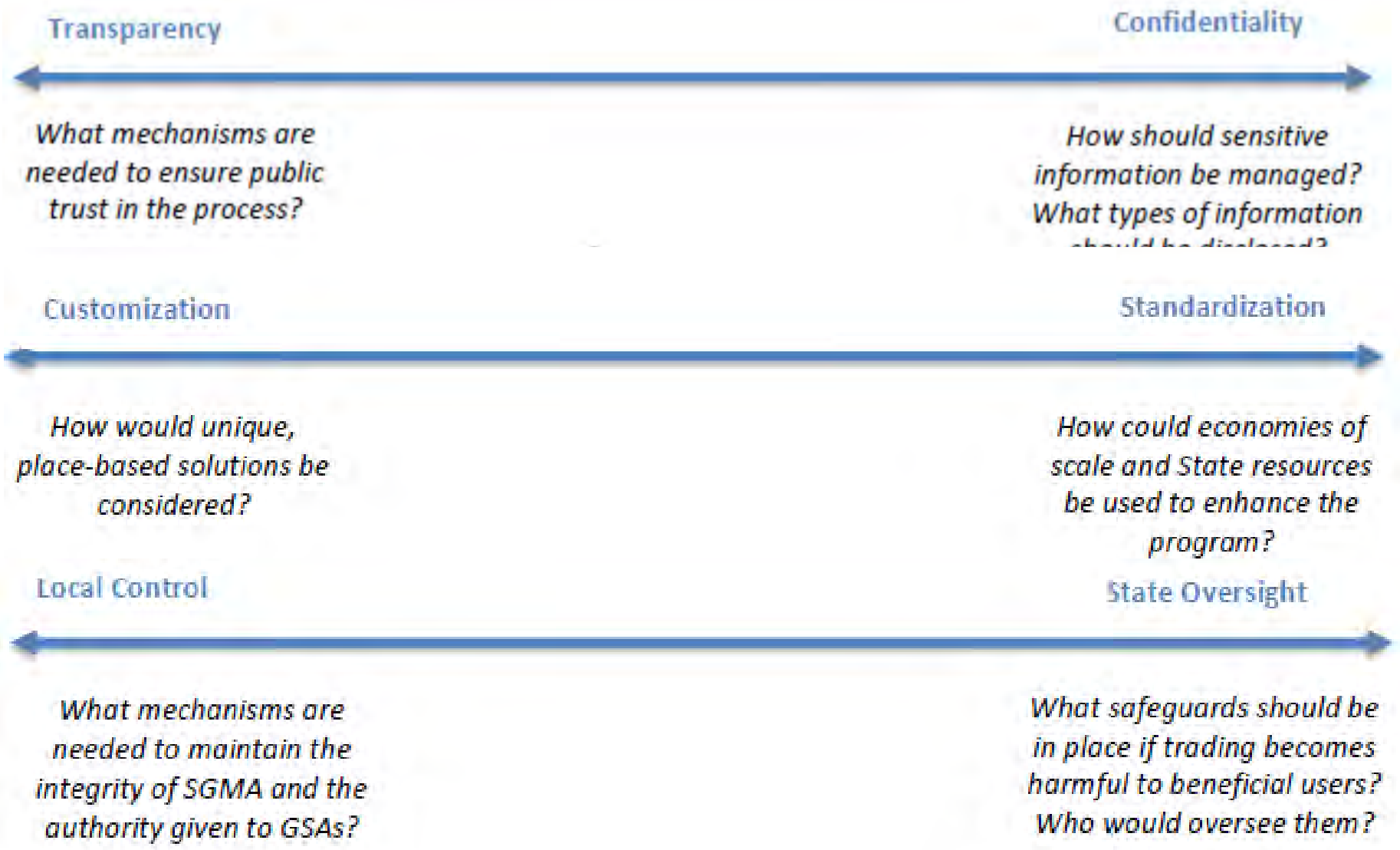
Cross-cutting themes

- Trust is critical
- Part of a larger groundwater management effort
- Good data is imperative
- Start small – geographically, temporally
- Beware market power & gaming the system

Points of Divergence



Breakout Session: Points of Divergence

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Reports Back: Points of Divergence

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Presentation: The Role of the State

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Role for the State

- Provide information & education
- Provide technical & financial assistance
- Provide guidance/minimum standards
- Ensure metrics, monitoring are in place
- Ensure Human Right to Water is met
- Enforce safeguards for vulnerable users
- Other?

Large-group Discussion: The Role of the State

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Next Steps

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Commission timeline

Frame the Issue

- Expert Panels
- Small Group Conversations

June - September 2021

Hold Public Discussions

- Localized Outreach
- Public Workshops

September - November 2021

Draft White Paper

- Present Draft
- Present Final

January - March 2022

Contacts

Laura.Jensen@water.ca.gov
Joseph.Yun@water.ca.gov

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Thank you.
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