Reducing Inequality through Better Groundwater Management

2021 CA Environmental Assembly

January 28, 2021

Introducing Panelists & Host

Moderator: **Jennifer Clary**
California Director
Clean Water Action

Susan Fricke
Water Quality Program Manager
Karuk Tribe Department of Natural Resources

Panelist: **Amanda Monaco**
Water Policy Coordinator
Leadership Counsel for Justice and Accountability

Panelist: **Justine Massey**
Policy Advocate
Community Water Center

Panelist: **Angela Islais**
Community Development Specialist
Self-Help Enterprises

SGMA Basics: Defining Sustainability

The absence of undesirable results, which are

Significant and unreasonable….

- Lowering of groundwater levels
- Reduction of groundwater storage
- Seawater intrusion
- **Degraded water quality**
- Land subsidence
- Surface water depletions

Beneficial uses and users

The groundwater sustainability agency shall consider the interests of all beneficial uses and users of groundwater

Holders of overlying groundwater rights, including:

Agricultural users.

Domestic well owners.

Municipal well operators.

Public water systems.

Local land use planning agencies.

Environmental users of groundwater

Surface water users, if there is a hydrologic connection between surface and groundwater bodies.

The federal government

California Native American tribes.

Disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems.

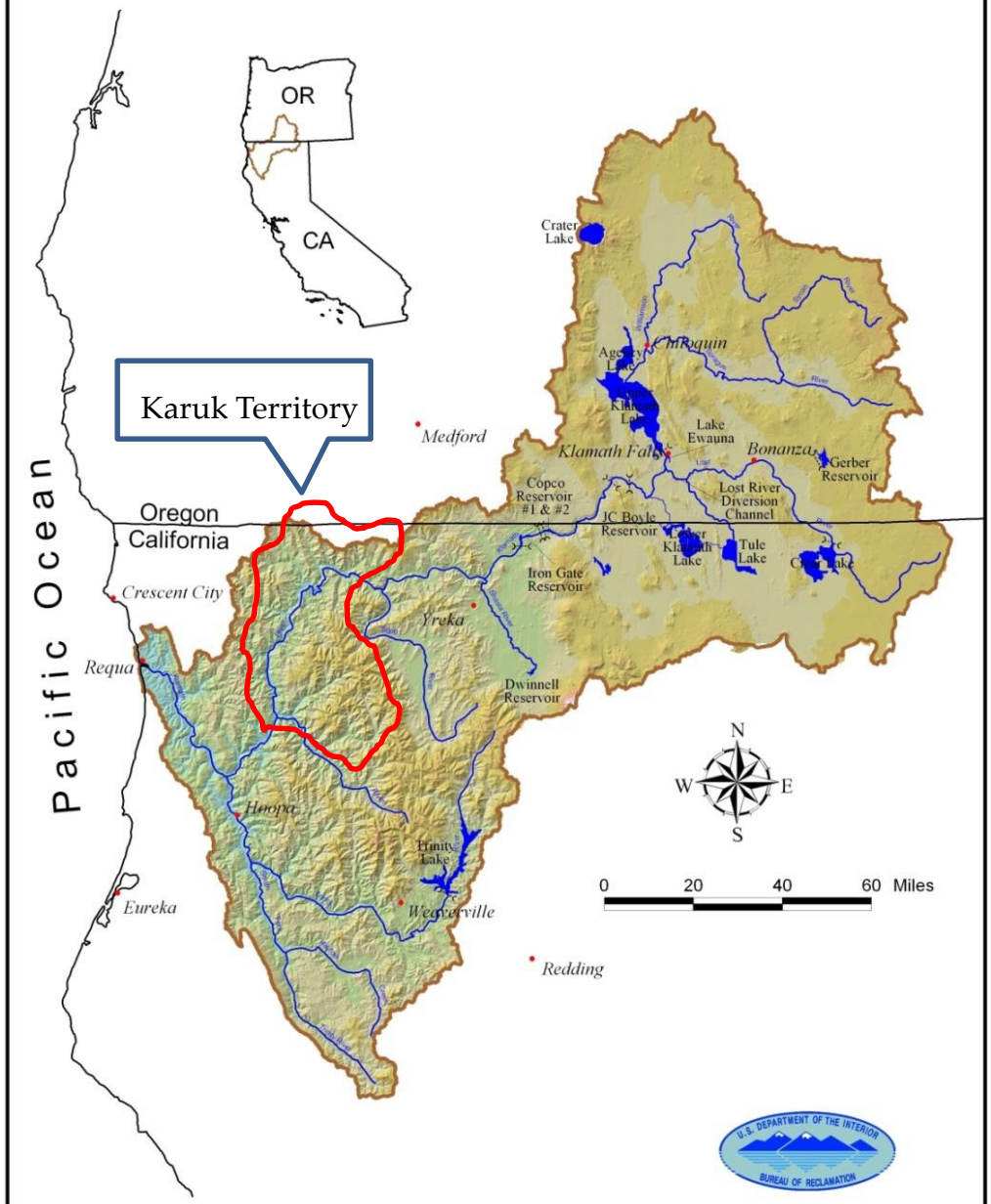
Entities that are monitoring and reporting groundwater elevations in all or a part of a groundwater basin

Susan Fricke

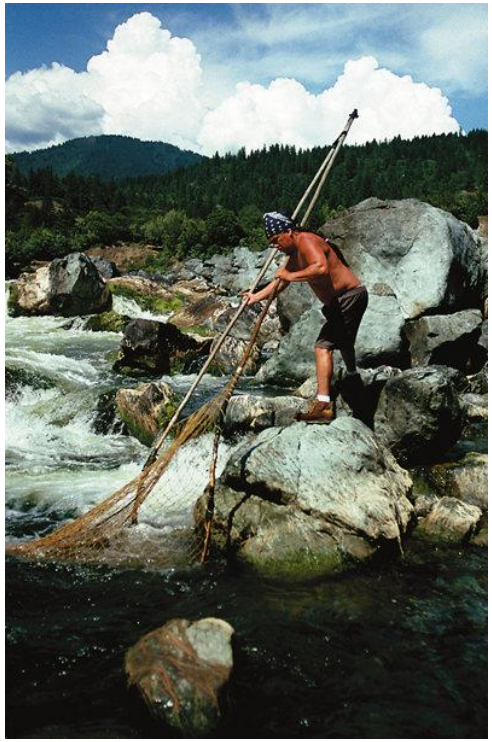
Water Quality Program Manager

Karuk Tribe Department of Natural Resources

Klamath River Basin



Karuk People Have Lived in the Basin since Time Immemorial



And continue traditional practices today

Diversity is the Spice of Life

Fall Chinook

Spring Chinook

Coho Salmon

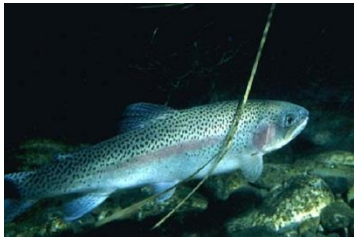
Pink Salmon

Mussels

Chum Salmon

Candlefish

C'wam



Winter Steelhead

Summer Steelhead

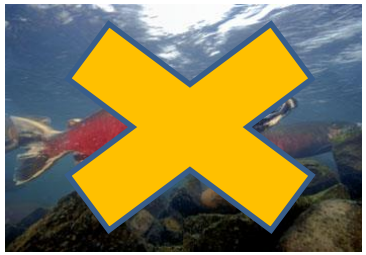
Pacific Lamprey

Green Sturgeon

Diversity is the Spice of Life

Fall Chinook

Spring Chinook



Coho Salmon

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Mussels

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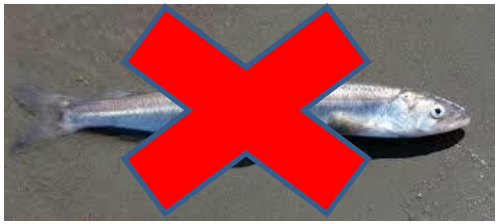
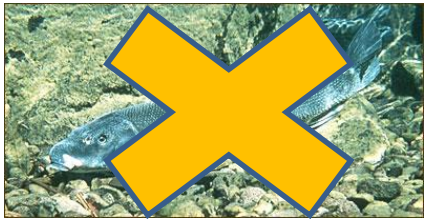
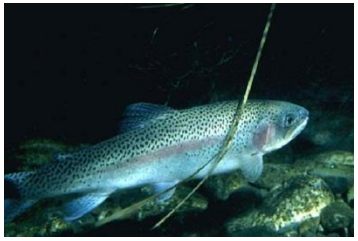


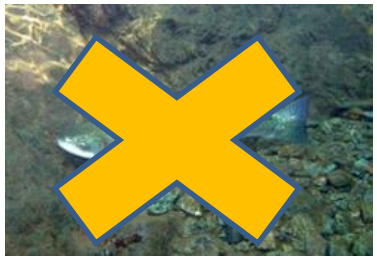
Candlefish



C'wam

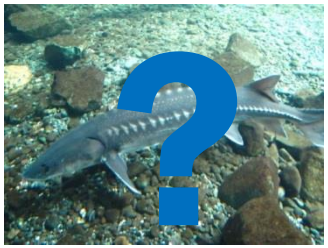


Winter Steelhead



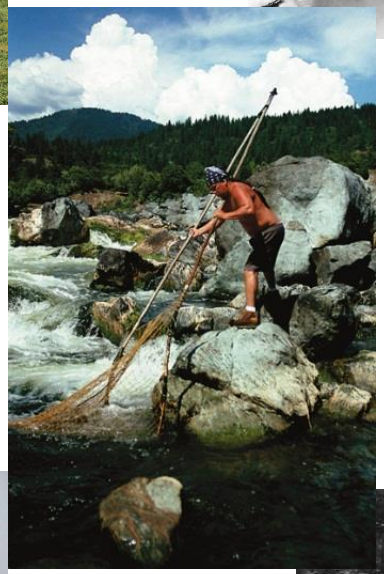
Summer Steelhead

Pacific Lamprey



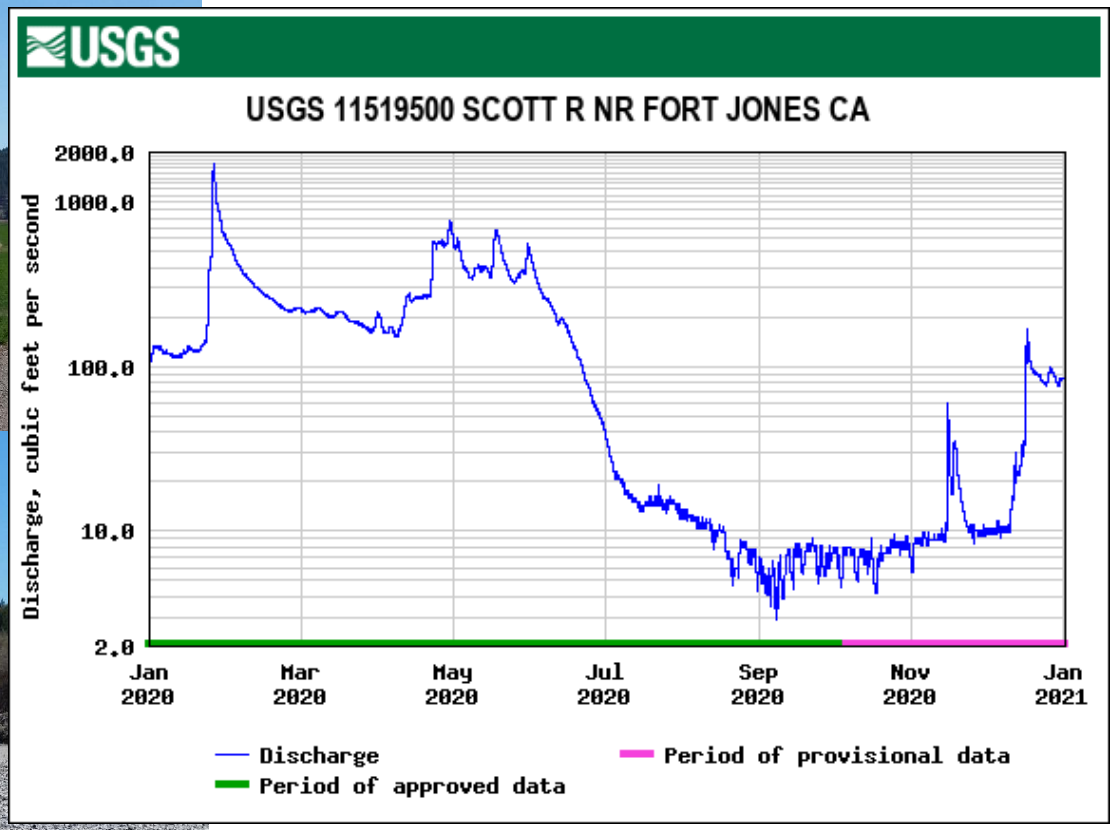
Green Sturgeon

New Cultural Diversity

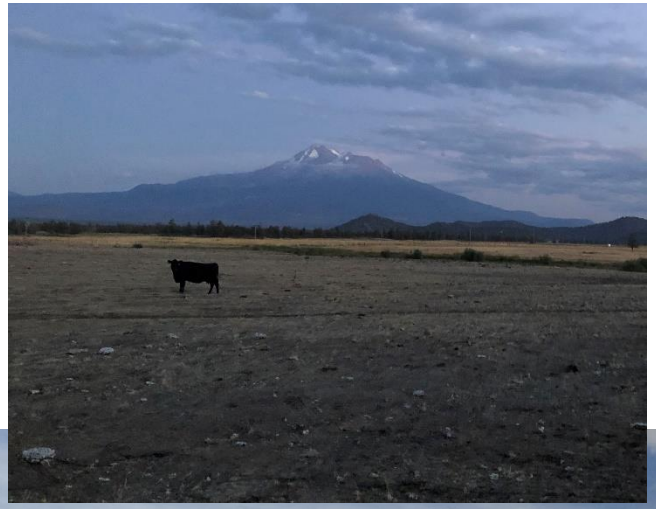


Scott and Shasta Basins

Scott River


USGS
USGS 11519500 SCOTT R NR FORT JONES CA
Discharge, cubic feet per second
2000.0
1000.0
100.0
10.0
2.0
Jan 2020
Mar 2020
May 2020
Jul 2020
Sep 2020
Nov 2020
Jan 2021
Discharge
Period of approved data
Period of provisional data

Shasta River



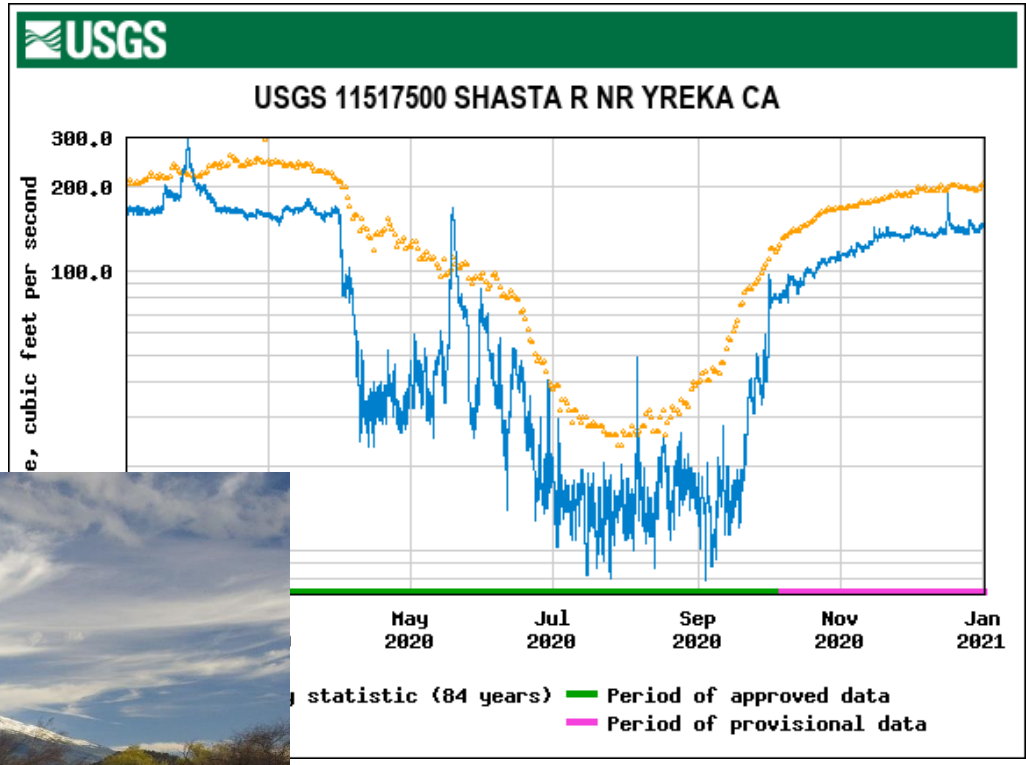


Photo: The Nature Conservancy

Inclusive and Equitable Groundwater Management

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Amanda Monaco
Leadership Counsel for Justice and Accountability
January 28th, 2021 PCL Conference

Photo: Self-Help Enterprises

Photo: Leadership Counsel

DACs have the most to lose and the most to gain from SGMA

- Need reliable, clean and affordable water for basic necessities

- Disproportionately impacted by water issues
  - Dry wells
  - Drinking water contamination
  - Faulty and unaffordable infrastructure

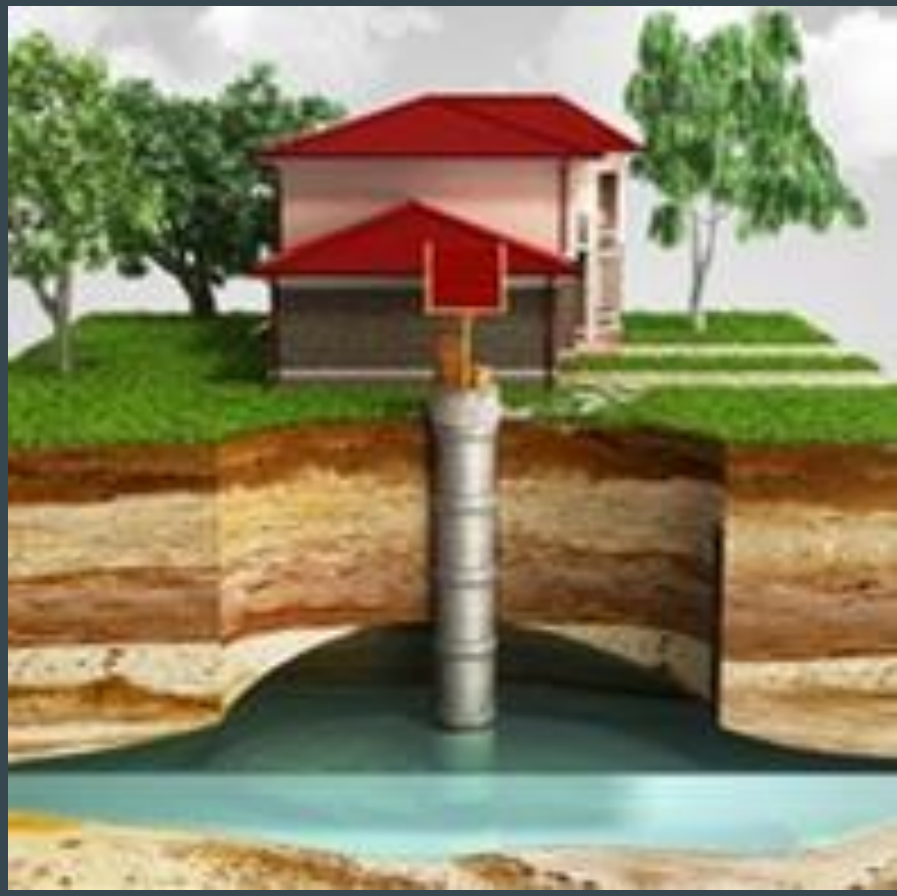
How could SGMA help disadvantaged communities?

- Include DACs in decisions about water resources
- Create reliable drinking water supply
- Minimize water contamination from groundwater pumping

Photo: Self-Help Enterprises

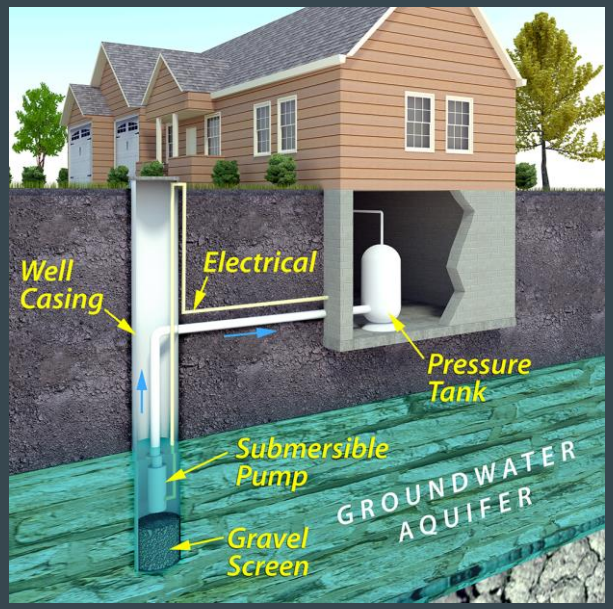
The vast majority of unincorporated communities in the SJV are served by groundwater.

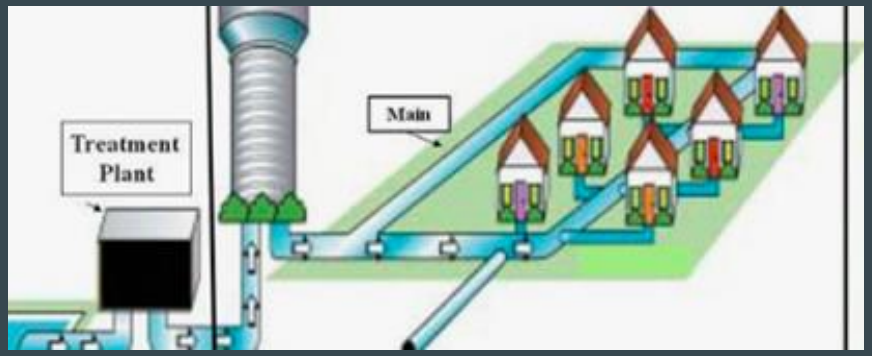
- All domestic wells
- 87% of community water systems in the SJV



Source: UC Davis, *The Struggle for Water Justice in California's San Joaquin Valley*

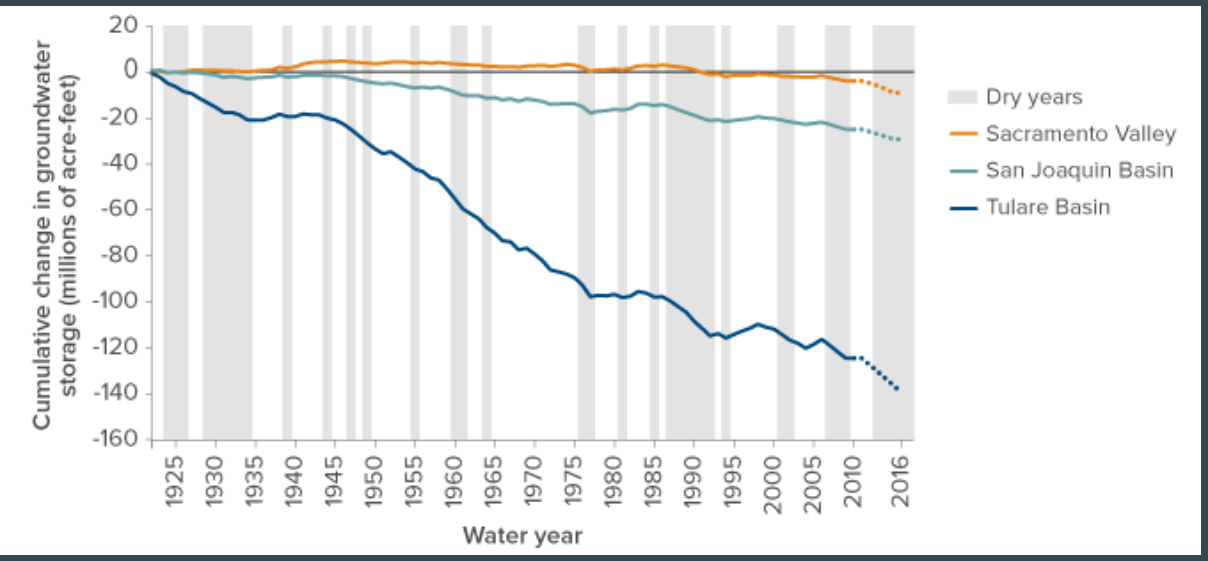
<u>Private domestic wells</u>: each home has its own well





<u>Community water systems</u>: systems administered by Special Districts, private companies, or the County

Dropping water levels are causing drinking water crises for DACs



Source: Ellen Hanak et al., *What If California's Drought Continues?* (PPIC, 2015)

- Groundwater levels have been steadily dropping for decades
- In the 2014 drought, thousands of homes lost water
- Now, SGMA provides a framework for starting to protect groundwater

Costs of addressing dry wells

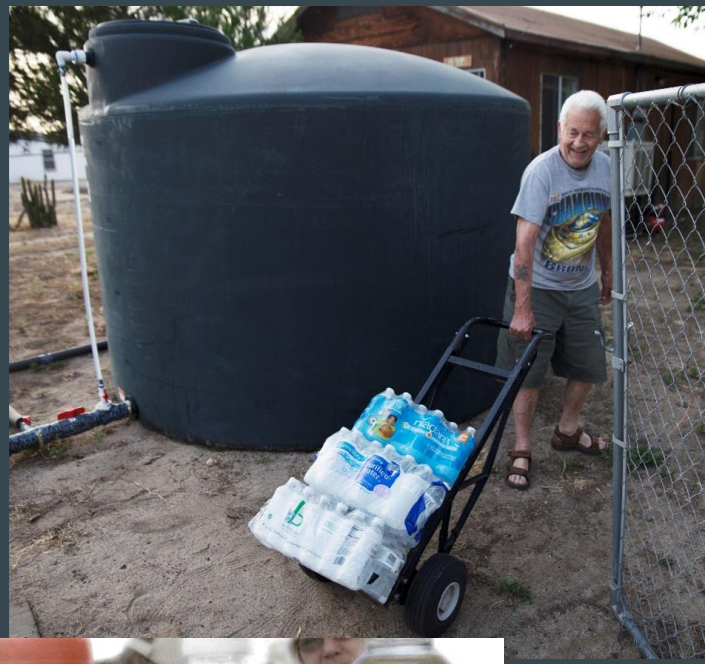
Bottled Water	$75 per month, per house
Water Tank	$3,680, plus up to $900 for tank refills
Lowering well pump	$5,000 to $10,000
Deepening a domestic well	$20,000 to $45,000
Deepening a community well	up to $1.5M
Alternate Supply Source	costs vary
Prevention of water supply loss	priceless

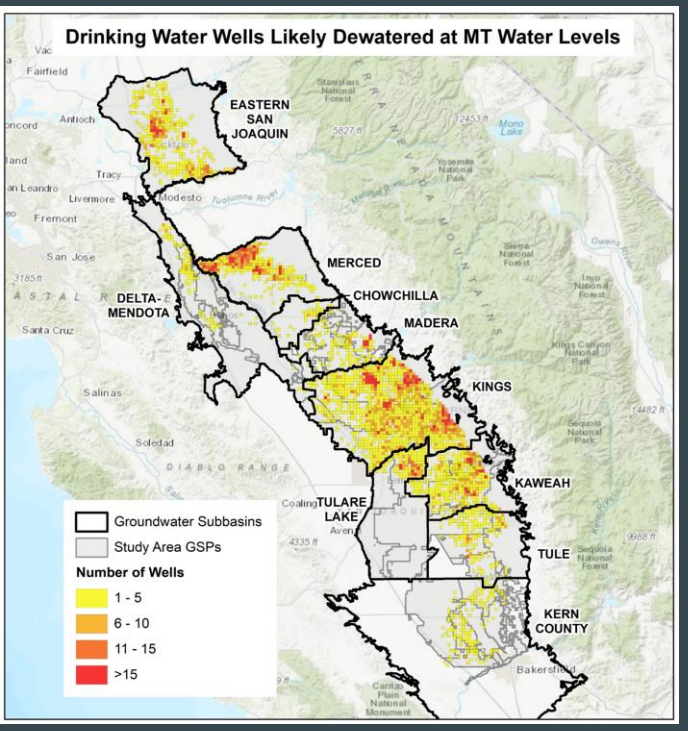
Source: Framework for a Drinking Water Mitigation Program

Drinking water quality issues

- Common contaminants:
  - Arsenic
  - nitrates
  - DBCP
  - 123-TCP
  - hexavalent chromium

- Groundwater contamination is exacerbated by overpumping and management activities





GSPs fail to consider DAC needs

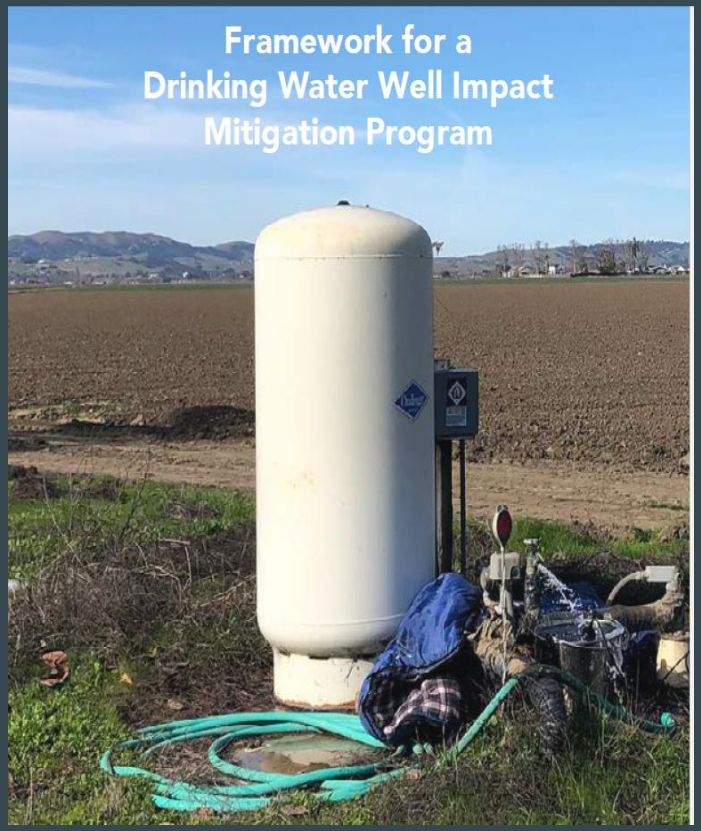
- **Key policies didn't equally consider DAC or drinking water needs** (vs. ag needs)
  - Minimum thresholds for water levels = thousands with dry wells
  - Minimum thresholds for water quality = increased contamination
  - Continued agricultural pumping at the expense of drinking water users
- **No plan to mitigate drinking water impacts**
  - Little basic understanding about drinking water users and potential impacts
- **Proposed management actions will likely aggravate inequity of water access**
  - Groundwater markets

Solutions

- GSA protection of drinking water
  - Complete information about drinking water users and impacts
  - Drinking Water Mitigation Frameworks
  - More protective management goals
  - Projects that benefit drinking water

- Oversight by state agencies (Department of Water Resources, SWRCB):
  - Comply with the Human Right to Water Scorecard
  - Fully understand of potential drinking water impacts
  - Avoid harmful activities
  - Mitigate drinking water impacts

- Building partnerships across interest groups for drinking water protection in the SJV
  - SJVWCAP



Significant and Unreasonable

Anticipated GSP Impacts on Public Water Systems and Domestic Wells

Justine Massey
Policy Advocate
Community Water Center
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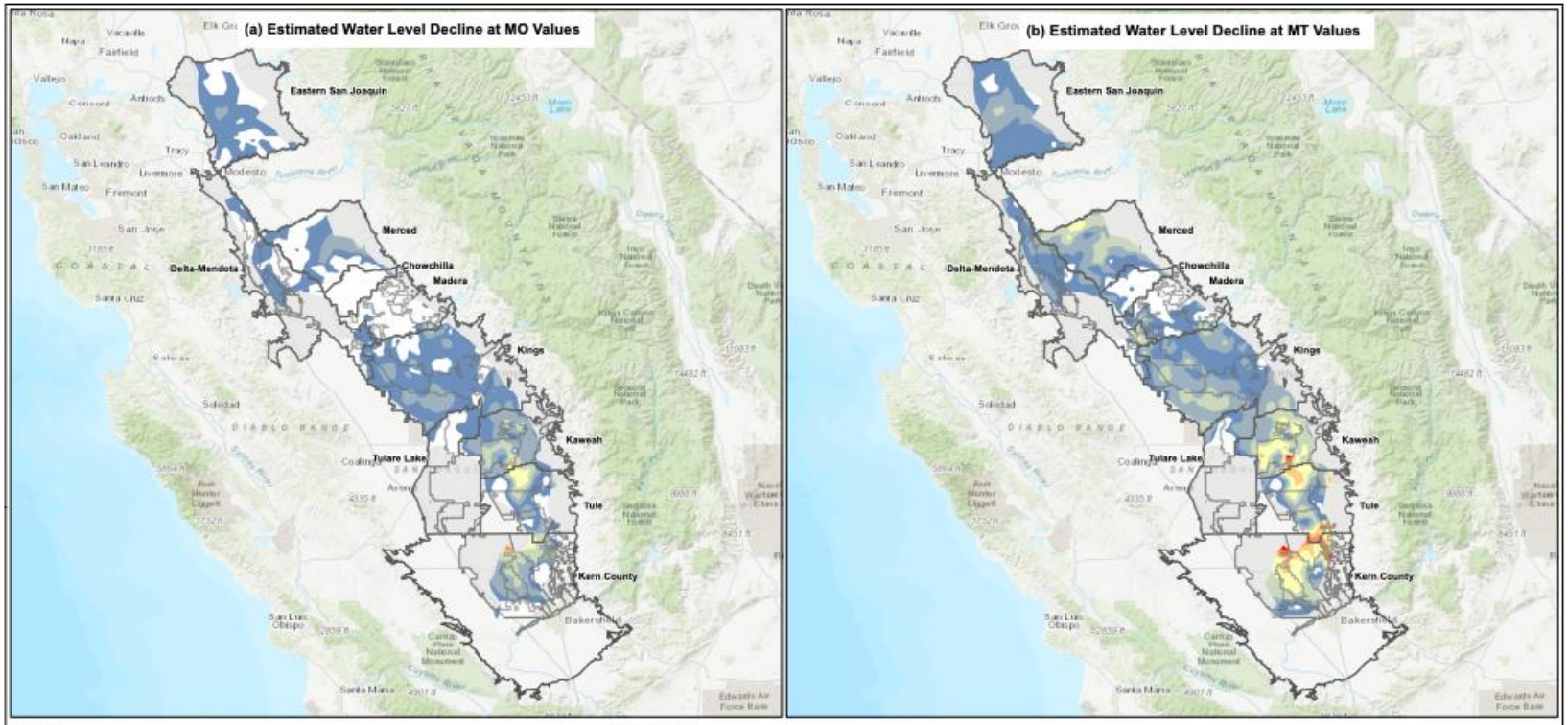
Impacts on Water Levels

White Paper: Estimated Numbers of Californians Reliant on Domestic Wells Impacted as a Result of the Sustainability Criteria Defined in Selected San Joaquin Valley Groundwater Sustainability Plans and Associated Costs to Mitigate Those Impacts: Developed by EKI Environment & Water, Inc, April 2020. Report Commissioned by the Water Foundation.

26 plans in the San Joaquin Valley fail to protect drinking water for vulnerable communities. Under these plans:

- Up to 12,000 drinking water wells will go dry by 2040.
- **This will impact up to 127,000 people who would lose their primary source of water.**
- This would cost up to $359 million to mitigate the damage.



Legend

- Groundwater Subbasins
- Study Area GSP Areas

Water Level Decline (feet)

- Above Current (Fall 2018) DTW
- 0 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 350
- > 350

Abbreviations

DTW = depth to groundwater
GSP = Groundwater Sustainability Plan
MO = Measurable Objective
MT = Minimum Threshold

Notes

1. All locations are approximate.
2. This map reflects the water level decline anticipiated to occur if current (Fall 2018) DTW were to reach their associated MOs or MTs.

Sources

1. Fall 2018 depth to groundwater contours (Figure 2).
2. Estimated depth to groundwater at MOs and MTs (Figure 3).
3. GSP areas as mapped in their respective GSPs (see references section for list).
4. Basemap provided by ESRI.
5. Groundwater subbasin extents as defined by DWR's Bulletin 118 Final Basin Prioritization, February 2019.

N

0 35 70
(Scale in Miles)

Estimated Water Level Decline between Depth to Groundwater from Fall 2018 Water Levels to MOs and MTs

Water Foundation
April 2020 EKI
B90087.01

Figure 4

eki environment & water

Low-income families and communities of color are the hardest hit during a drought, especially in the San Joaquin Valley.

It’s critical that we protect access to safe water for vulnerable communities as part of SGMA implementation.

Everyone must have access to safe, clean, and affordable drinking water.

Current State of Water Quality

White Paper: Groundwater Constituent Impacts and Trends in Domestic Wells and Public Water Systems in California. Prepared by EKI Environment & Water, Inc, Dec 2020. Report commissioned by the Water Foundation.

Currently affected population:

Table ES-1
Estimated Populations Exposed to Drinking Water with Constituents Above MCLs

Constituent	Estimated Population			Number of GSAs	Number of Basins
	Domestic Well Users	Public Water System	Total		
Arsenic	87,433	90,240	177,673	106	46
Nitrate	107,461	9,422	116,883	83	49
1,2,3-TCP	140,369	422,833	563,202	53	23
Uranium	21,016	1,126	22,142	38	19
DBCP	n/a	1,350	1,350	1	1

Abbreviations

DBCP = 1,2-dibromo-3-chloropropane
GSA = Groundwater Sustainability Agency
MCL = California Maximum Contaminant Level
n/a = not available
1,2,3-TCP = 1,2,3-trichloropropane

- Up to 367,000 people are being served water that is obtained from public water supply wells that pump source water with concentrations above MCLs and where concentrations are continuing to increase.

- Up to another 11.8 million people are being served water from wells where the source water is currently below MCLs, but where increasing trends suggest concentrations could exceed MCLs and require treatment in the future.

“GSP regulations and SWRCB guidance are clear that GSAs **must evaluate existing groundwater quality conditions** in their GSPs, and, as applicable, **define quantifiable and measurable sustainability criteria related to degraded water quality**, and to **take actions** (i.e., projects and management actions, including policies and monitoring) **to avoid undesirable results**.”

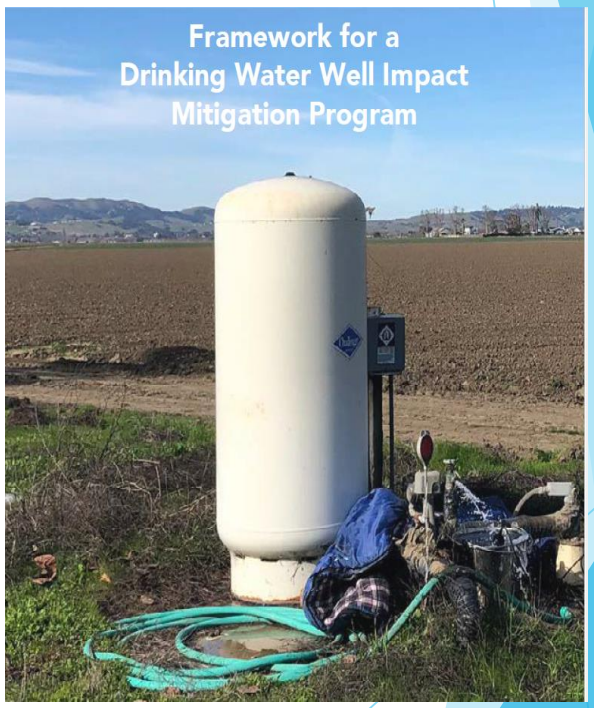
“Per the SWRCB Water Quality FAQ, **water quality degradation that significantly and unreasonably affects the supply or suitability of groundwater for use in drinking water systems is an undesirable result**, and it is the **responsibility** of a GSA to ensure that its management of groundwater will not significantly and unreasonably degrade water quality.”

Takeaways:

- Plans don’t have enough data on how communities will be impacted, which is dangerous.
- We can anticipate disastrous results if plans are approved in their current form.
- These harmful impacts amount to the “sins” of SGMA that GSAs are required to avoid.
- We need to see oversight from state agencies to protect drinking water users.

Drinking Water Mitigation Framework

Developed by LCJA, SHE, and CWC



Presented by:

Angela Islas, Self-Help Enterprises

Importance of a Drinking Water Well Impact Mitigation Plan

- Many families who depend on shallow domestic wells or small water systems cannot afford to deepen wells or treat their water.
- Requires GSAs to think critically of the potential impacts the GSP, including projects and management actions, MTs, and MOs, can have upon drinking water sources.
  - This can also benefit the GSP and basin as a whole through the creation of better management practices.
- GSPs that fail to consider such impacts can result in: fully or partially dewatered wells, unaffordable water rates, and increased levels of water contamination.
- Not all impacts are easily predictable. Having a plan for how negative impacts to drinking water sources will be mitigated is essential.

Key Elements and Framework to Developing a Drinking Water Well Impact Program

- Drinking Water Well Monitoring Network
- Adaptive Management Trigger System
- Other Key Elements to Developing a Drinking Water Well Impact Program

http:/bit.ly/MitigationProgram

Triggers	Groundwater Conditions and Impacts	Examples of Quantifiable Measures	Potential Corrective Actions
Green light	Groundwater levels and quality are stable.	Firmly in compliance with Measurable Objectives and MCLs.	No action required.
Yellow light	Groundwater levels and quality are approaching concerning levels and impacts may occur or are occurring. Some corrective actions are needed.	Groundwater levels[7]: 3% of drinking water wells have gone partially or fully dry, or 5% of drinking water wells in the GSP area are projected to go dry if current trends continue. Groundwater quality: Water quality reaches 70% of the MCL in any given monitoring well.	- Undertake an analysis to pinpoint the cause; - Undertake water quality testing for selected domestic and public supply wells; - Provide immediate support to groundwater users experiencing impacts; - Reassess pumping allocation and pumping patterns; - Consider restricting or limiting groundwater extraction near the impacted area.
Red light	Time to stop groundwater pumping and any projects or management actions which are causing dry wells. The GSA needs to mitigate as significant impacts are imminent or are occurring.	Groundwater levels: More than 7% of drinking water wells have gone dry, or 10% of drinking water wells in the GSP area are projected to go dry if current trends continue. Groundwater quality: Water quality reaches 85% of the MCL in any given monitoring well.	- Reassess pumping allocation and pumping patterns; - Consider further restricting or limiting groundwater extraction near the triggered area or reevaluating minimum thresholds or measurable objectives; - Provide interim emergency solution(s) while working with impacted groundwater users to pursue a permanent, long-term solution.

Interim Solutions

Solution	Problem	Options	Estimate of Costs
Interim Solution	Water Quality	Point-of-Use Filtration System	$1,000 to $4,500 per unit per home, for one year
		Bottled Water Services	$75 per month, per home, including delivery
	Access to Water	Water Tank Program with Bottled Water Services	One-time fees - 2,600 gal tank and materials: $2,100 - Labor and installation: $1,500 - Electrical permitting: ~$80 On-going fees - Tank water between $500-$900 - $30 for bottled water

Permanent Solutions

Solution	Problem	Options	Estimate of Costs
Permanent Solutions	Water Quality	Water Treatment System	Costs vary depending on technology, water contaminant(s) and # of households
		Alternate Supply Source	Costs vary depending on solution, technology and # of households
	Access to Water	Lowering of well pump	One time cost: between $5,000 and $10,000
		Drill of a new deeper well	Private wells: $20,000 to $45,000 Water systems: up to $1.5M
		Alternative water supply source	Costs vary dependent on solution, technology, and # of households

Case Studies

- Mt. Rose-Galena Fan Domestic Well Mitigation Program
- Carrizo Aquifer Well Mitigation Program
- Kern County Well Mitigation Strategy
- Third-Party Impacts Action Plan

https:/bit.ly/MitigationPlanCaseStudies

For more information:

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