

Aquifer Risk Map Workshop – Domestic Wells, Small Water Systems

July 22, 2020

1:00 pm – 3:00 pm

Remote participation only



California Water Boards

Workshop Logistics

- Please submit questions using this [form](#)
- We will answer as many submitted questions as possible during the workshop
- Participants on the Zoom call will be able to answer poll questions
- Additional comments or questions may be sent to the SAFER@Waterboards.ca.gov inbox, which we will continue to monitor after the workshop

Aquifer Risk Map - Schedule

**April 17
Webinar**

**Project Kick Off
– Staff Receives
Initial Feedback**
[Link to
recording](#)

**July 22
Webinar**

**Follow up
Workshop-
Staff presents
proposed
approaches**

October

**Draft map
presented for
comment and
review**

**November
Board
Meeting**

**Staff
presents
draft map
to SWRCB**

**January 1,
2021**

**Map is
made
available to
the public**

Outreach – develop
approach

Stakeholder
input –
feedback on
approaches

Implement approach – focused
stakeholder input

Finalize and post
(Update Annually)

Poll Question 1

- Did you participate in the initial workshop April 17, 2020?
 - Yes
 - No

- Materials and recording available on the [SAFER website](#)

SB-200 Requirements

116772. (a) (1) By January 1, 2021, the board, in consultation with local health officers and other relevant stakeholders, shall use available data to make available a map of aquifers that are at high risk of containing contaminants that exceed safe drinking water standards that are used or likely to be used as a source of drinking water for a state small water system or a domestic well. The board shall update the map annually based on new and relevant data.

”

SB-200 Requirements (continued)

(2) The board shall make the map of high-risk areas, as well as the data used to make the map, publicly accessible on its internet website in a manner that complies with the Information Practices Act of 1977 (Chapter 1 (commencing with Section 1798) of Title 1.8 of Part 4 of Division 3 of the Civil Code). The board shall notify local health officers and county planning agencies of high-risk areas within their jurisdictions.



Aquifer Risk Map - Goals

- Prepare a map depicting relative risk of ambient source groundwater containing chemicals at concentrations above regulatory levels
- Focus on shallow groundwater likely to be accessed by domestic wells and state small systems
- Water quality risk to be combined with other factors: accessibility, affordability, water shortage risk, and demographic information - as part of the SAFER fund expenditure planning

FAQ from April 17, 2020 Workshop

Q: How are domestic wells located

A: We are teaming with WESS, USGS and others to improve our identification of domestic well locations

Q: How is well owner privacy maintained?

A: Personal information will not be publicly disclosed

Q: How is this effort tied in with work that others are doing (DWR, SGMA, CWC/WESS, CV-SALTS etc.)?

A: Water Boards staff has been coordinating with these efforts to avoid duplication of work and to share data and methodologies.

Discussion Questions

1. How can we improve the identification of domestic wells and state small water system locations?
2. What factors should go into water quality risk, and how should those factors be ranked?
3. What area should the data be aggregated over? How should areas of “unknown” water quality be dealt with?

Poll Question 2

- Are these webinar workshops sufficient for public input to the aquifer risk map?
- Yes, the current workshops are sufficient
- No, more workshops or other venues are needed

Poll Question 3

- How familiar are you with the GAMA Domestic Well Water Quality Tool?
- Very familiar
- Somewhat familiar
- I'm aware of it
- Never heard of it

Previous Work - Needs Assessment (Domestic Well Water Quality Tool)

- Uses depth-filtered water quality results from public and domestic wells to estimate well depth groundwater quality per square mile for all chemicals with an MCL. Groundwater quality assessed using 20-year average and using all results from past 2 years.
- Uses OSWCR domestic well construction report counts to estimate density of domestic wells per square mile
- [Link to online viewer](#)

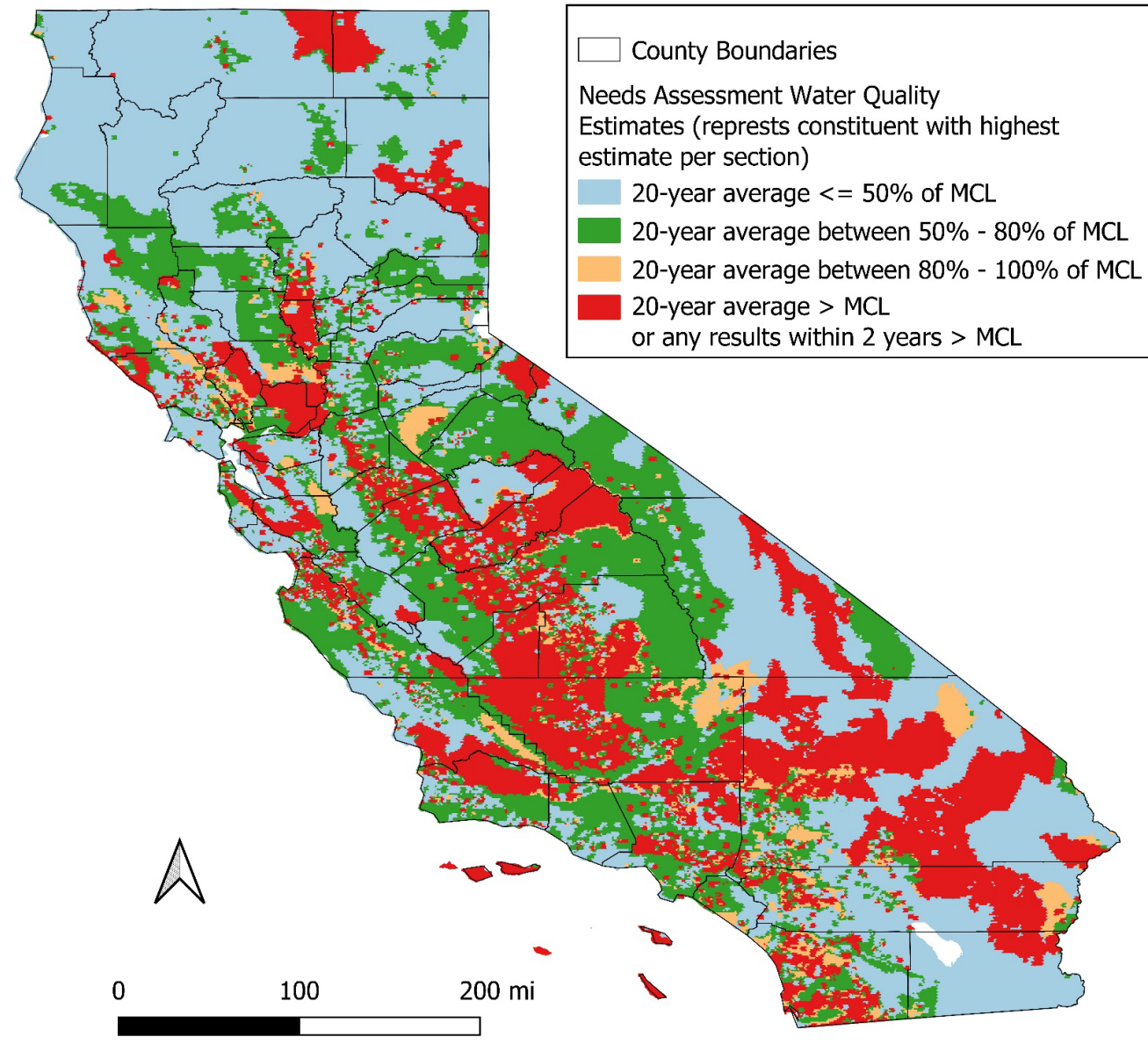


Poll Question 4

- Have you read the Fund Expenditure Plan section that focuses on the aquifer risk map (pages 31-34)?
 - Yes, I read it carefully
 - Yes, I skimmed it
 - No, I have not read it

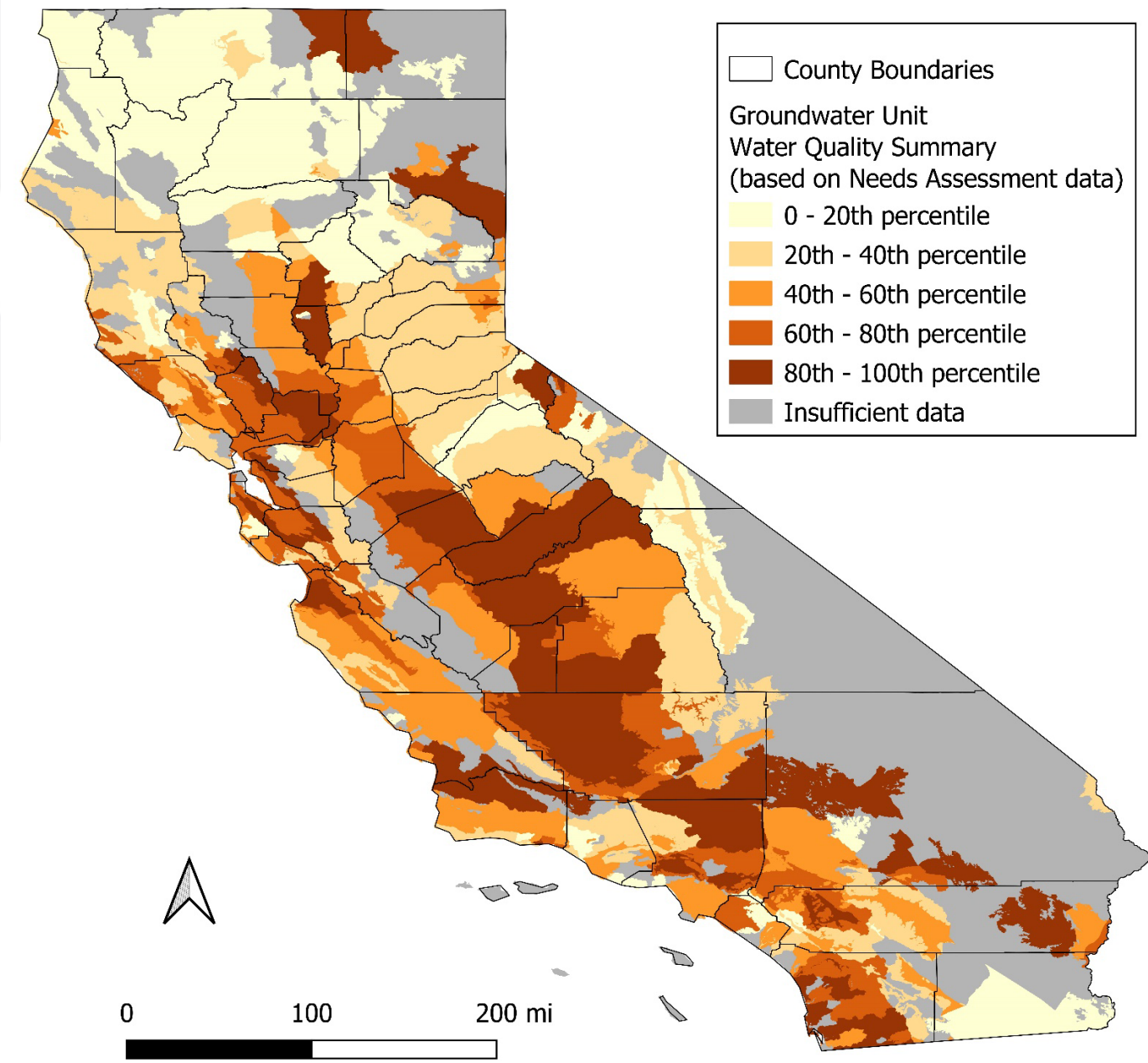
Needs Assessment to aquifer risk map

- Domestic Well Water Quality Tool (Needs Assessment) currently lists 192 values for every square mile section (long-term average and number of recent detects above MCL)
- One possible aggregation – take maximum estimates per section and combine long-term/recent results (*shown at right*)



Draft Fund Expenditure Plan Risk Map

- [Link to plan \(pgs 31-34\)](#)
- Aggregates Needs Assessment data by Groundwater Units; units are ranked by the percent of sections “at-risk” for any constituent (“at-risk” = long-term OR recent estimations are over MCL)
- Groundwater Units ranked by percentile



Aquifer Risk Map - Decisions



Discussion - Structure

- Discussion Topic 1: Domestic Wells and State Small System Identification
- Discussion Topic 2: Risk Ranking
- Discussion Topic 3: Technical Questions
- If you would like to participate in the discussion, please submit your questions or comment via this [form](#)

Discussion Topic 1: Domestic wells and state small system identification

- **DWR - OSWCR:** square mile estimates of domestic well records
- **WESS:** combine OSWCR data with APN and population information to identify “likely” and “possible” domestic well communities (exclude areas covered by public water systems)
- **Johnson et al., 2019 (USGS):** use census and household density data to identify areas with high likelihood of domestic well usage

Poll Question 5

- Should areas within public water system boundaries be excluded from this risk assessment, even though many domestic wells are located with these boundaries?
- Yes
- No
- I'm not sure

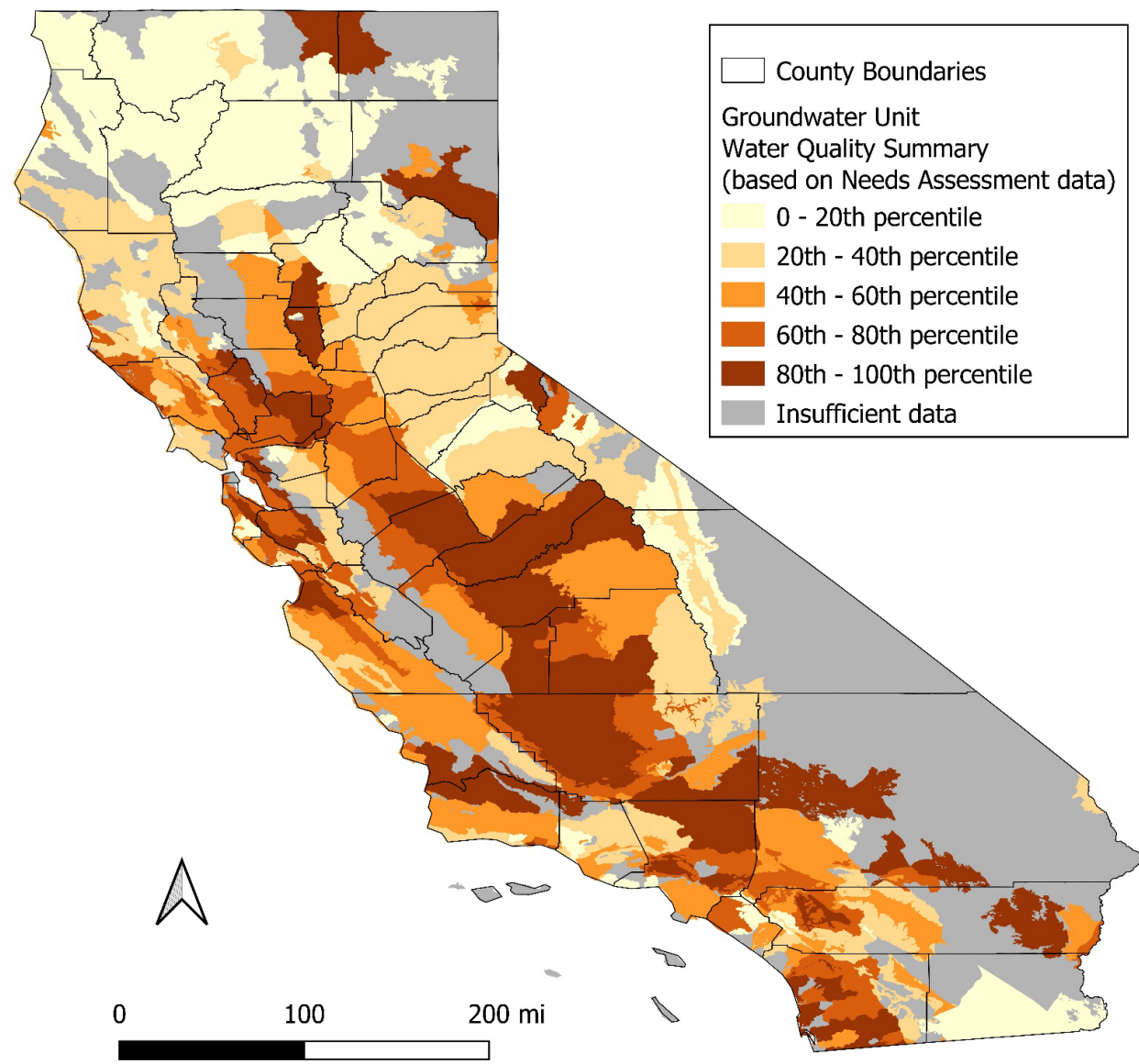
Discussion Topic 1: Domestic wells and state small system identification

Q&A:

1. How can we improve the identification of domestic wells?
2. How can we ensure that these methodologies are as complete as possible (identify all potential domestic wells)?

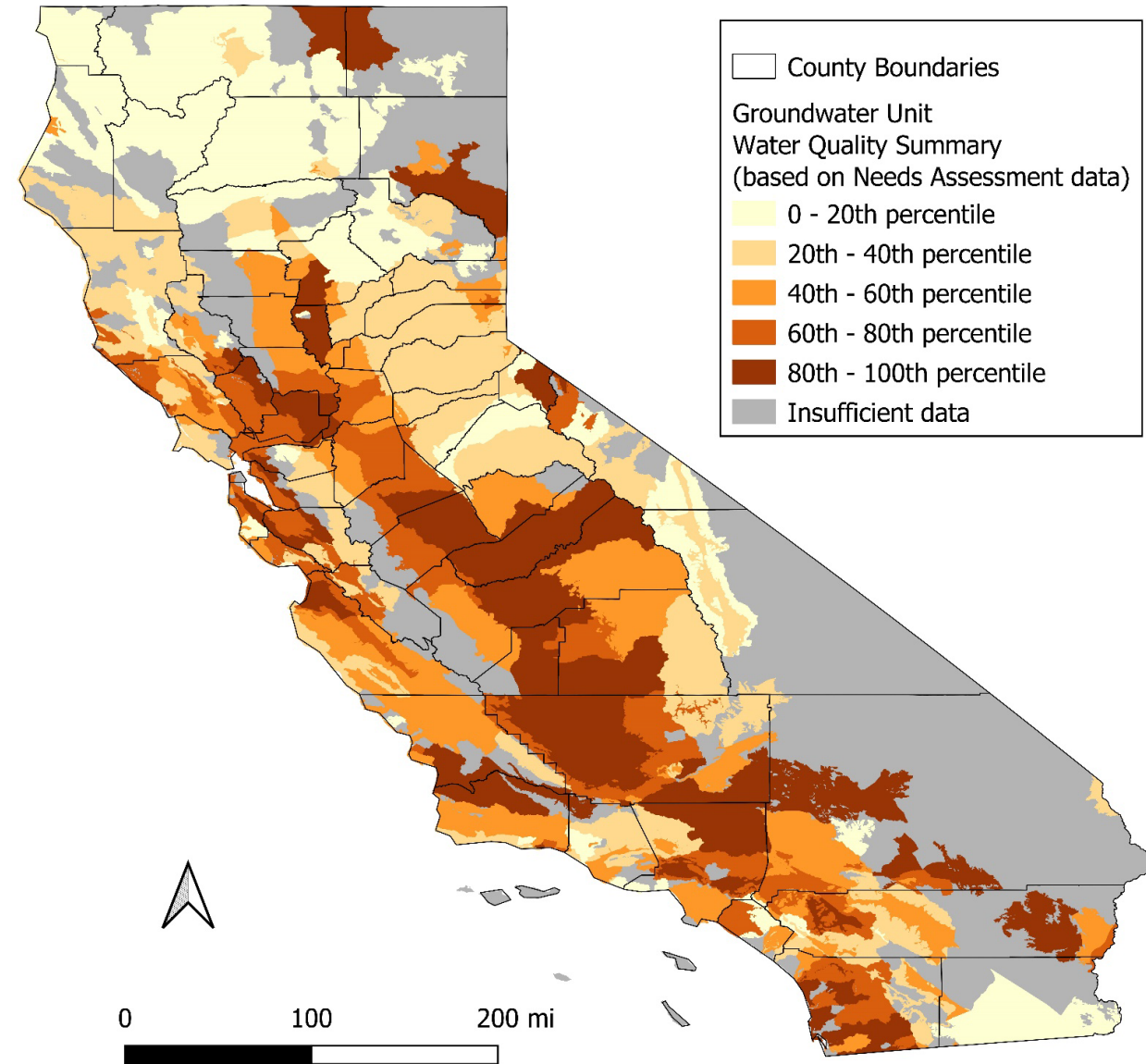
Discussion Topic 2: Risk Ranking

- Draft Fund Expenditure Plan Map contains:
 - Relative ranking
 - Risk assessment based on whether any chemical is above the MCL in a section



Discussion Topic 2: Risk Ranking

- Draft Fund Expenditure Plan Map does not contain:
 - Absolute thresholds
 - Risk assessment based on multiple chemicals
 - Risk assessment based on magnitude of estimate above the MCL



Poll Question 6

- Does the Fund Expenditure Plan Map capture enough risk factors to accurately characterize aquifer water quality risk?
- Yes, it is sufficient
- No, but it would be sufficient if the other risk factors mentioned were added
- No, it is not sufficient (please email additional suggestions to SAFER@Waterboards.ca.gov)

Poll Question 7

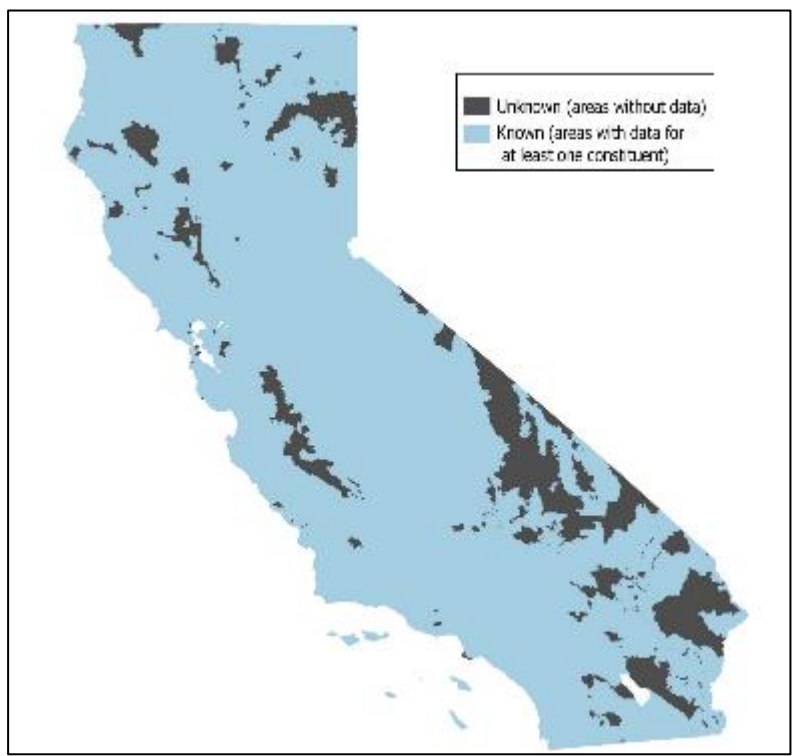
- Do the areas currently identified as “high-risk” in either the Fund Expenditure Plan or Needs Assessment Domestic Well Water Quality Tool match your expectations of aquifers at risk of water quality issues accessed by state small systems and domestic wells?
- Yes
- No
- I’m not sure

Discussion Topic 2: Risk Ranking

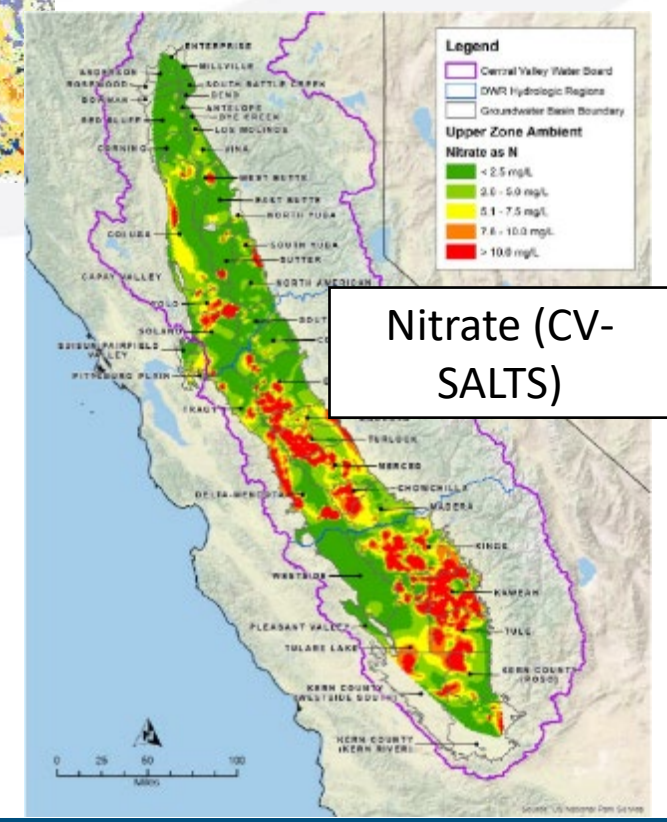
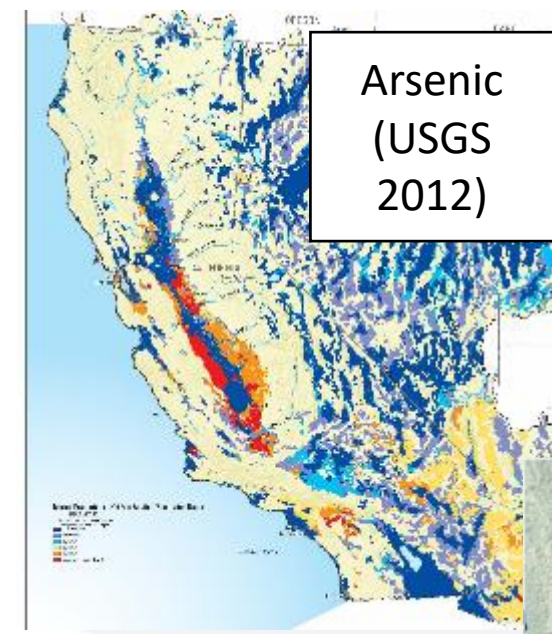
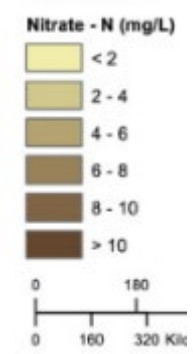
Q&A:

1. What are the shortcomings of the current methodology? How should we adapt the methodology to better represent water quality for all domestic wells and state small systems in California?
2. What additional risk factors should be used to characterize aquifer water quality risk?

Discussion Topic 3: Technical Questions



Nitrate
(Ranson
2017)



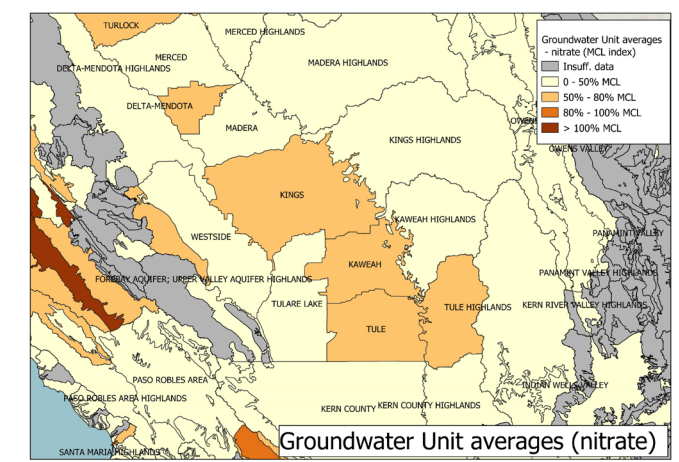
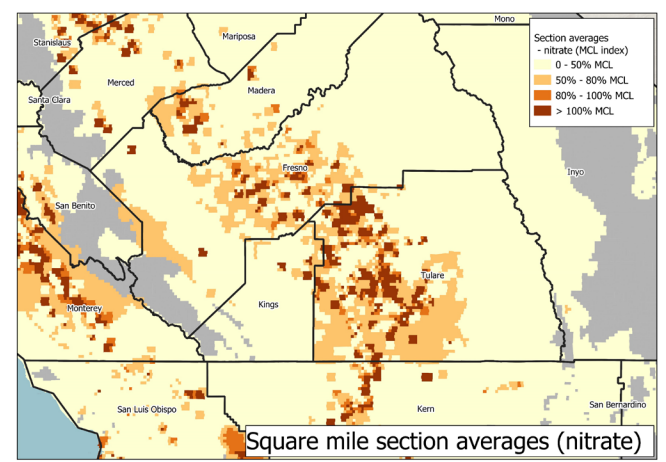
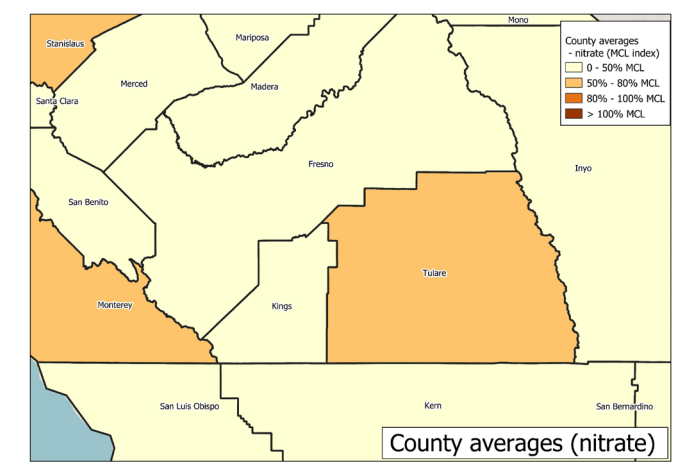
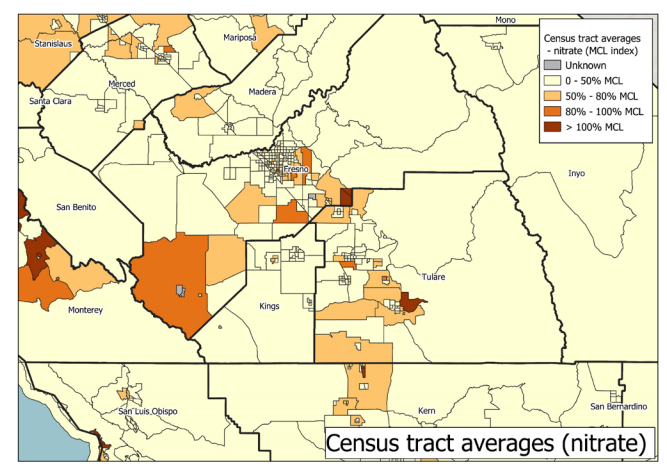
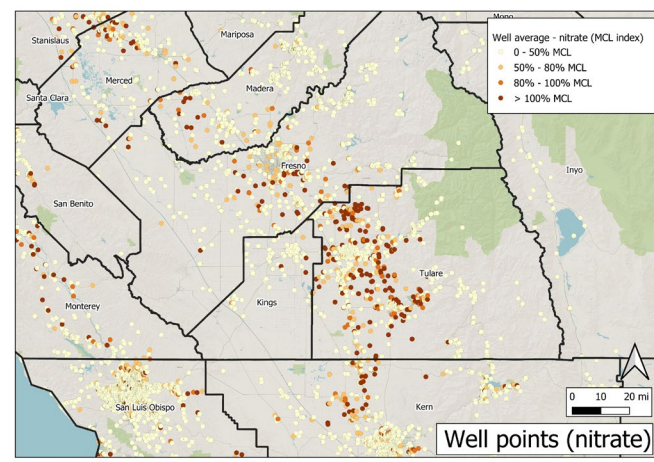
Nitrate (CV-
SALTS)

Discussion Topic 3: Technical Questions

Q&A:

1. Should additional data sources (models, estimations) be used to fill in data gaps? If so, how?
 - Supplement data gaps with modeling estimates
 - Incorporate modeling estimates for all areas
 - Only use data from wells
2. What is the risk of areas with “unknown” water quality (no data from nearby wells or models/estimations)?

Discussion Topic 3: Technical Questions



Poll Question 8

- What boundaries should be used for the “aquifer” risk map?
- The most granular level available (well points, square mile estimates)
- By geologic area (basins, groundwater units)
- By social/political boundaries (Groundwater Sustainability Agencies, counties, census blocks, etc.)
- Other

Discussion Topic 3: Technical Questions

Q&A:

- What boundaries should data be aggregated over?

General Q&A

- Any additional questions about the development of the aquifer risk map are welcome

Future work

- Draft Aquifer Risk Map will be available for comments and public review in October
- Email SAFER@waterboards.ca.gov or Emily.Houlihan@waterboards.ca.gov with additional suggestions, questions, or feedback after the workshop