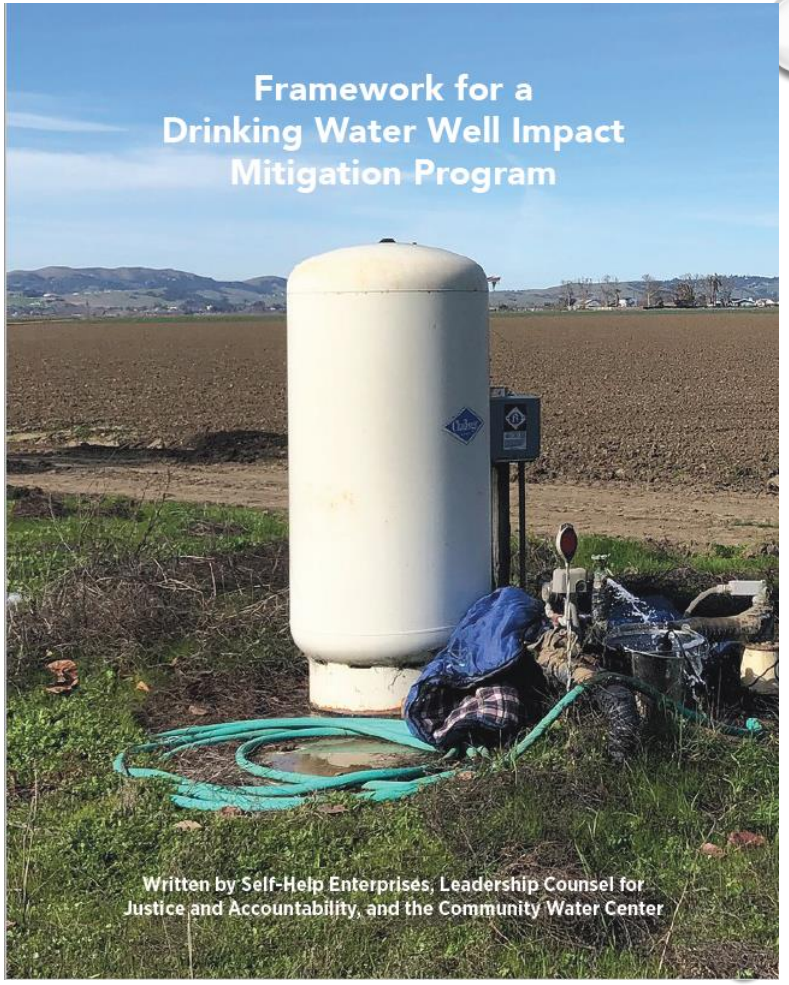
Well mitigation strategy

- Assess and improve well information
- Assess drinking water well vulnerabilities
- Identify mitigation strategies
  - interim and long-term
- Develop outreach and communication
- Define the role of the County
- Prioritize actions and procure funds
- Collaborate and receive support from State agencies and others

- Reference: *Framework for a Drinking Water Well Impact Mitigation Program*, by Self-Help Enterprises, Leadership Counsel for Justice and Accountability, and the Community Water Center

- Examples of existing Drinking Water Well Impact Mitigation Programs: [Well-Mitigation-Case-Studies.pdf (selfhelpenterprises.org)]



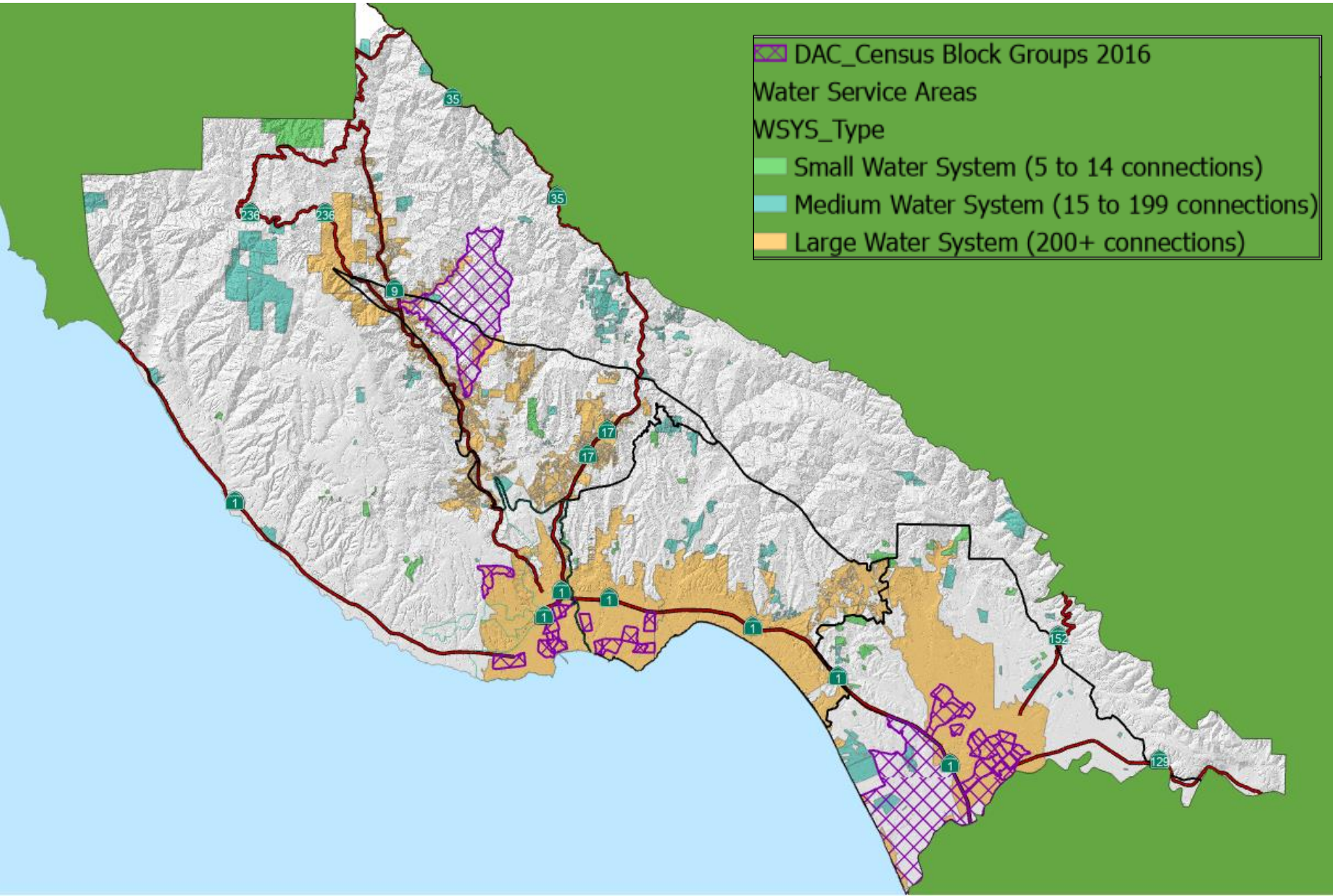
Assess drinking water well vulnerabilities

- Vulnerability assessment
  - Disadvantaged communities (DACs)
    - Annual median household income (MHI) is less than 80 percent of the Statewide annual MHI. "Severely Disadvantaged Communities“ have an annual MHI that is less than 60 percent of the Statewide annual MHI
  - Water supply vulnerability
  - Water quality vulnerability
  - Others (e.g., location; depth; proximity to pumping/management activity; high density of wells)
  - How do we define vulnerability in Santa Cruz County?

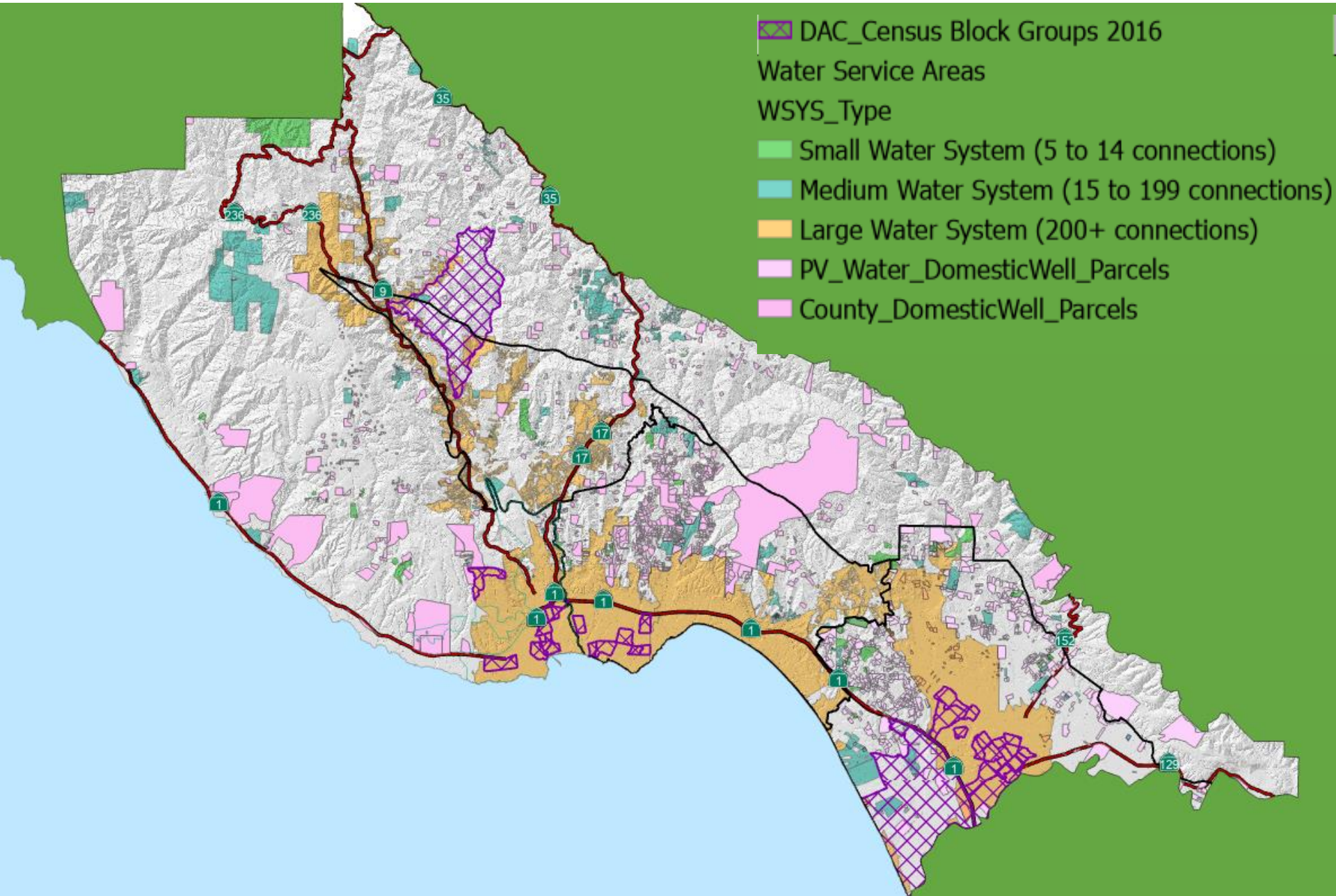
Assess drinking water well vulnerabilities

- State-supported vulnerability assessment tools
  - DWR Drought Risk Explorer - Rural Communities (March 2021)
  - State Water Board 2022 Aquifer Risk Map (ca.gov)
  - California's Groundwater Live: Well Infrastructure (arcgis.com)
  - State Water Board GAMA - OnLine Tools
- Building County data collection and mapping resources

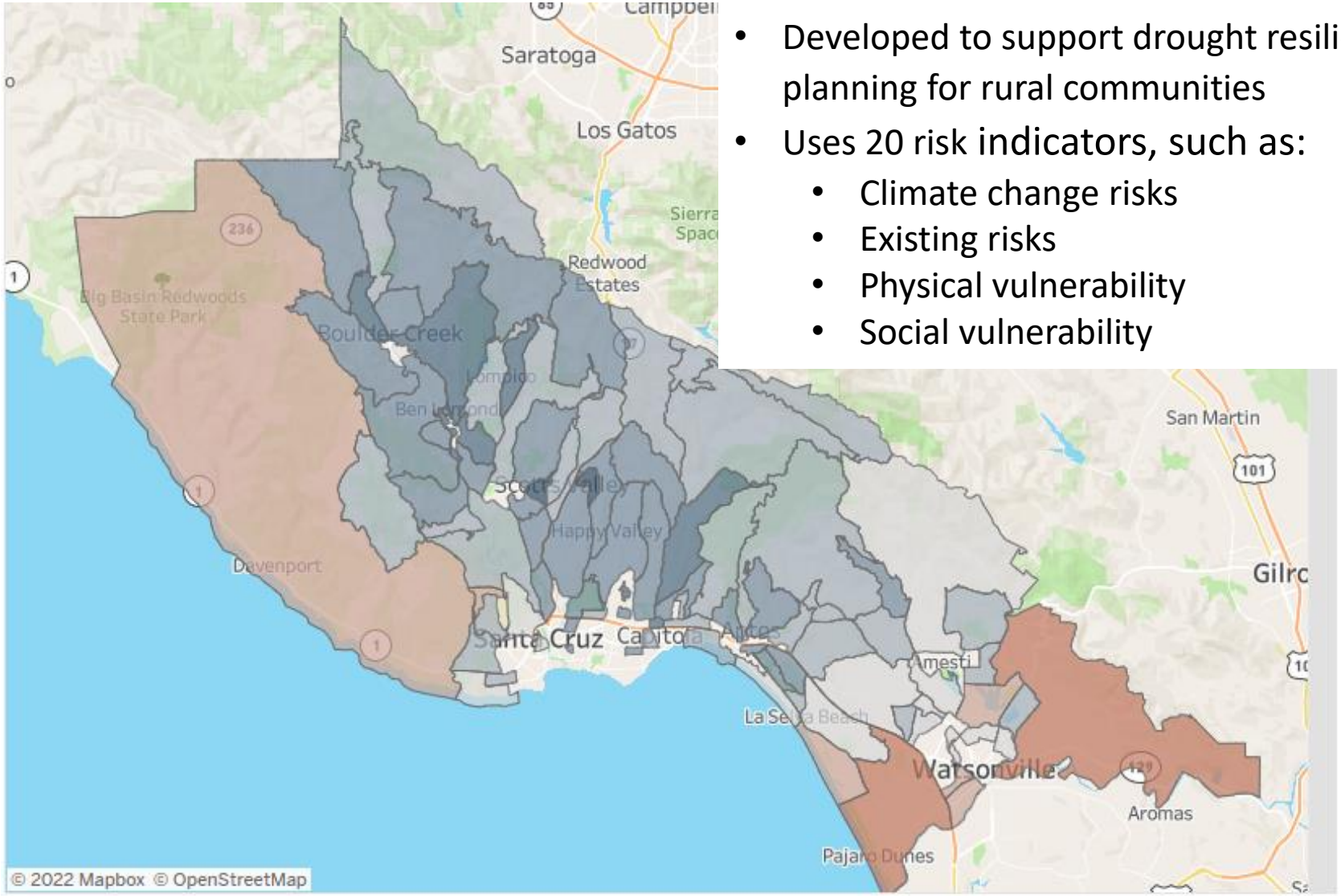
Disadvantaged Communities and Water Systems



Disadvantaged Communities, Water Systems & Parcels with Domestic Wells

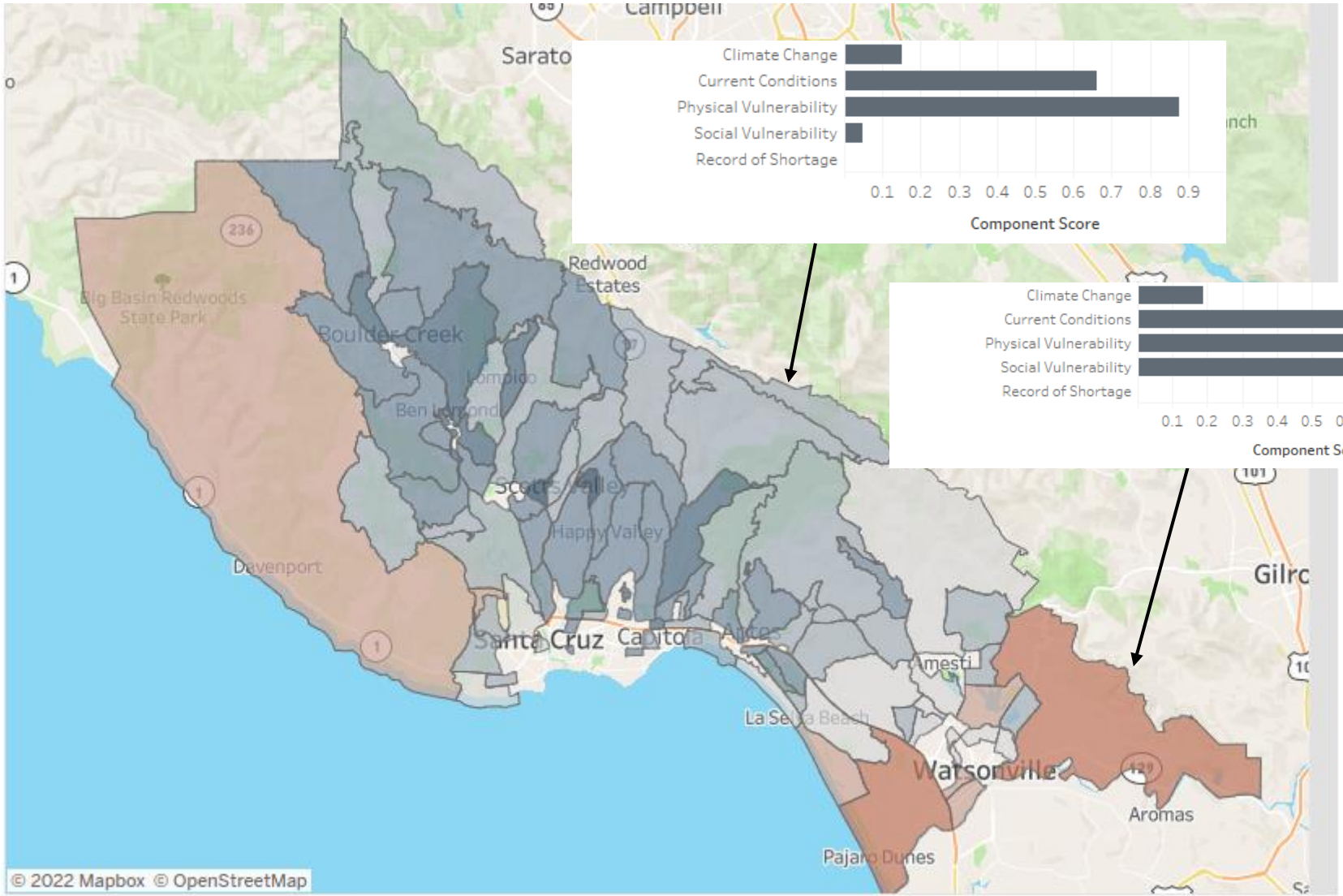


DWR Drought Risk Explorer



- Developed to support drought resilience planning for rural communities
- Uses 20 risk indicators, such as:
  - Climate change risks
  - Existing risks
  - Physical vulnerability
  - Social vulnerability

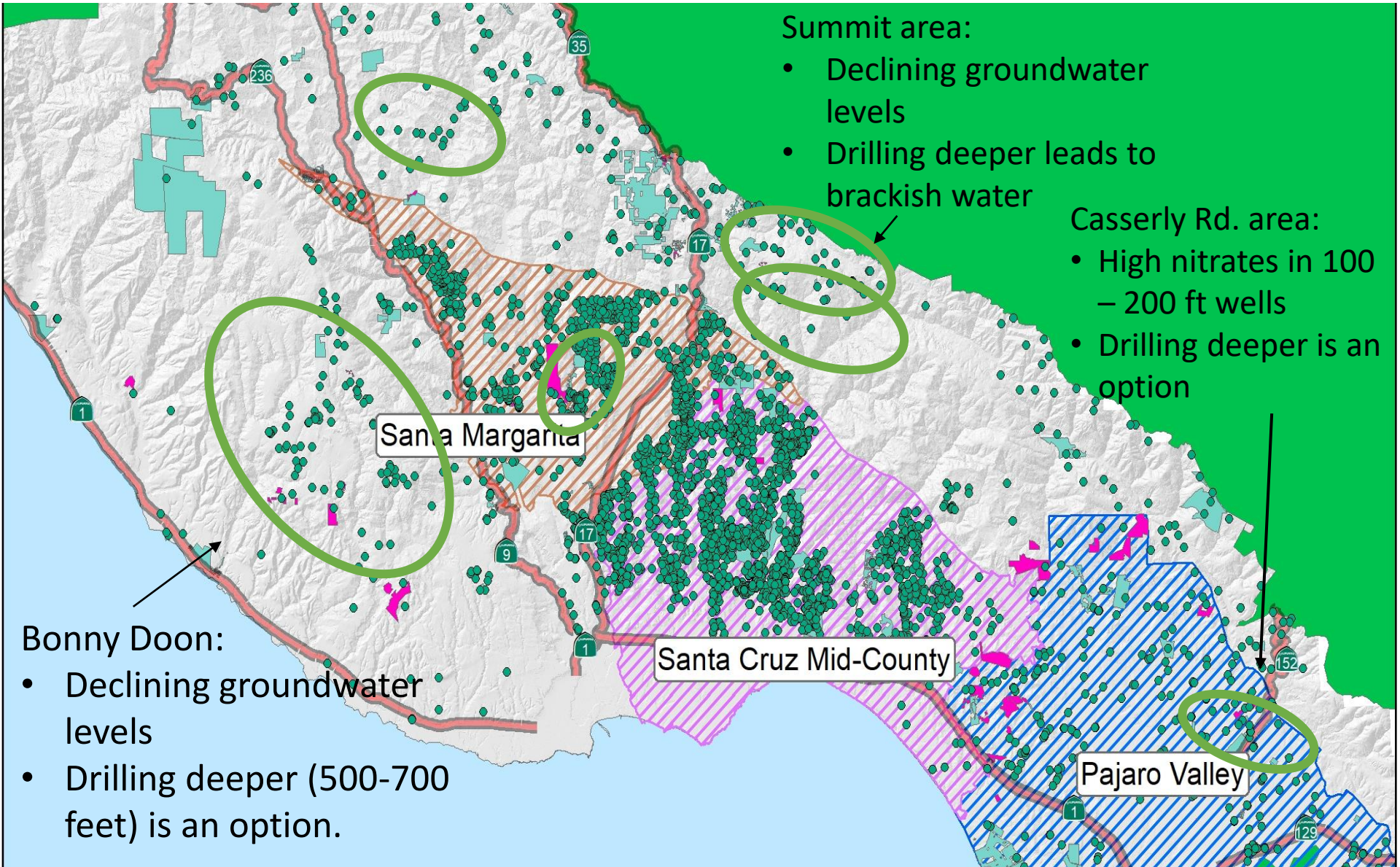
What explains the risk scores?



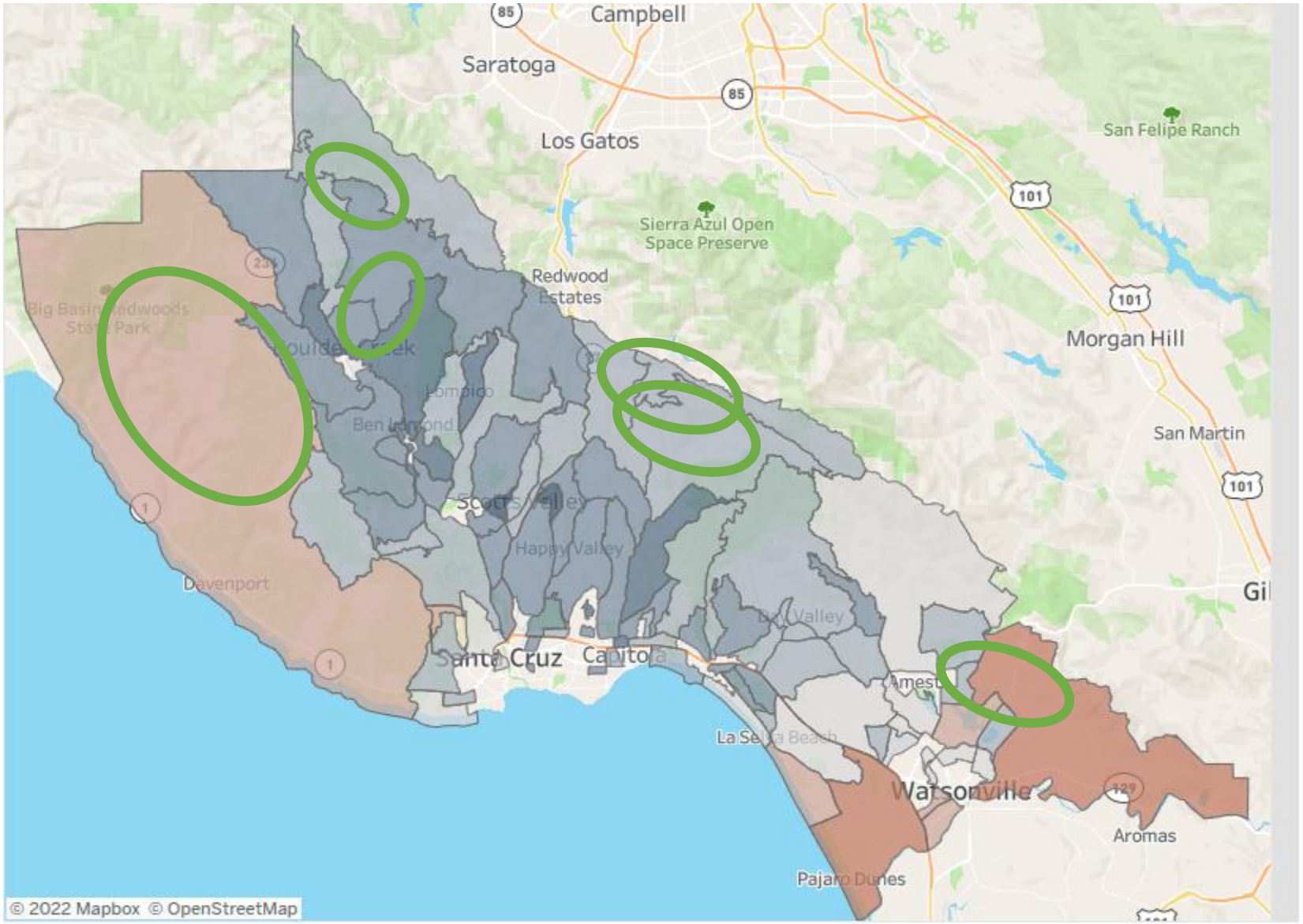
Risk Score Legend Colors
0 = low risk; 100 = highest risk

0 100

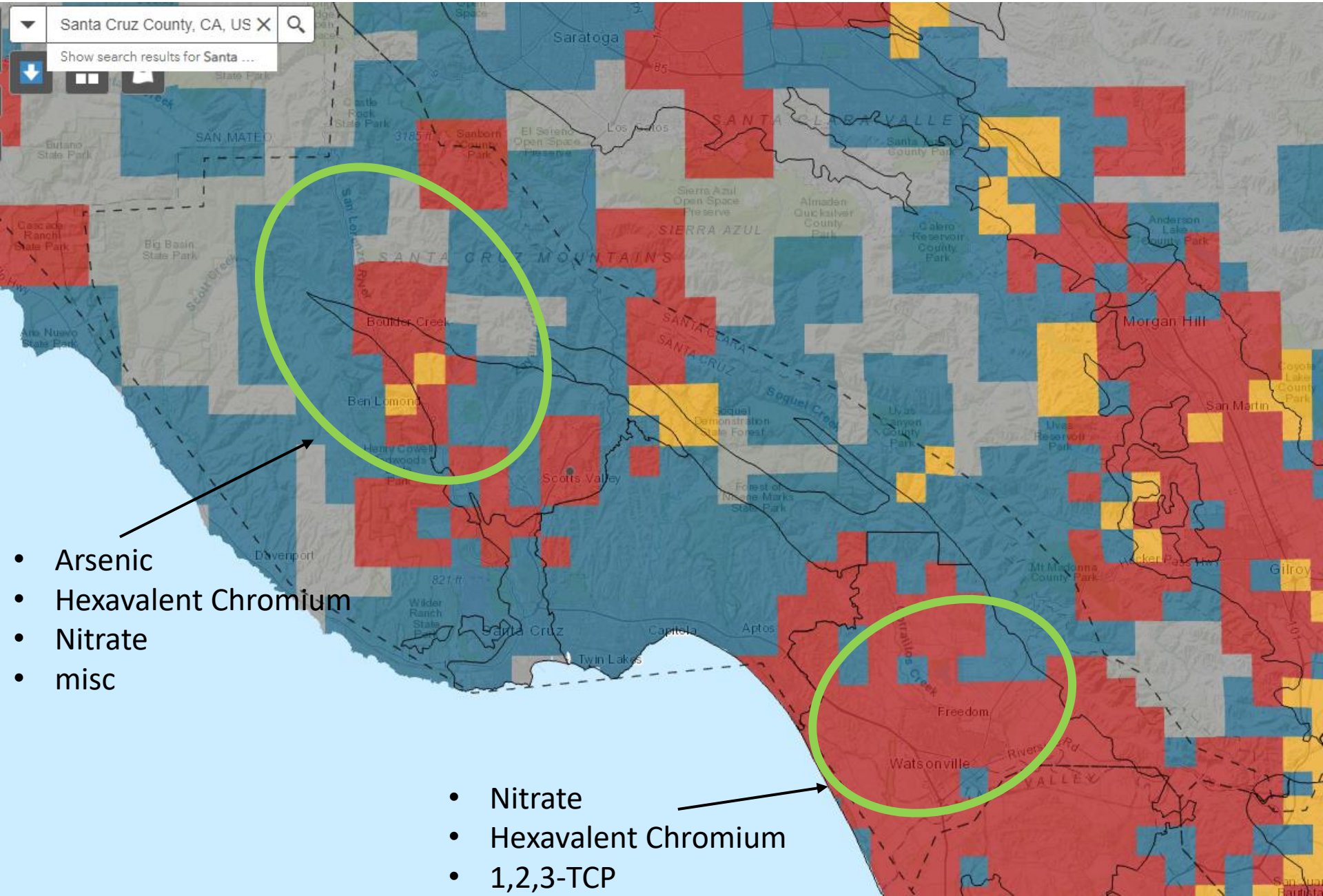
Individual/small water systems and areas with known well issues



DWR Drought Risk Explorer and areas with known well issues



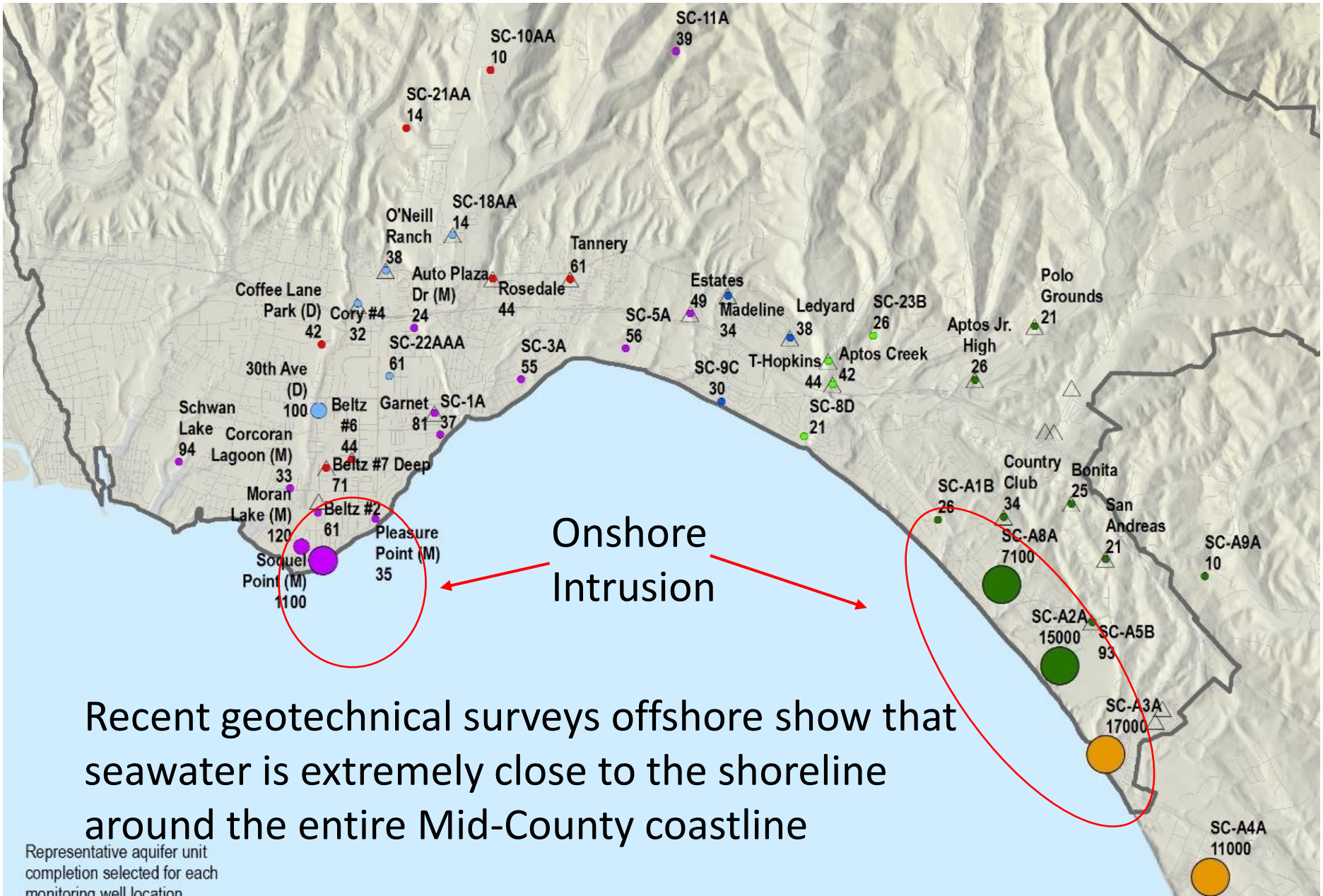
Combined Water Quality Risk Map Source: [2022 Aquifer Risk Map (ca.gov)]



- Arsenic
- Hexavalent Chromium
- Nitrate
- misc

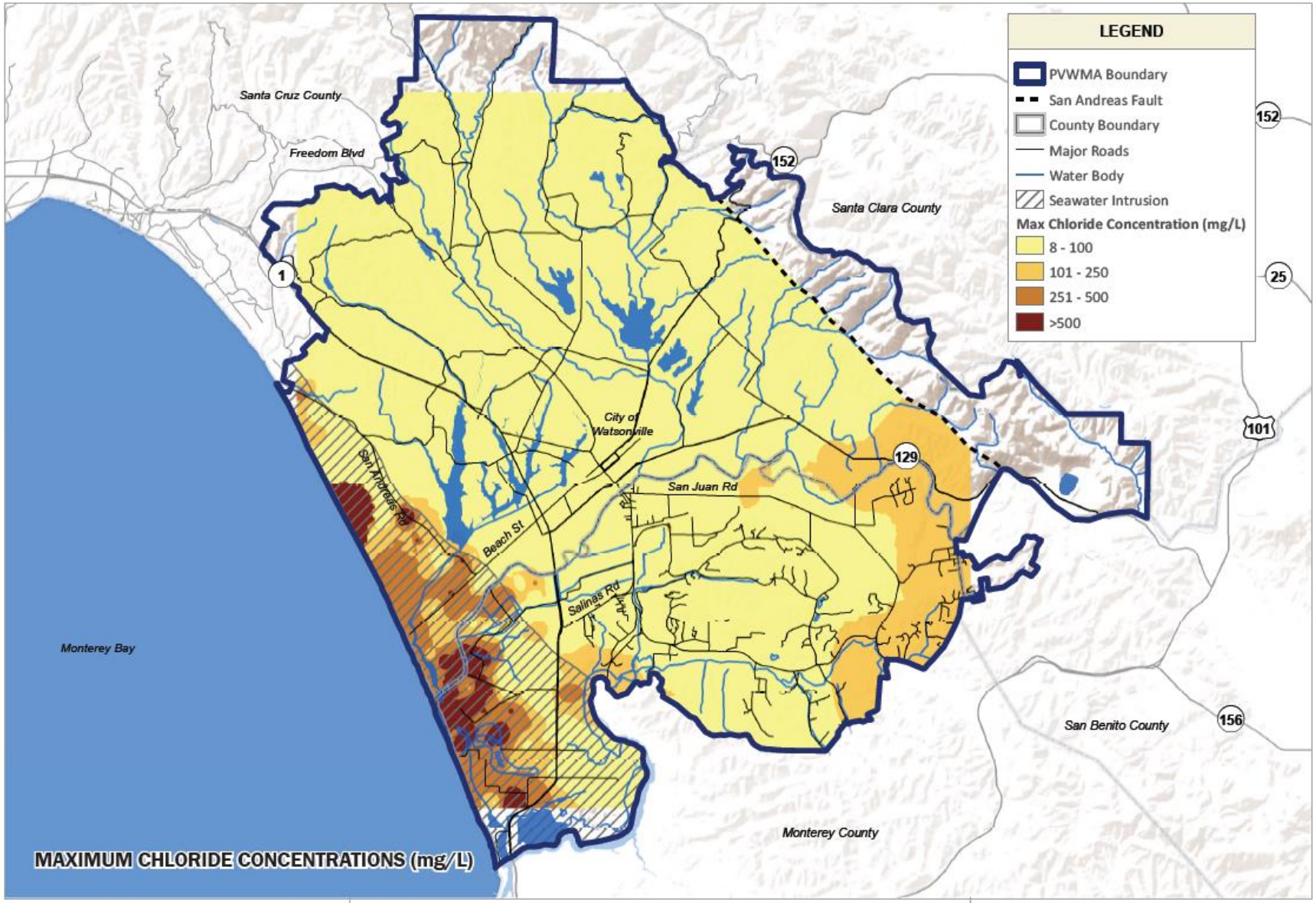
- Nitrate
- Hexavalent Chromium
- 1,2,3-TCP

Seawater Intrusion in Mid-County



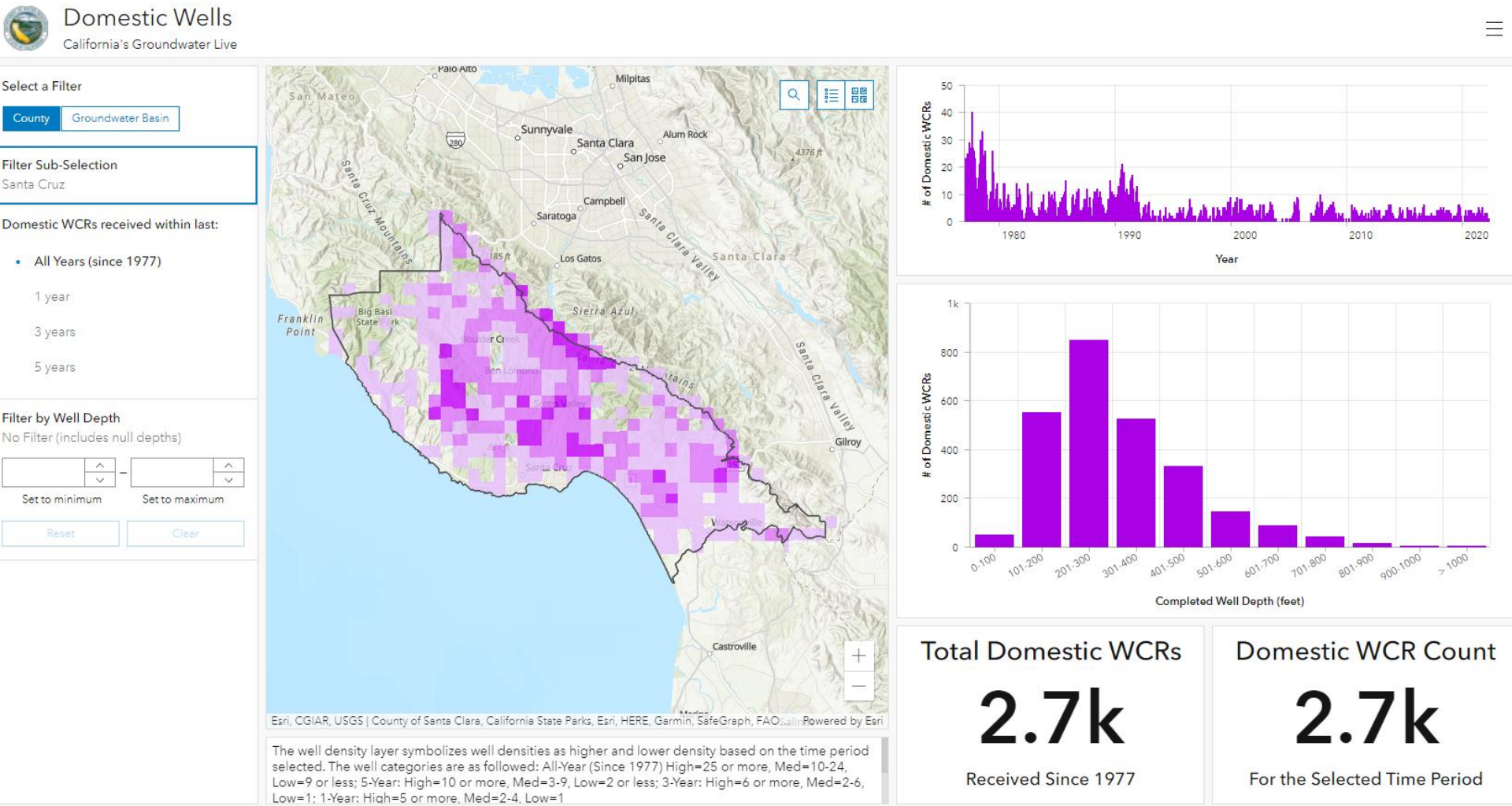
Recent geotechnical surveys offshore show that seawater is extremely close to the shoreline around the entire Mid-County coastline

Pajaro Valley Seawater Intrusion



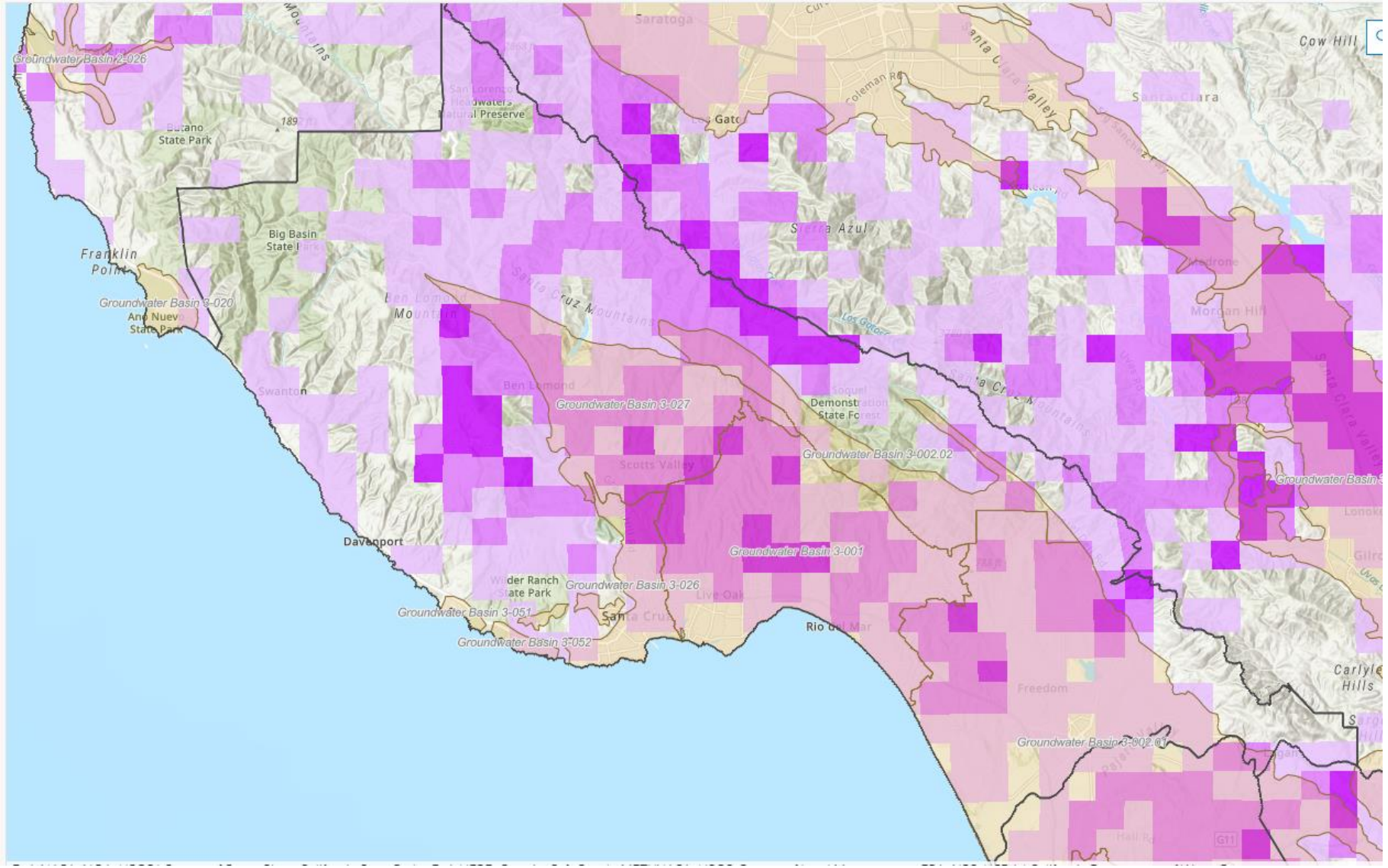
Domestic Wells

[California's Groundwater Live: Well Infrastructure (arcgis.com)]

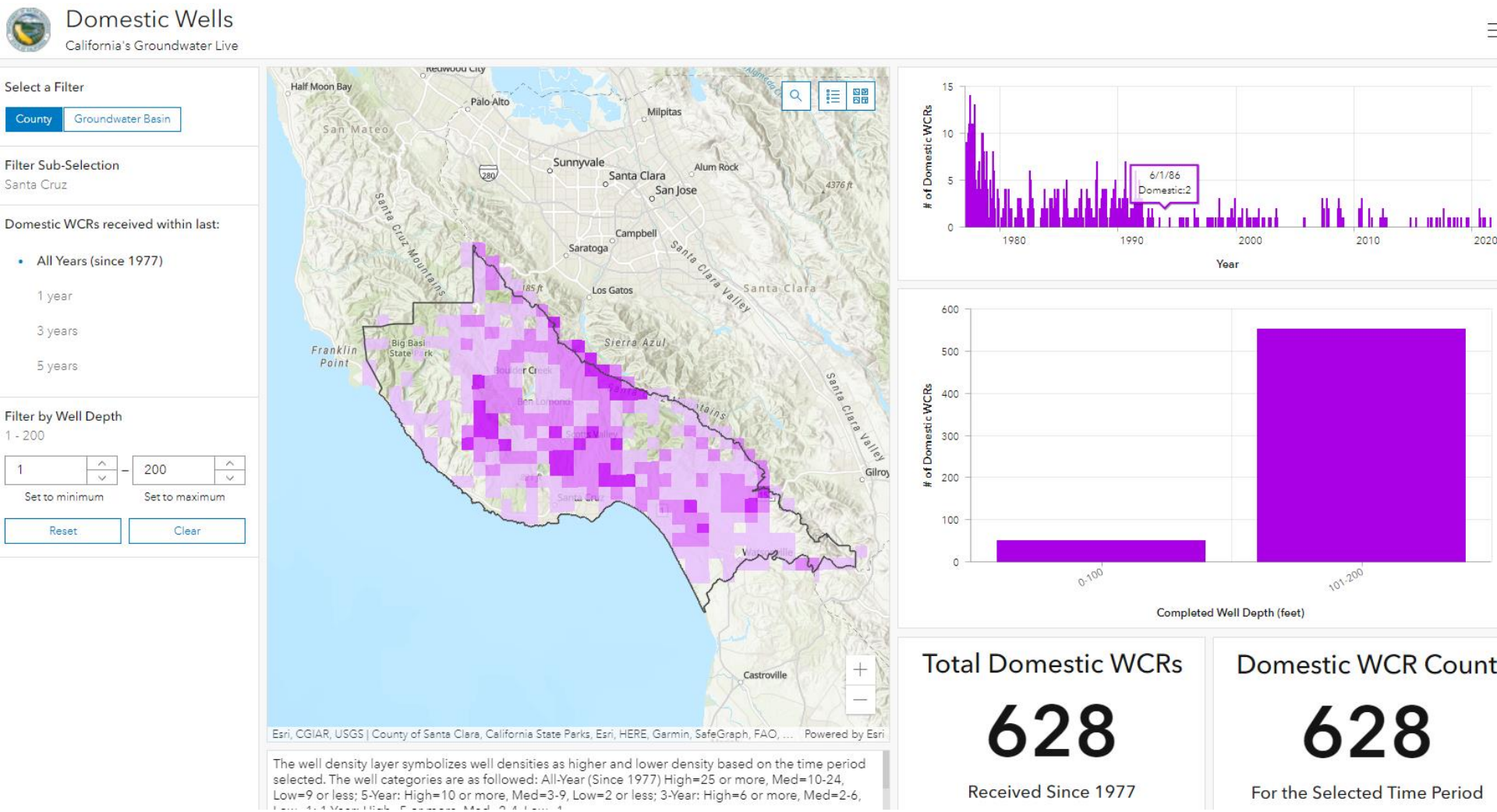


Domestic Wells since 1977 (DWR)

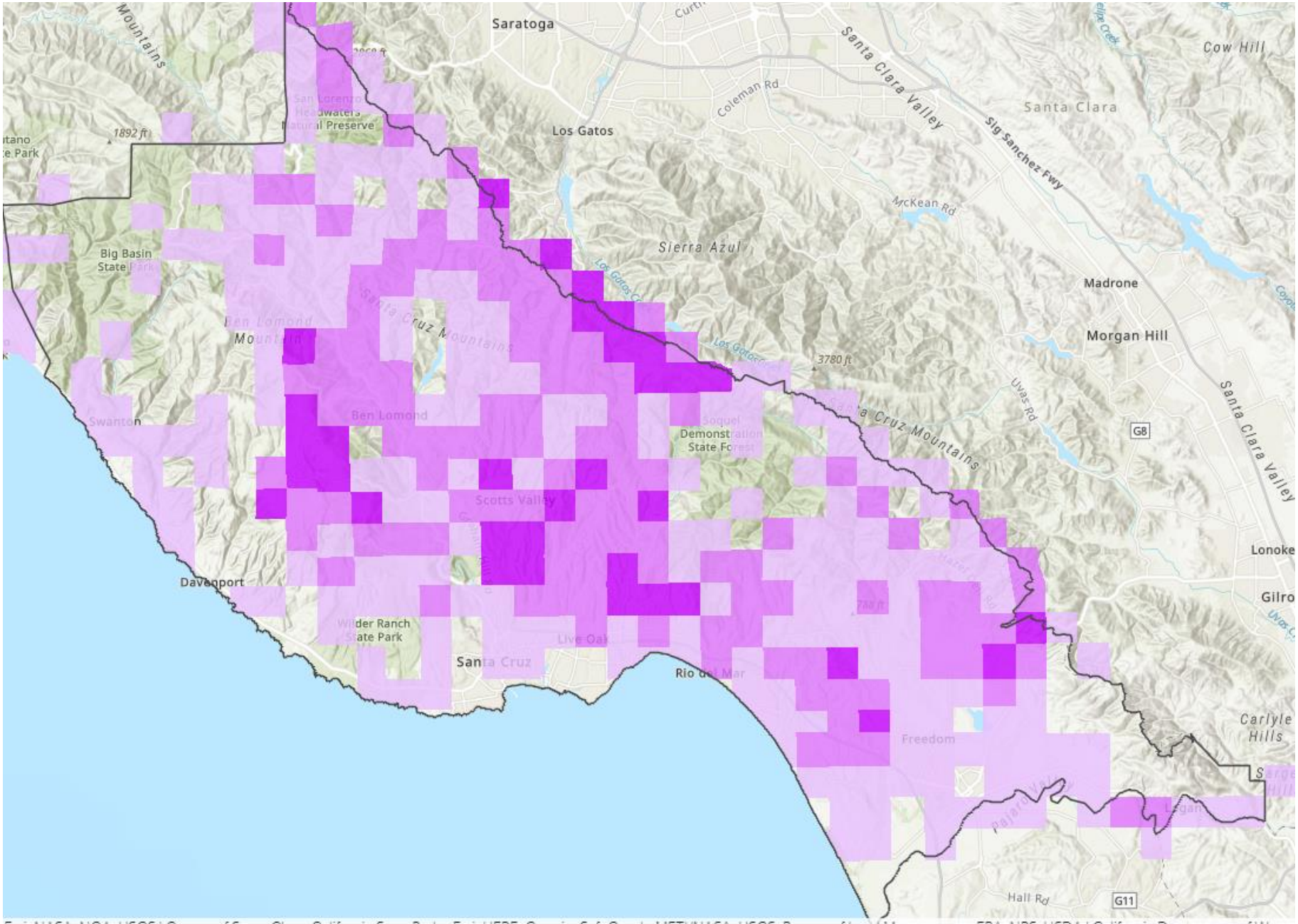
[California's Groundwater Live: Well Infrastructure (arcgis.com)]



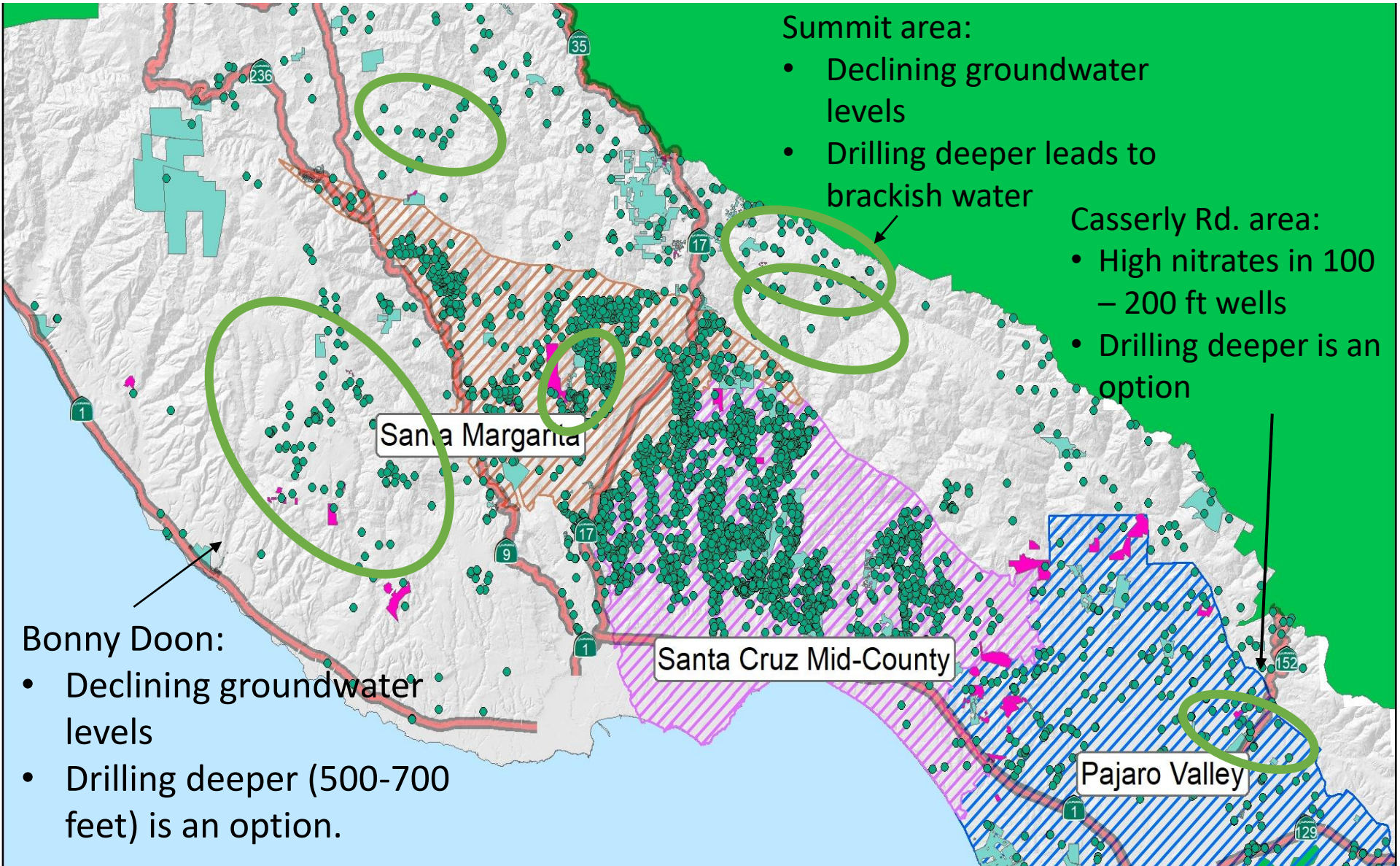
Domestic Wells: 200 ft deep or less, since 1977



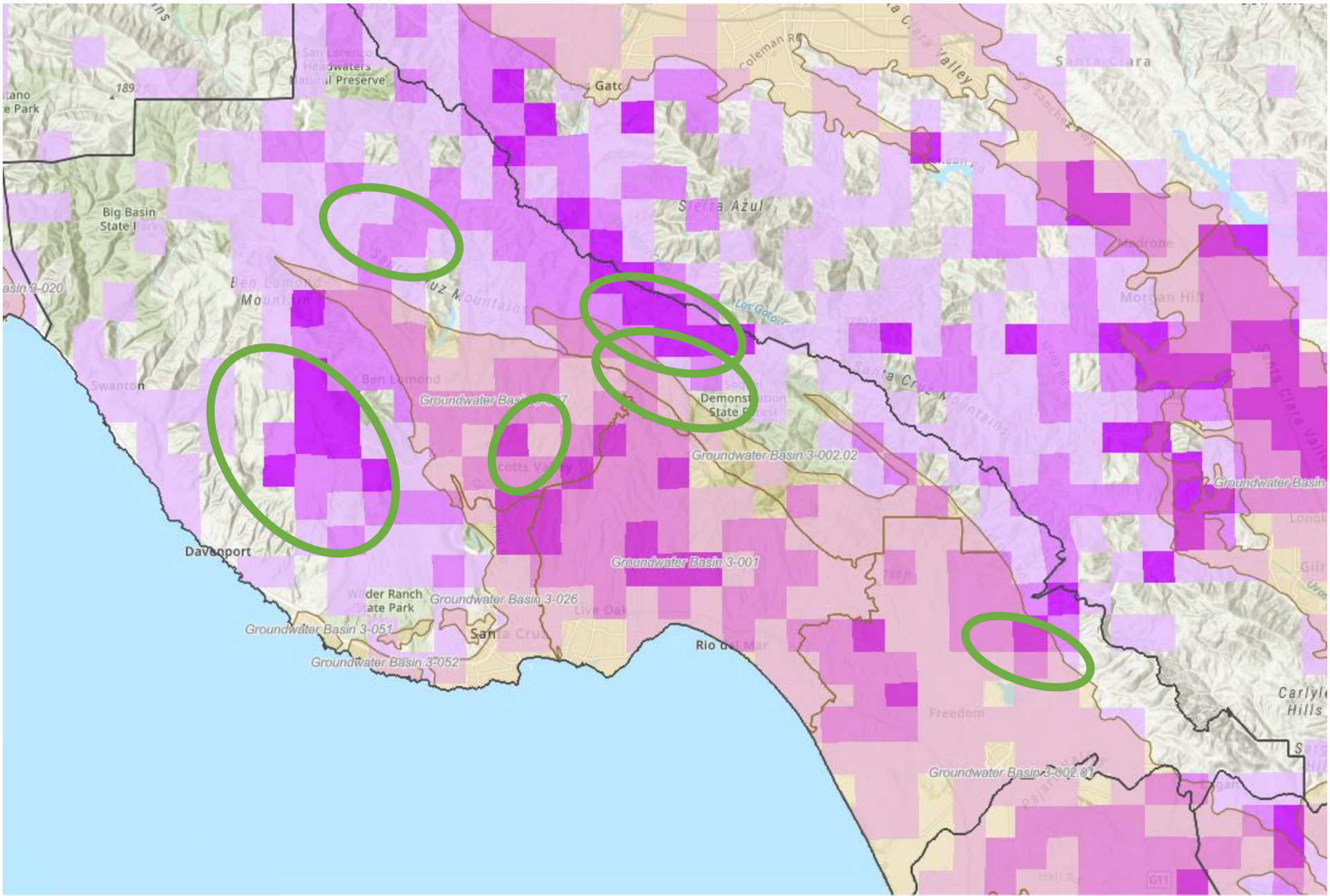
Domestic Wells: 200 ft deep or less, since 1977



Individual/small water systems and areas with known water supply issues



Domestic WCRs, less than 200ft depth (DWR)



Well mitigation strategy

- Assess and improve well information
- Assess drinking water well vulnerabilities
- Identify mitigation strategies
  - interim and long-term
- Discussion
  - Develop outreach and communication
  - Define the role of the County
  - Prioritize actions and procure funds
  - Collaborate and receive support from State agencies and others

Interim and permanent well mitigation strategies				
Solution	**Problem**	**Options**	**Pros and Cons**	**Estimated Costs**
Interim solution	Access to water	Water tank + bottled water	Tank water is not necessarily safe for drinking; the two must be paired	One-time fees: - 2,600 gallon water tank and materials: approximately $2,500. - Labor and tank installation: $1,500 - Electrical permit: $100 On-going fees: - Tank water between $500 to $1,000 depending on delivery charge by water hauler. - For bottled water: $50 to $75 per month per house. - Not estimated: other fees associated with ongoing maintenance of the tank, including routine cleaning.
	Water quality	POU	Treats water at one tap; may need ongoing monitoring or maintenance	$1,000 to $4,500 per unit per home, for one year. Costs include: initial capital costs (installation, treatment system, monitoring system) and also ongoing operation, maintenance, routine monitoring, and waste disposal costs. - Costs vary depending on the contaminant and filtration.
	Water quality	Bottled water	Safe and effective but can be expensive in the longterm; can be difficult to distribute to isolated areas	$50 - $75 per month per house, including delivery

Interim and permanent well mitigation strategies				
Solution	**Problem**	**Options**	**Pros and Cons**	**Estimated Costs**
Permanent solution	Access to water	Lowering of pump	Least expensive permanent solution, if feasible. Limited by depth of well. Energy use increases w depth. Water quality may decrease with depth.	$5,000 - $ 10,000
		Drill a new deeper well	Well test needed to assess yield capacity and water quality on deeper levels.	Private wells $25K - $75K; Water systems up to $1.5M+
		Alternative water source/ Consolidation	Consolidation with local system is most likely alternative; Households must understand and agree with the advantages and disadvantages of connecting to a local water system.	Costs vary depending on the desired solution, technology, and number of households
	Water quality	Water treatement system	Technical, managerial, and financial capacity should be considered when assessing treatment options.	Costs vary depending on the technology, water contaminant(s), and number of households.
		Alternative source of water	Construction of a new well or consolidation with a nearby water system.	Costs vary depending on the desired solution, technology, and number of households.

Well mitigation strategy

- Assess and improve well information
- Assess drinking water well vulnerabilities
- Identify mitigation strategies
  - interim and long-term
- Discussion
  - Define the role of the County
  - Develop outreach and communication
  - Prioritize actions and procure funds
  - Collaborate and receive support from State agencies and others

- *Questions/comments?*