



Areas of Concern
for Nitrate in Groundwater

March 4, 2014

State Water Board Meeting - Informational Item 9

Presentation Overview

- Provide information on draft nitrate maps
- Discuss regional and local efforts identifying nitrate in groundwater
 - Central Valley Regional Water Board
 - CA Rice Commission
 - East San Joaquin Water Quality Coalition
 - Central Coast Regional Water Board
 - Central Coast Groundwater Coalition

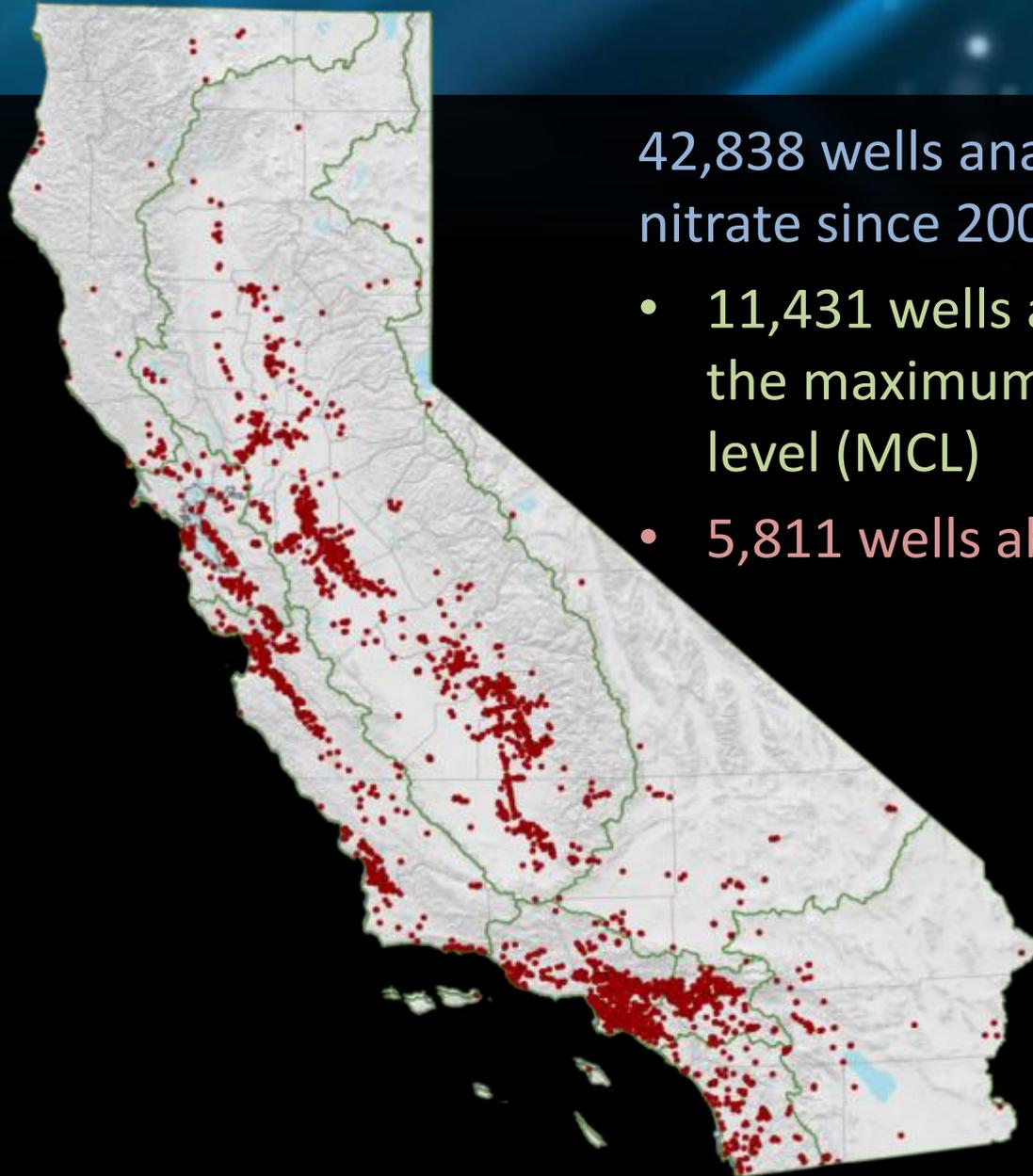
Presentation Overview

- Three basic approaches used to define areas:
 - Vulnerable Areas
 - Basins
 - Well water quality
- Advantages and challenges will be discussed for each
- Preferred draft map approach
- Solicit input from the Board on maps

Water Board Mapping Effort

- Regional and State Board staff workgroup created initial draft map;
- Additional draft maps were then created using alternate approaches
- All draft maps were shared with Department of Food and Agriculture, as required by Memorandum of Understanding
- Water Boards will re-evaluate the areas as new information becomes available.

Framing the Issue – Nitrate in Groundwater



42,838 wells analyzed for nitrate since 2000

- 11,431 wells above one-half the maximum contaminant level (MCL)
- 5,811 wells above the MCL

Initial Map

Draft Map #1

A. Hydrogeologically vulnerable areas and DPR leaching groundwater protection areas



Initial Map

Draft Map #1

B. Farmland Mapping
and Monitoring
Program
irrigated agriculture lands
and dairy lands

- Intersect A and B
- Add sections containing a well at least one-half the MCL
- Add their adjacent sections



Initial Map

Draft Map #1

Advantages:

- Covers areas outside defined groundwater basins

Challenges:

- Assumes nitrate levels based upon land activity
- Produces inconsistent and irregular polygons
- Defining areas by section questions, “Why this section and not its neighboring section?”



Basin Approach

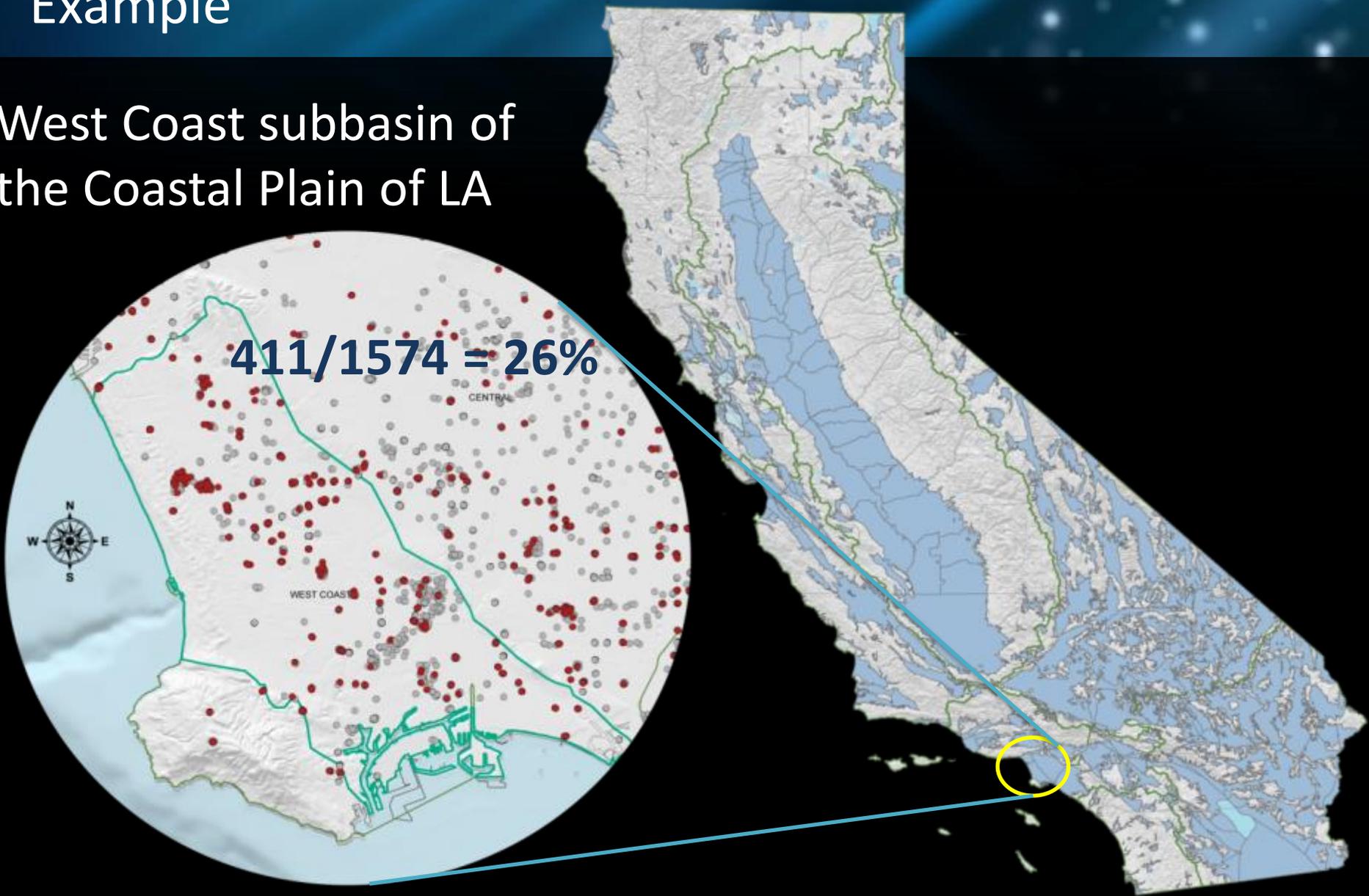
The following basin approach maps define areas where 25% of the wells in each basin have at least:

- one detection above one-half the MCL
- one detection above the MCL
- three detections above one-half the MCL

Basin Approach

Example

West Coast subbasin of
the Coastal Plain of LA



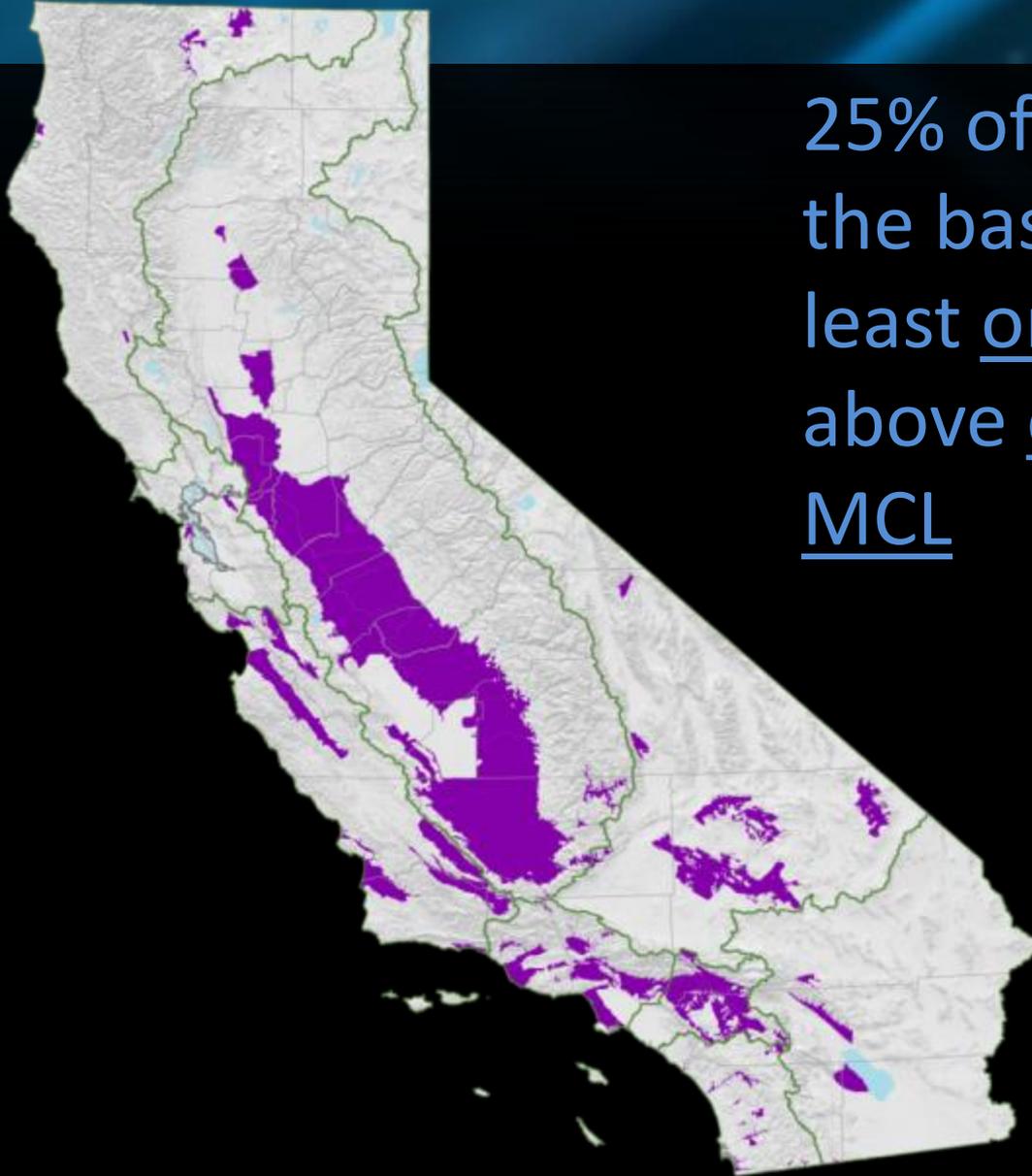
$$411/1574 = 26\%$$

CENTRAL

WEST COAST

Basin Approach

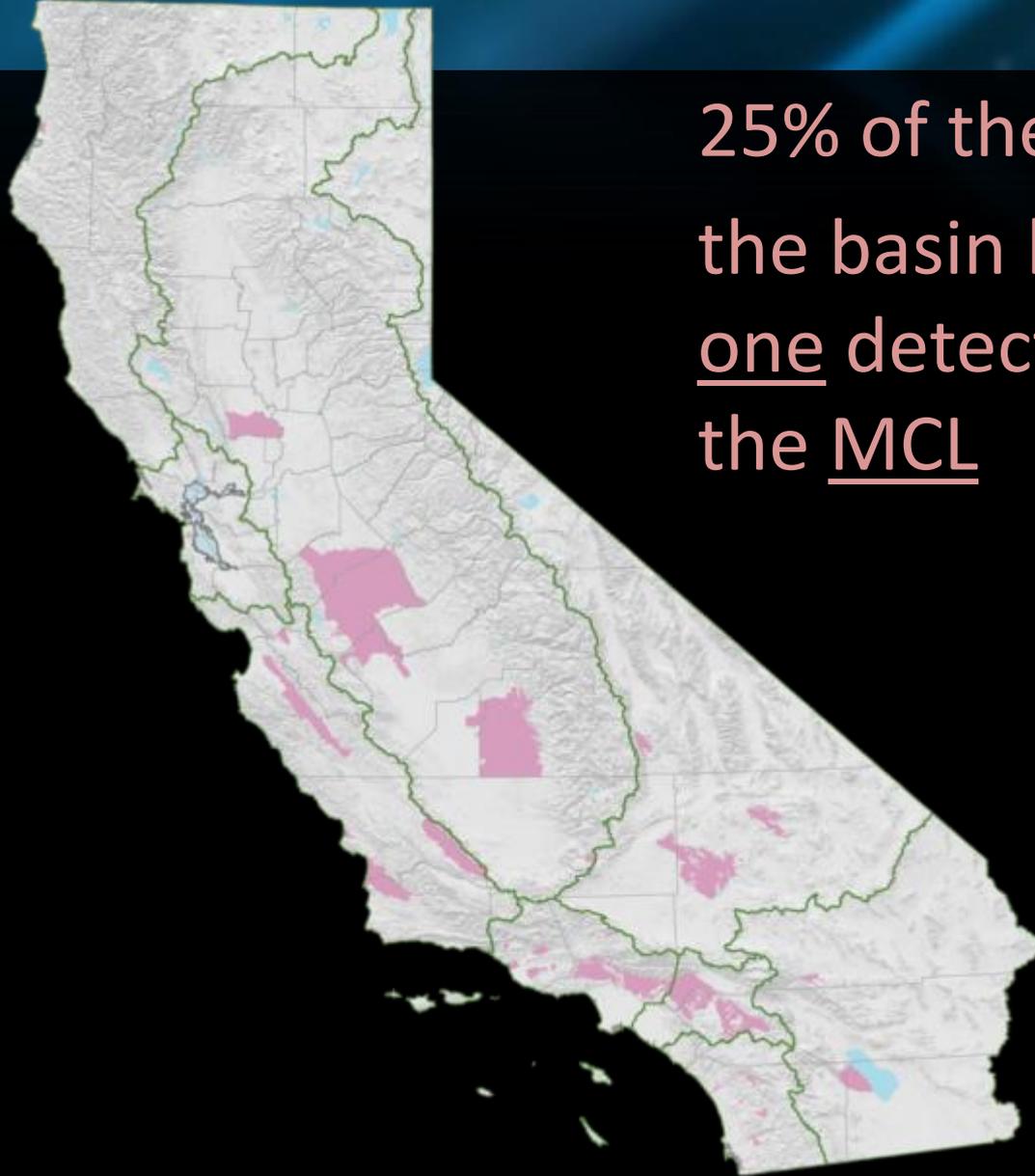
Map #2



25% of the wells in the basin have at least one detection above one-half the MCL

Basin Approach

Map #3



25% of the wells in
the basin have at least
one detection above
the MCL

Basin Approach

Map #4



25% of the wells in
the basin have at least
three detections above
one-half the MCL

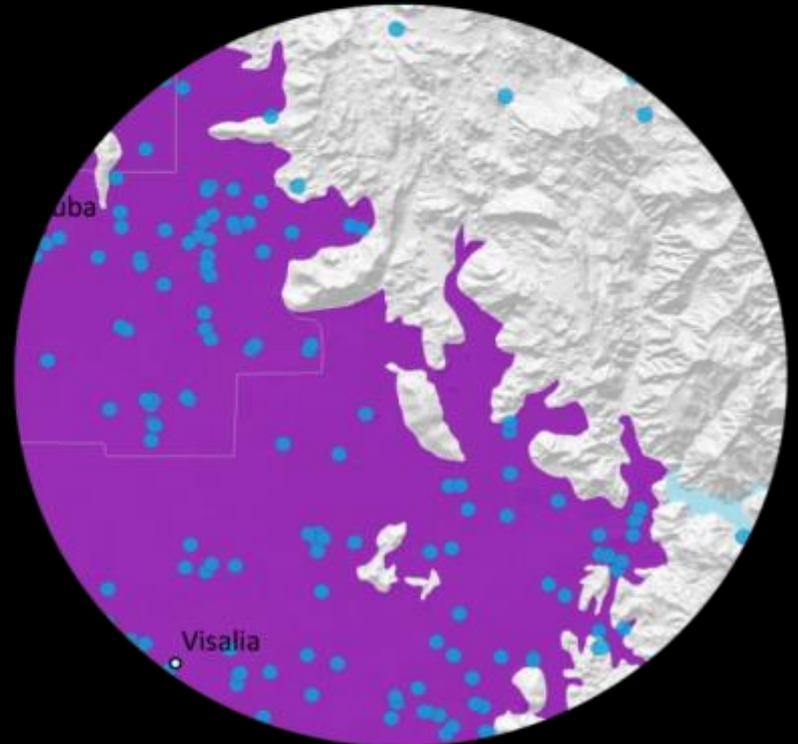
Basin Approach maps

Advantages:

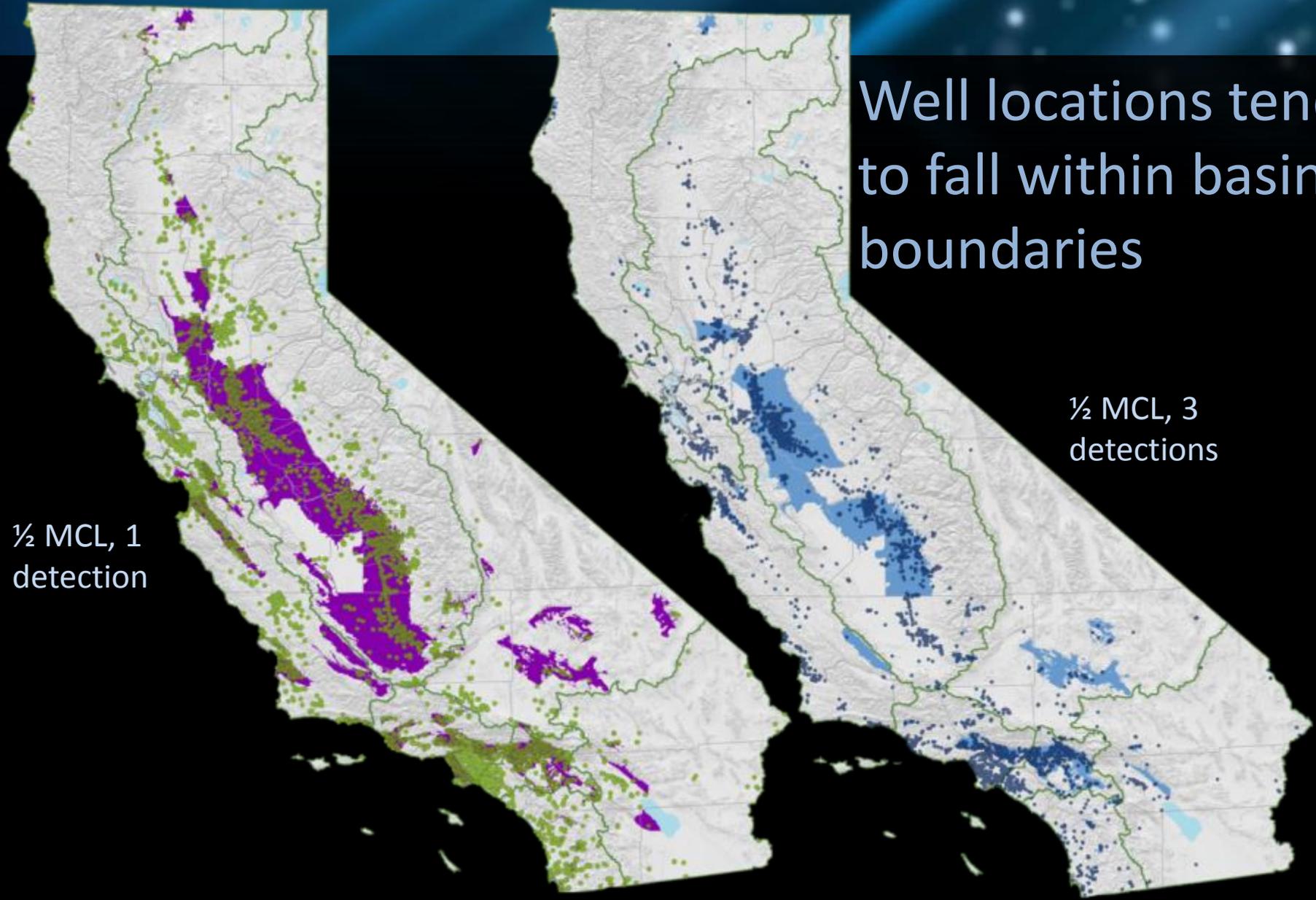
- Areas have a definitive boundary
- Idaho uses the same criteria for their “Areas of Concern”

Challenges:

- Does not include areas outside basins
- Includes basins with a small amount of wells



Basin Approach maps



Well locations tend to fall within basin boundaries

1/2 MCL, 1 detection

1/2 MCL, 3 detections

Proximity to Nitrate Impaired Wells

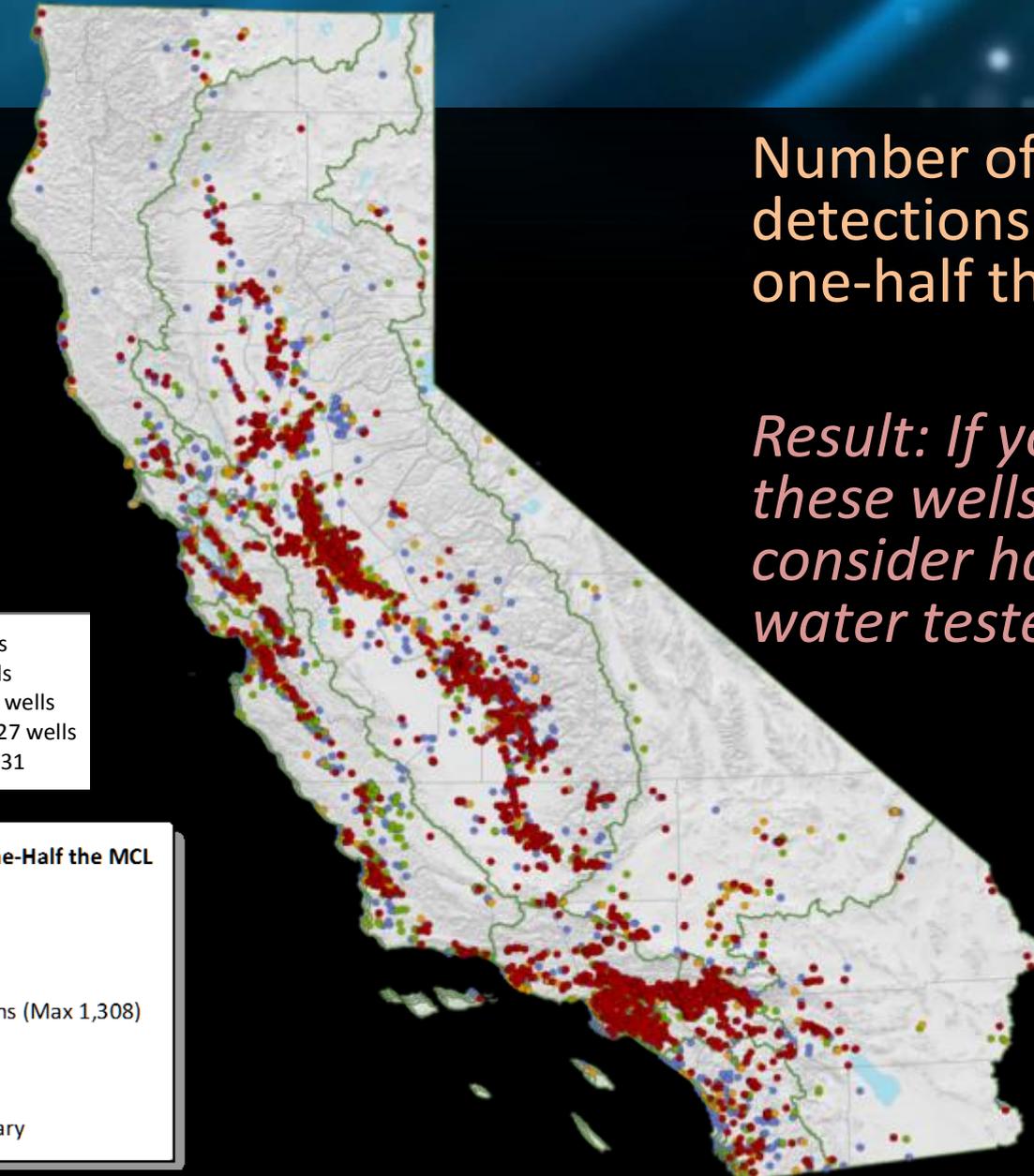
Map #5

Defines areas of concern by one's proximity to the wells indicated on the map.

The following "proximity" map defines areas of concern for nitrate in groundwater:

Proximity to Nitrate Impaired Wells

Map #5



Number of nitrate detections per well above one-half the MCL

Result: If you live near these wells, you should consider having your well water tested.

One detection: 3,780 wells
Two detections: 1,527 wells
Three to five detections: 1,827 wells
Greater than five detections: 4,927 wells
Total Number of Wells: 11,431

Number of Detections Above One-Half the MCL

- One Detection
- Two Detections
- Three to Five Detections
- Greater than Five Detections (Max 1,308)

Regional Board Boundary

County Boundary

Groundwater Basin Boundary

Irrigated Lands Regulatory Program Central Valley Water Board

Joe Karkoski
Program Manager

State Water Resources Control Board
March 4, 2014



Irrigated Lands Regulatory Program Central Valley Region Land Use



PREPARED BY: the California Regional Water Quality Control Board, Central Valley Region, 5 June 2013
 SOURCES: California Dept of Conservation (DOC), Farmland Mapping and Monitoring Program (FMMP), 2006-2010. California Dept of Water Resources (DWR), Land & Water Use, 1997-2002
 DISCLAIMER: Map has been developed with best available data and is intended for general reference use. Land use was gathered primarily from the DOC. Where DOC data was not available, DWR data was used.

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New ILRP Orders

- Identify high/low vulnerability areas
- Focus requirements and plans on High Vulnerability areas
- High Vulnerability areas will be identified by the third-party – must be approved by the Executive Officer

Focus on management practice implementation and reporting

Limited monitoring (compared to other programs)

Central Valley Water Board

New ILRP Orders

- Groundwater Quality Assessment Report Objectives
 - Provide assessment of available data and information to determine high/low vulnerability areas
 - Establish priorities for monitoring and studies in high vulnerability areas
 - Provide a basis for establishing trend monitoring network and management practices evaluation program
 - Provide a basis for establishing groundwater quality management plans in high vulnerability areas and priorities for implementation



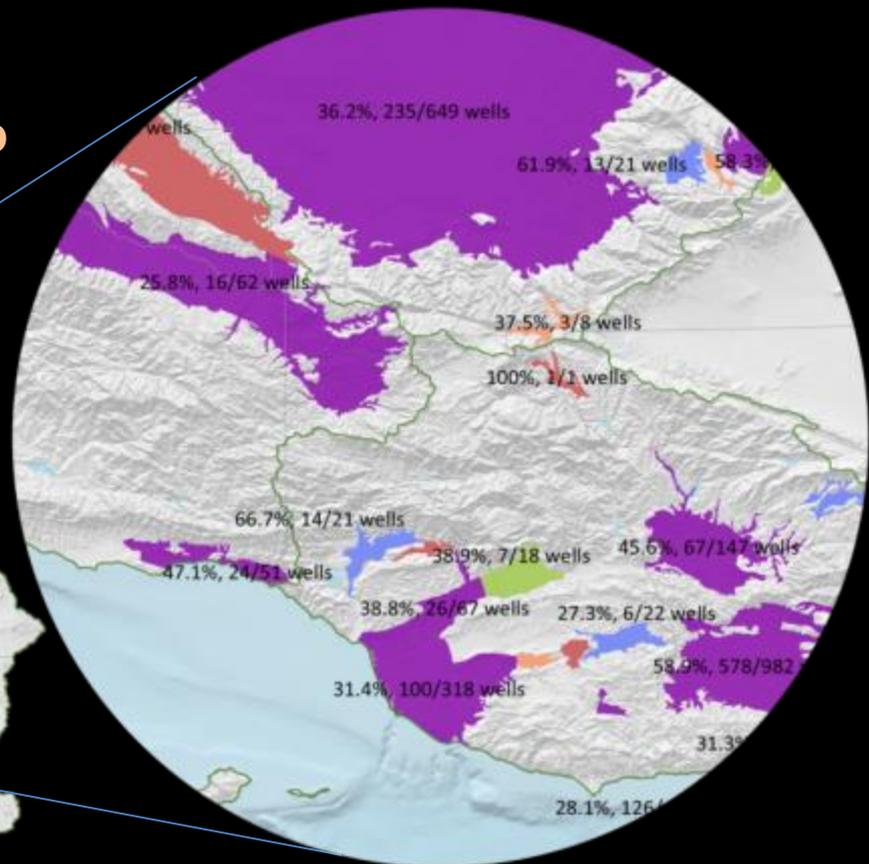
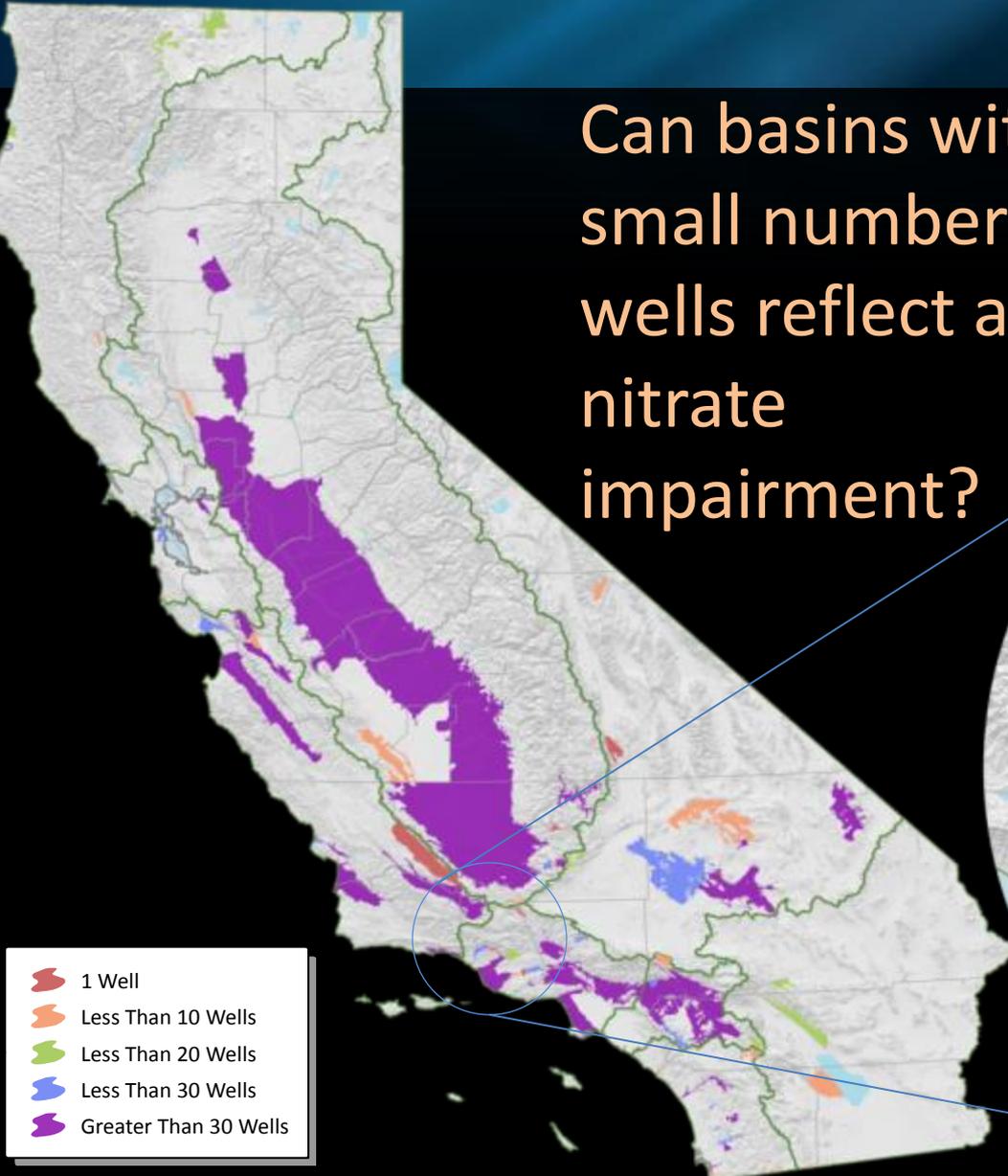
**Central Coast Regional
Water Quality Control Board Efforts**



End

Basin Approach

Can basins with a small number of wells reflect a nitrate impairment?



Supportive Maps

Areas of irrigated agriculture and wells with at least one detection above half the nitrate MCL

