

# Update on the Development of the Groundwater Protection Strategy

North Coast Regional Water Quality Control Board Meeting

Item No. 3

October 20, 2016

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North Coast Regional Water Quality Control Board





# Key Points

- 1) Abundant high-quality groundwater in the North Coast Region.
- 2) Numerous statewide policies that can effect groundwater.
- 3) Groundwater Protection Strategy needed to maintain such quality to protect consumptive and environmental uses.
- 4) Basin Plan Prohibition has lead to discharges to land.
- 5) Pollution prevent is more effective than groundwater remediation.
- 6) Priorities and actions informed by data collection and analysis.
- 7) SGMA promotes groundwater protection and management at a local level.

**Basin Plan  
Amendment  
Water Quality  
Standards**

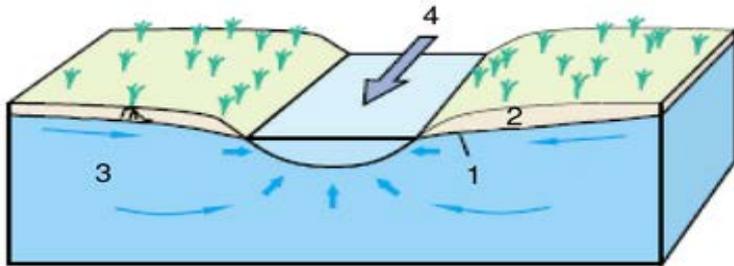
**Update Water Quality  
Objectives (Phase I Complete)**

- Groundwater Toxicity
- Chemical Constituents

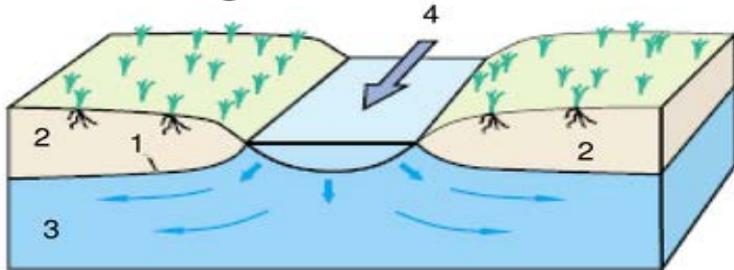
**Beneficial Use Designation**

- Freshwater Replenishment
- Groundwater Recharge

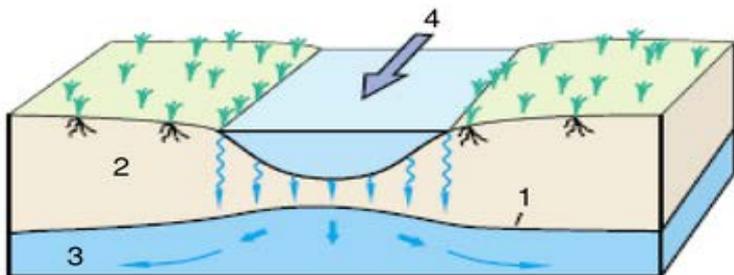
### A Gaining Stream



### B Losing Stream



### C Losing and Disconnected Stream

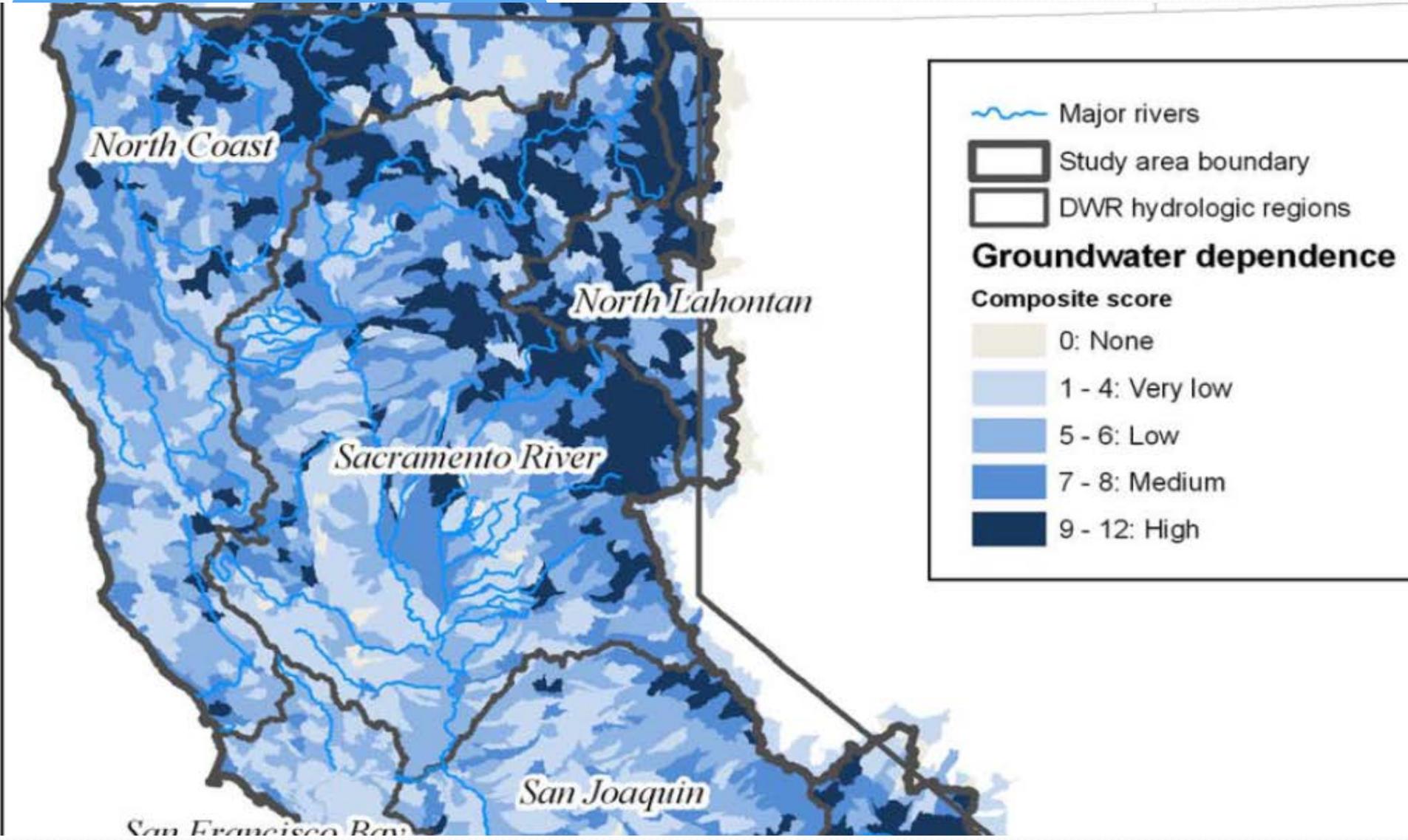


## Beneficial Use Designation

- Freshwater Replenishment
- Groundwater Recharge
- Wildlife Habitat
- Rare, threatened and Endangered Species

# Basin Plan

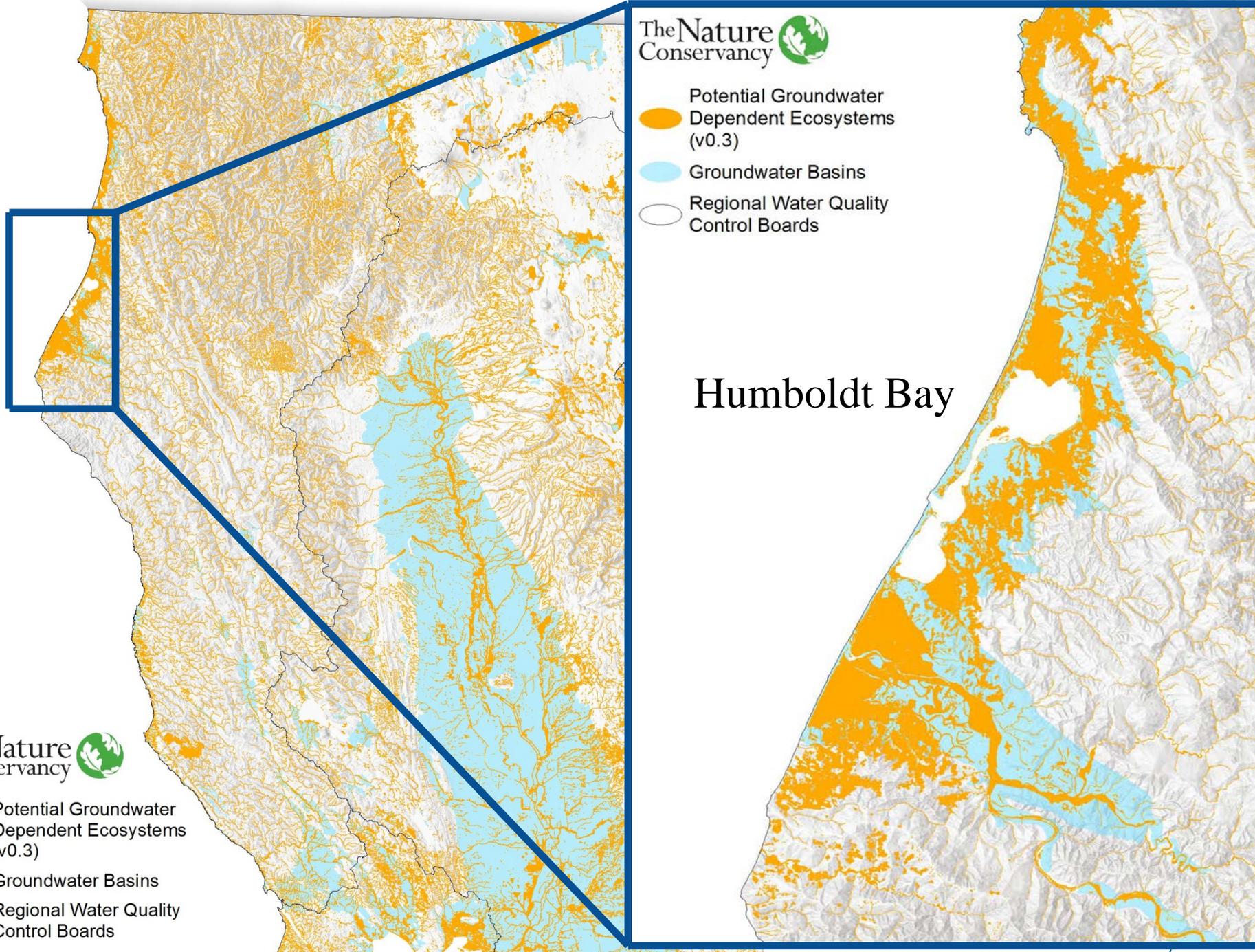
# Beneficial Use Designation



- Potential Groundwater Dependent Ecosystems (v0.3)
- Groundwater Basins
- Regional Water Quality Control Boards

# Humboldt Bay

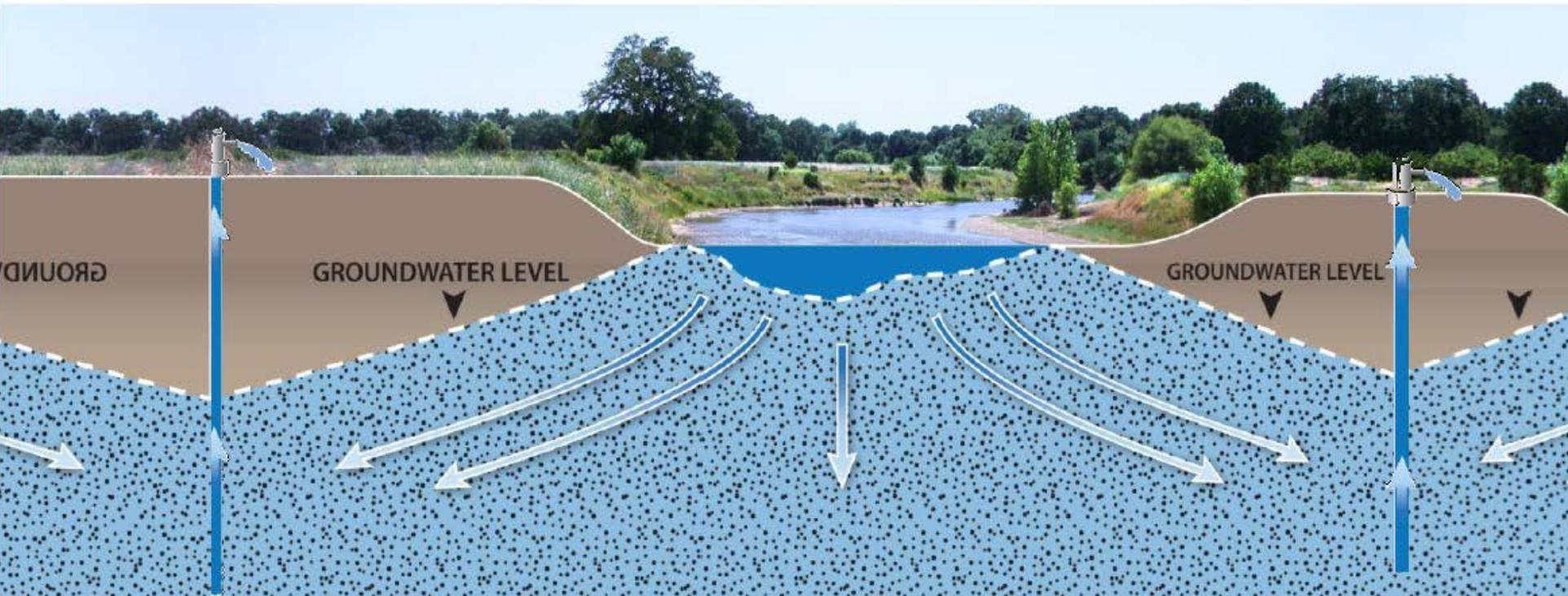
- Potential Groundwater Dependent Ecosystems (v0.3)
- Groundwater Basins
- Regional Water Quality Control Boards



# Groundwater - Surface Water Connection

## Groundwater Affects Stream Flow “Losing Stream”

**Wetlands    Riparian Zone    Streams**



Pumping Lowers Groundwater Levels  
Stream Loses Flow to Groundwater

*Courtesy The Nature Conservancy*

# Groundwater Dependent Ecosystems

*Conceptual Model of Watershed Hydrology,  
Surface Water and Groundwater Interactions,  
and Stream Ecology*

*for the Russian River Watershed*

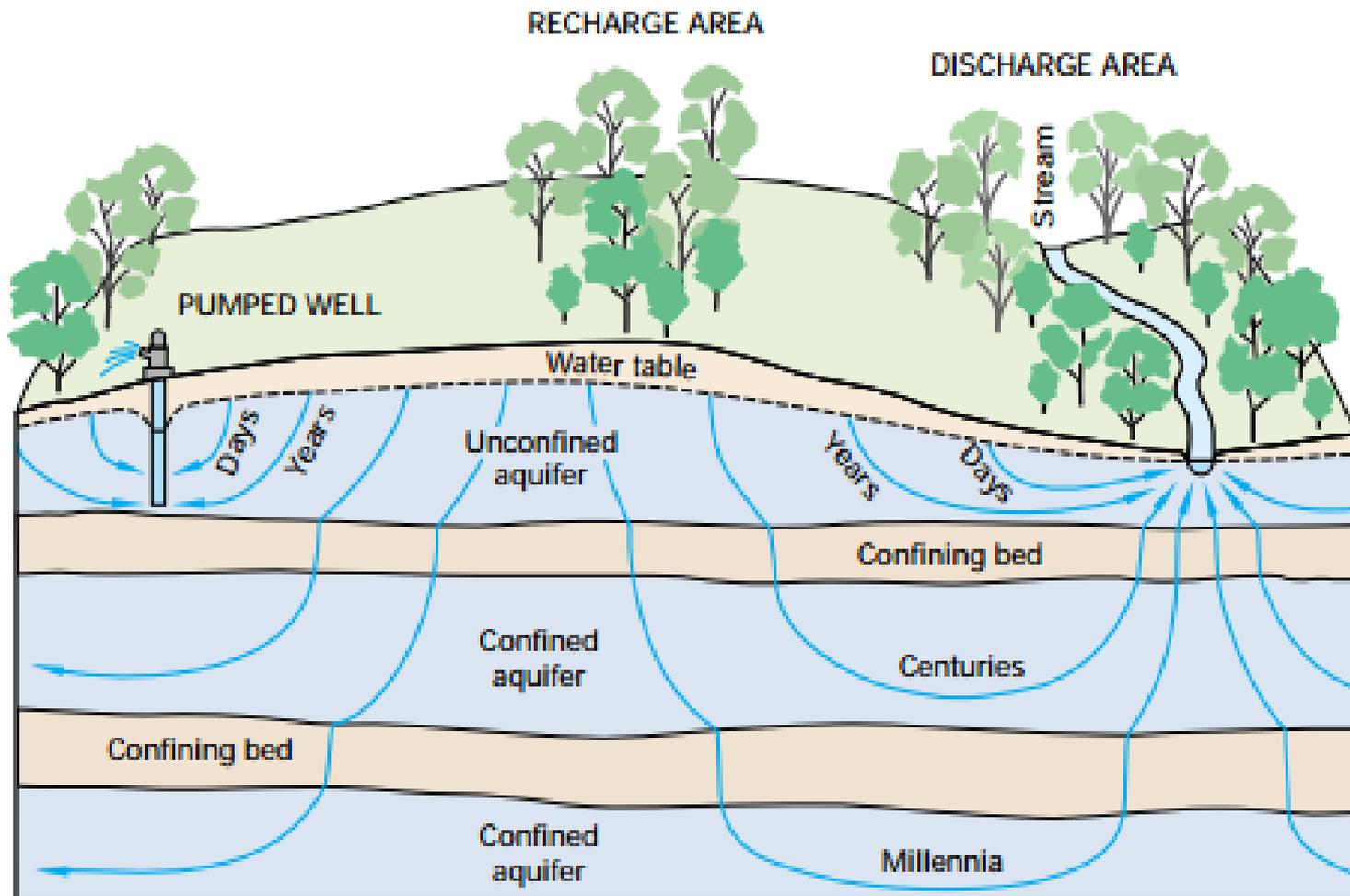
by the

**Russian River**

**Independent Science Review Panel**



# Groundwater Recharge





**Data  
Compilation  
Groundwater  
Assessment**

## **Impacts to Beneficial Uses**

- Human Health / Taste & Odor
- Agriculture

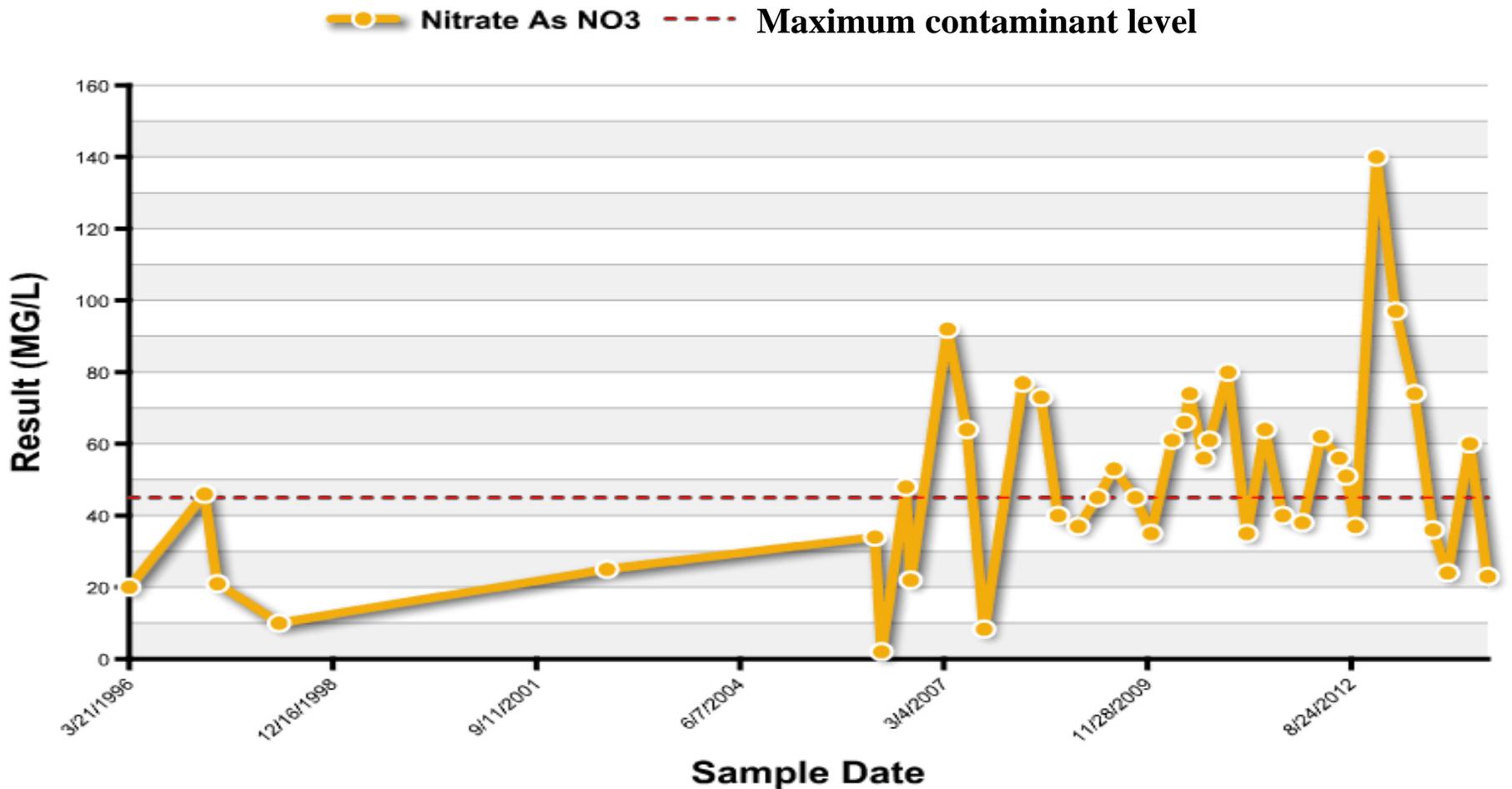
## **Data Collection**

- Get data into Geotracker/GAMA
- Conduct basin-wide monitoring
- Establish baselines



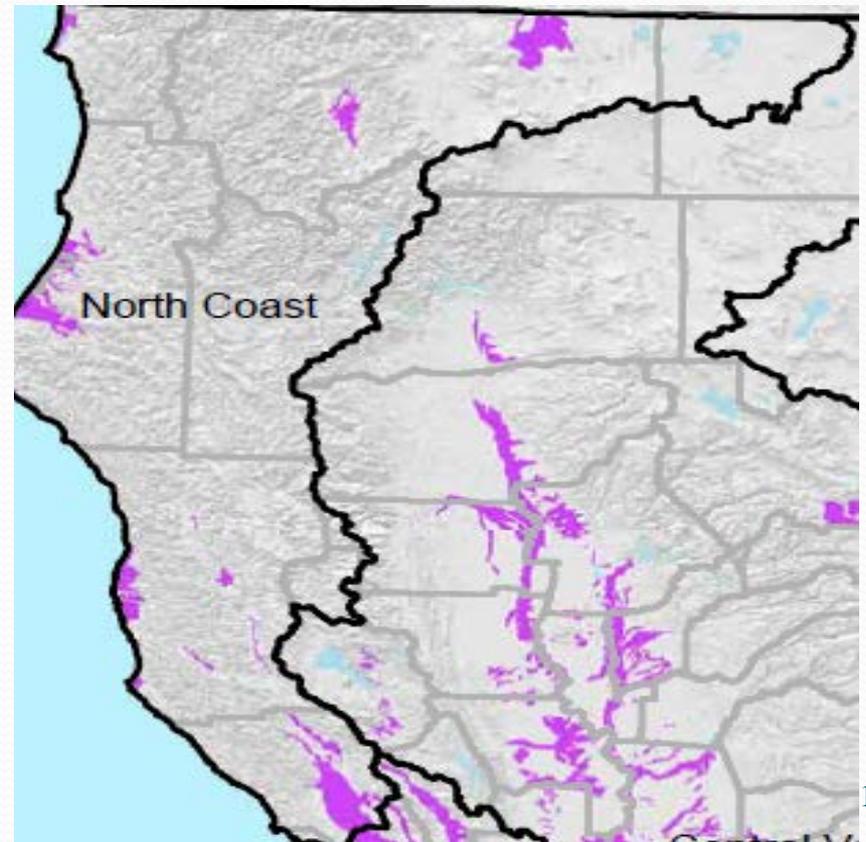
# Impacts to Beneficial Uses

## Nitrate As NO3 Results for Valley Ford Water Supply Well



# Risk Assessment & Basin Prioritization

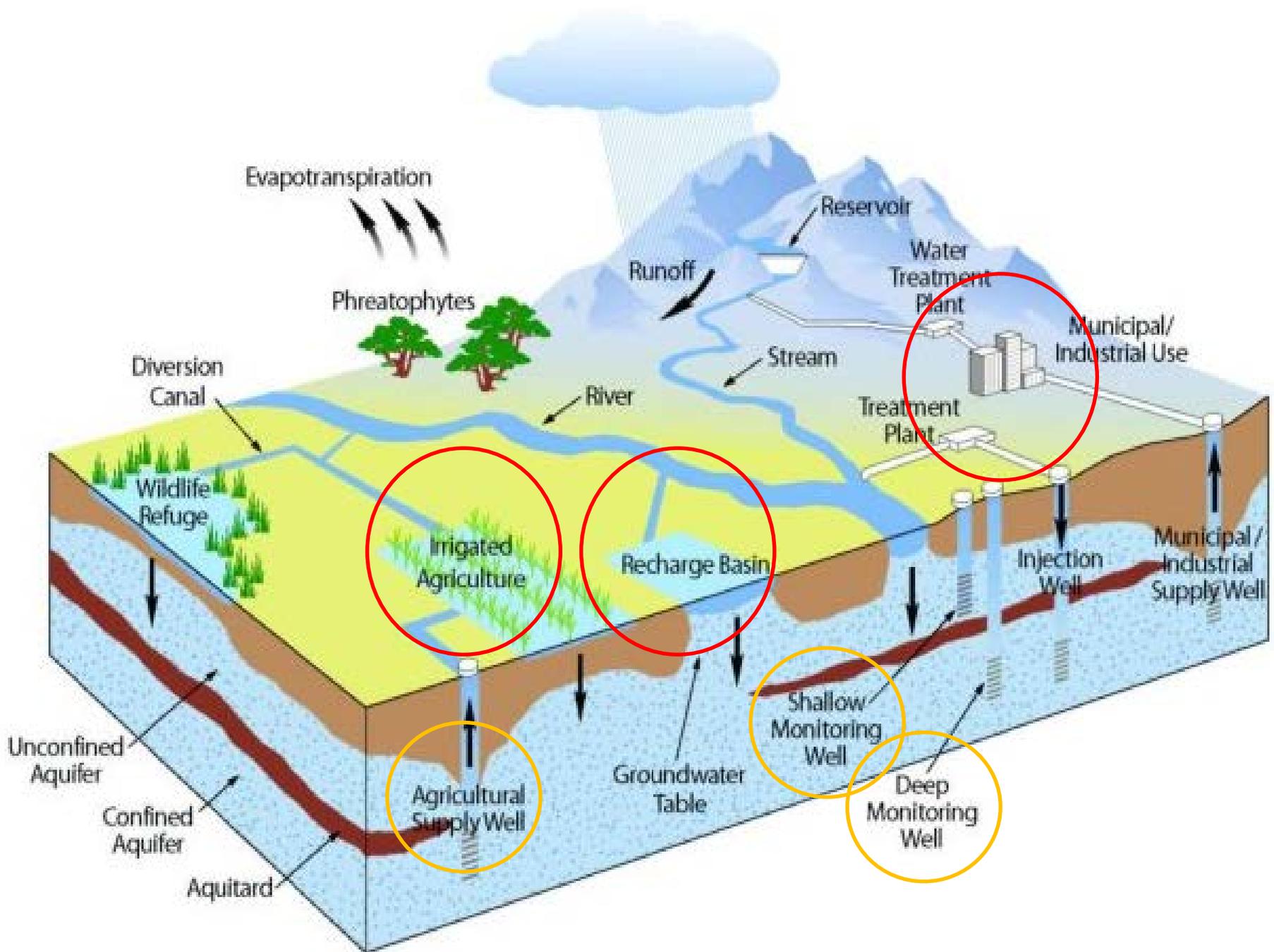
- Identify risks to beneficial uses
- Vulnerability rating
- Establish baselines / trends
- Prioritization of resources



**Basin Plan  
Amendment  
Action Plan for  
Discharges of  
Waste to Land**

**Action Plan**

- Municipal, Industrial & Commercial Sources of Waste
- Recycled Water Use
- Irrigated Lands
- Regional Management / Monitoring Plan Requirements
- Identification of High Risk Areas
- Policy Statement on High Quality Water



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## **Program Management**

### **Continue Program Implementation**

- Waste to land
- Cleanups
- Onsite Wastewater Treatment Systems Policy (OWTS)
- Recycled Water Permits

### **Develop/Update Orders**

- General & Individual Orders
- Promote storm water capture & groundwater recharge zone protection
- Irrigated Lands Regulatory Program
- Require monitoring programs

### **Project Prioritization**

- Prioritize According to Risk
- Enforcement Strategy

# Partnering Funding SGMA

## Partnering

- SWRCB DWQ Policies
- ORP, DDW, DWR, DFA
- Local, State & Federal

## Funding

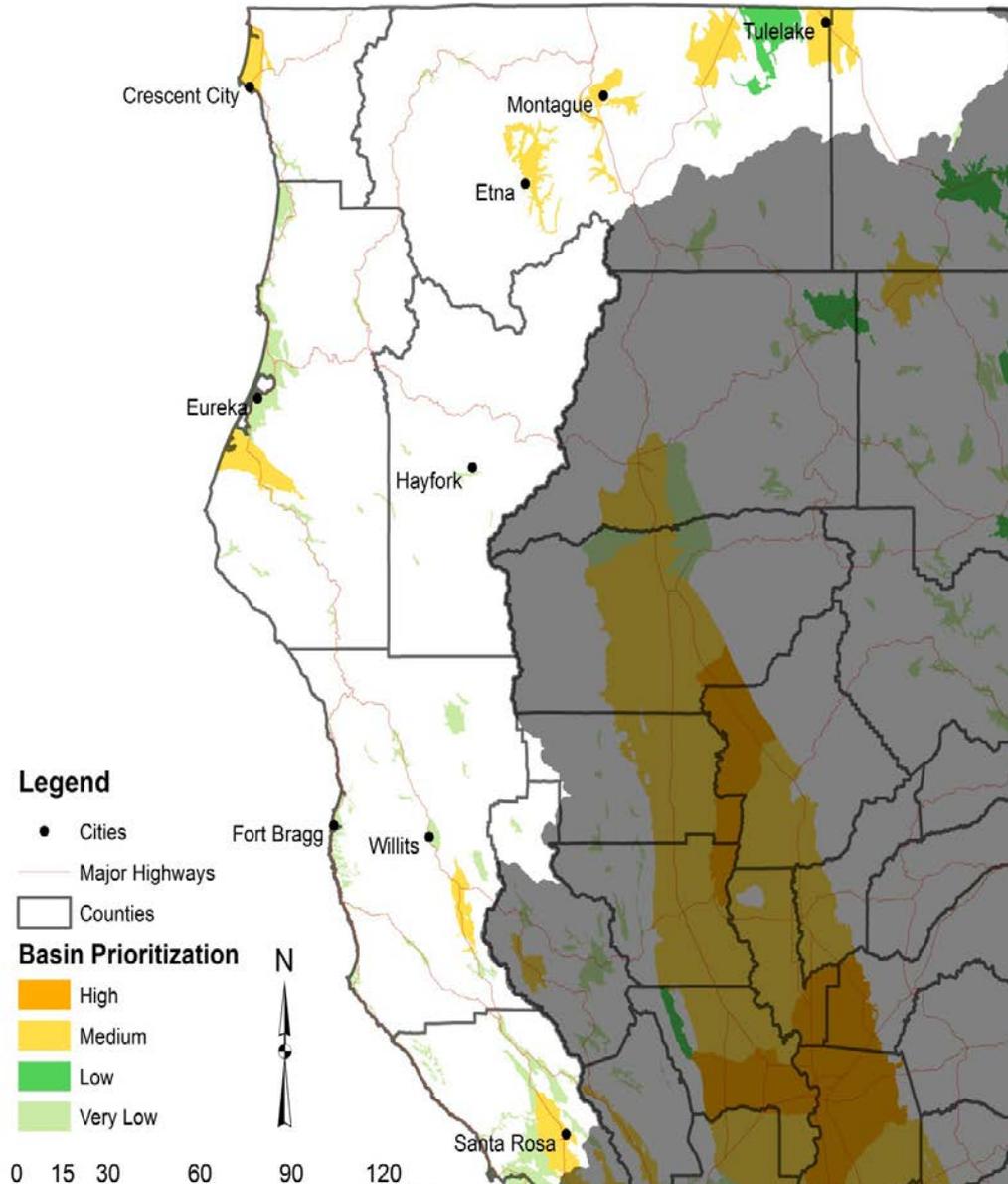
- SWCRB – SRF, Prop 1
- Adaptive management unit

## SGMA

- Connection to local efforts



# Sustainable Groundwater Management Act



California Department of Water Resources  
Groundwater Information Center  
Map Interface

CASGEM Groundwater Basin Prioritization

High  
Medium  
Low  
Very Low

Medium Priority Basins of the North Coast Region:

- Shasta Valley
- Santa Rosa Plain
- Smith River Plain
- Tule Lake
- Ukiah Valley
- Eel River Valley
- Scott River Valley
- Butte Valley

# Sustainable Groundwater Management

Management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.

## Undesirable results

Significant and unreasonable:



Surface Water  
Depletion



Reduction  
of Storage



Degraded  
Quality



Seawater  
Intrusion



Land  
Subsidence



Lowering  
GW Levels

# Information Request by DWR for SGMA Priority Basins

1. Water Quality Impacts
2. Surface Water Impacts from Groundwater uses



# Data Driven Adaptive Management

## GeoTracker/GAMA

- Funnel data from programs to GAMA

## Risk Assessment

- Vulnerability
- Impairments
- Basins in Overdraft
- Trend analysis

## Regional Monitoring Programs

- Russian River
- Santa Rosa Plain
- Klamath River Watershed
- Groundwater Sustainability Plans
- CA Statewide Groundwater Elevation Monitoring Program

The screenshot displays the GeoTracker GAMA web application interface. On the left, there is a search panel with the following elements:

- SEARCH FOR WELLS** section: Includes a dropdown for "Wells With Results", a dropdown for "Any Chemical", a "All Years" dropdown, and a "Go" button.
- Results summary: "10658 WELLS FOUND (58.01% ABOVE COMPARISON CONCENTRATION)".
- Footnote: "\* The list of comparison concentrations can be found [here](#)."
- "Well Quick Search" link.

Below the search panel is the **DATASETS** section, which includes a **GIS LAYERS** dropdown menu. The selected layer is "Regional Board Boundaries". Below this, there is a dropdown for "NORTH COAST RWQCB (REGION 1)" and a note: "SELECTING A GIS LAYER ABOVE WILL LIMIT YOUR QUERY TO RESULTS IN THAT GIS LAYER".

Underneath the GIS layers are "Other GIS Coverages:" with several checkboxes:

- HYDRO FRACTURED WELLS
- OIL / GAS FIELD BOUNDARIES
- RB BOUNDARIES (SECURE)
- TOWNSHIPS - ZOOM IN
- PCAS [ALL PCAS]

The main map area shows a map of Northern California with numerous red circular markers representing wells. Key geographical features and cities labeled include Santa Rosa, Medford, Klamath Falls, Ashland, Redding, Chico, Sacramento, and various National Forests like Modoc, Shasta-Trinity, and Mendocino. The map also shows major highways like I-5 and I-80.



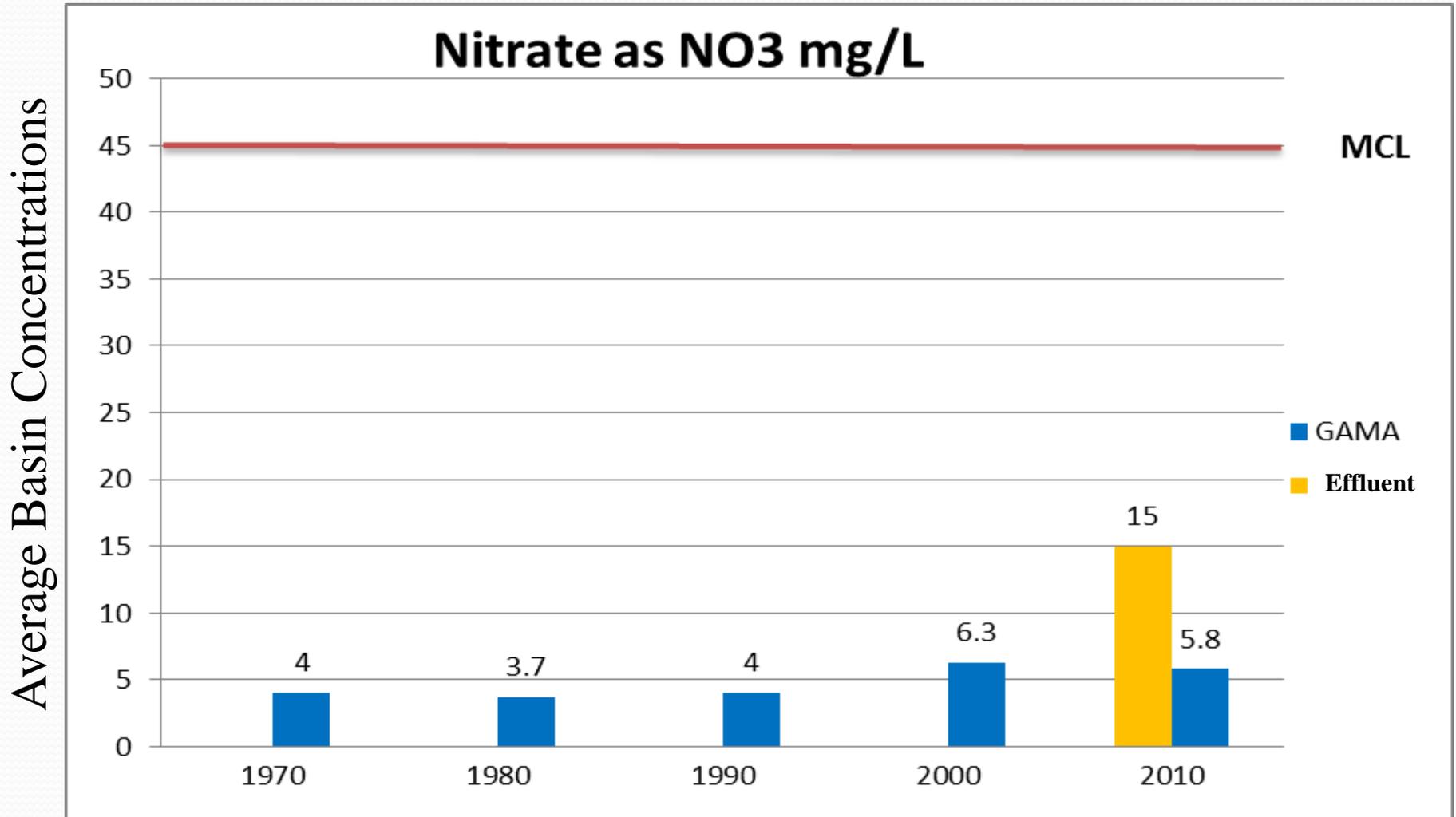
# Healdsburg Basin Water Quality Estimated Average Basin Concentrations

Lake Sonoma →



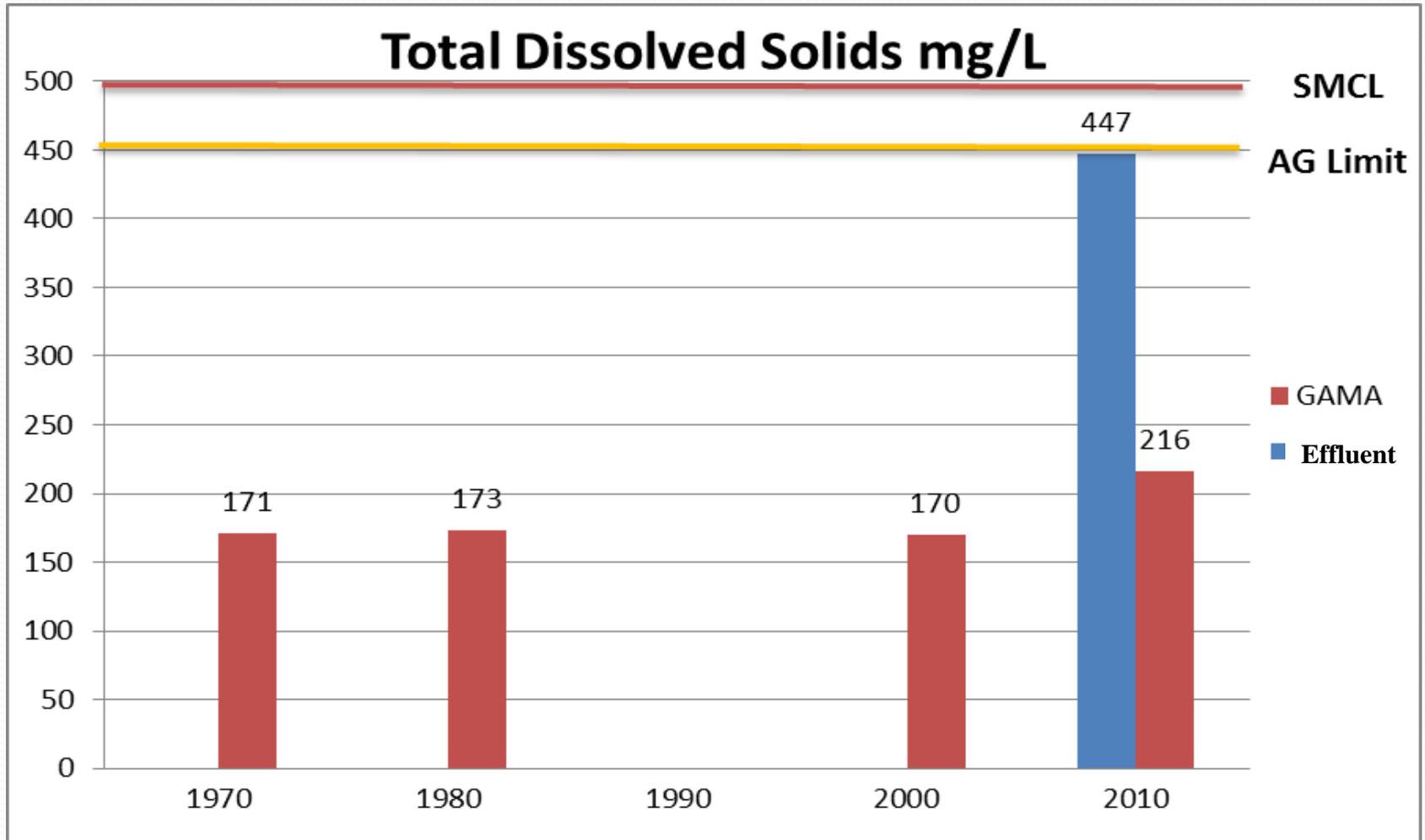
Healdsburg →

# Healdsburg Basin Water Quality



# Healdsburg Basin Water Quality

Average Basin Concentrations

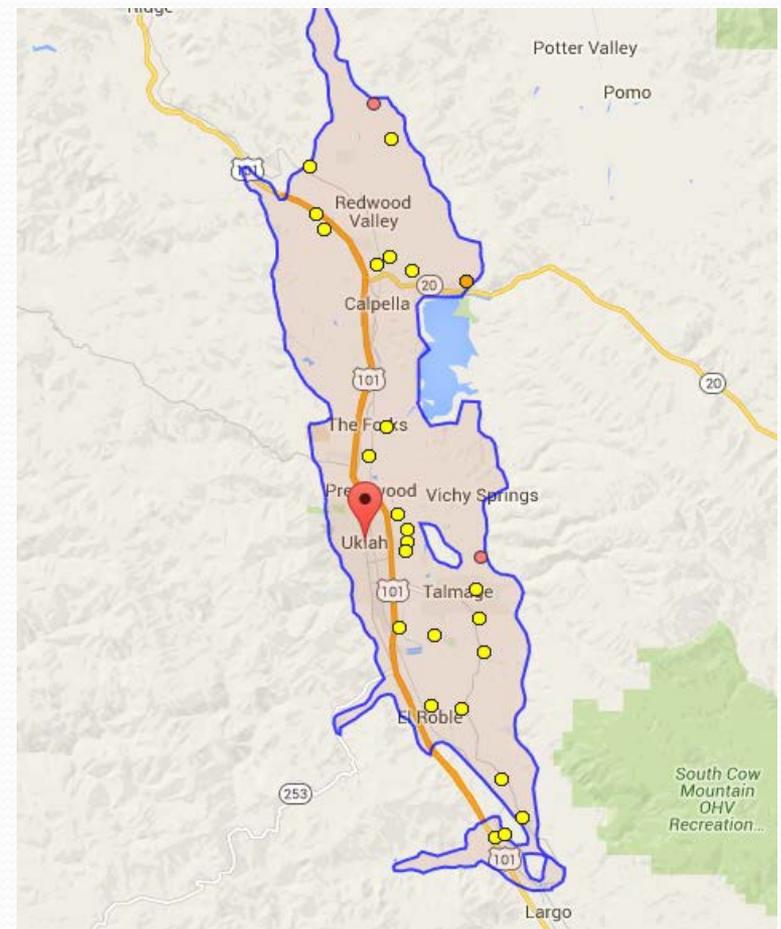


# Ukiah Valley Basin Water Quality

## Nitrate as N03

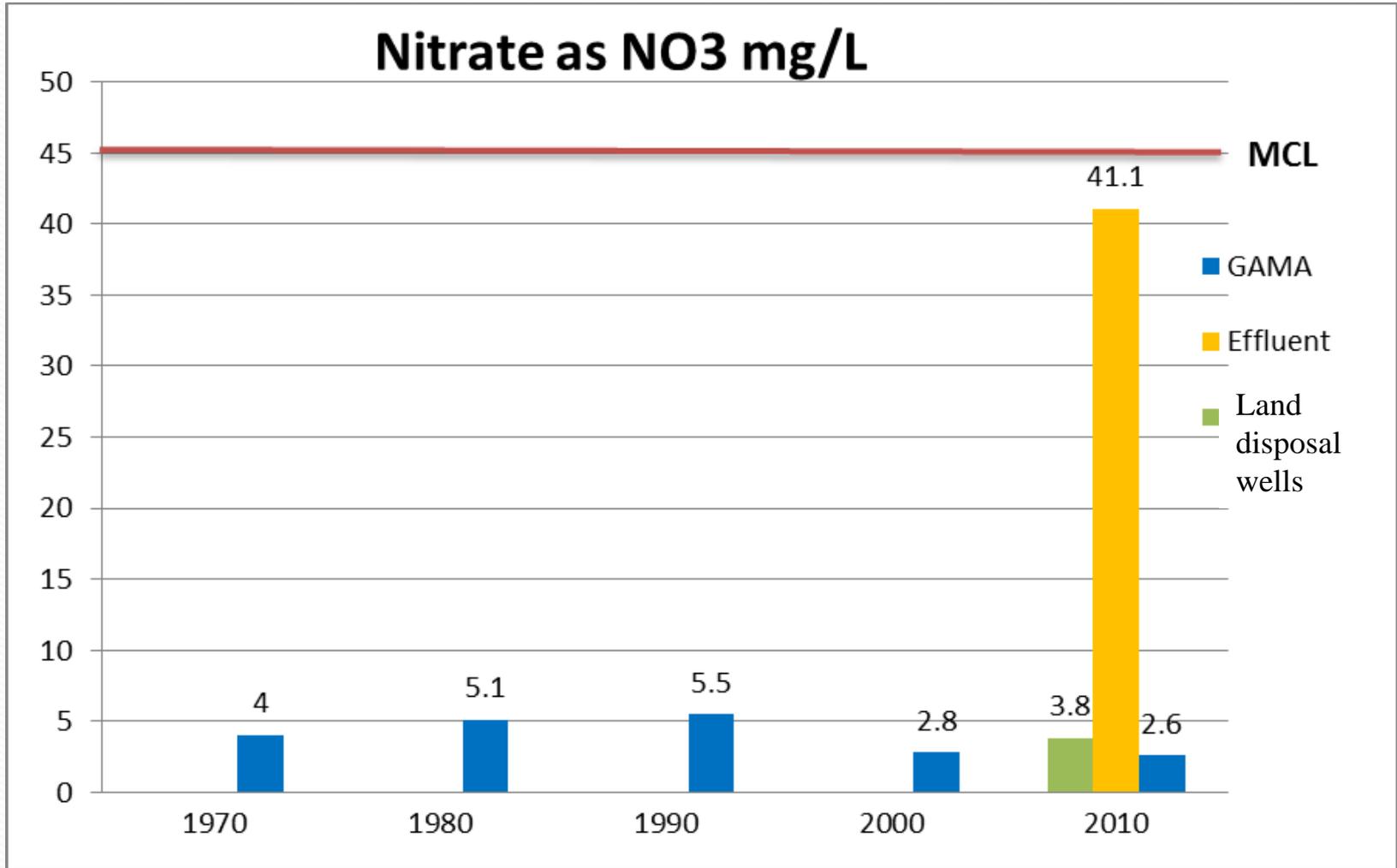


## Total Dissolved Solids



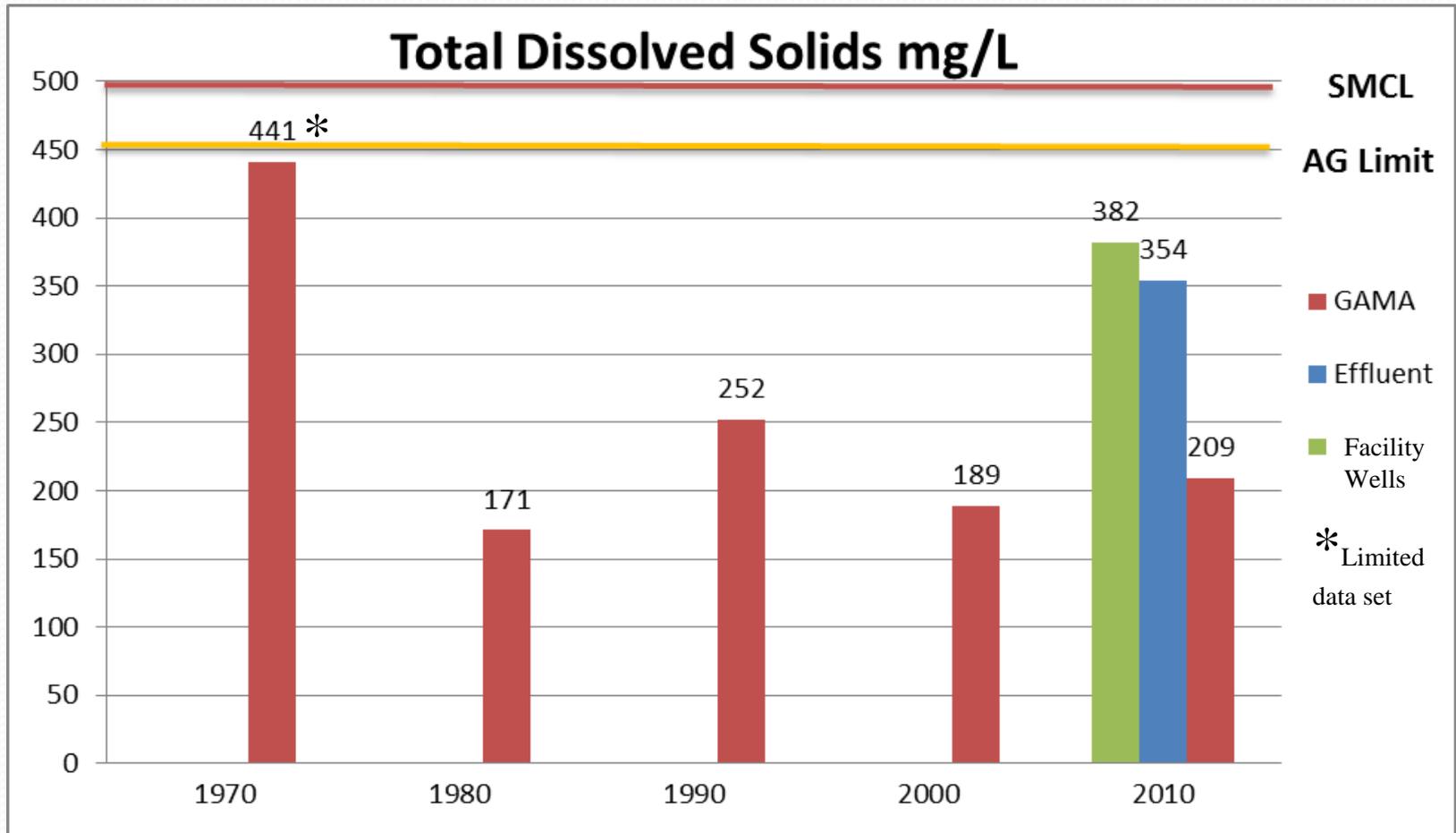
# Ukiah Valley Basin Water Quality

Average Basin Concentrations



# Ukiah Valley Basin Water Quality

Average Basin Concentrations



# Santa Rosa Plain Basin Water Quality



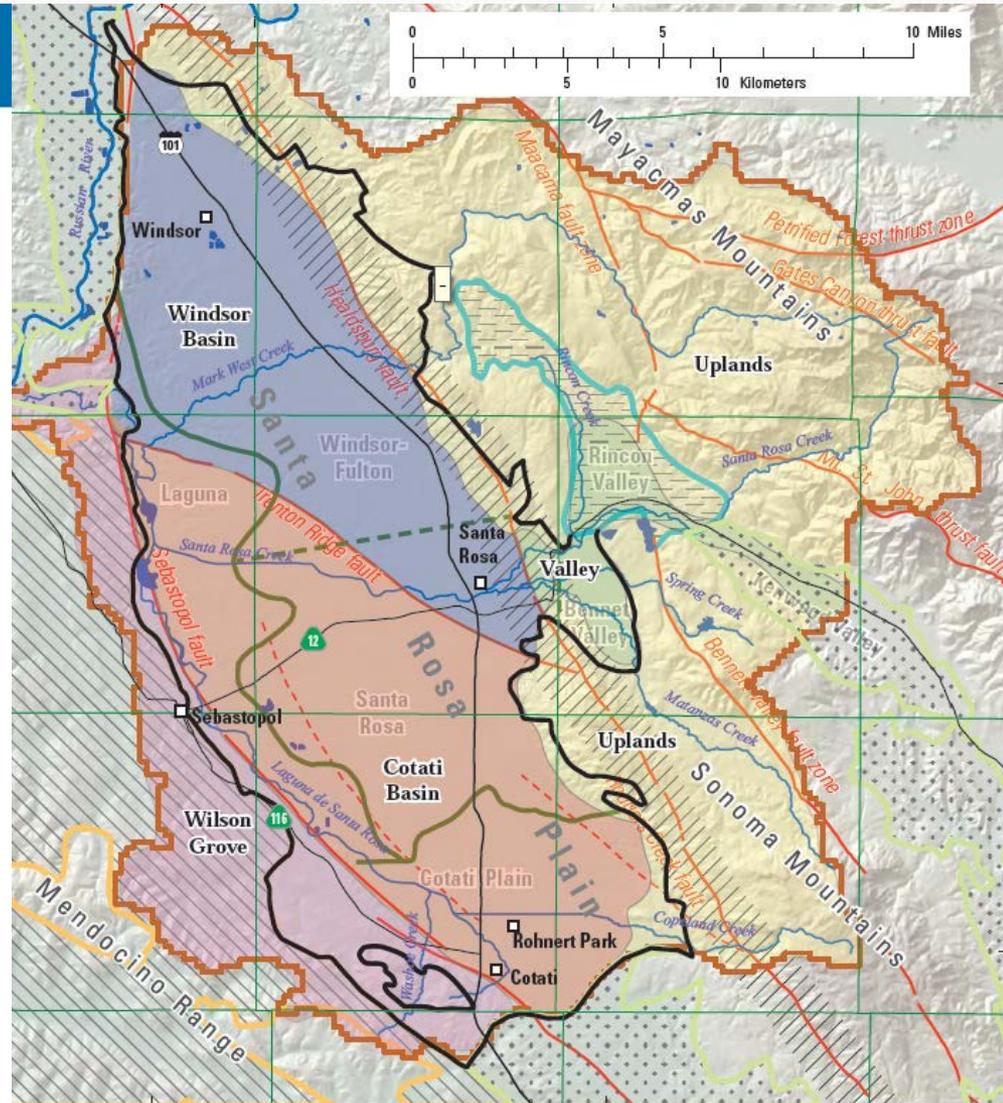
Prepared in cooperation with the Sonoma County Water Agency

## Hydrologic and Geochemical Characterization of the Santa Rosa Plain Watershed, Sonoma County, California



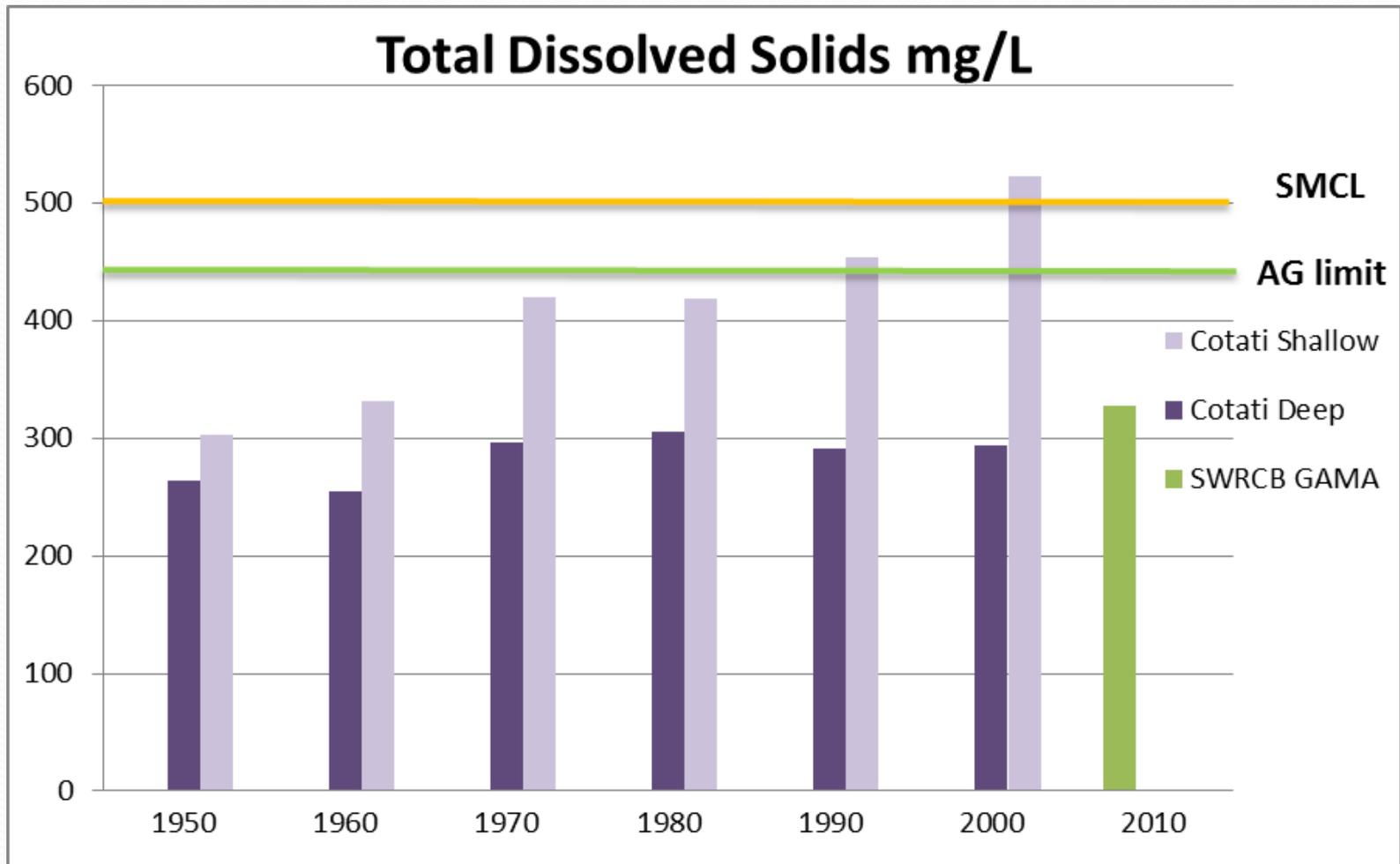
Scientific Investigations Report 2013–5118

U.S. Department of the Interior  
U.S. Geological Survey



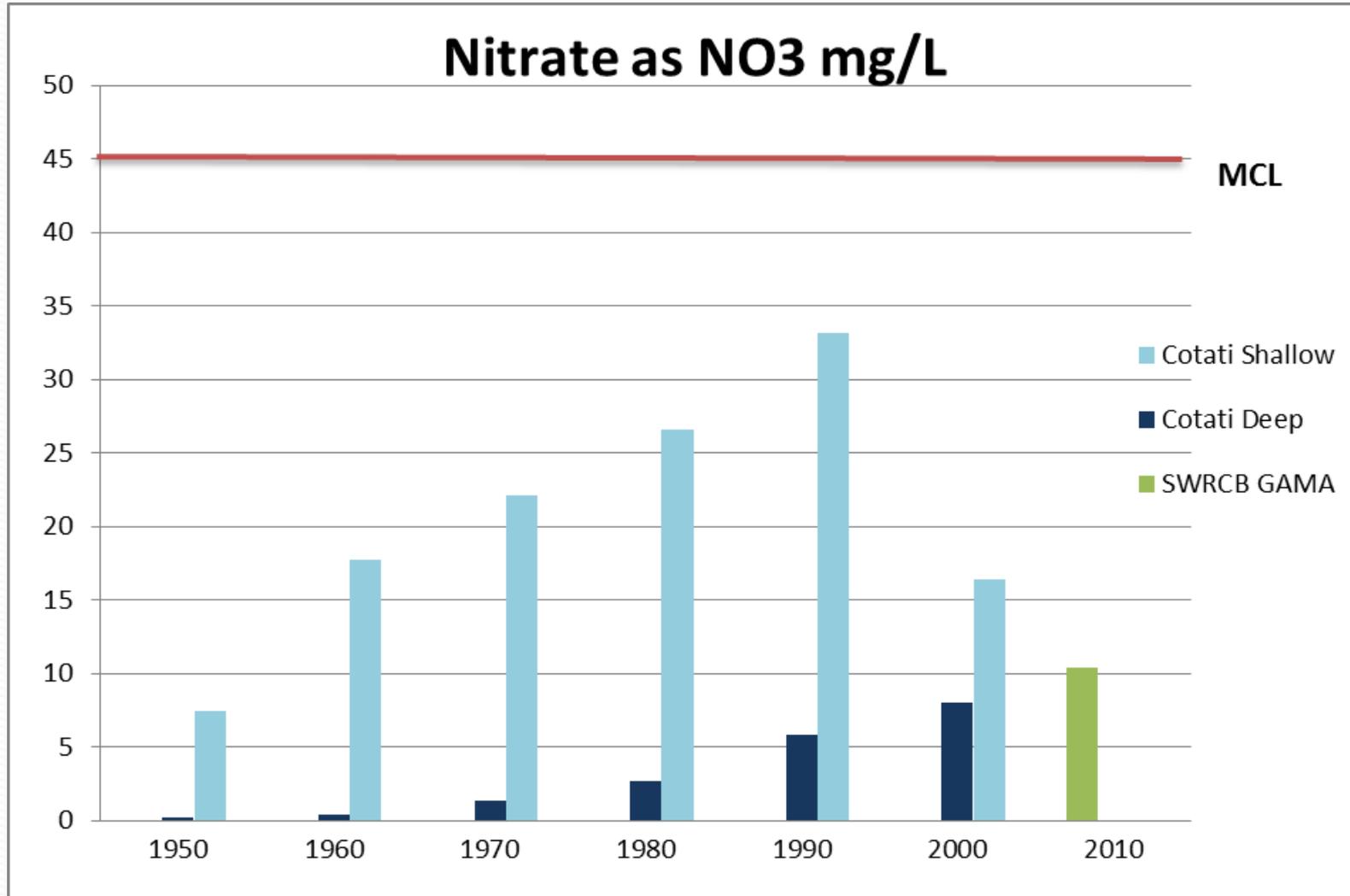
# Santa Rosa Plain Cotati Sub-Basin

Average Basin Concentrations

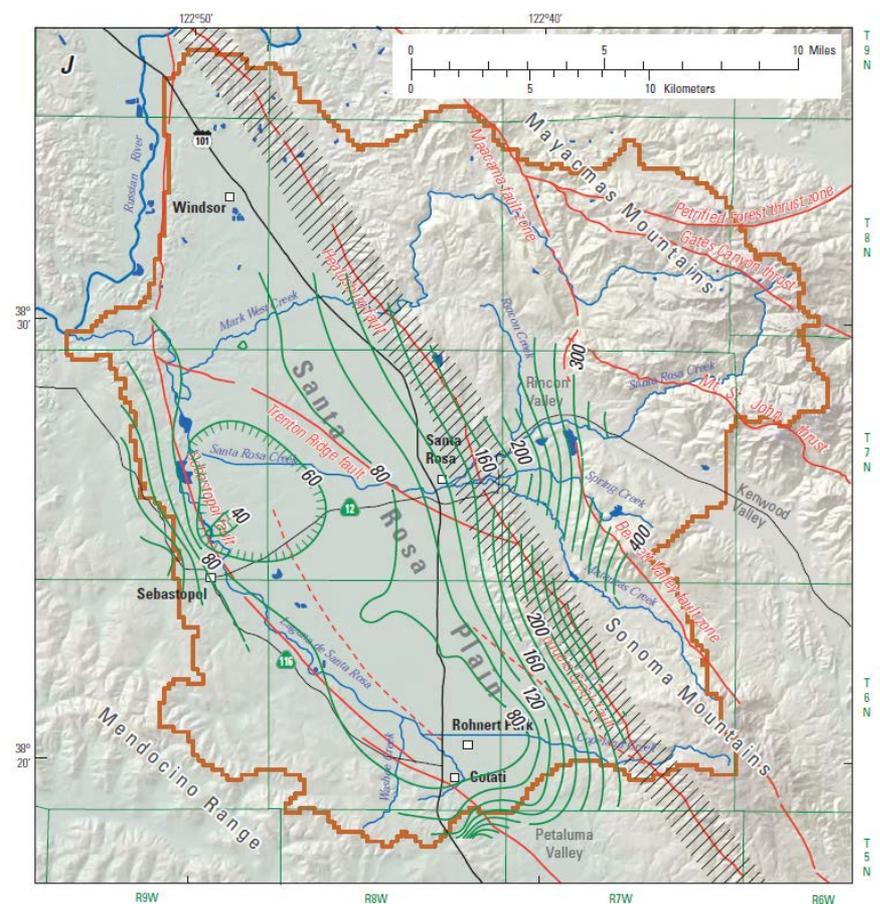
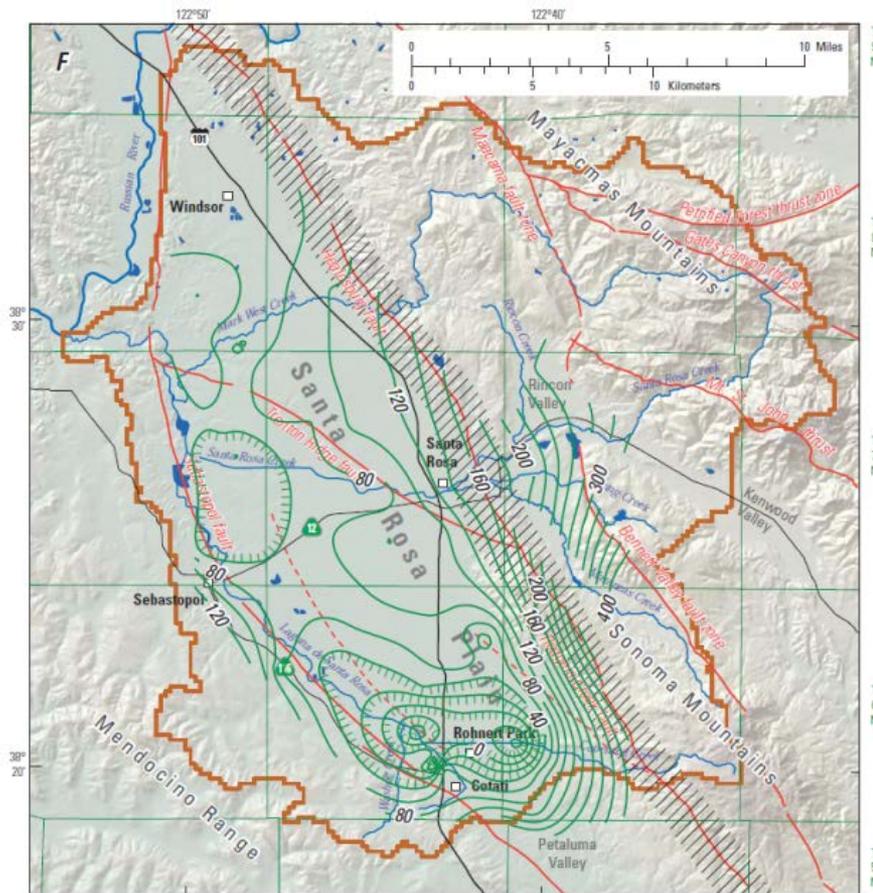


# Santa Rosa Plain Cotati Sub-Basin

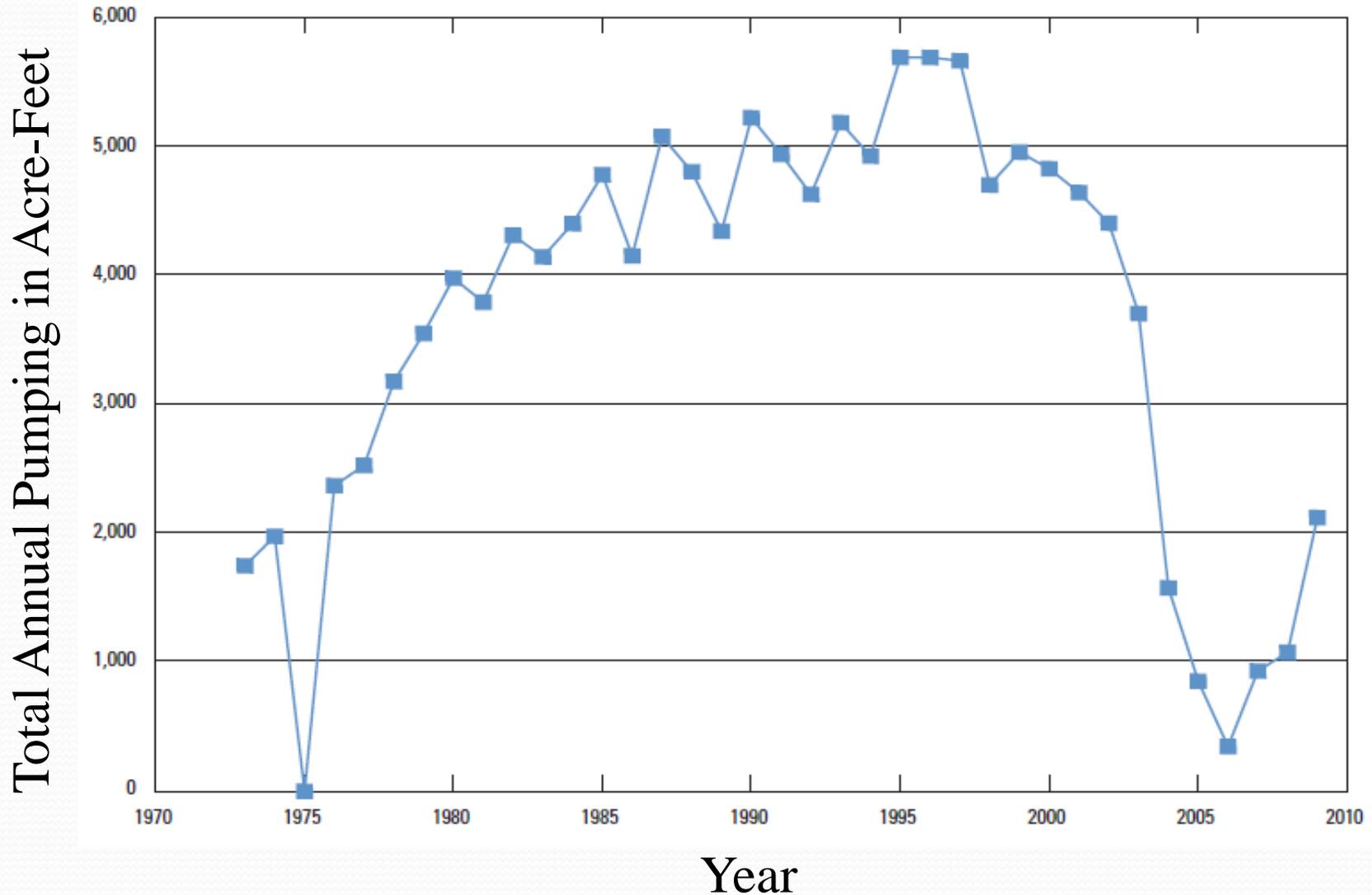
Average Basin Concentrations



# Santa Rosa Plain Groundwater Elevations

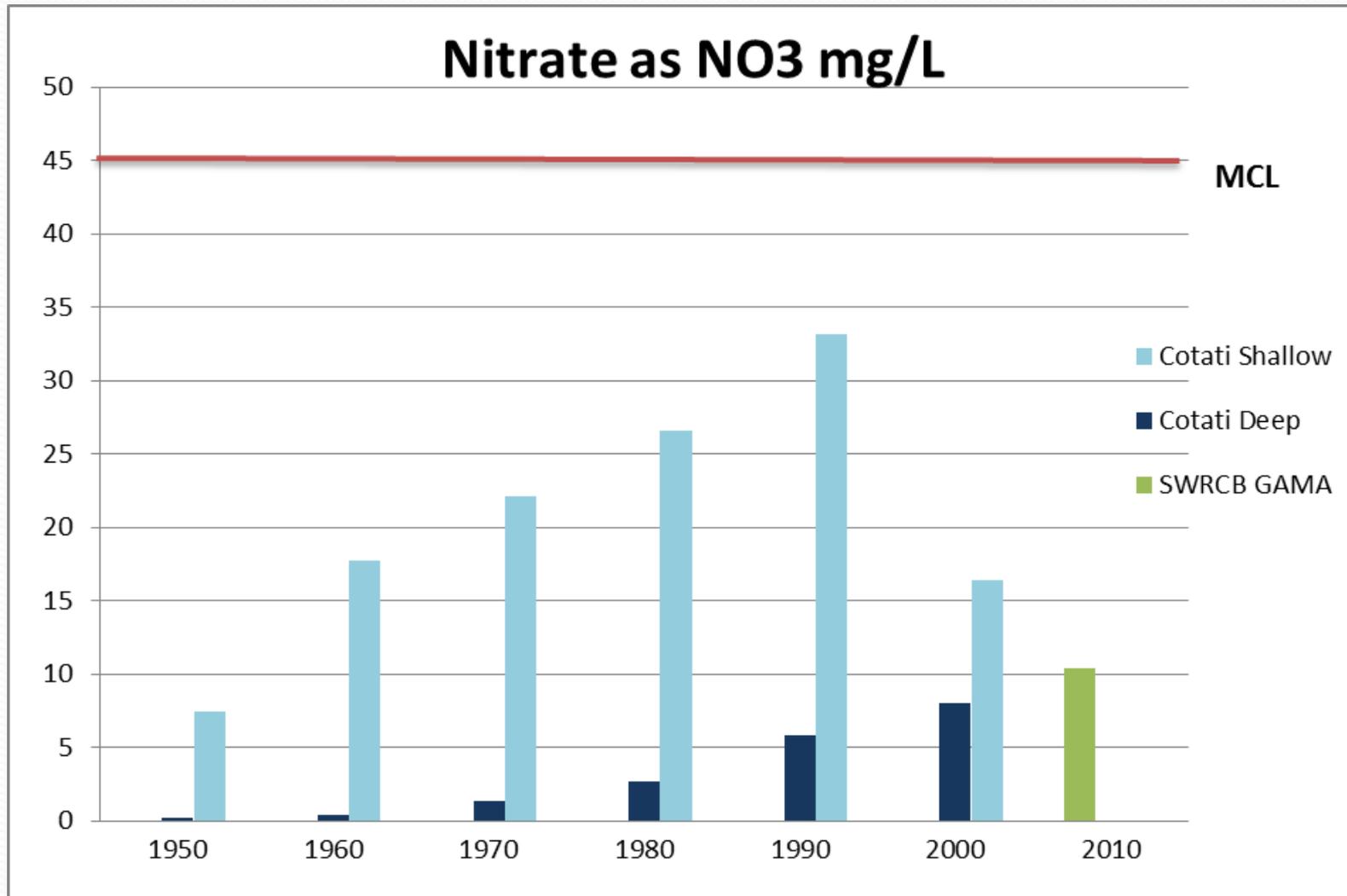


# Groundwater Use in Rohnert Park

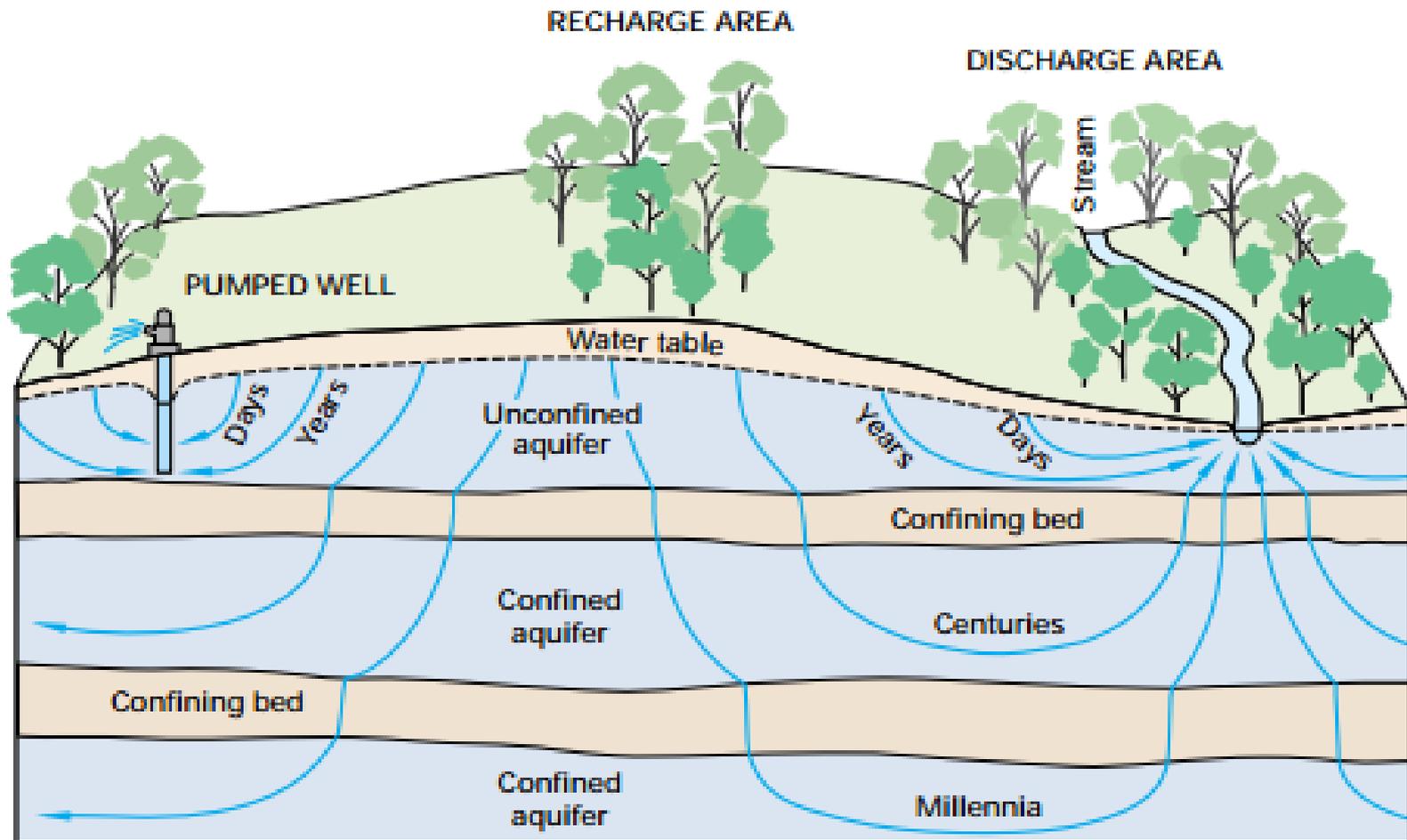


# Santa Rosa Plain Cotati Sub-Basin

Average Basin Concentrations



# Recharge, Discharge, Flowpaths



# GEOTRACKER GAMA

Valley Ford, CA, United States

Map Address

- Select Data to Display
- Filters / Data Export
- Tools
- Reports and Well Logs
- Map Coverages
- GeoTracker Sites

[CONTACT US](#) [TAKE A TOUR](#) [VIEW ON GEOTRACKER](#)

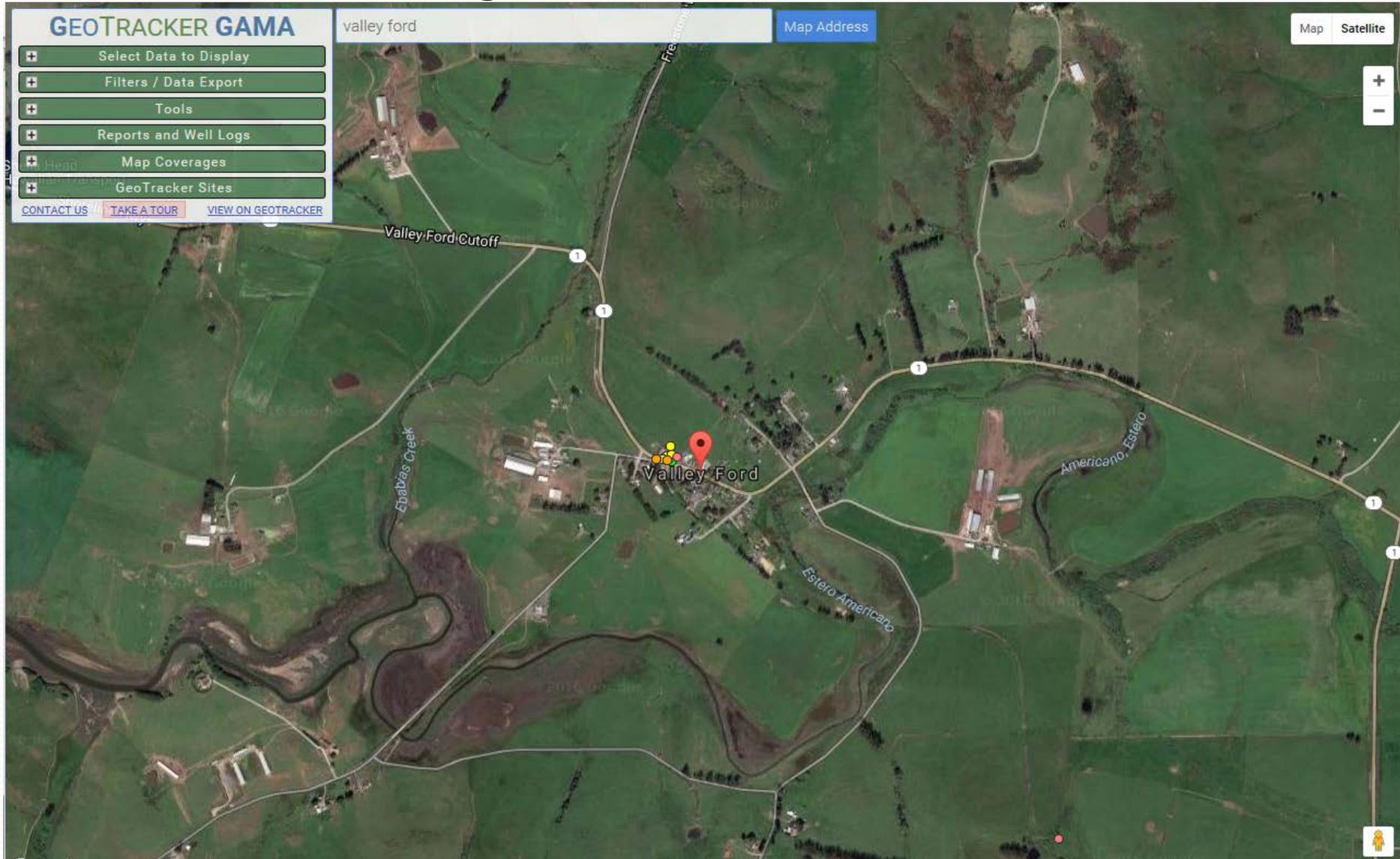
Fort Ross State Historic Park

Austin Creek State Recreation Area

Annadel State Park

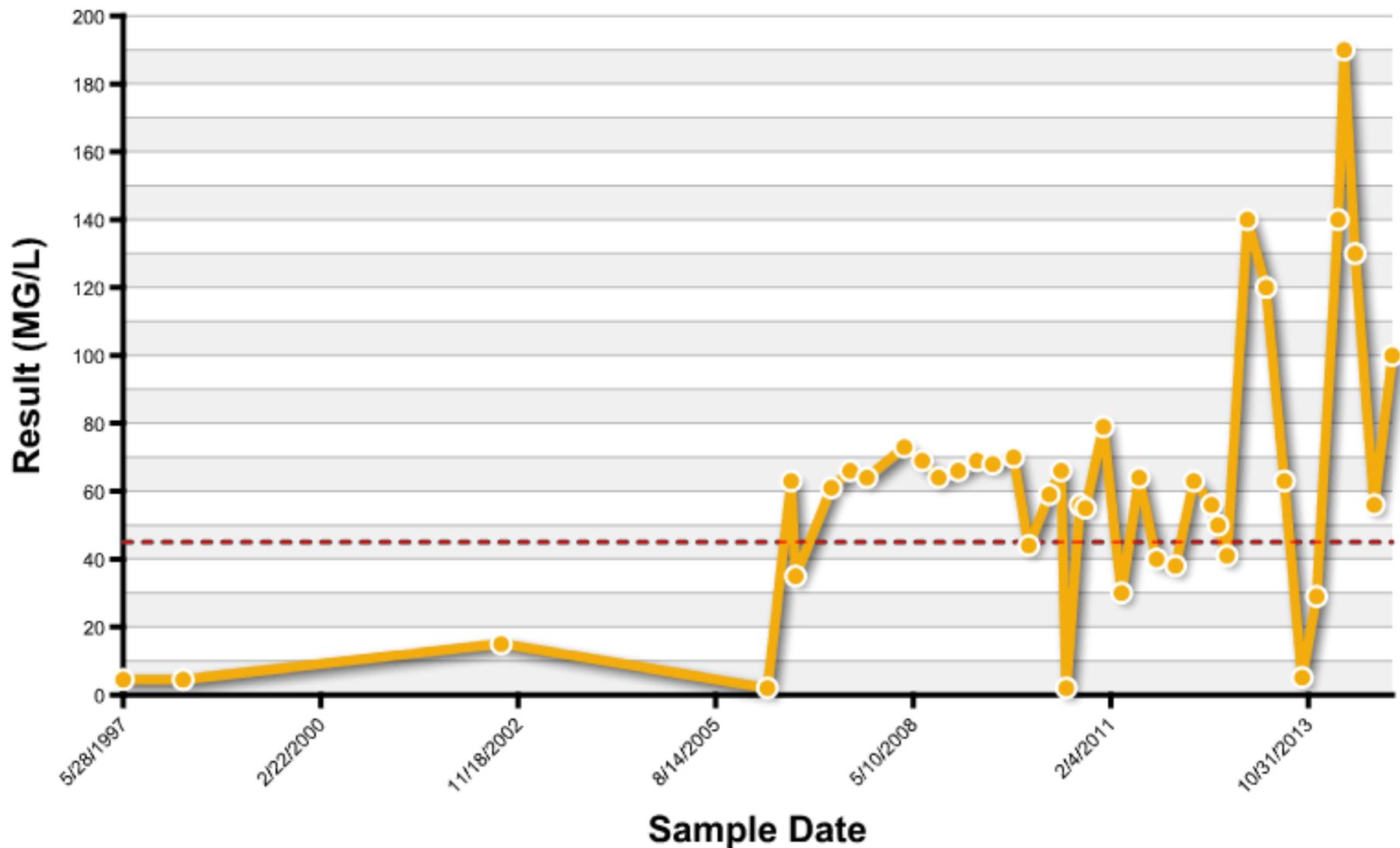


# Valley Ford - Nitrate



# Nitrate As NO3 Results for Valley Ford Water Supply Well

● Nitrate As NO3 - - - Maximum Contaminant Level



# Valley Ford Water Quality

- SWRCB Report on Reliance on Contaminate Groundwater (January 2013)
- Sonoma – 17 groundwater only systems
  - Mostly arsenic
  - One high nitrate
- Valley Ford Water Association
  - Nitrate MCL violations
  - Funding SDWSRF, Prop. 84 Prop 50
- CDPH (DDW) Drinking Water Source Assessment (May 2003)
  - High level of vulnerability from agricultural activities

# Key Points

- 1) Abundant high-quality groundwater in the North Coast Region.
- 2) Numerous statewide policies that can effect groundwater.
- 3) Groundwater Protection Strategy needed to maintain such quality to protect consumptive and environmental uses.
- 4) Basin Plan Prohibition has lead to discharges to land.
- 5) Pollution prevent is more effective than groundwater remediation.
- 6) Priorities and actions informed by data collection and analysis.
- 7) SGMA promotes groundwater protection and management at a local level.

# Next Steps

- Develop a stakeholder participation plan by 2017.
- Develop a Groundwater Protection Strategy Basin Plan Amendment and Workplan by end of 2018.
- Continue to build partnerships, require groundwater monitoring, analyze available data to characterize our basins & prioritize our actions.



# GROUNDWATER

