



Alternative Submittal Update

SCGA Update of Alternative Submittal

October 12, 2016

6/8/2016

(1)

October 2016 Board Meeting

Development Guidelines Categorized by Source

- **SGMA Statute**

- Requires scientific evidence of a historic 10 year period of operation within a locally defined Sustainable Yield of the entire subbasin
- No updates to local GMPs are allowed after January 1, 2015
 - SCGA's planned 10 year update in 2015 was put on hold
- No CEQA statutory exemption for Alternative Submittal provided
 - Requires Alternative to consider CEQA process with compressed deadlines

Guidelines, Continued

- **GSP Regulations**

- Functional Equivalence to Art 5 and 7 of GSP Regulations

- Requires SCGA to demonstrate functional equivalency to the contents of a groundwater sustainability plan, monitoring programs, and reporting requirements
- Demonstration relies upon the 2006 GMP, and other publically available resource documents, including the South American Subbasin Alternative

Guidelines, Continued

- **Feedback from DWR**

- Preparation and reporting of “All” data (i.e., groundwater levels, water quality, etc.)
- Substantiated evidence of subbasin operating within the Sustainable Yield
- No undesirable results (URs) have occurred in the subbasin
- Acknowledge activities not subject to SGMA control (remediation) or in adjacent subbasin(s) on thresholds for URs

Guidelines, Continued

- **Feedback from DWR, continued**

- Showing “new” projects/programs not already in GMP undermines assertion of 10-year sustainability (i.e., if operating sustainably with no URs occurring, why the need for “SGMA-related” projects?)
- Functional Equivalency is likely going to be a “check-the-box” exercise with DWR preparing the requirements based on structure set forth in GSP Regulations
- Substantially complete Alternative may be returned with recommended corrective actions based on DWR considerations
- DWR/SCGA counsel recommendation for CEQA compliance creating critical path and additional hard deadlines

Guidelines, Continued

- **SCGA 2006 Groundwater Management Plan (GMP)**
 - In-basin projects and programs that affect operating within the sustainable yield considered in the 2006 GMP
 - Management thresholds based on 2006 GMP Basin Management Objectives
 - Basin Management Reports (requirement of 2006 GMP) used as method of reporting to basin stakeholders of groundwater conditions

Accessing Draft Alternative

DRAFT SOUTH AMERICAN SUBBASIN ALTERNATIVE SUBMITTAL

The Sacramento Central Groundwater Authority (SCGA) has prepared a Draft South American Subbasin Alternative Submittal (Alternative), which is being distributed for public review and comment.

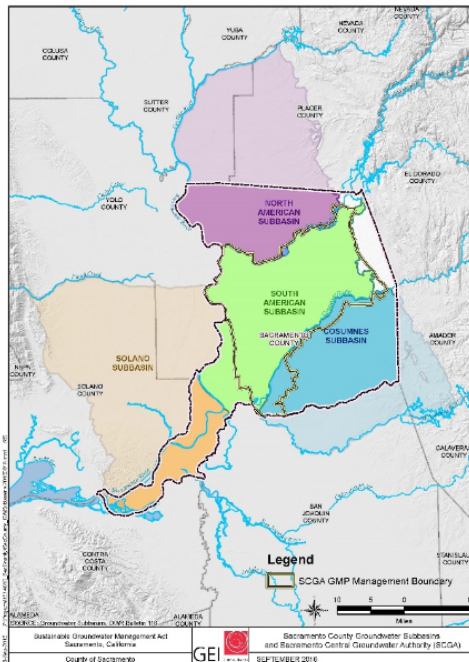
DOCUMENT LINKS:

[Notice of Public Draft Release SCGA Alternative Submittal](#)

[Public Draft - South American Subbasin Alternative Submittal CH1 and CH2](#)

[Appendix 1A - Central Sacramento County Groundwater Management Plan](#)


Project Location: The figure below shows the location of the South American Subbasin (located in the central portion of Sacramento County), the existing SCGA GMP area, and portions of the adjacent California Department of Water Resources' (State DWR's) Bulletin 118 (2003) groundwater subbasins located within Sacramento County.



Chapter 1 and 2 vs. Combined

- Chapter 1 and 2 provides background, analysis, and findings of 10 years of operating within the sustainable Yield (12.6MB)
- All Chapters include functional equivalency and all resource documents (500MB)
 - Zip file with folder structure

Notice of Availability – how to comment



SCGA Sacramento Central Groundwater Authority
*Managing Groundwater Resources
in Central Sacramento County*

Darrell K. Eck
Executive Director

California-American
Water Company

City of Elk Grove

City of Folsom

City of Rancho Cordova

City of Sacramento

County of Sacramento

Florin Resource Conservation
District/Elk Grove Water
Service

Golden State Water Company

Orochumne-Hartnell
Water District

Rancho Marieta Community
Services District

Sacramento Regional
County Sanitation District

Agricultural Representative

Agricultural-Residential
Representative

Commercial/Industrial
Representative

Conservation Landowners

Public Agencies/Self-
Supplied Representative


NOTICE OF AVAILABILITY AND PUBLIC COMMENT PERIOD FOR DRAFT SOUTH AMERICAN SUBBASIN ALTERNATIVE SUBMITTAL

REVIEW PERIOD: October 12, 2016 - 5p.m. November 11, 2016

Date: October 12, 2016
To: All Interested Parties
Subject: Notice of Availability and Public Comment Period for Draft South American Subbasin
Alternative Submittal

NOTICE IS HEREBY GIVEN that the Sacramento Central Groundwater Authority (SCGA) has prepared a Draft South American Subbasin Alternative Submittal (Alternative), which is being distributed for public review and comment.

Project Location: The figure below shows the location of the South American Subbasin (located in the central portion of Sacramento County), the existing SCGA GMP area, and portions of the adjacent California Department of Water Resources' (State DWR's) Bulletin 118 (2003) groundwater subbasins located within Sacramento County.



Review Notes

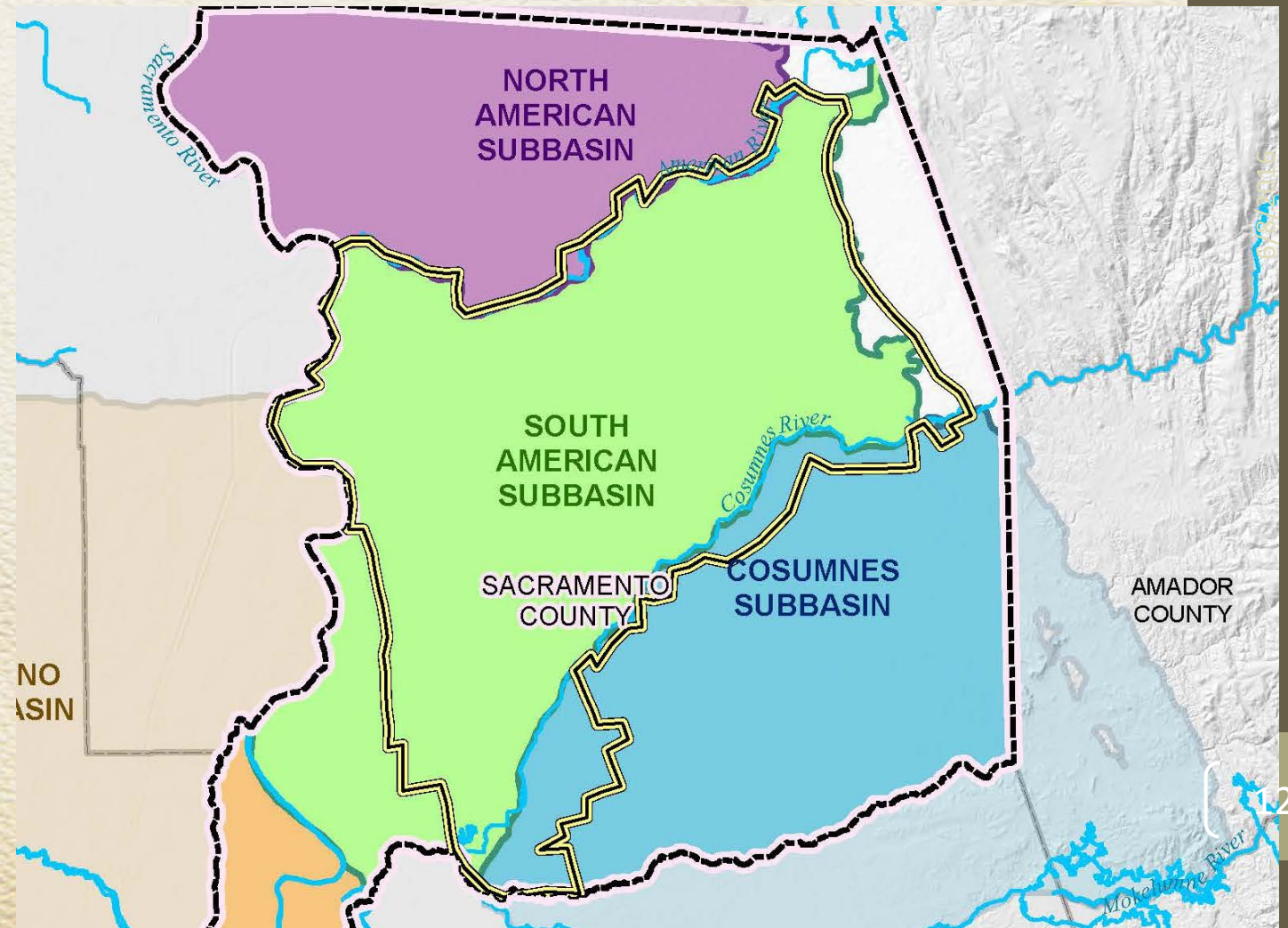
- DWR has set a high bar
- Public Draft
- Yellow Highlighted Text
- Appendices
- Boxed Text
- Use Hyperlinks...

Chapter 1 – Introduction and Purpose

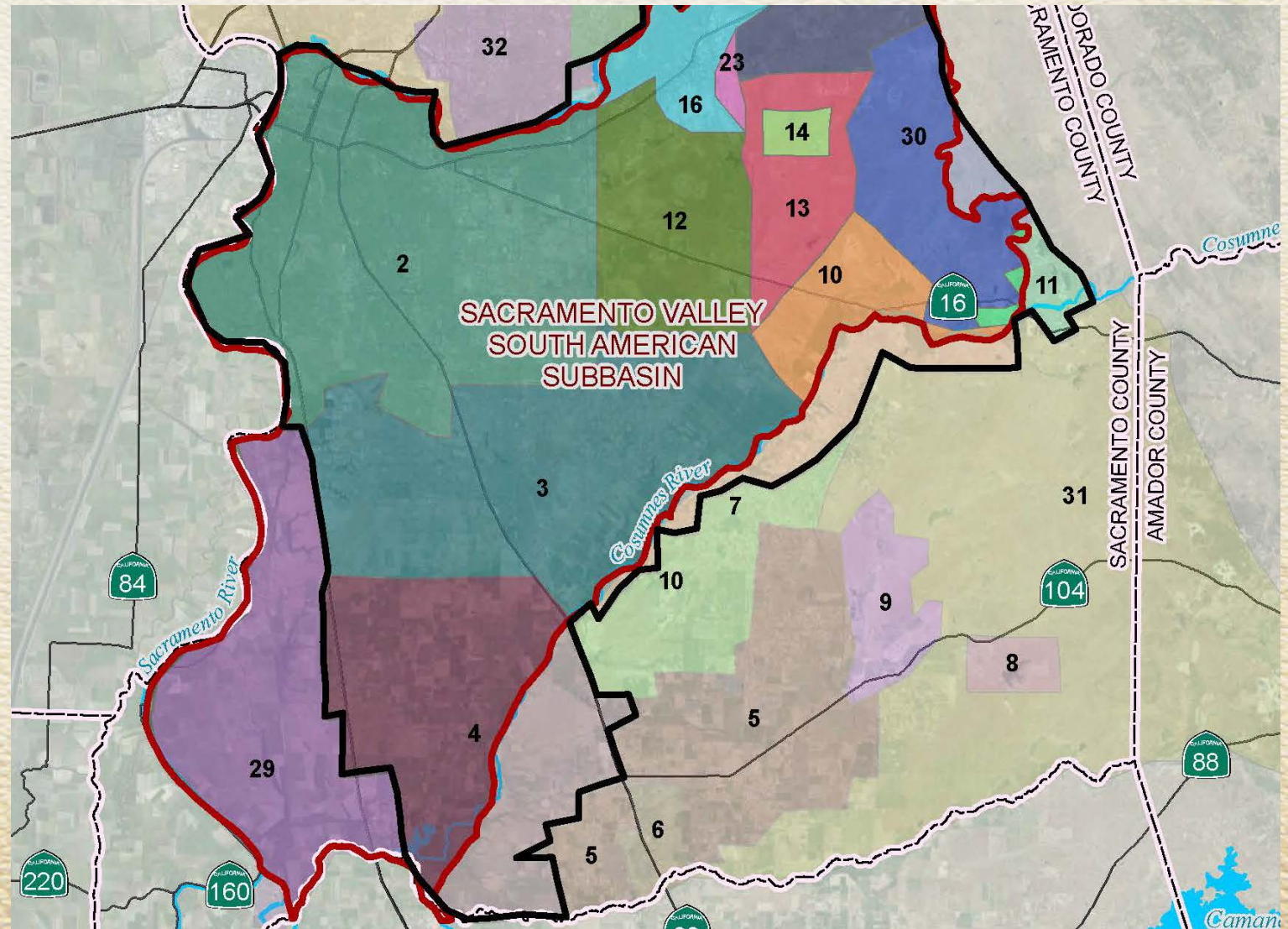
- Background
- Timeline of Groundwater Management
- Water Forum
 - Central Basin Boundary Criteria
- Public Outreach
- Eligibility to Submit

Chapter 2 – Evaluating Sustainability

- Determining Sustainable Yield
 - Realignment with South American Subbasin



Ch2- Delta Area and Subtracted Area

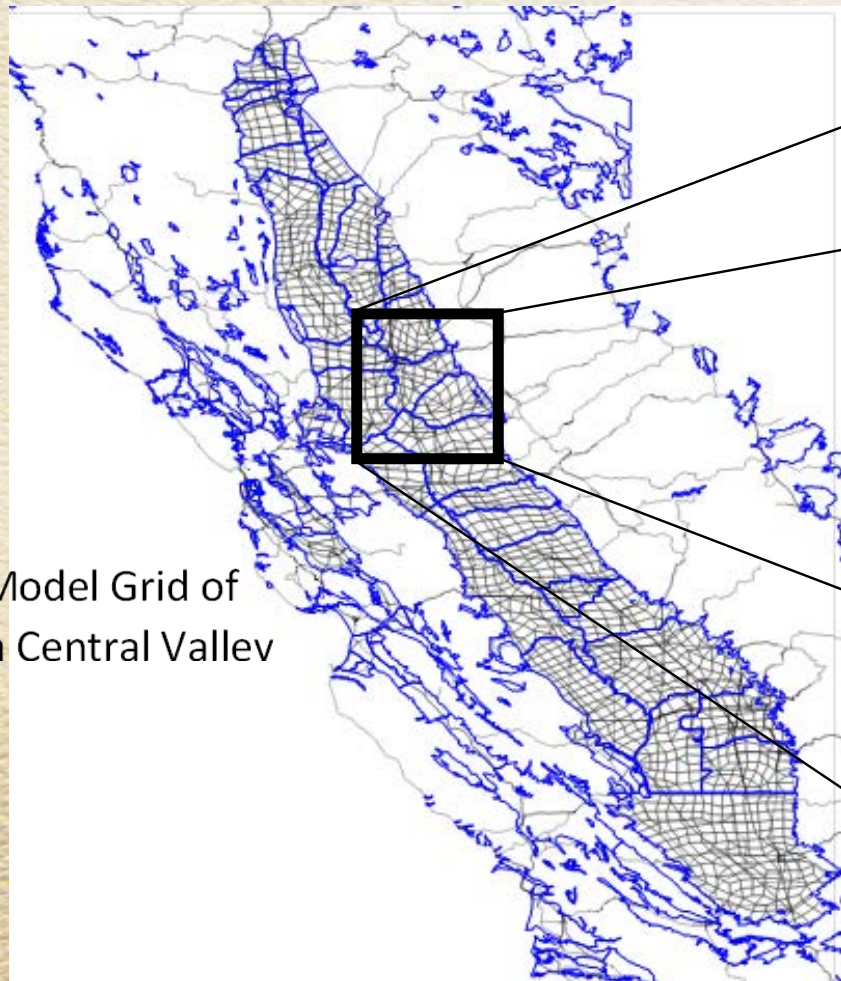


Ch 2 – Too Many Models!!!!

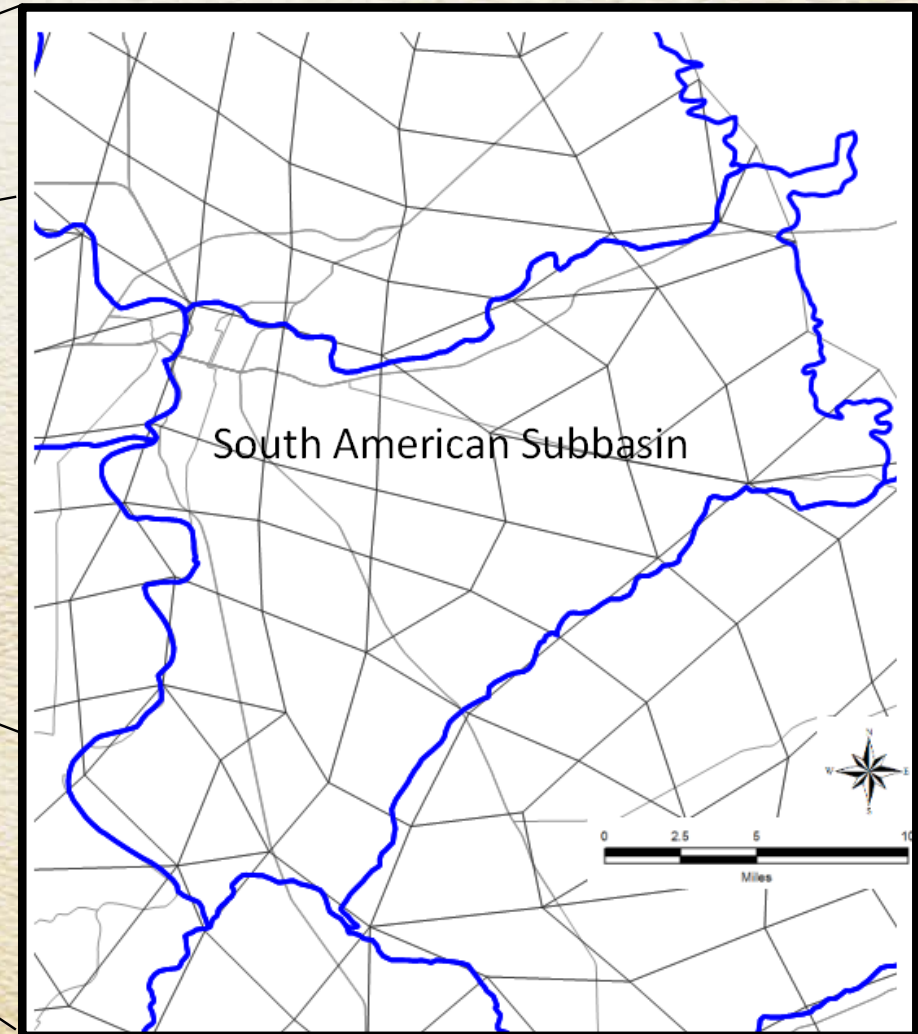
- Model Differences
 - Calibration vs. Forecast
 - Original SacIGSM
 - Current Sac IGSM (1969 to 2011)
 - Water Forum Original SacIGSM
 - Water Forum Solution Original SacIGSM

Ch2 - State DWR C2VSim – Central Valley

(1921-2009)– No Forecast



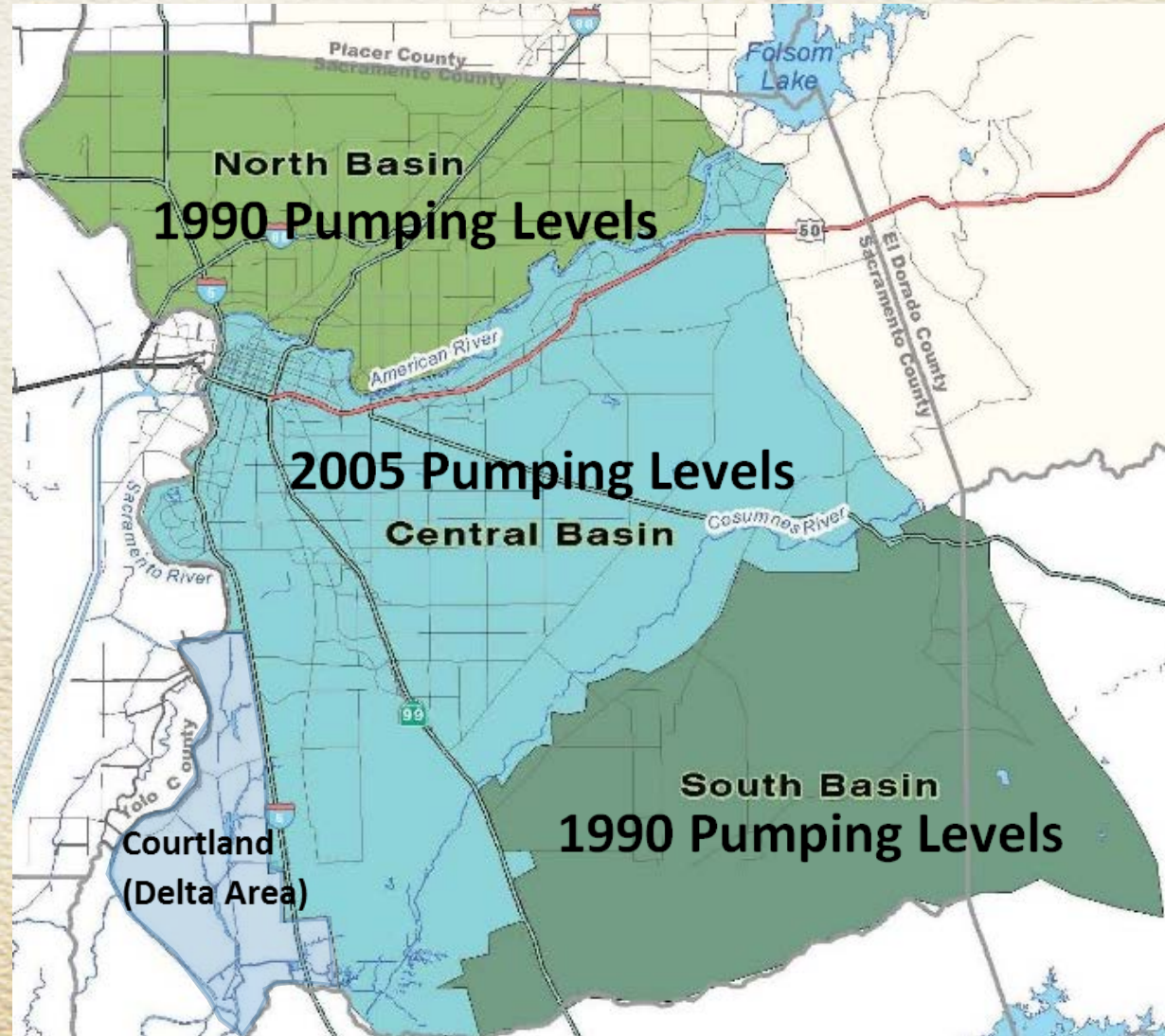
C2VSim Model Grid of
California Central Valley



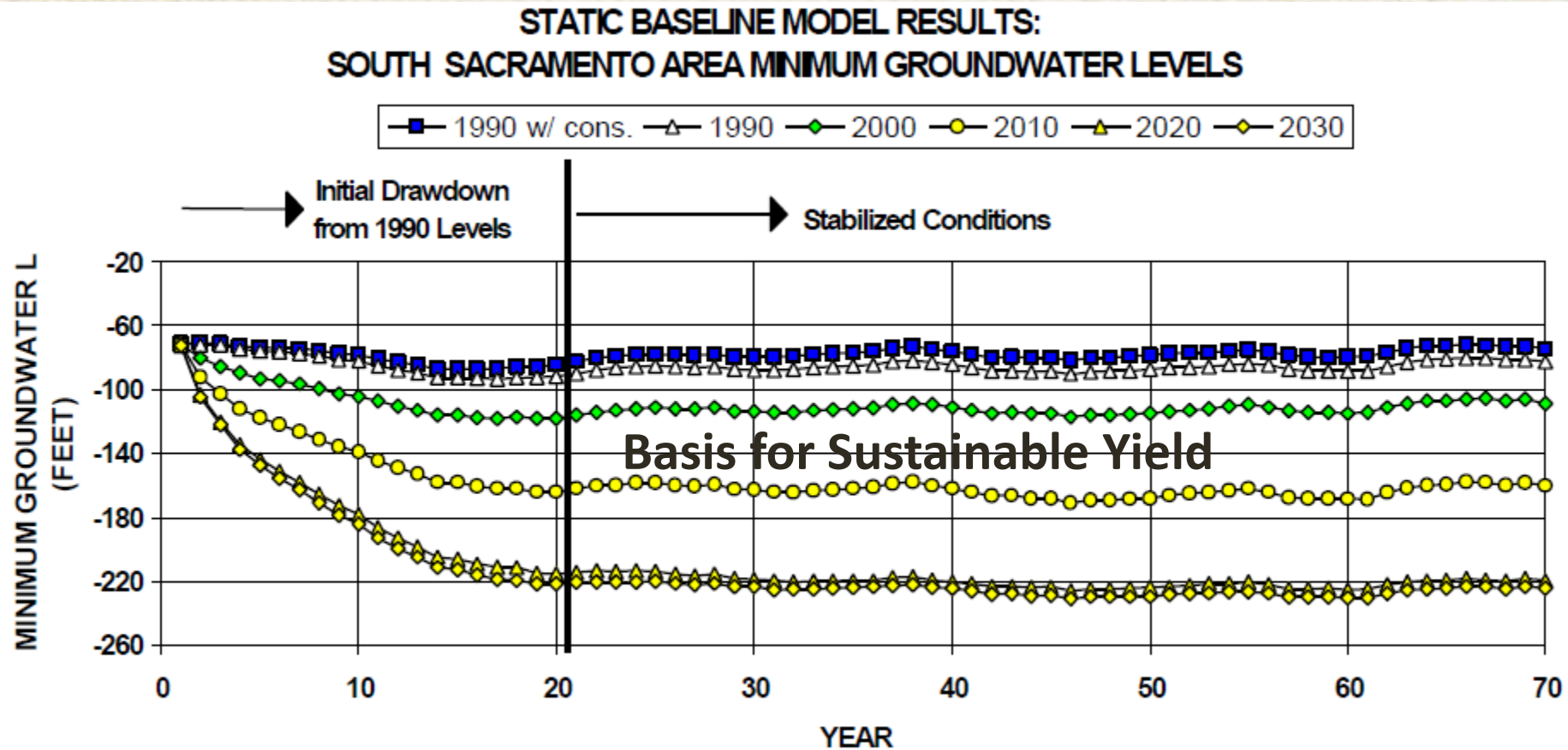
Ch 2 – Water Forum Forecast Years

Sustainable Yield Forecast Years, Water Forum Modeling

- North Basin 1990
- Central Basin 2005
- South Basin 1990



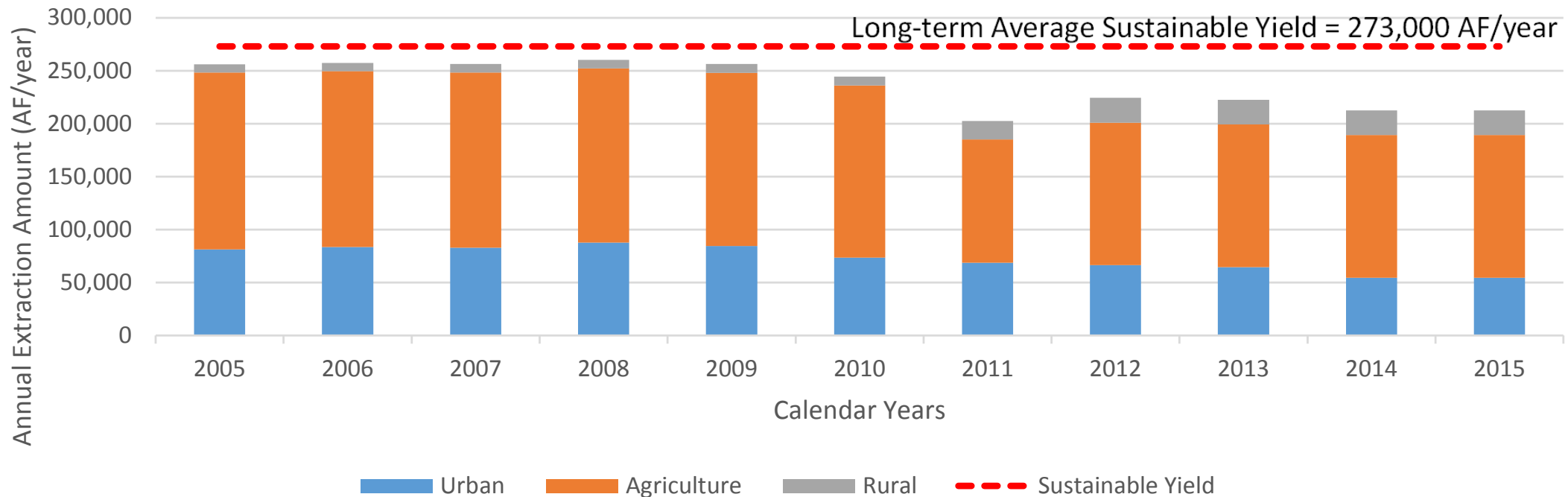
Ch2- Water Forum Evaluated Undesirable Effects



Note: (1) Groundwater levels represent the average over all of the aquifer layers

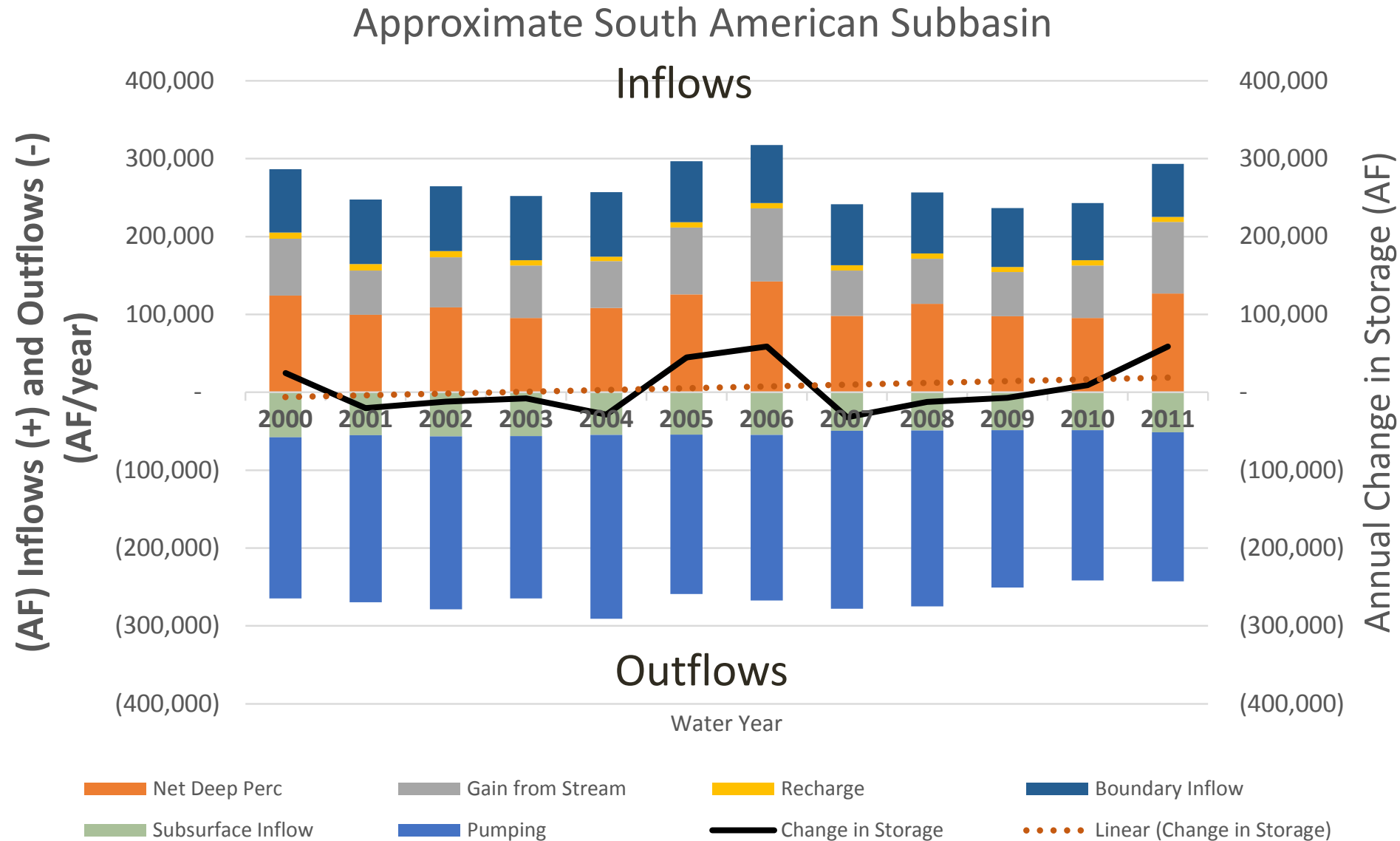
Ch2 – Past 10 Years of Operations

10-Year Operation within Sustainable Yield



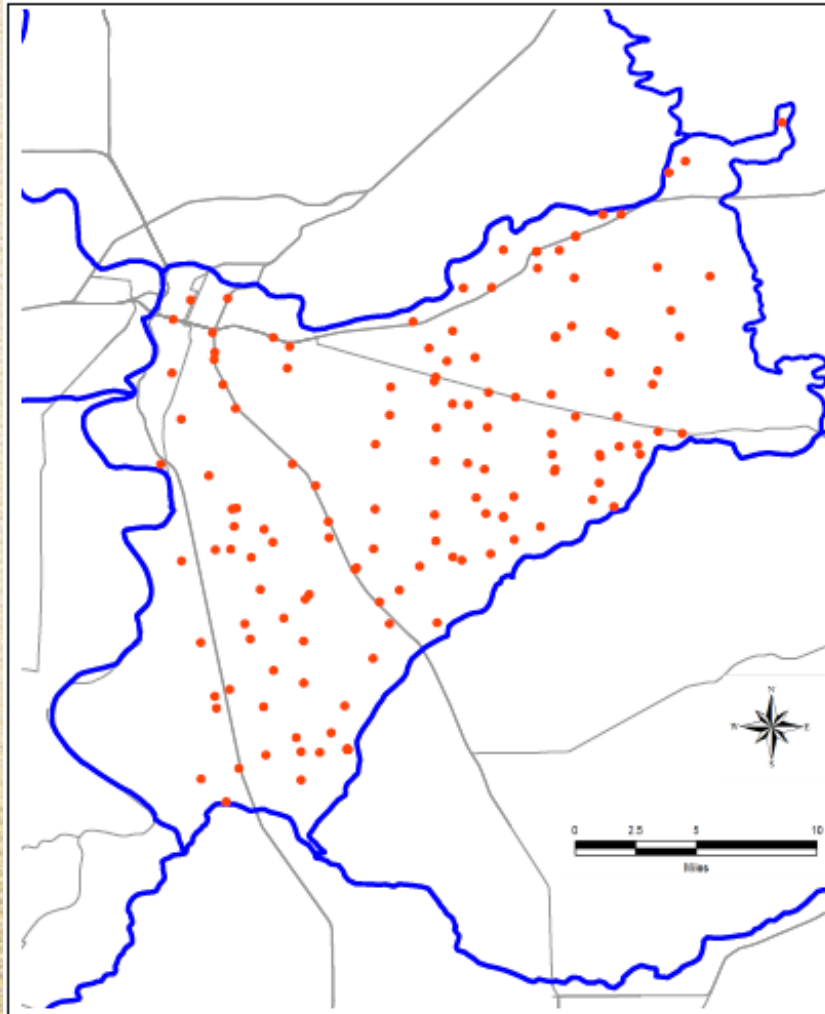
Note: slide corrected from October 12, 206 Presentation by removing double counting of deep percolation. Annual change (or difference) in Storage did not change.

Ch 2 – Water Budget



DWR Wells in CASGEM & WDL Systems

- 139 wells



Alternative Submittal
South American Subbasin
Sacramento County, California

Sustainable Groundwater Management Act

Sacramento Central Groundwater Authority

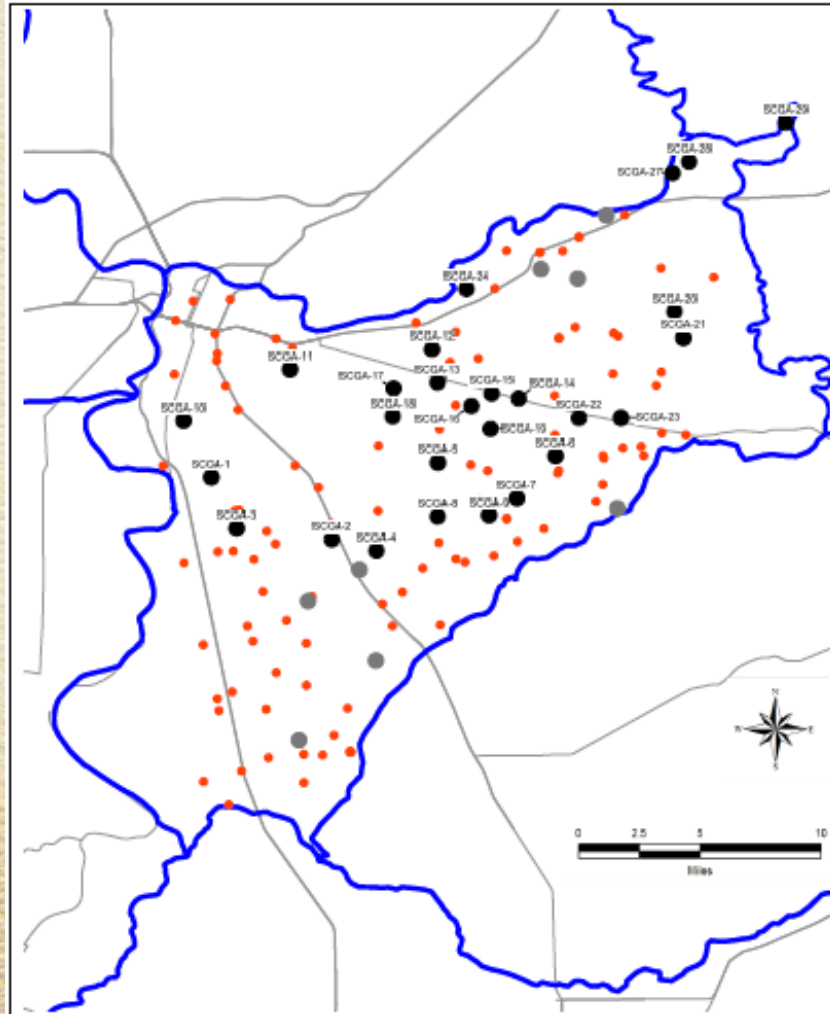


Oct-16

9107/8/9

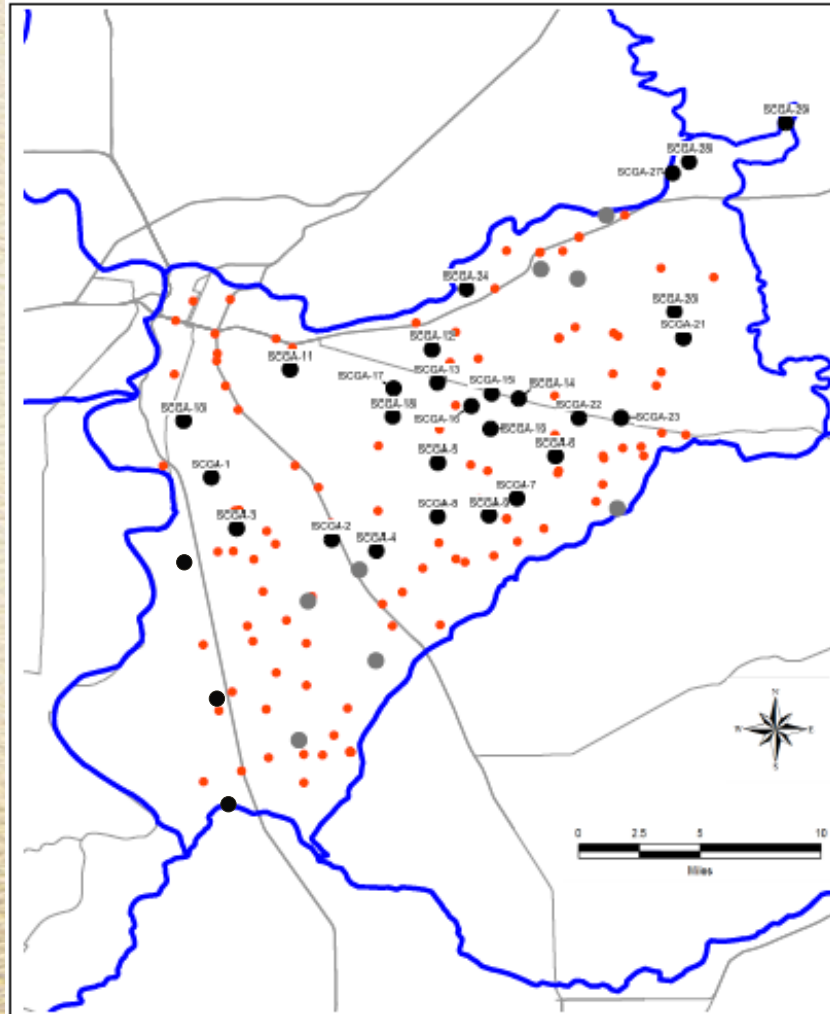


DWR Wells in CASGEM & WDL Systems



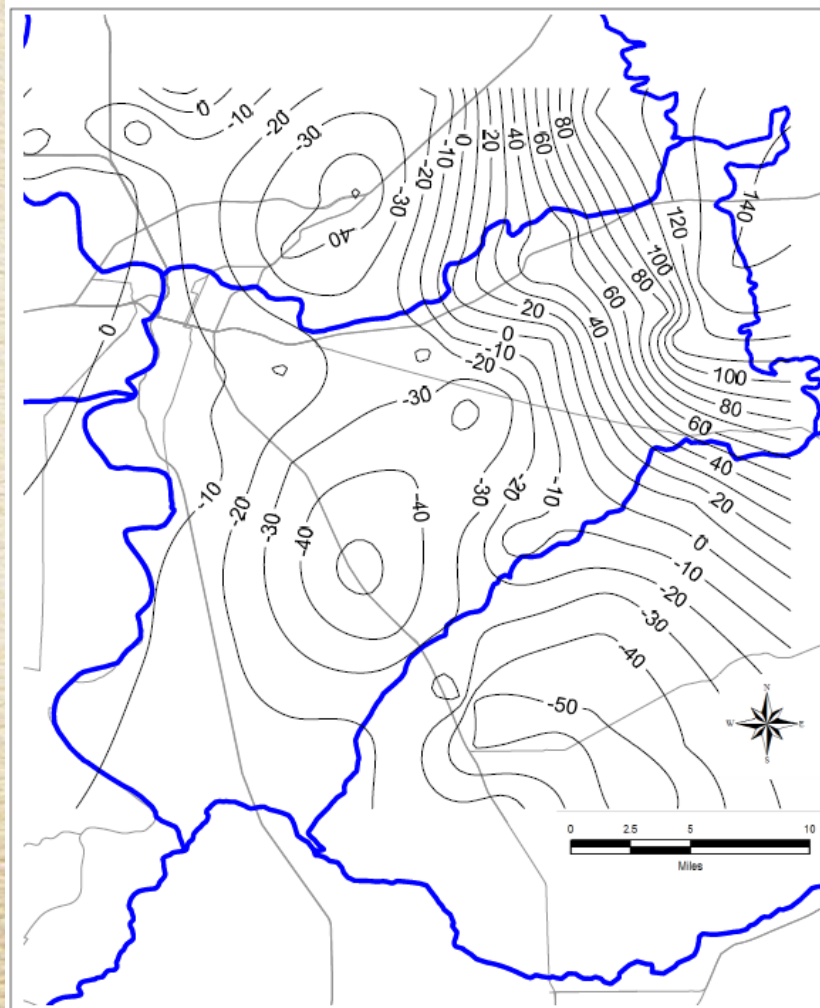
- 139 wells
- 20 SWP wells – Basin Management Reports
- 27 SGCA Wells in 2012 CASGEM Monitoring Plan

DWR Wells in CASGEM & WDL Systems



- 139 Wells
- 20 SWP Wells – Basin Management Reports
- 27 SGCA Wells – 2012 CASGEM Monitoring Plan
3 wells in Courtland/Delta area
- 89 other wells

Water Level Contours – Fall 2005



- Southwest flow from uplands to cones of depression
 - North of Cosumnes River in South American Subbasin
 - South of Cosumnes River along Highway 104
 - North of American River at intersection of I-80 & B-80
- Easterly flow from Sacramento River
- Wells with water levels – fewer than 2015
 - South American: 38
 - Cosumnes: 14
 - North American: 27

Alternative Submittal
South American Subbasin
Sacramento County, California

Sustainable Groundwater Management Act

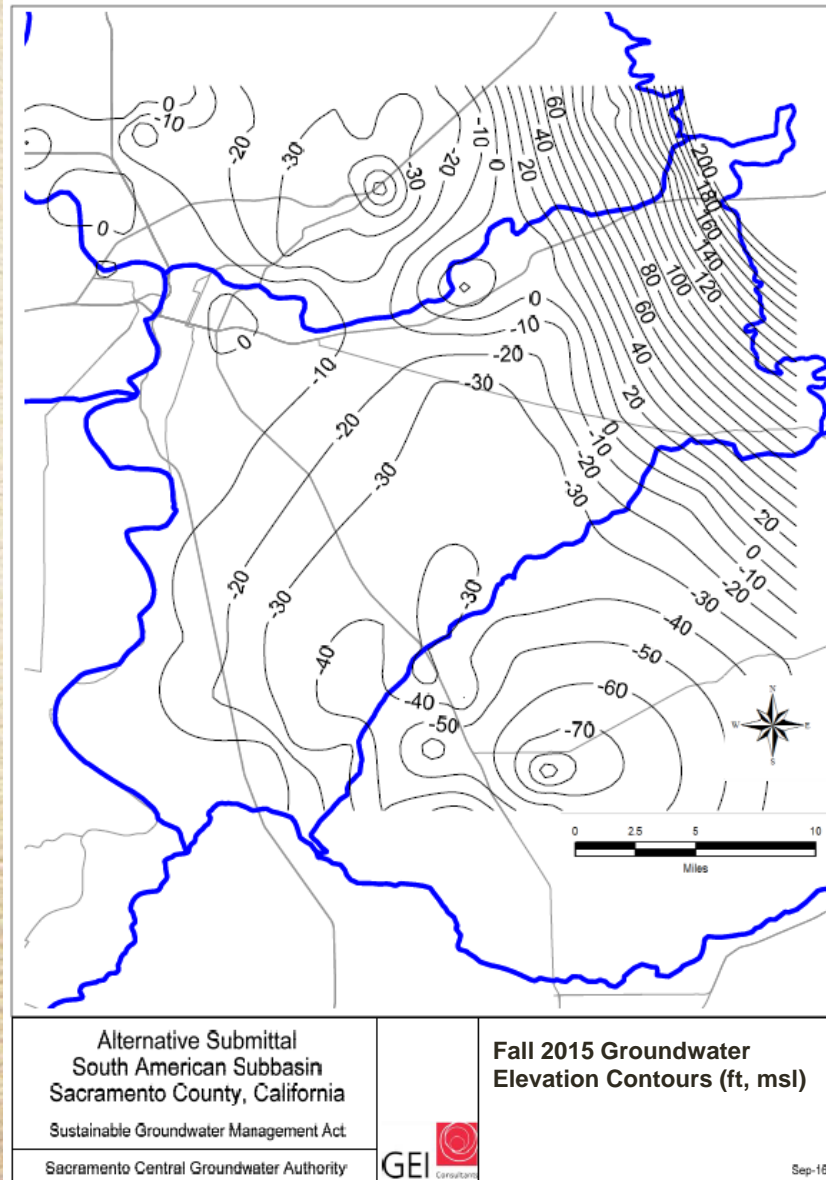
Sacramento Central Groundwater Authority



Fall 2005 Groundwater
Elevation Contours (ft, msl)

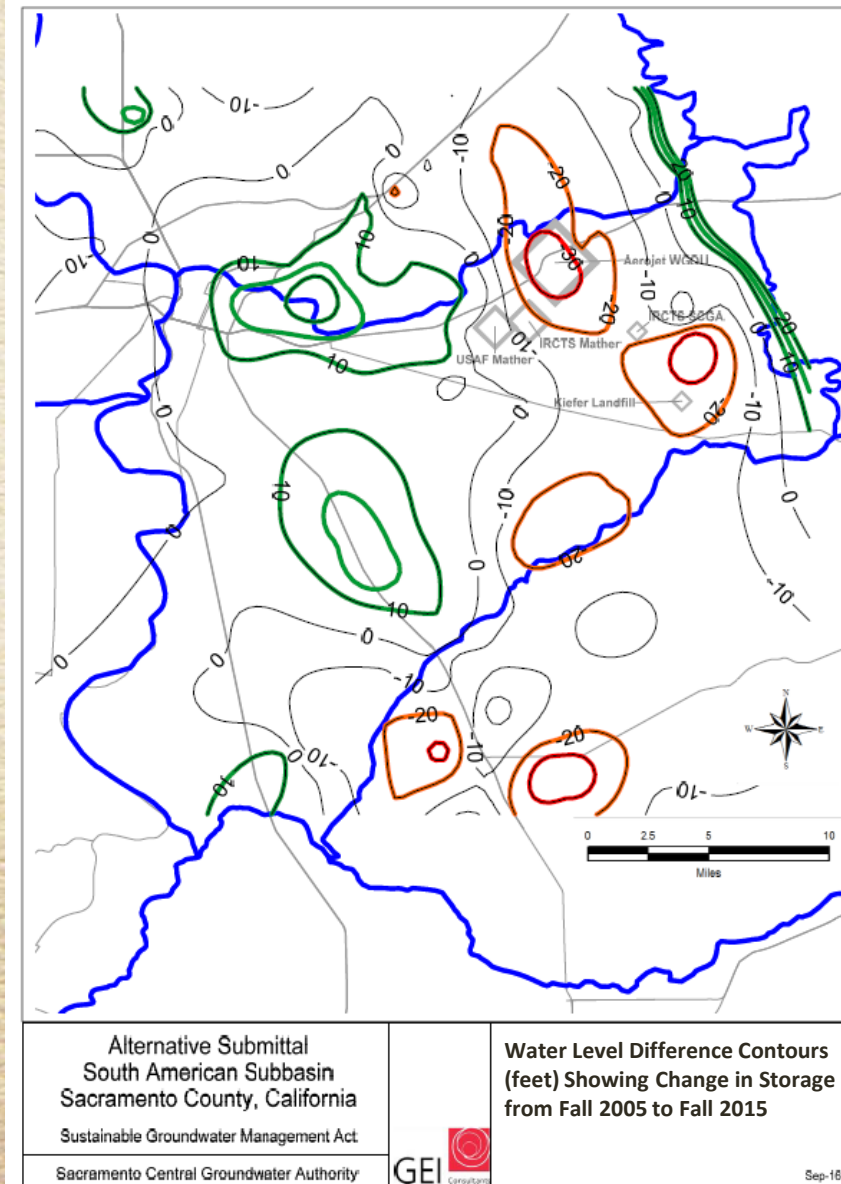
Sep-18

Water Level Contours – Fall 2015



- Southwest flow from uplands to cones of depression
 - Along Cosumnes River in South American Subbasin
 - South of Cosumnes River along Highway 104
 - North of American River at intersection of I-80 & B-80
- Easterly flow from Sacramento River
- Wells with water levels
 - South American: 51
 - Cosumnes: 22
 - North American: 74
- South American cone shallower than 2005
- Cosumnes cone deeper than 2005

Water Level Contours – Differences



- Fall 2015 minus Fall 2005
 - Mathematical subtraction of grid files
 - Green equals increase in water levels
 - Orange & red equal decrease in water levels
- Increase in water levels
 - Center portion of South American Subbasin
 - Along American River
- Decrease in water levels
 - East side of South American Subbasin be
 - South of Cosumnes River

Hydrograph Summary

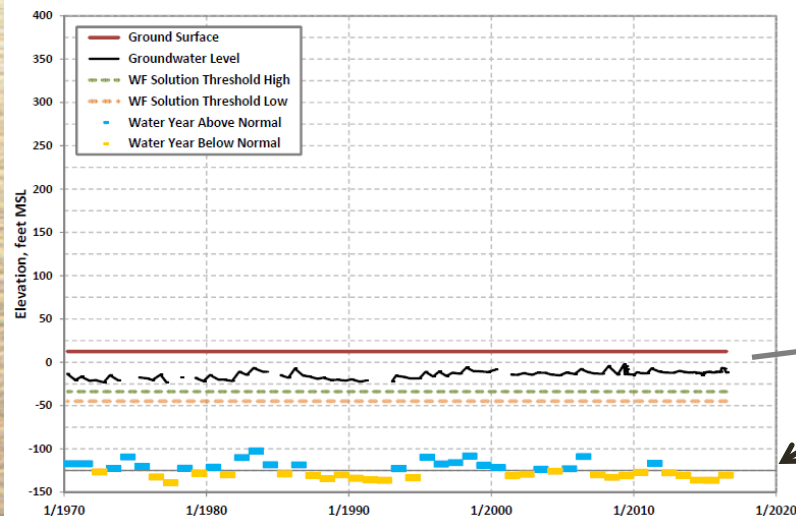
- 48 wells – Data before 2005 to 2015/16
 - 15 wells above bandwidth, 16 wells within bandwidth, 17 wells below bandwidth
- 8 wells – Data before SCGA and Recent
 - 2 wells above bandwidth, 2 wells within bandwidth, 4 wells below bandwidth
- 2 wells – Recent data – after 2010
 - 1 well above bandwidth, bandwidth invalid (above grade) for other well
- 12 wells – Data up to 2012
 - Probably: 3 wells above bandwidth, 3 wells within bandwidth, 6 wells below bandwidth
- 16 wells – Data up to 2005, just before SCGA
- 51 wells – Data before 2000 – not used
- 2 wells – No data after 1970 or no data
- 139 wells total

2006 Threshold
Bandwidth
32% above
31% within
37% below

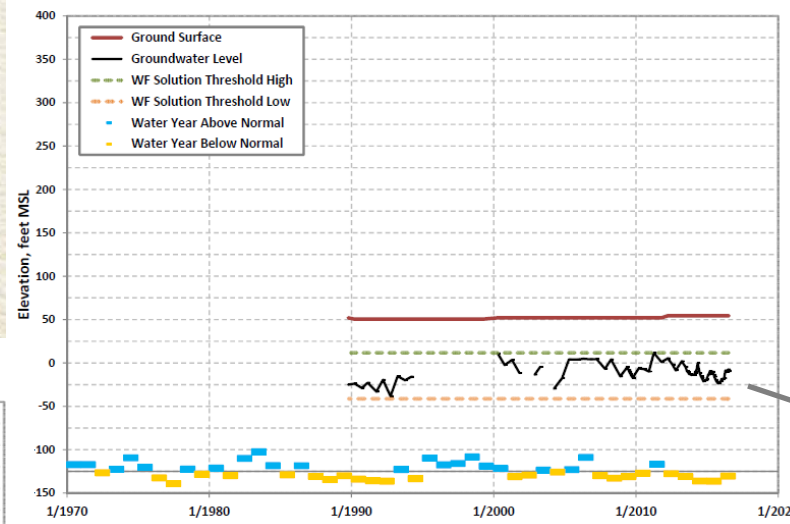
Hydrographs of Selected Wells

- Uniform scales
 - 1970 to 2020
 - 400' to -150'
- Lines Explanation
 - Ground surface – brown
 - Water level – black
 - Upper threshold – green
 - Lower threshold - orange

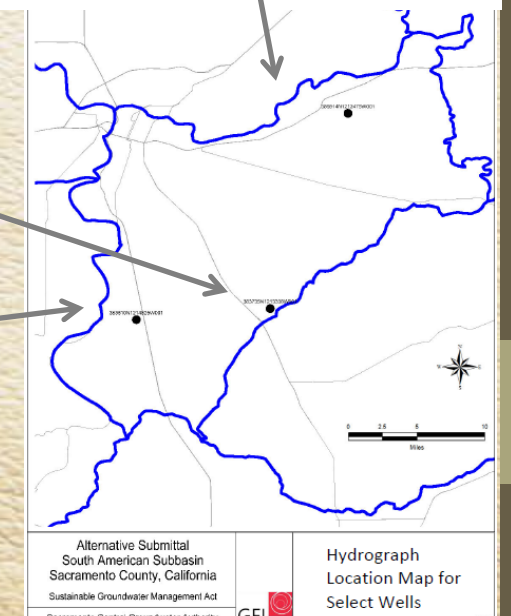
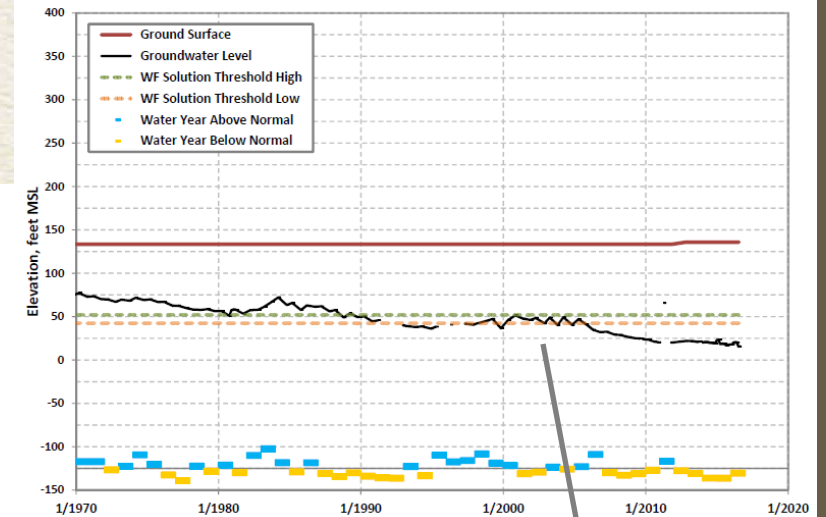
383610N1214825W001



383735N1213338W001



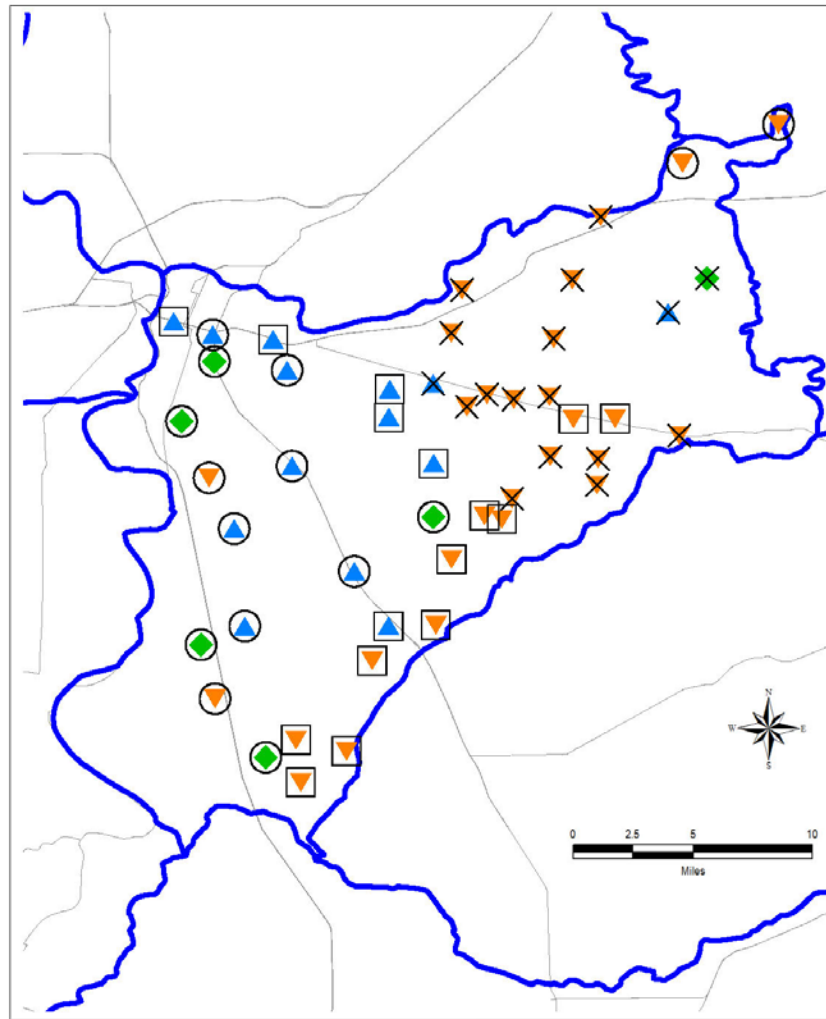
SWP-255 / 385914N1212475W001



Water Year Index

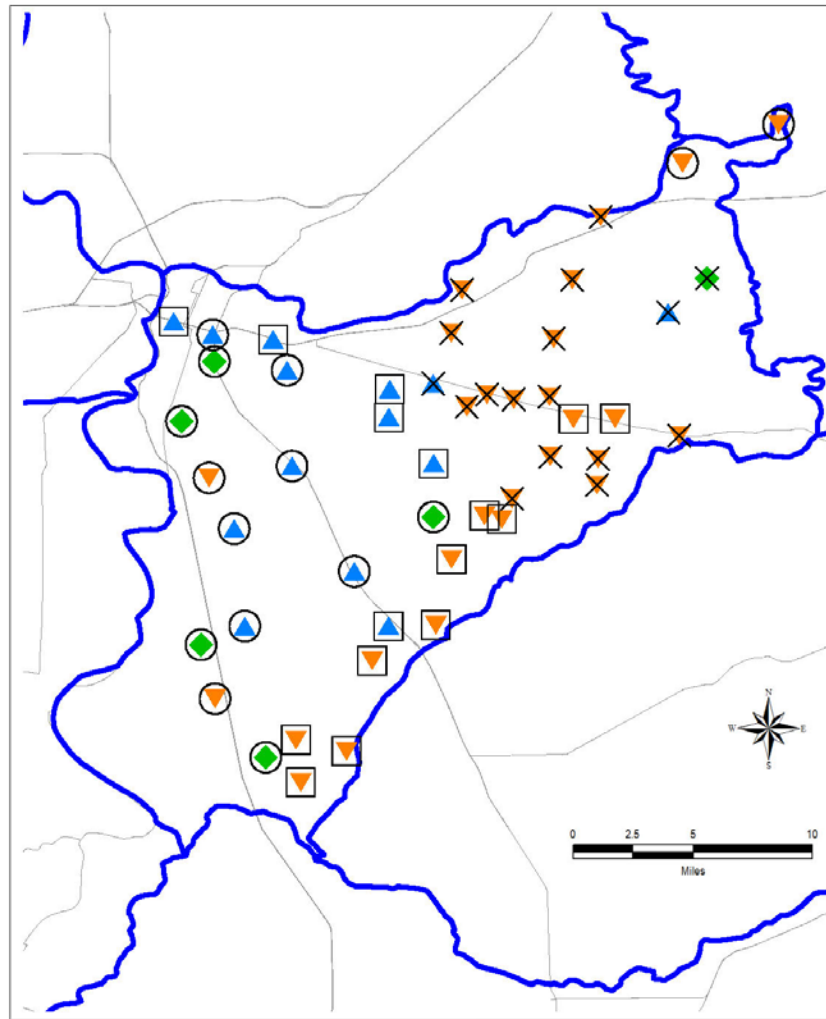
- Blue = above normal
- Orange = below normal

Water Level Trends since 2005 1 of 2



- Linear regression of Spring water levels
- Rising / Flat Water Levels (blue / green)
 - Northwestern & central portion
 - Northeastern corner
- Falling Water Levels (orange)
 - Eastern portion
 - Remediation along American River
 - Agriculture along Cosumnes River & within Cosumnes Subbasin
 - Less flow in Deer Creek due to lower EID discharge of treated wastewater
 - Southern Portion – Agriculture, including Cosumnes Subbasin
- Well Characteristics
 - 48 wells
 - Depths: 72 to 600 feet; mean: 233 feet

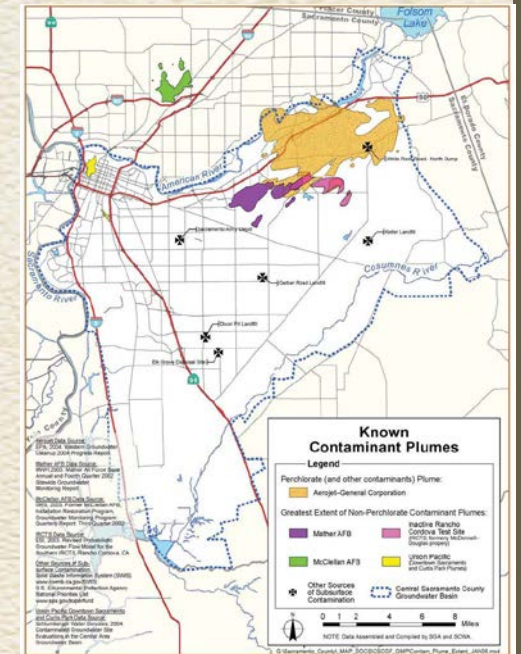
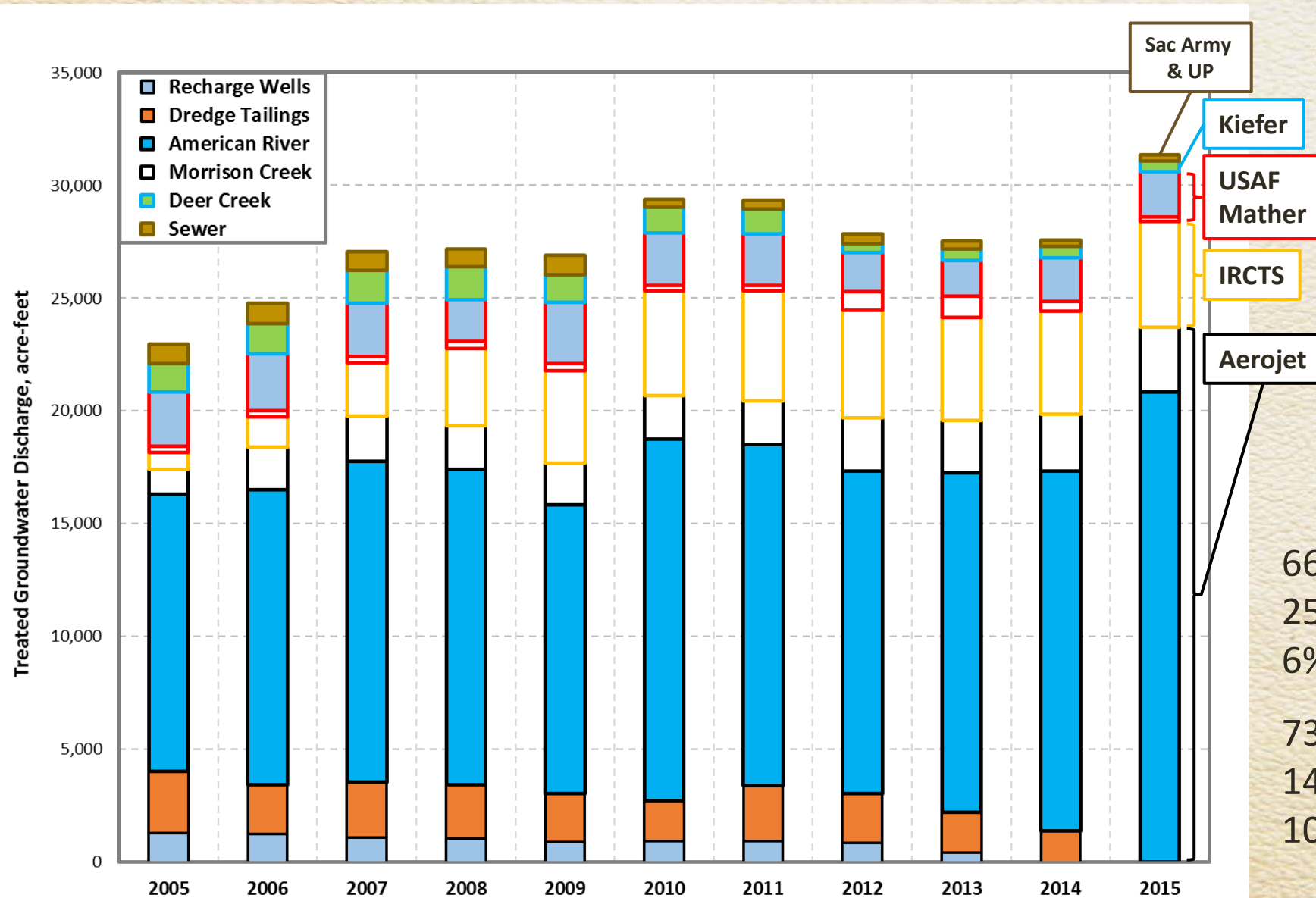
Water Level Trends since 2005 2 of 2



- 2006 GMP Threshold Bandwidth

- 15 wells above bandwidth (circle)
 - Western & central portion
 - Northeastern corner
- 16 wells within bandwidth (square)
 - Northwestern & southwestern boundaries
 - Central portion
- 17 wells below bandwidth (X)
 - Eastern portion

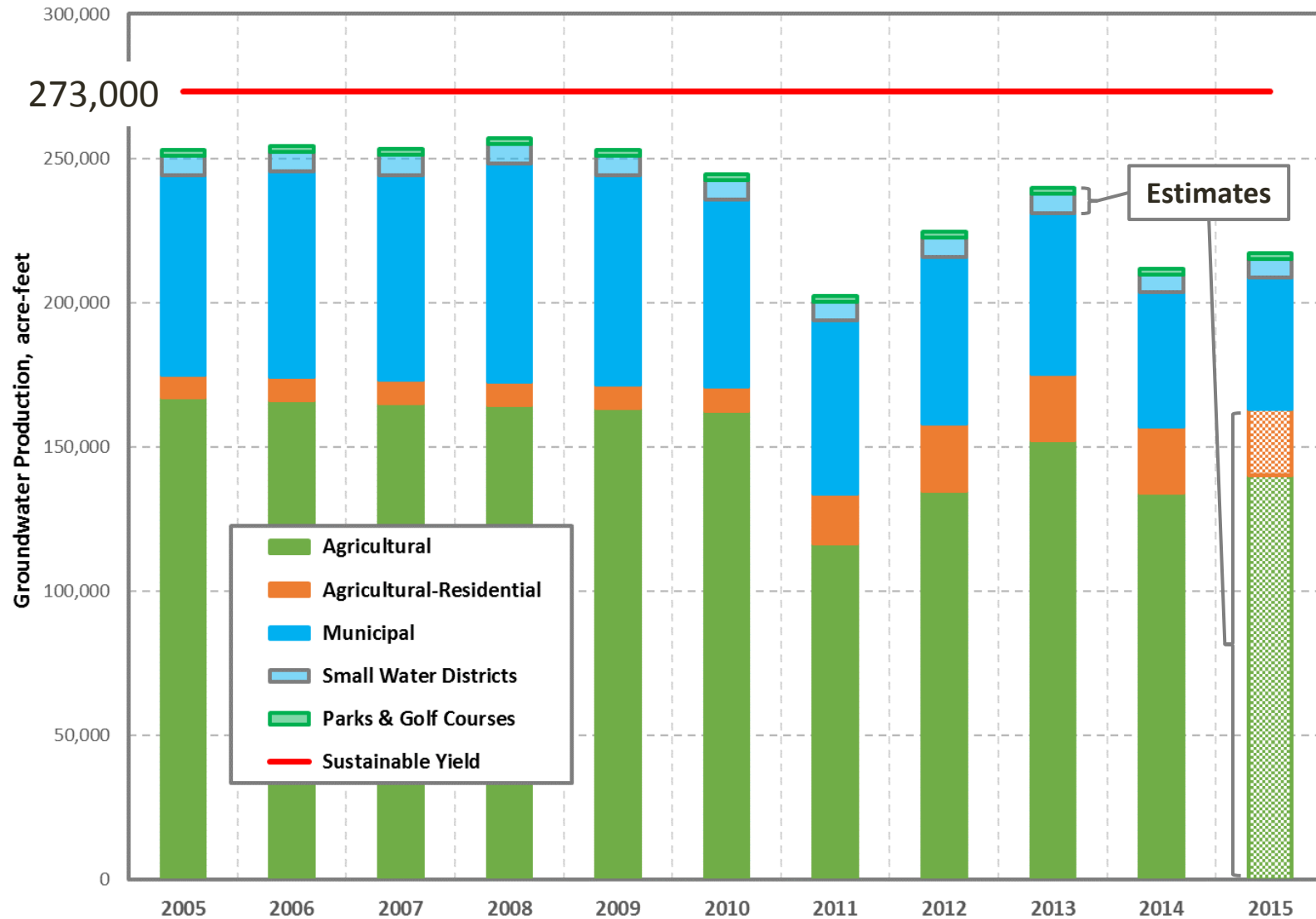
Pumping Amounts – Remediation



66% to American River
25% to Morrison Creek
6% to Recharge Wells

73% Aerojet Site
14% IRCTS — Boeing & Aerojet
10% USAF Mather

Pumping Amounts – Municipal & Agriculture

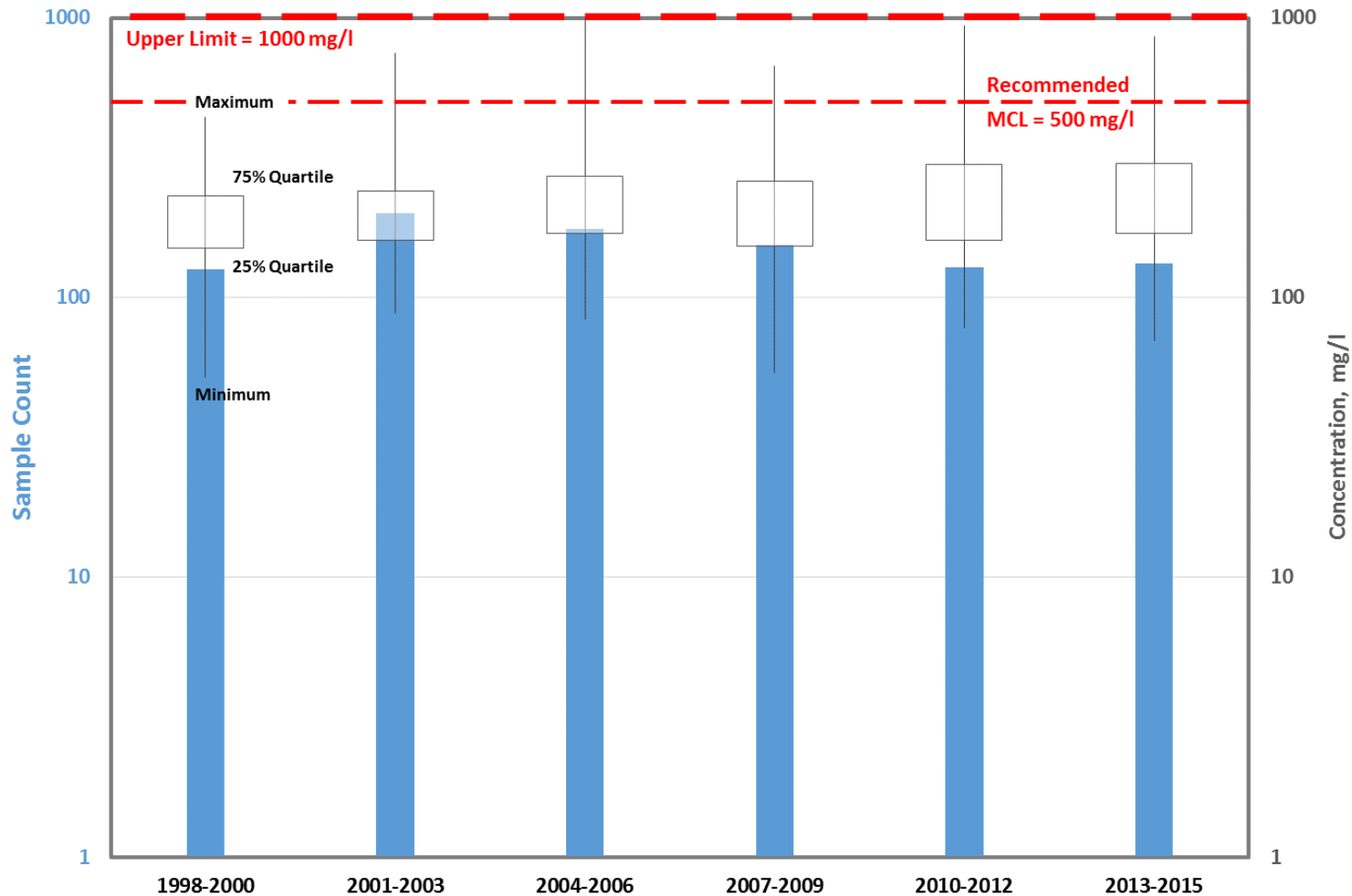


**M&A pumping
is less than
Sustainable Yield**

Revised methodology for 2005 to 2010 would likely produce lower volumes for Agriculture and higher volumes for Agricultural-Residential — Possible net reduction in pumping

Excludes remediation pumping (8% to 13% of total pumping)

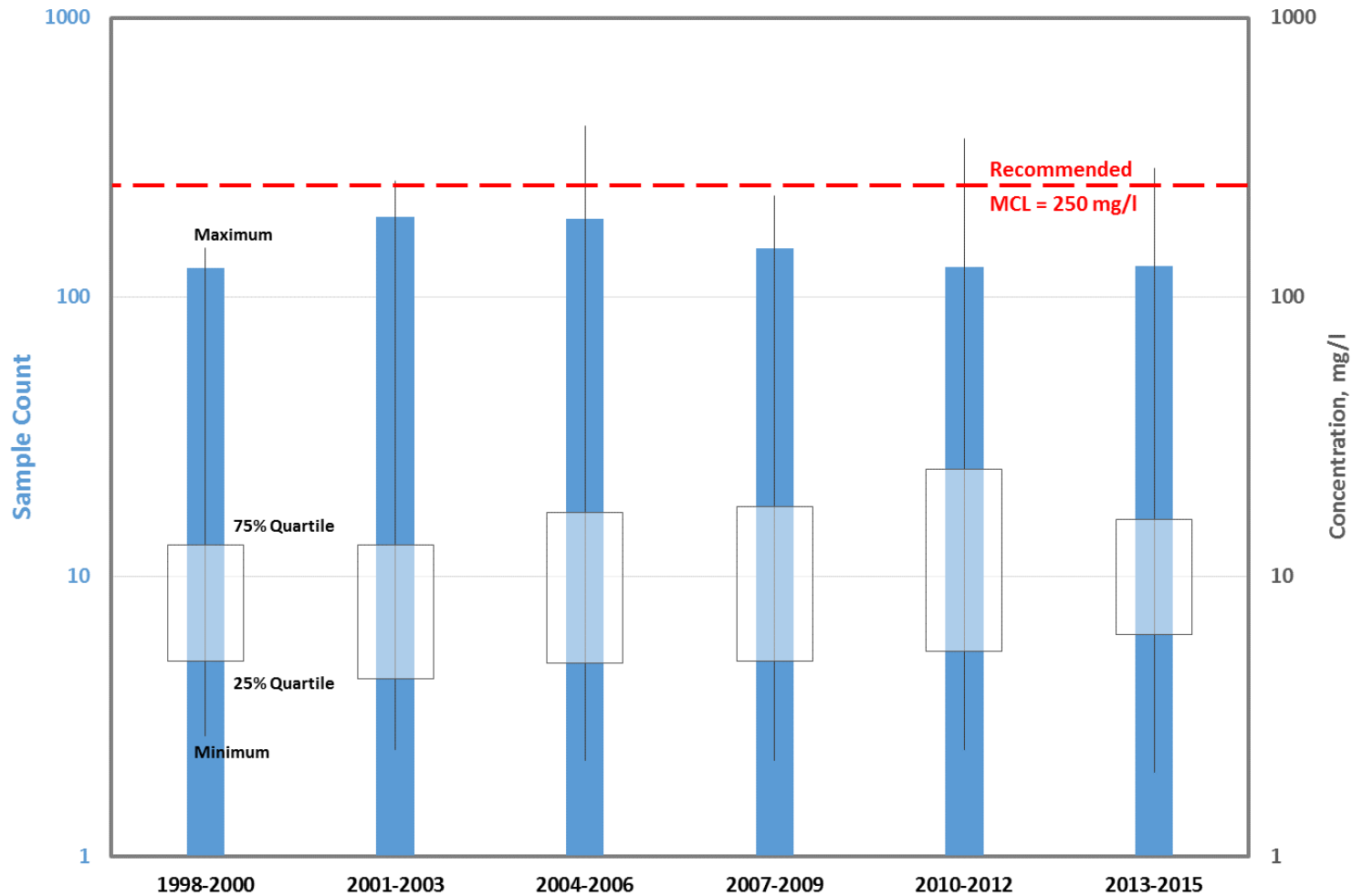
Water Quality – Total Dissolved Solids



- Slight increasing trend
 - 1998-2000 Median: 170 mg/l
 - 2013-2015 Median: 210 mg/l
 - Less than half of MCL
- Trend likely due to production of deeper groundwater
- Natural evolution of groundwater chemistry during last century of development

Source: Geotracker GAMMA - CDPH

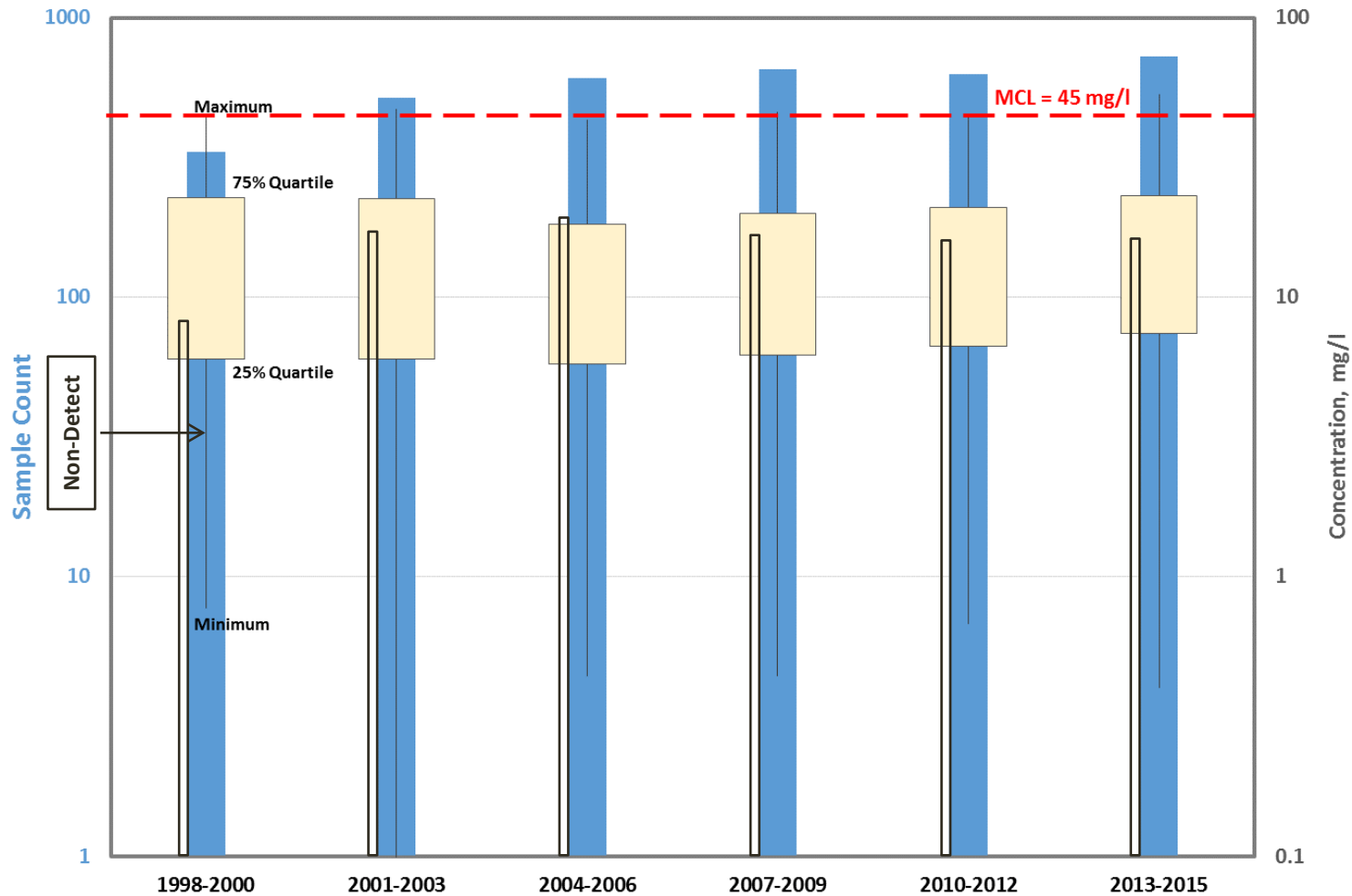
Water Quality – Chloride



- Slight increasing trend
 - 1998-2000 Median: 8 mg/l
 - 2013-2015 Median: 12 mg/l
 - Well below MCL
- Trend likely due to production of deeper groundwater

Source: Geotracker GAMMA - CDPH

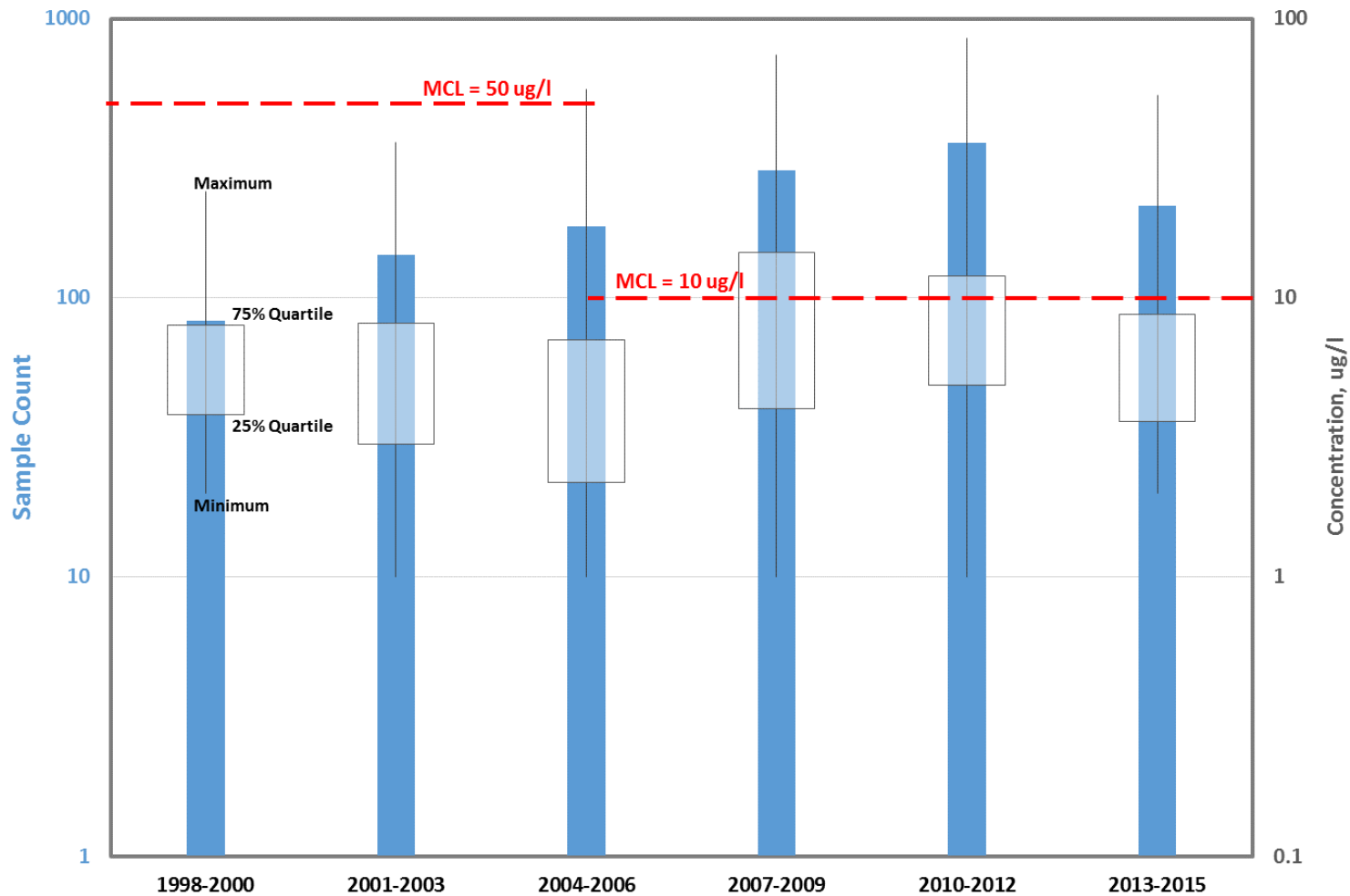
Water Quality – Nitrate Detections



- Slight increasing trend
 - 1998-2000 Median: 11 mg/l
 - 2013-2015 Median: 14 mg/l
 - Below MCL
- Non-Detects: 18 to 25%

Source: Geotracker GAMMA - CDPH

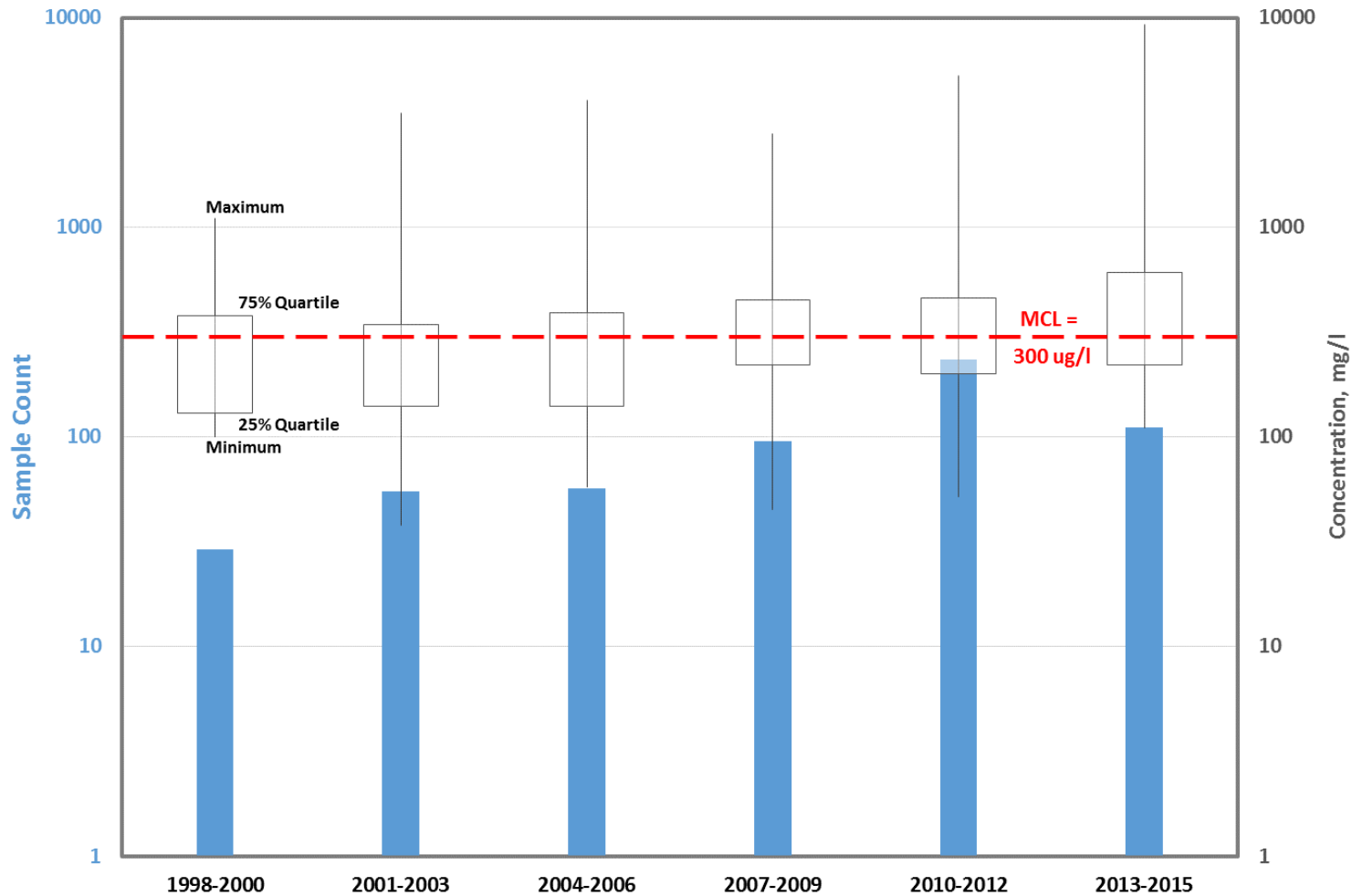
Water Quality – Arsenic Detections



- Trend variable
 - 1998-2000 Median: 6.8 ug/l
 - 2010-2013 Median: 13 ug/l
 - 2013-2015 Median: 9.8 mg/l
- Non-Detects: 10 to 36%
- MCL exceedances mostly after lowering of standard
- Natural constituent of shallow groundwater

Source: Geotracker GAMMA - CDPH

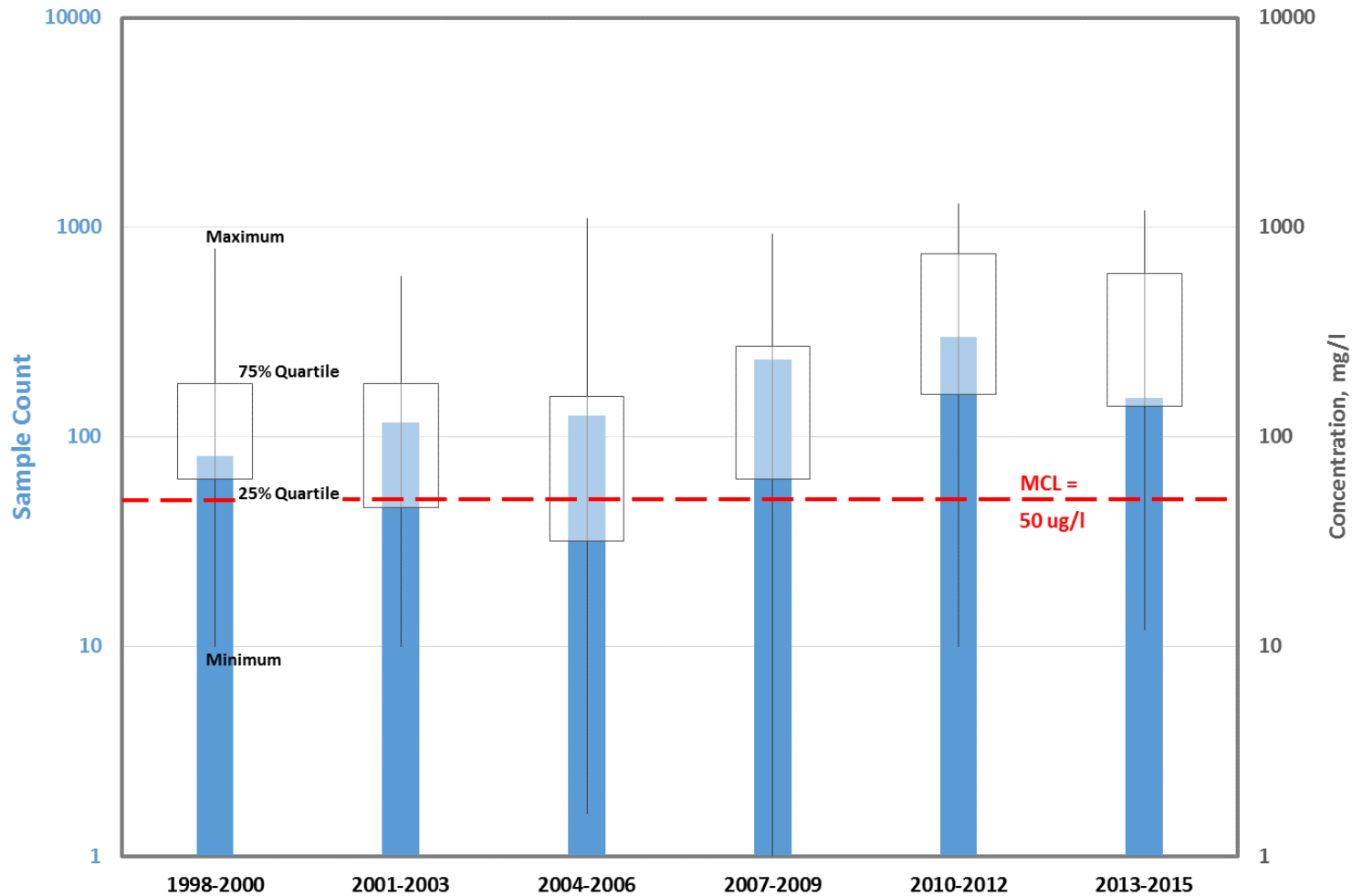
Water Quality – Iron Detections



- Non-Detects: 41 to 79%
- Variable increasing trend
 - 1998-2000 Median: 170 ug/l
 - 2007-2009 Median: 310 ug/l
 - 2013-2015 Median: 270 ug/l
- Notable level of exceeding secondary MCL
- Natural constituent of deeper groundwater
- Removal by treatment system

Source: Geotracker GAMMA - CDPH

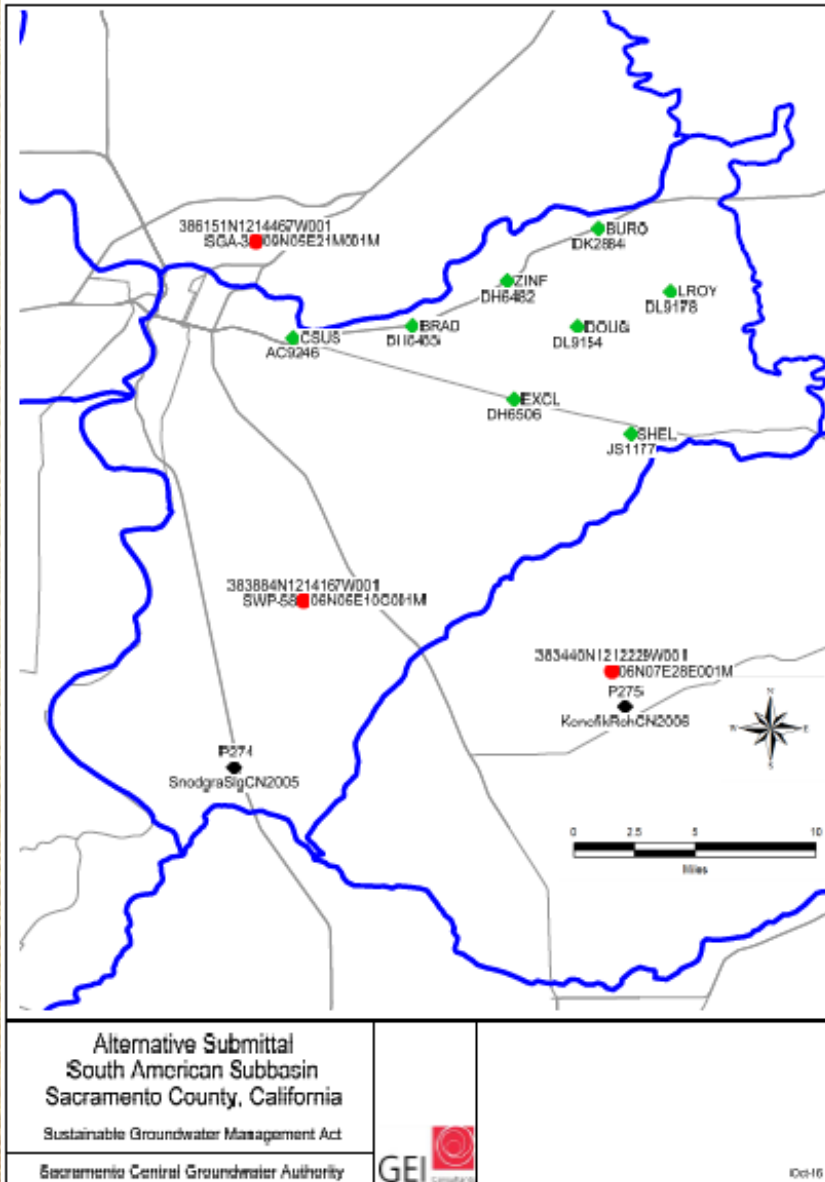
Water Quality – Manganese Detections



- Non-Detects: 20 to 57%
- Variable increasing trend
 - 1998-2000 Median: 11 mg/l
 - 2013-2015 Median: 14 mg/l
- Mostly exceeds secondary MCL
- Natural constituent of deeper groundwater
- Removal by treatment system

Source: Geotracker GAMMA - CDPH

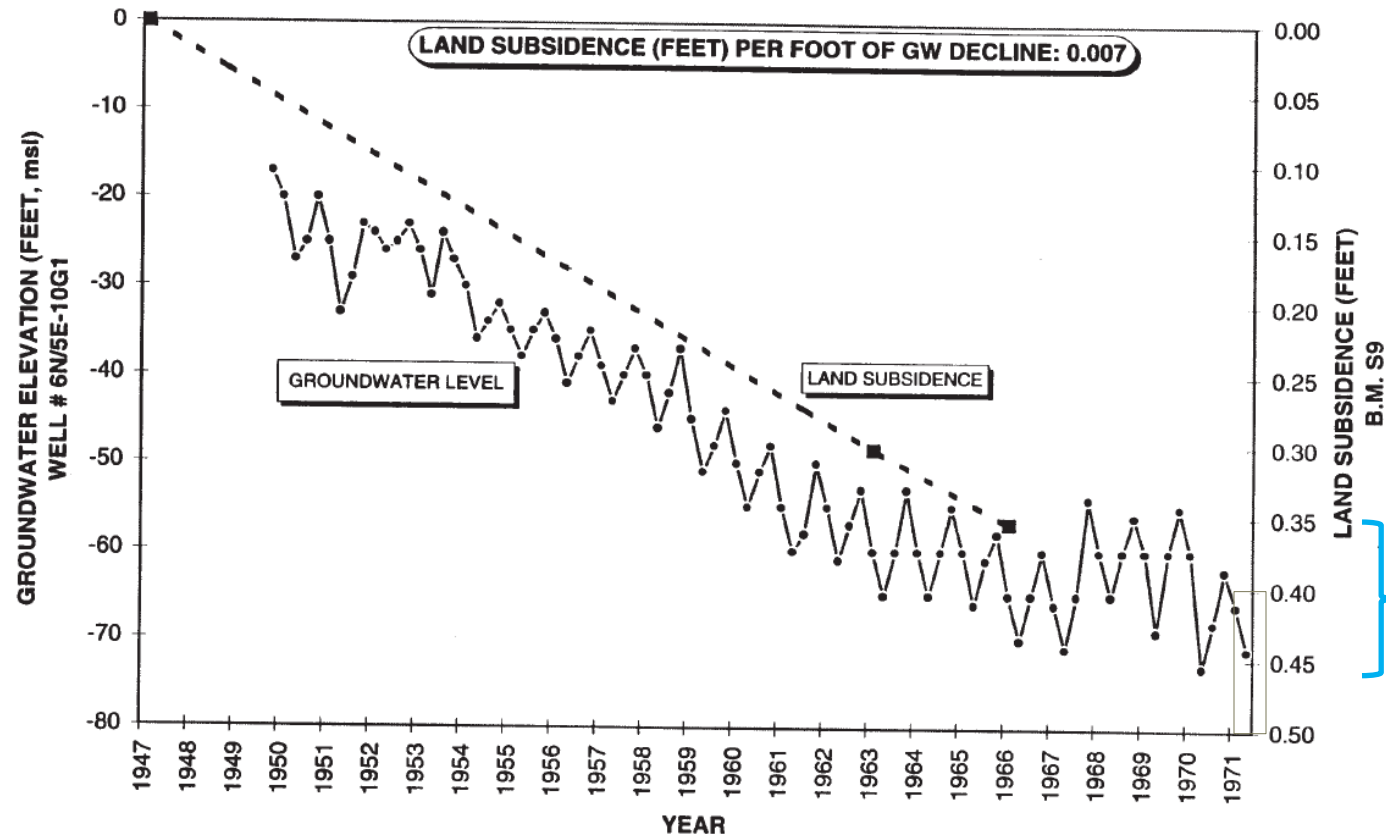
Land Subsidence



- No significant reports of subsidence
- DWR rates subbasin as medium-high potential
 - Current GW levels below historic low
 - Documented subsidence
- Water Forum studies evaluated rate of decline between 1947 and 1966 (red)
 - GW level decline used as an indicator
- GPS continuous monitoring (black) installed 2005
- GPS stations (green) established in 2008

Land Subsidence

LAND SUBSIDENCE AND GROUNDWATER DECLINE SOUTH SACRAMENTO COUNTY, NEAR ELK GROVE



Note: (1) Land subsidence corresponds to ground elevations measured at bench mark S9. Groundwater levels correspond to well number 6N/5E-10G1.

Source: 1997 Baseline Conditions for Groundwater Yield Analysis

South American Subbasin

P274 (SnodgraSlgCN2005) NAM08

Processed Daily Position Time Series

