

Applications of the Sacramento County Integrated Groundwater and Surface water Model (SacIGSM)

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**California Central Valley Groundwater
Modeling Workshop**

July 11, 2008



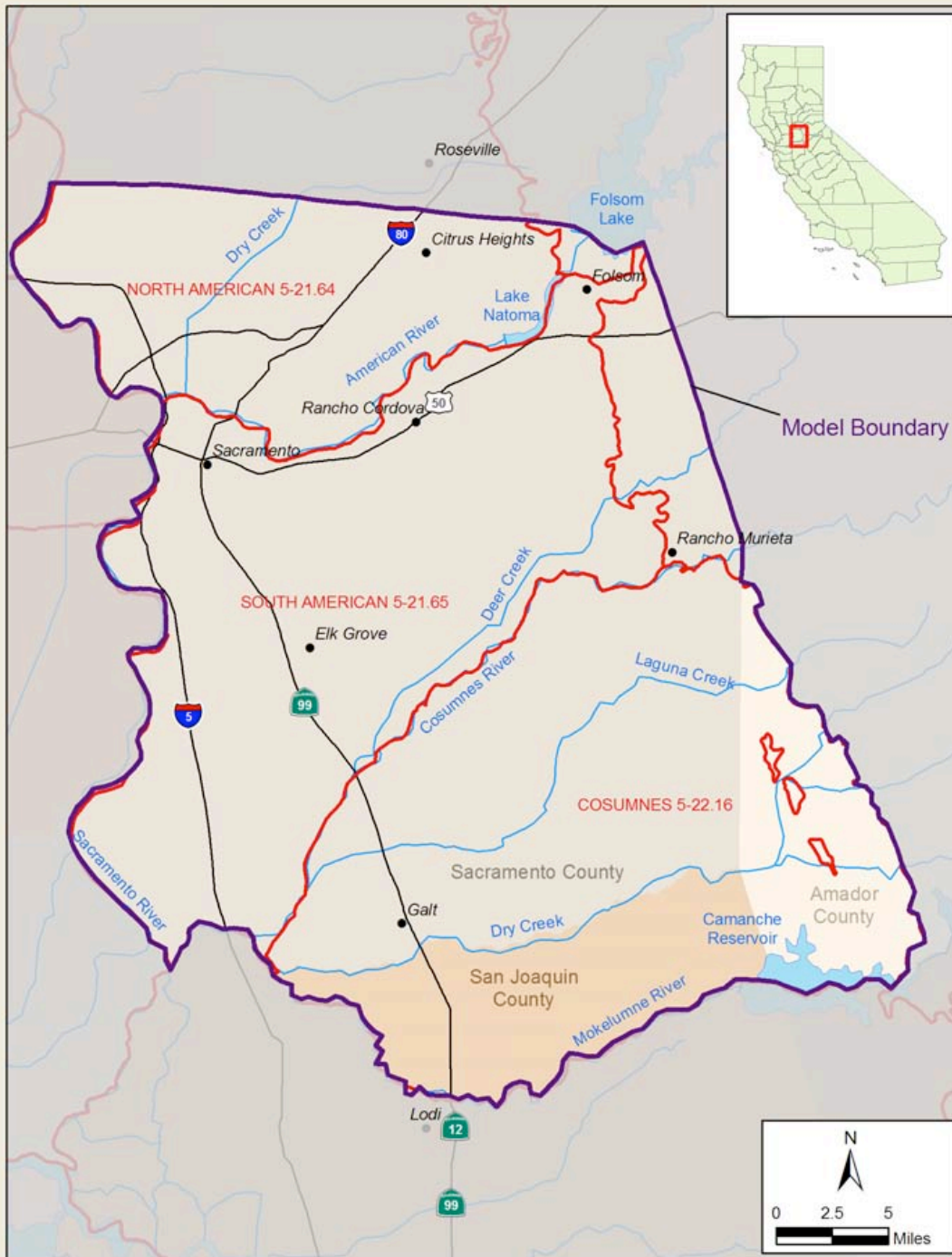
WRIME

**Water Resources & Information
Management Engineering, Inc**

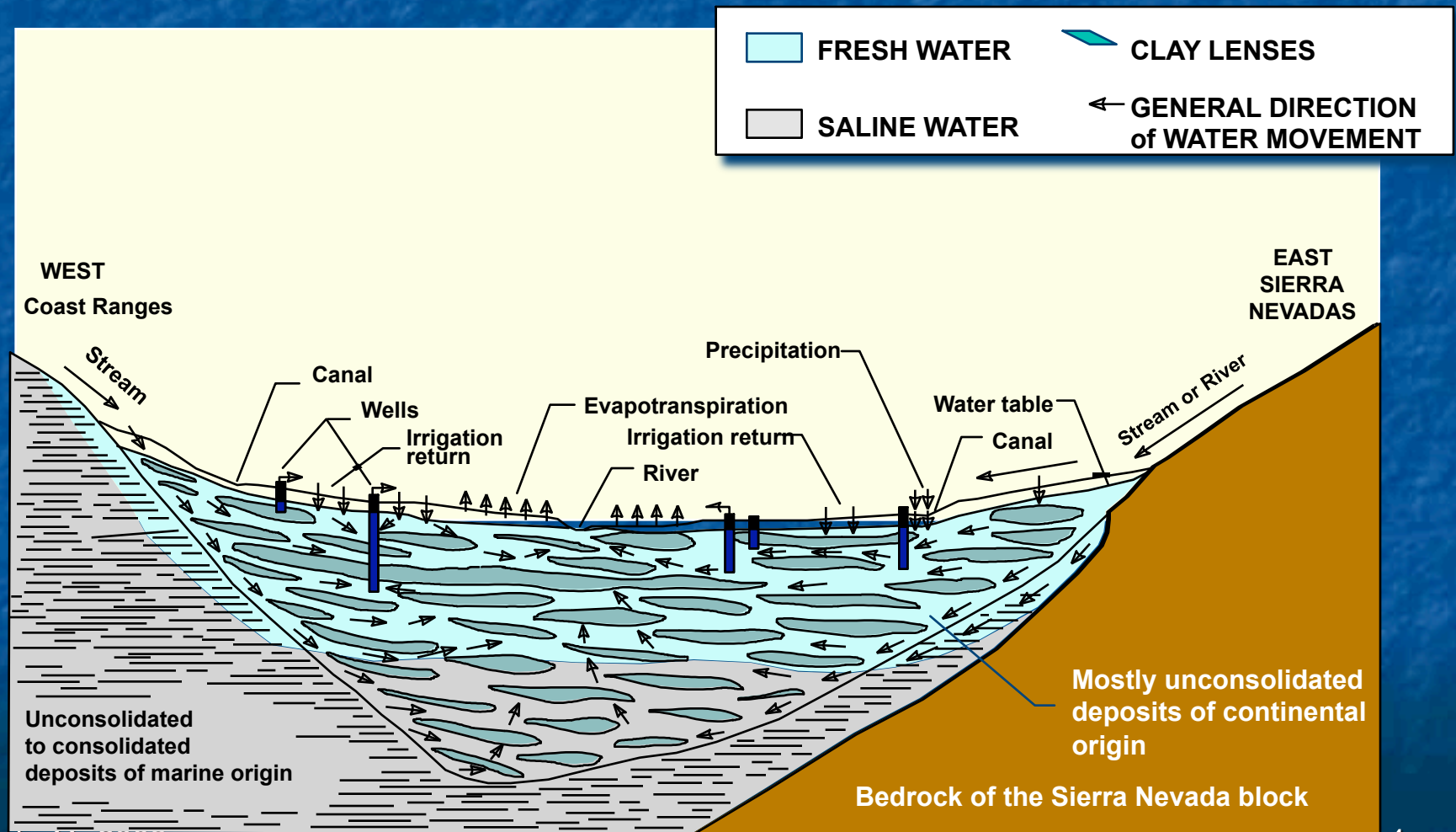
Presentation Agenda

- The Groundwater Basin
- Model Applications

Location



Cross-Section of the Regional Aquifer



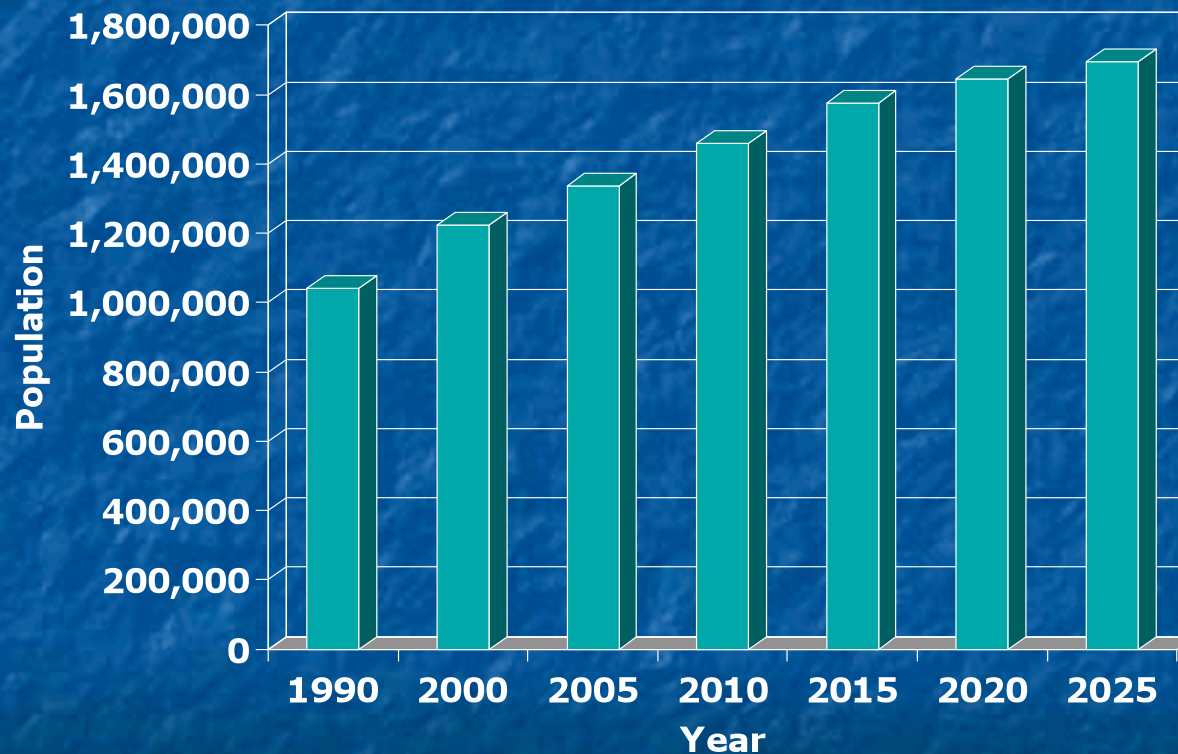
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Source: U.S. Geological Survey Professional Paper 1401-D, 1989.

Challenges

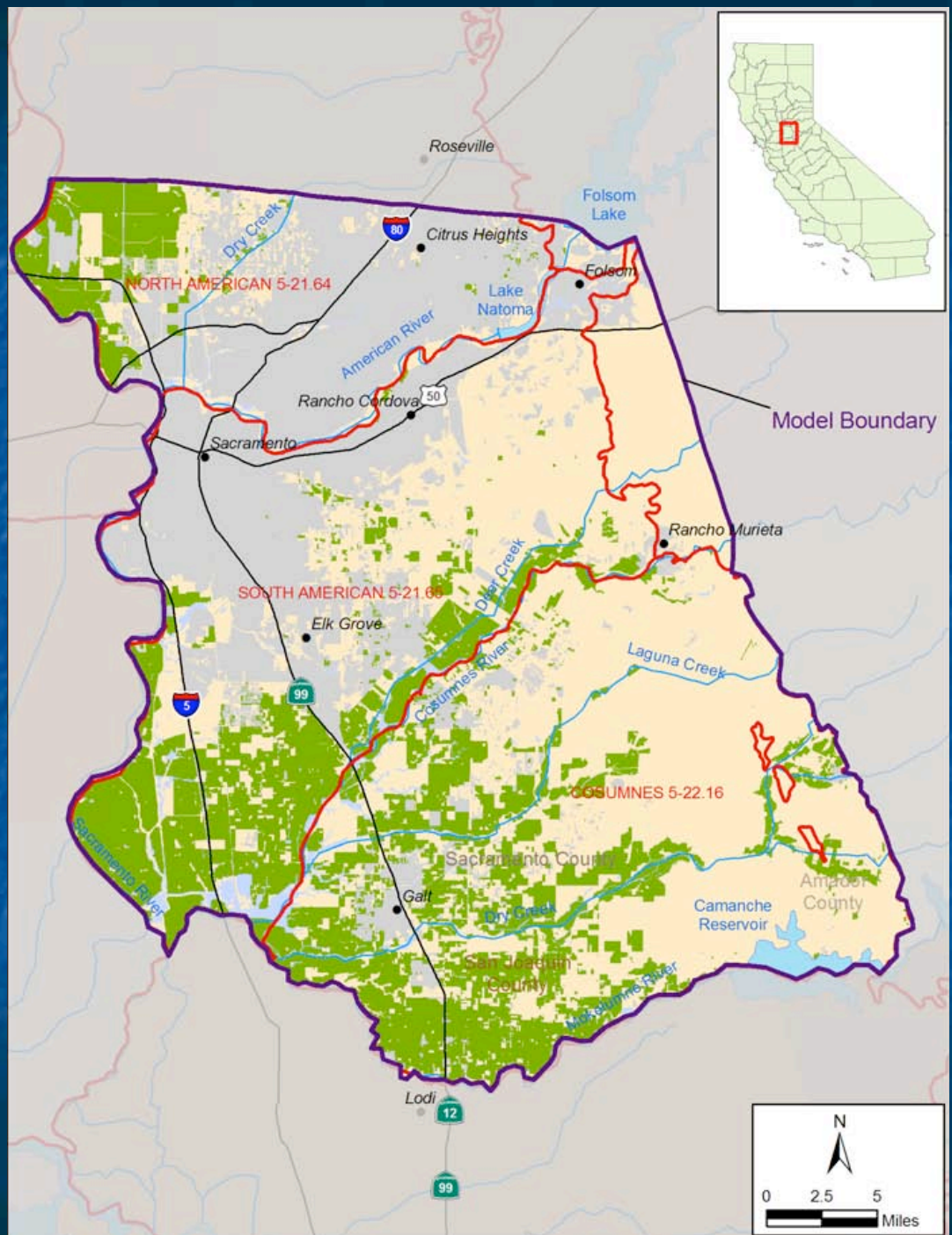
- Rapid population growth
- Important fisheries
- Overreliance on groundwater in some areas
- Groundwater contamination
- Multiple jurisdictions

Historical and Projected Population Growth

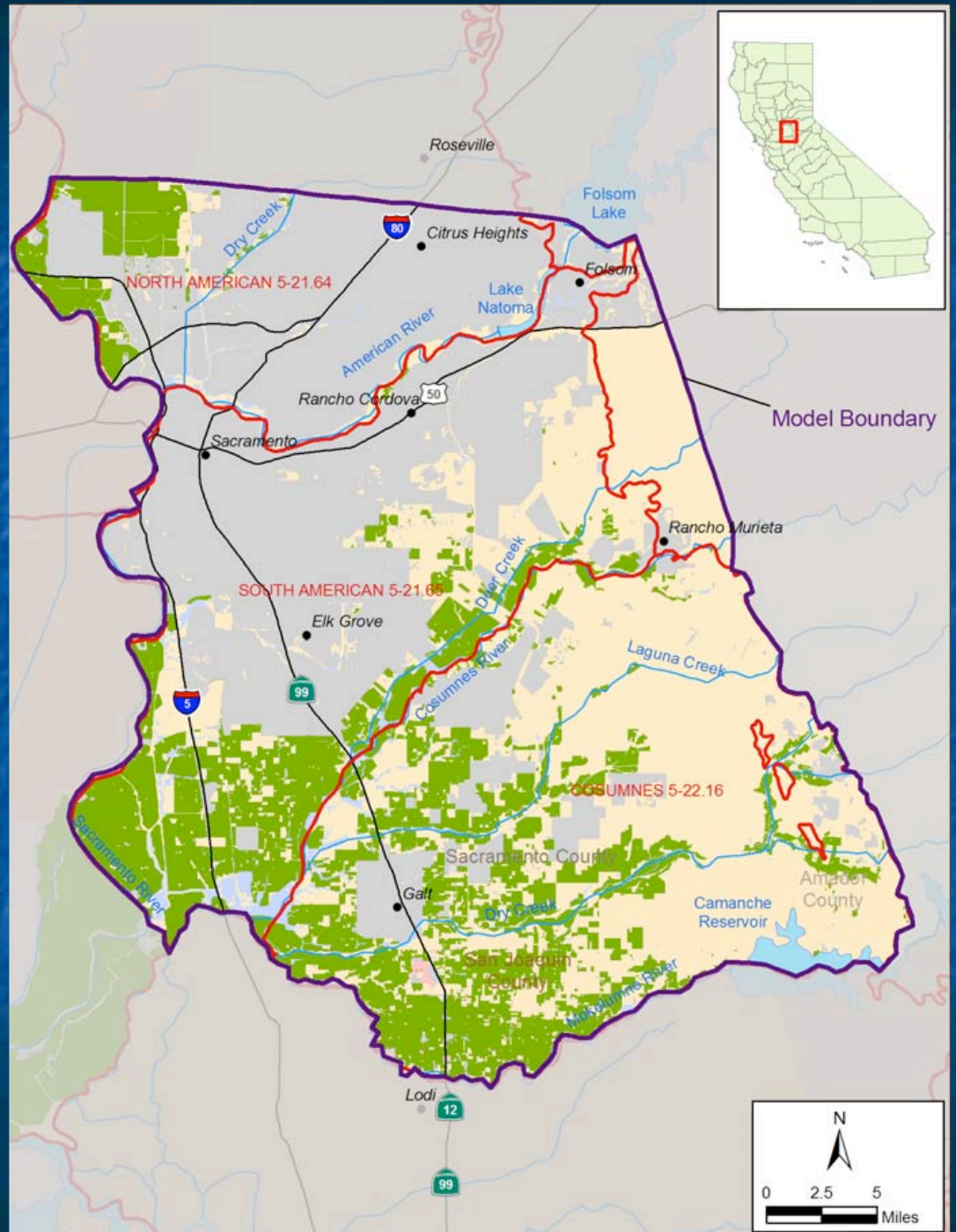


Land Use Change

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Land Use Change



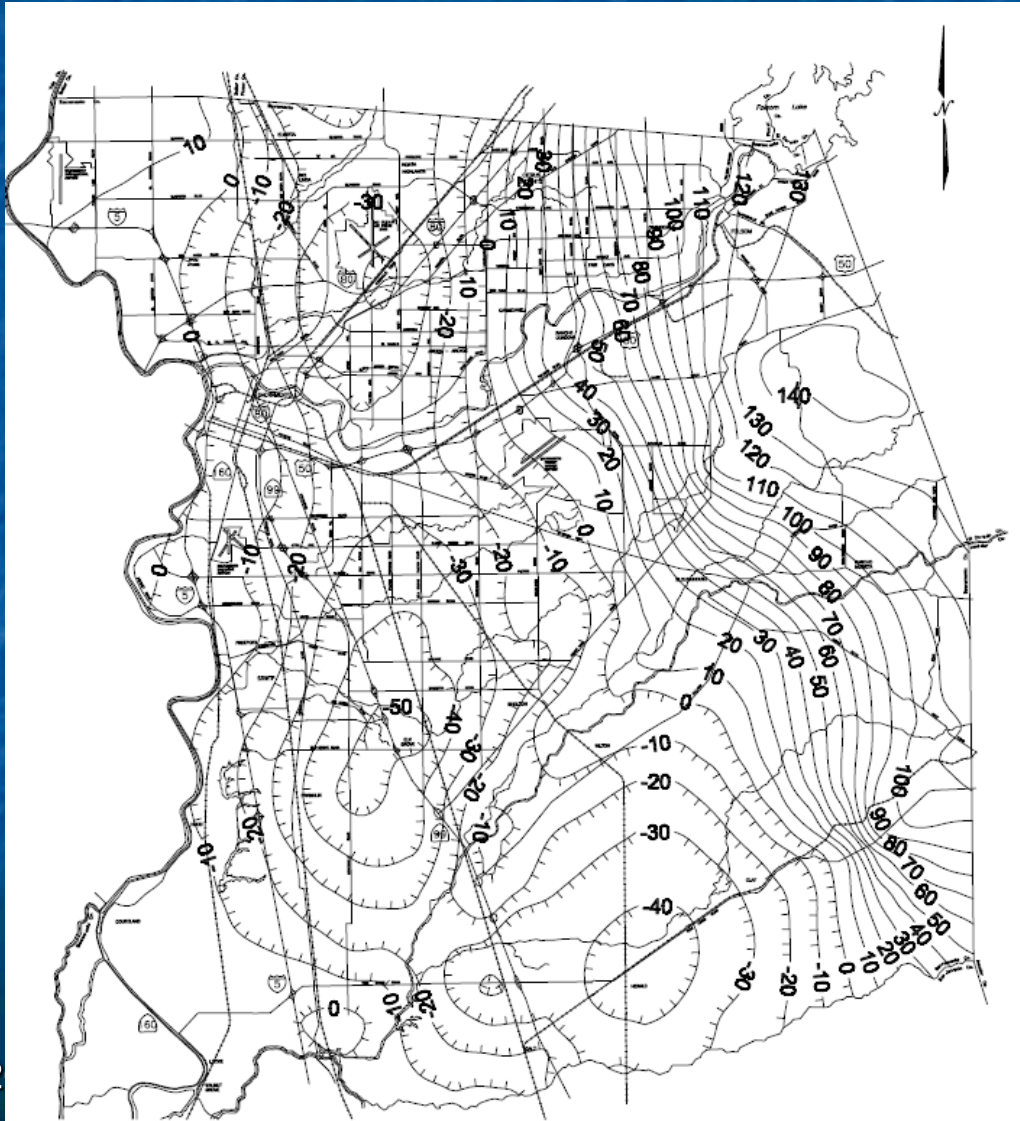
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Fisheries and Environment



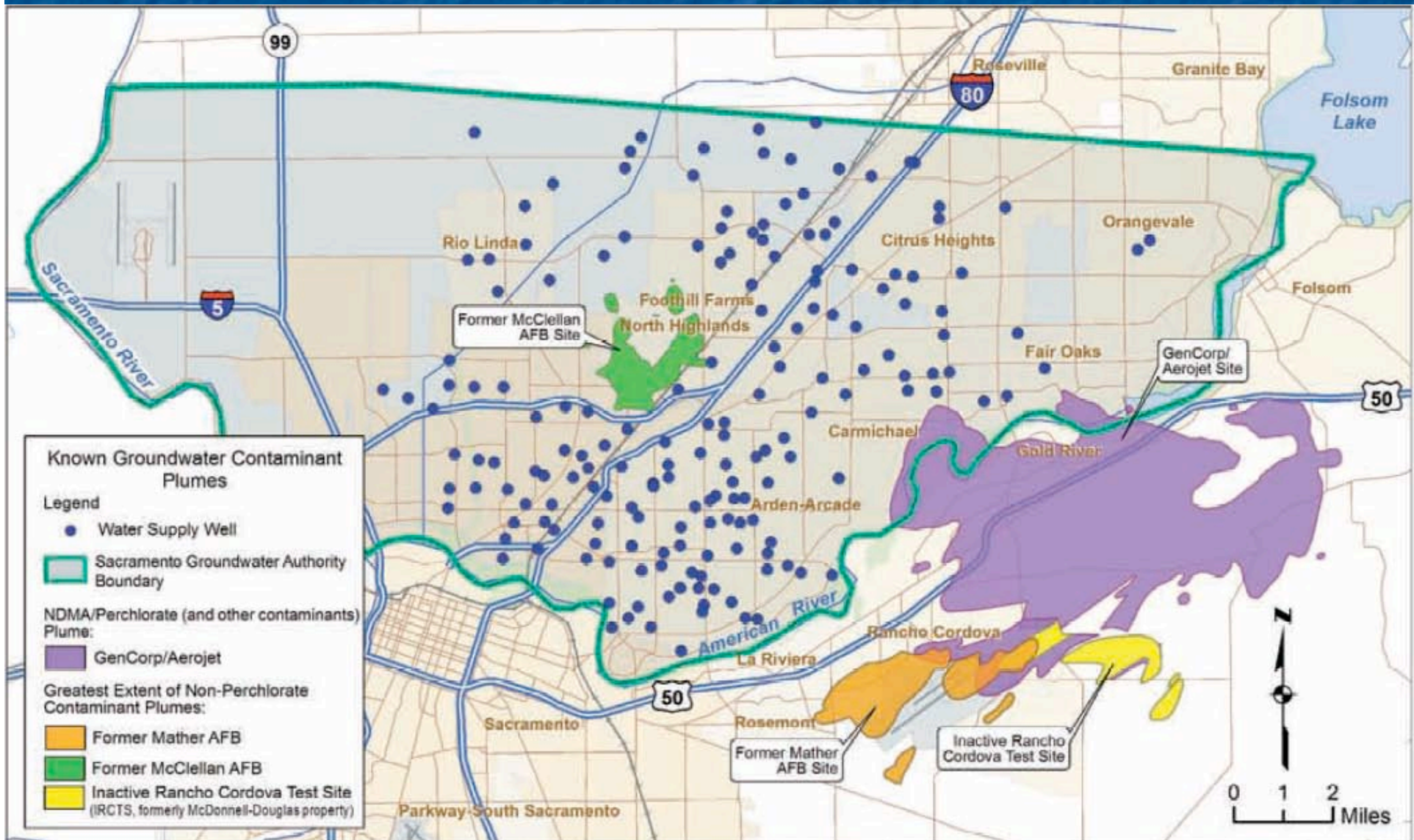
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Overreliance on Groundwater

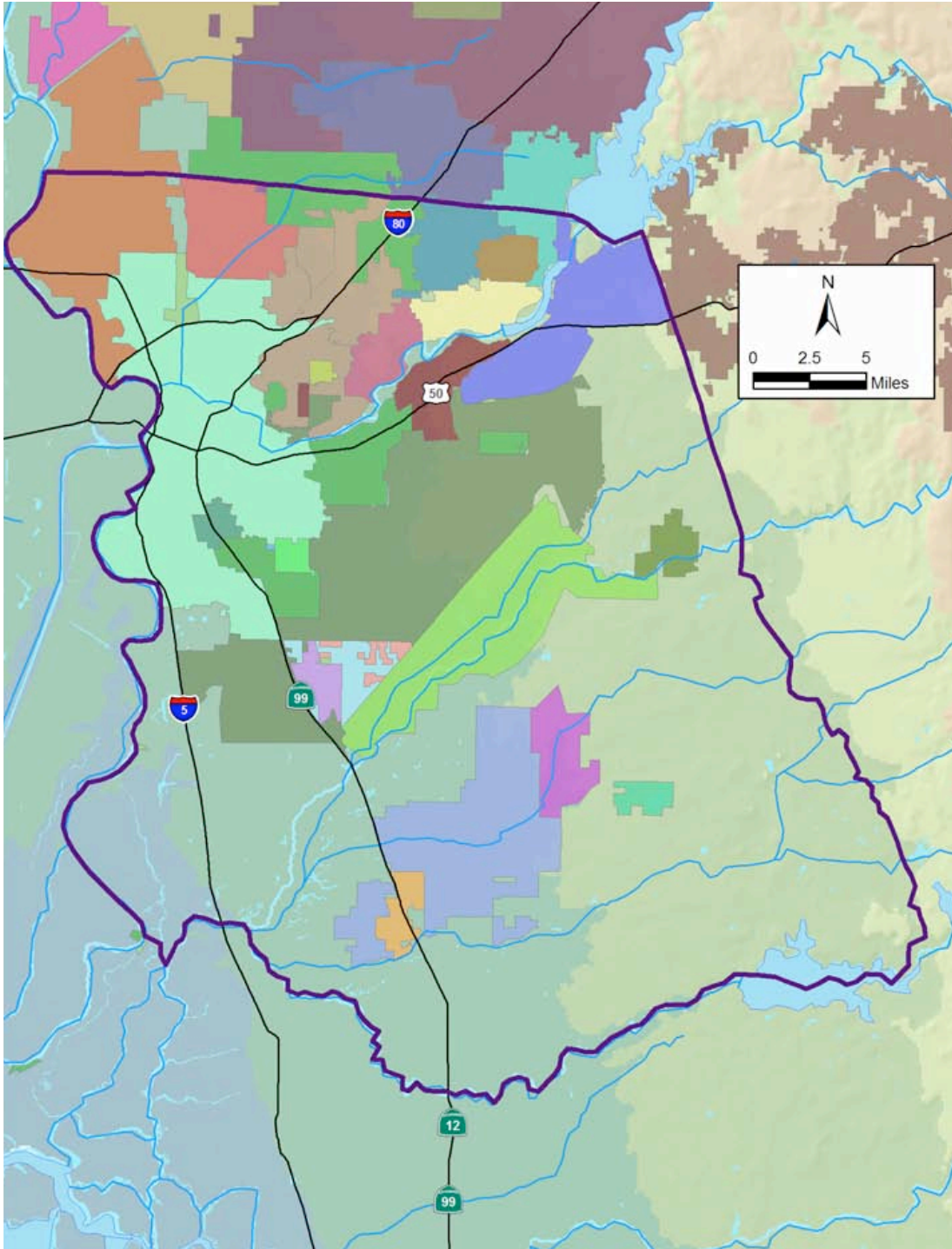


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Groundwater Contamination



Multiple Jurisdictions



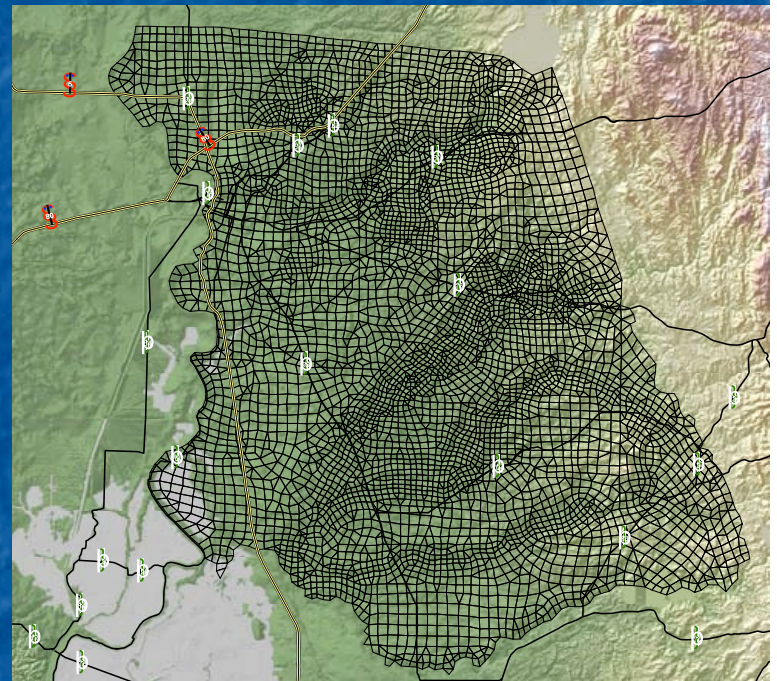
Opportunities

- **Surface water supplies**
- Local, regional and statewide conjunctive use



Sacramento County IGSM

- Originally developed in early 1990s.
- Applied to over 17 projects.
- Continually updated and refined to meet new project needs.
- Widely accepted at the best available regional model for the area.
- Represents the groundwater and surface water system.



Past Sacramento Modeling Efforts

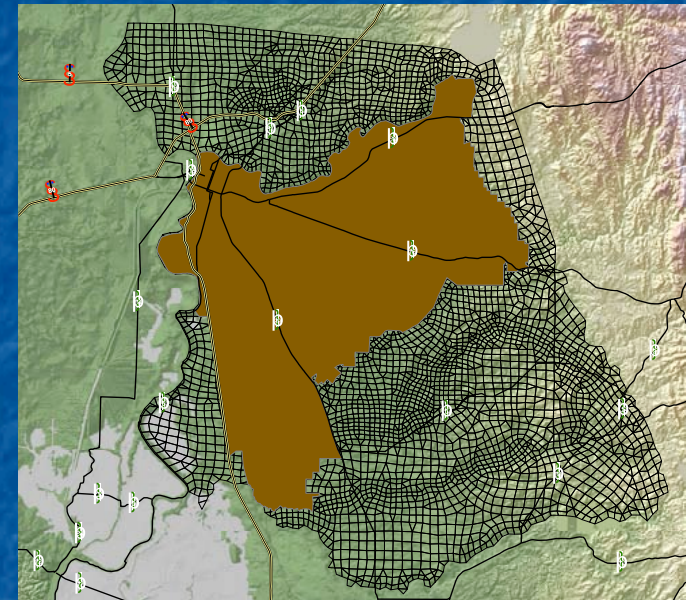
- Sacramento Water Forum
- Zone 40 Water Supply Master Plan
- Aerojet Surface Water Discharge Permitting
- Cosumnes River Flow Enhancement
- Well Protection Program
- Sutter Pointe
- Numerous others...

Water Forum Agreement

- Modeling supported Water Forum Agreement and related EIR, and subsequent planning efforts:
 - Basin yield estimates
 - Impact of land and water use changes
 - Impact of local and regional water supply projects
- Water Forum Agreement included water supply and environmental goals
 - Provide a reliable and safe water supply for the region's economic health and planned development through the year 2030
 - Preserve the fishery, wildlife, recreational, and aesthetic values of the Lower American River

Zone 40 Water Supply Master Plan

- Impact analysis
 - Pumping distribution and water supply scenarios
 - Impacts shown for groundwater and streamflow
- Model refinements
 - Finer grid spacing
 - Daily hydrologic modeling (rather than monthly)



Aerojet Surface Water Discharge Permitting

- 404 Permit for groundwater remediation activities, pumping and discharge to creek system
- Model used for impact analysis for remediation activities – net groundwater impact



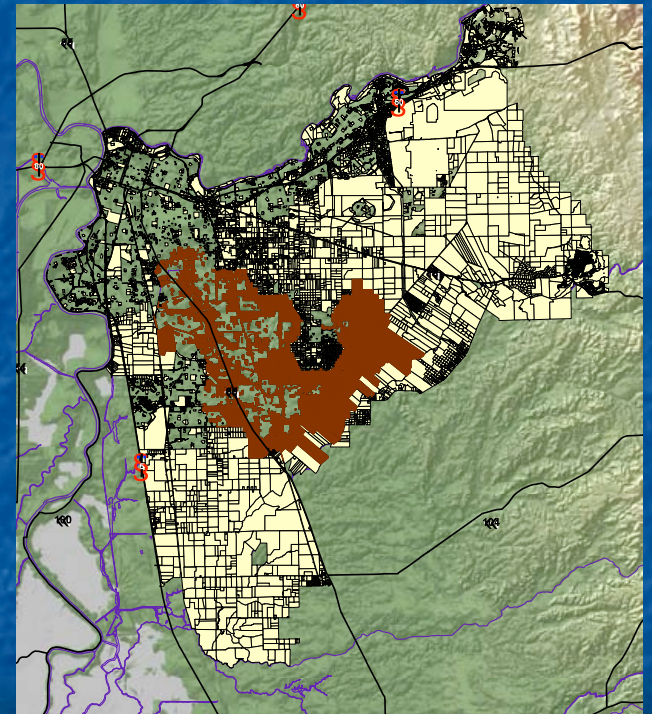
Cosumnes River Flow Enhancement

- Part of a stream-aquifer interaction study, providing boundary conditions for detailed, local model
- Incorporated recent physical understanding of stream-aquifer interaction developed by UC Davis
- Better resolution of timing and magnitude of flow conditions.
- Reinforces regional understanding of stream-aquifer interaction with localized responses.



Well Protection Program

- Model used to estimate number of wells impacted by water management alternatives out of total of approx 6,000 wells in the area
- Results assisted in cost estimates and outreach



Sutter Pointe

- Impact analysis for large development in the Natomas Basin adjacent to Sacramento County
- Utilized SacIGSM and North American River IGSM
- Studied the impact of the shift from agricultural water use to urban water use using several different levels of development and supply mixes.
- Refinements: Improved land use, water use, and aquifer parameter information

Future

- Continued application of the model to support water resources planning
- Continued refinement and updating of the model to meet future needs and expanding datasets

Questions?