Santa Margarita Groundwater Basin

December 13, 2017

Santa Margarita Groundwater Management Agency

Scotts Valley Water District

San Lorenzo Valley Water District

County of Santa Cruz

City of Scotts Valley

City of Santa Cruz

Mount Hermon Association

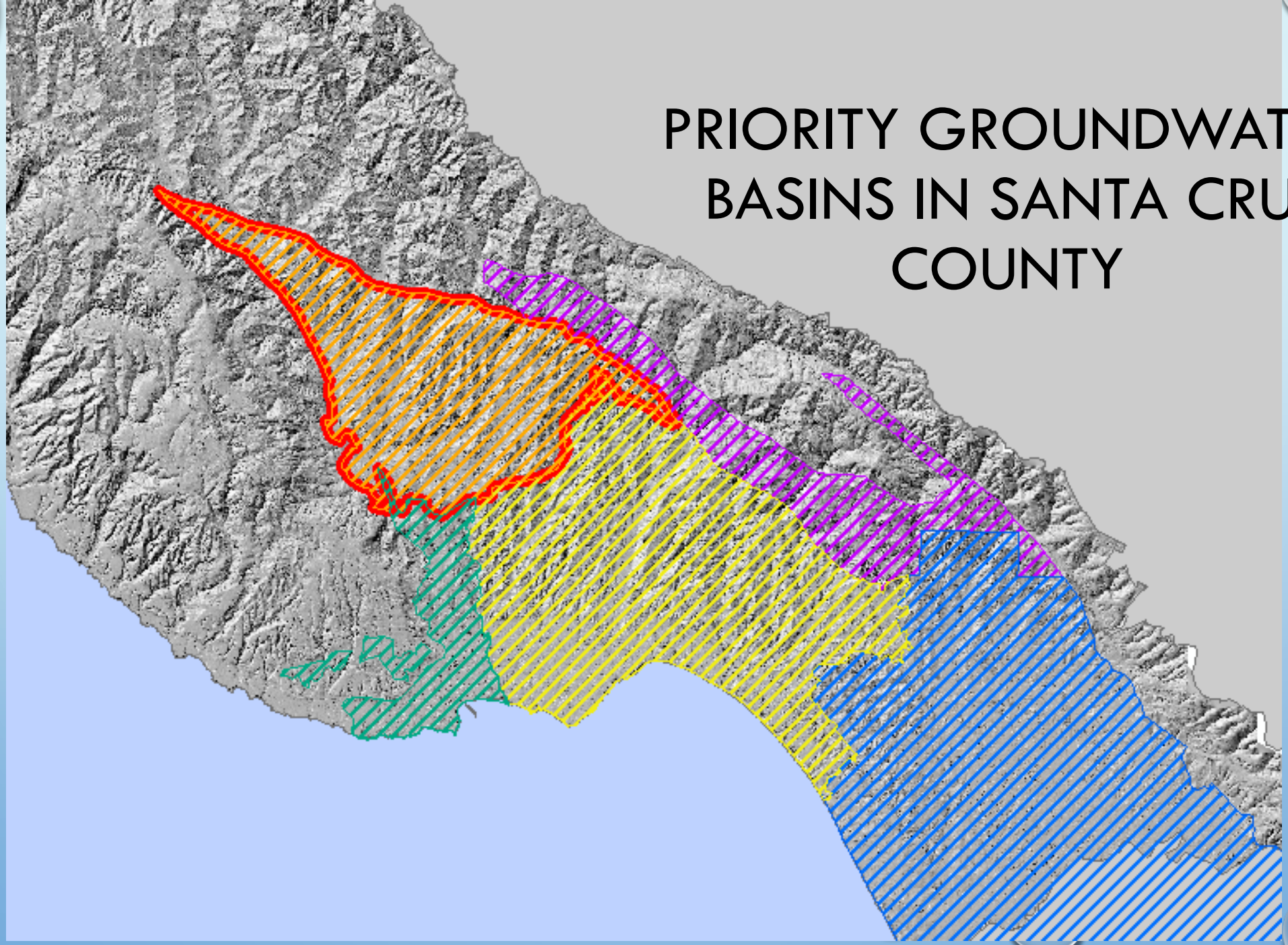
OVERVIEW OF THE SANTA MARGARITA GROUNDWATER BASIN:

- Is a primary source of water supply for Scotts Valley, Santa Cruz and the San Lorenzo Valley (Designated by US EPA as a sole source aquifer in 1985)
- Contributes 40% of dry season flow in the river
- Supports good flow in the productive tributaries of Bean and Zayante creeks
- Has been significantly impacted by over-pumping and lost groundwater recharge from urbanization (500-1000 acre-feet per year)
- Has great potential for improved management under the sustainable groundwater management act
- Good potential for more reliable water supply and increased stream baseflows.

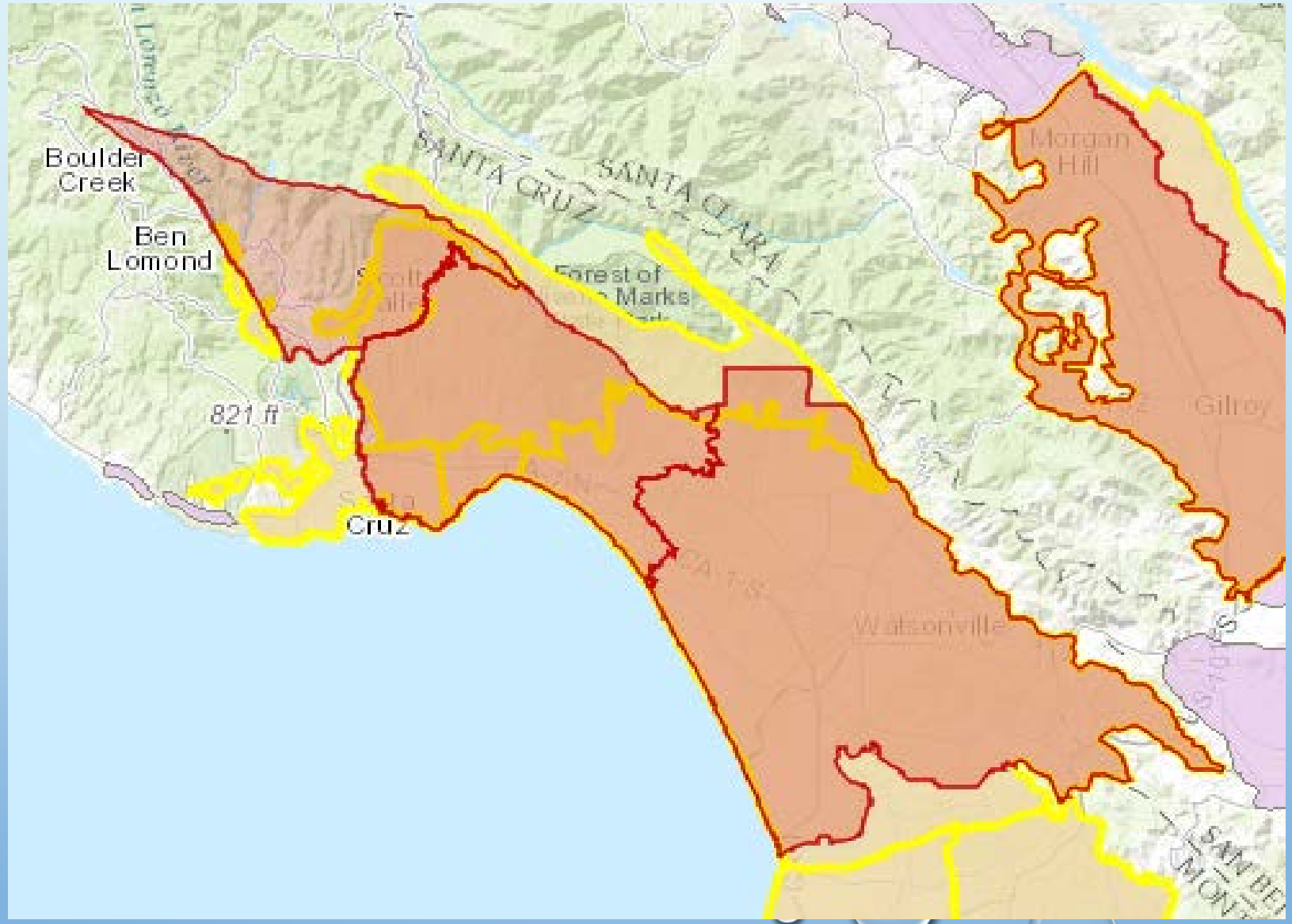
STATE OF THE BASIN

- Basin boundaries
- Geology and Hydrology
- Undesirable effects; Sustainability Indicators
  - Historic decline in groundwater levels by 250 feet
  - Loss of groundwater storage of 20,000-30,000 acre-feet
  - Decline in stream flow of 10-20%
  - Susceptible to water quality impacts
  - (Subsidence and Seawater intrusion are not issues here)
- Basin water use
- Management Efforts
- Information is based on estimates and from groundwater model
- Information will be further defined during plan development

PRIORITY GROUNDWATER BASINS IN SANTA CRUZ COUNTY

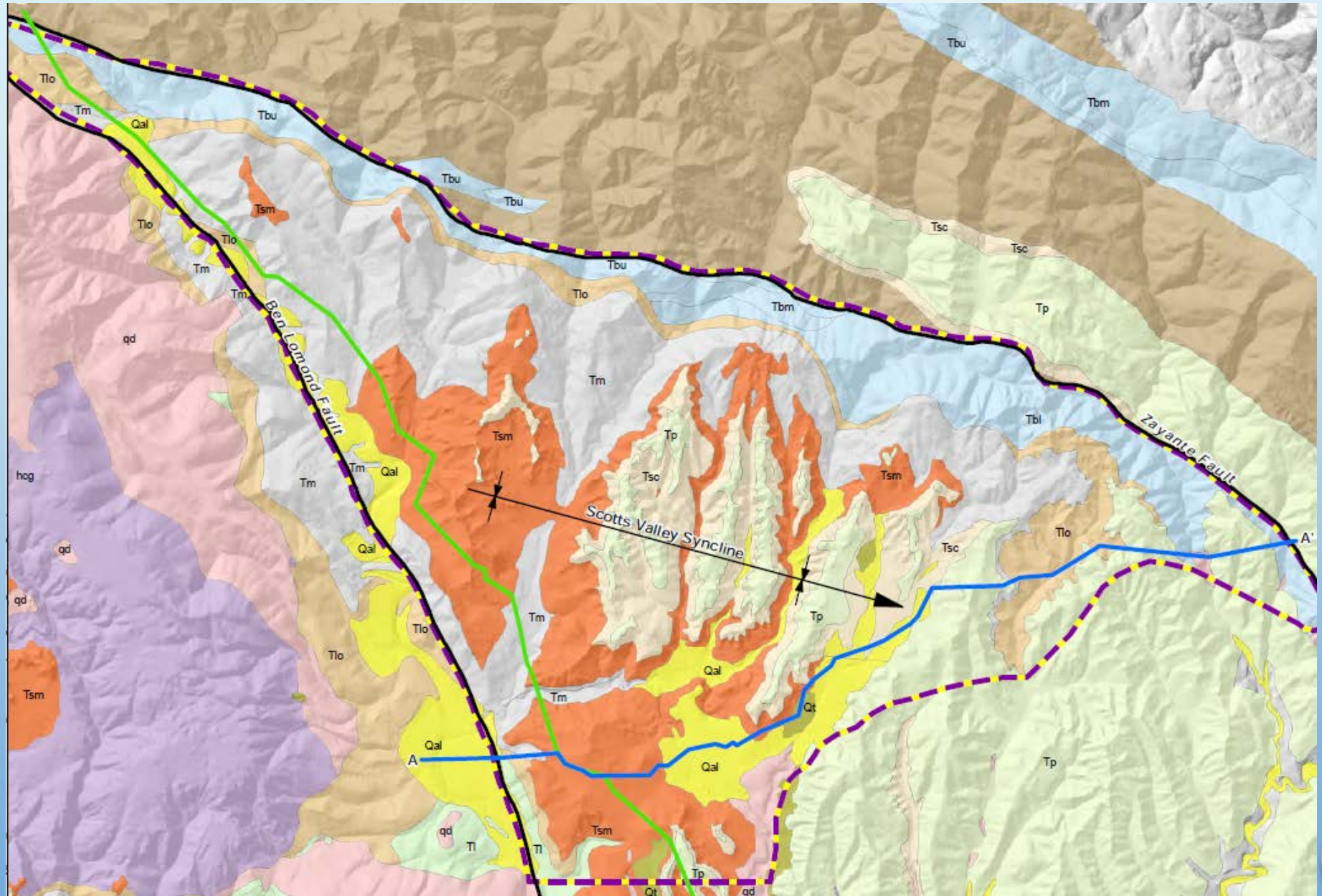


SANTA CRUZ BASIN BOUNDARY MODIFICATION

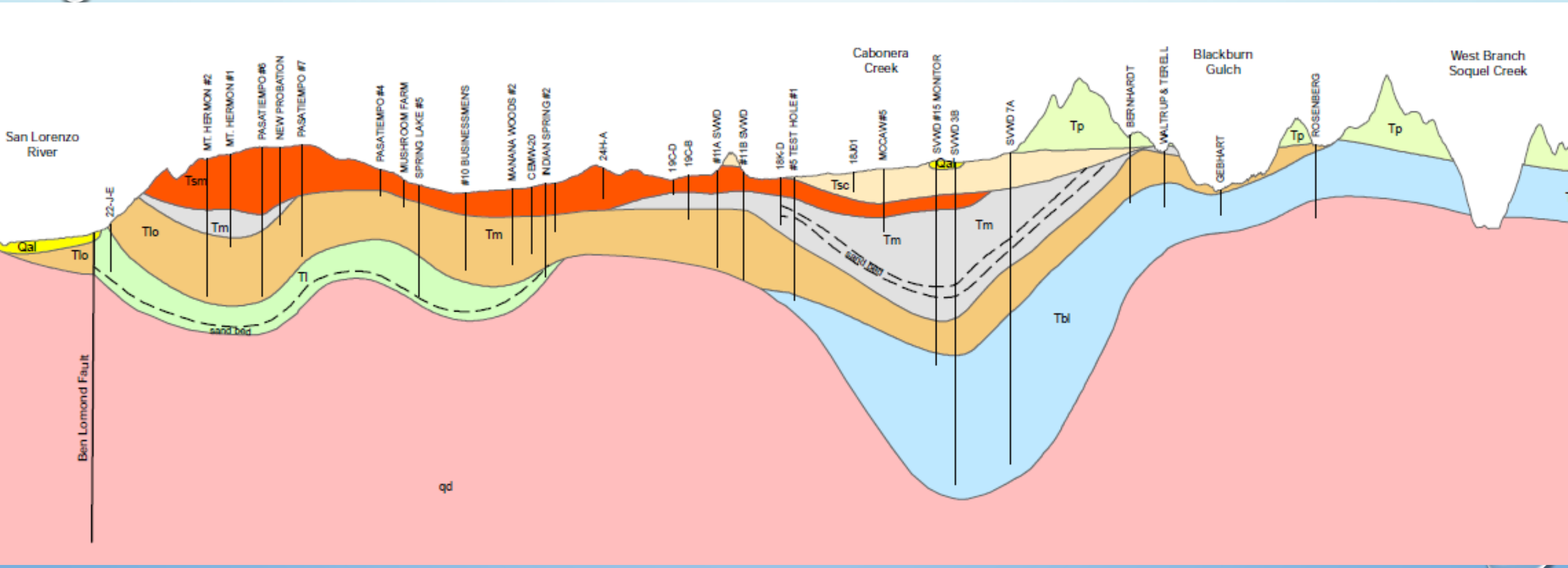



Santa Margarita Ground Water Basin
Boulder Creek
Brookdale
Ben Lomond
Scotts Valley
Mount Hermon
Bonny Doon
Felton
Highway 9
Highway 17
Highway 1
Santa Cruz

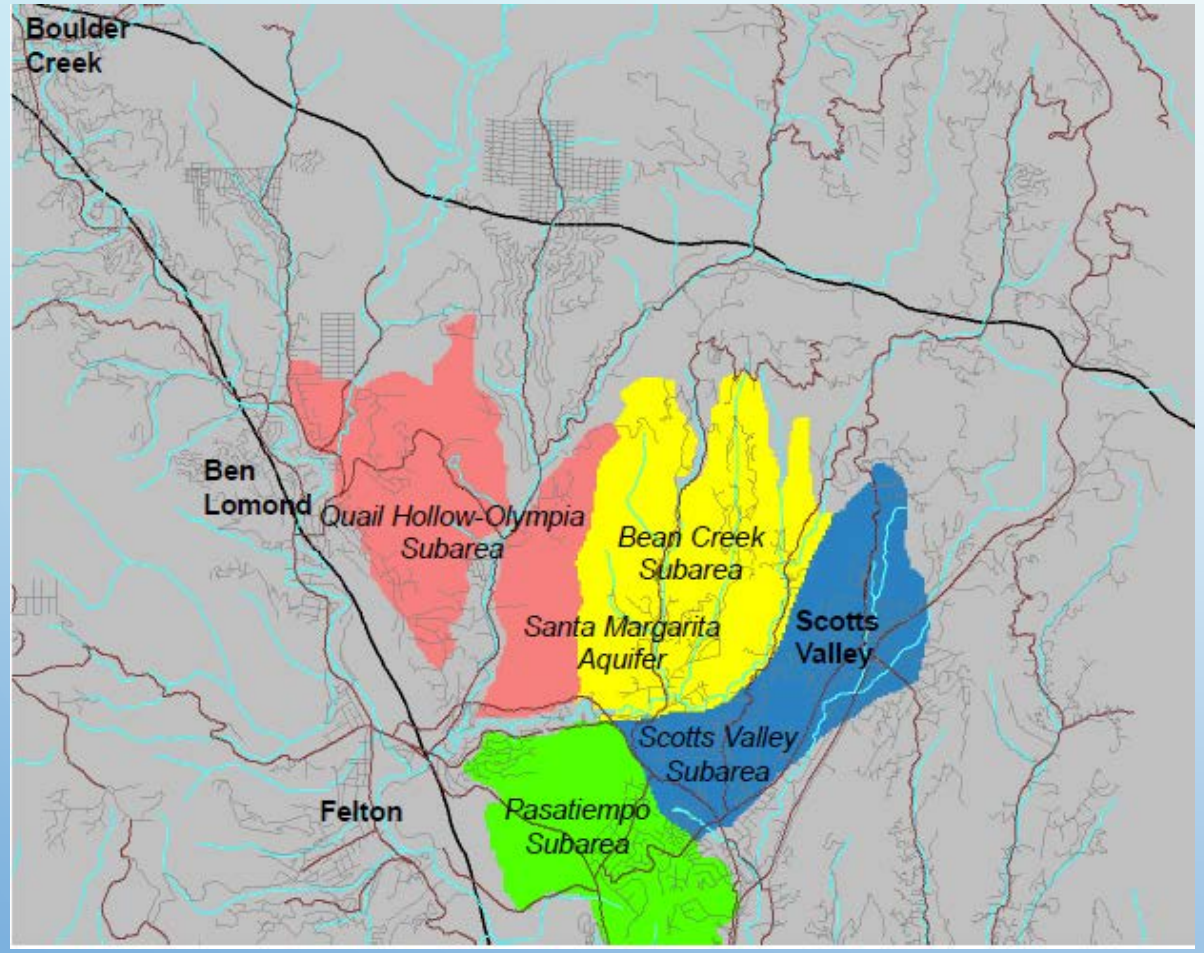
GEOLOGY

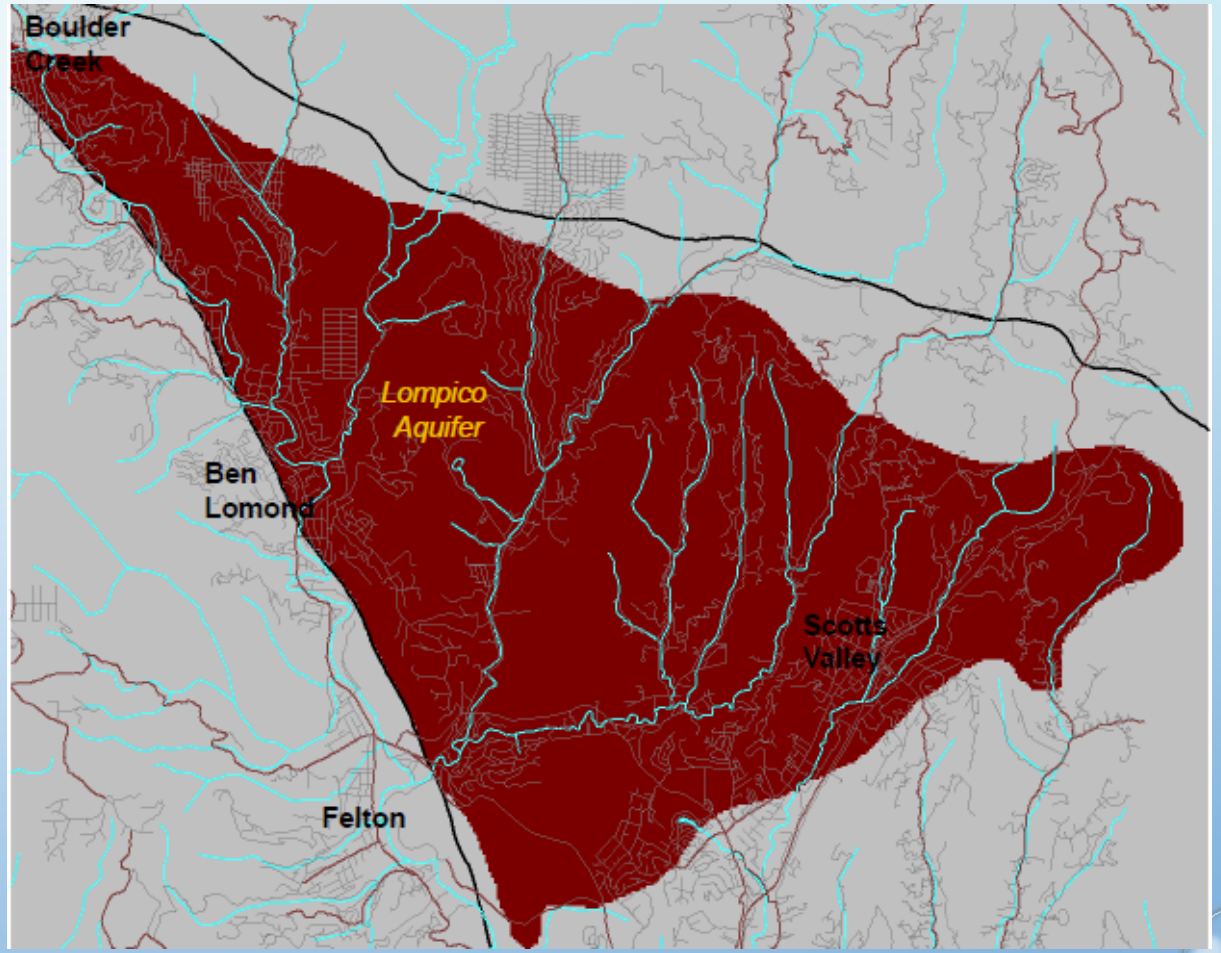

Tlo
Tm
Qal
Tbu
Tsm
qd
Ben Lomond Fault
hcg
Scotts Valley Syncline
Zayante Fault
Tbm
Tsc
Tp
Tbl
A
A'
Qt
Tl

GEOLOGY
WEST TO EAST

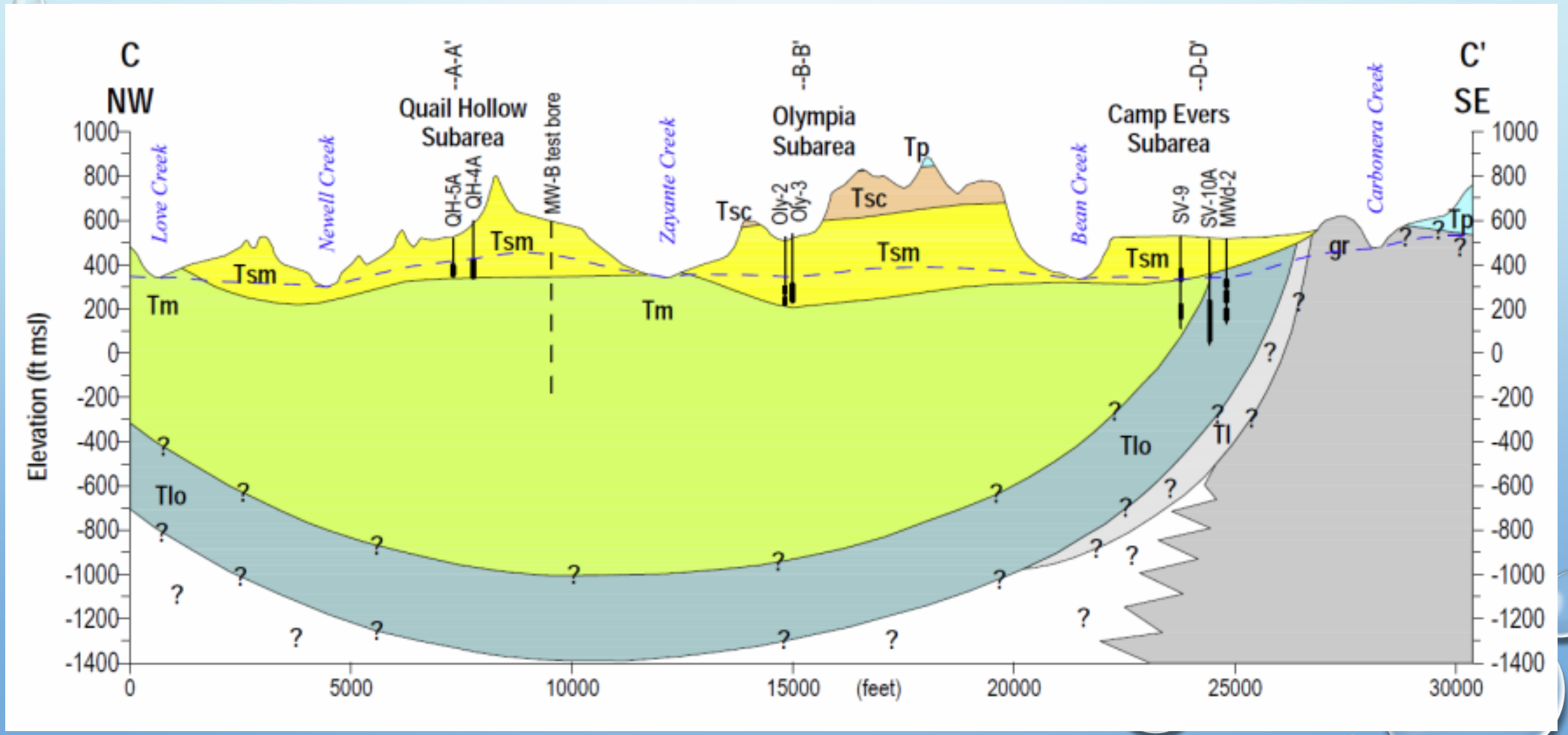


STACKED AQUIFERS
SANTA MARGARITA, LOMPICO

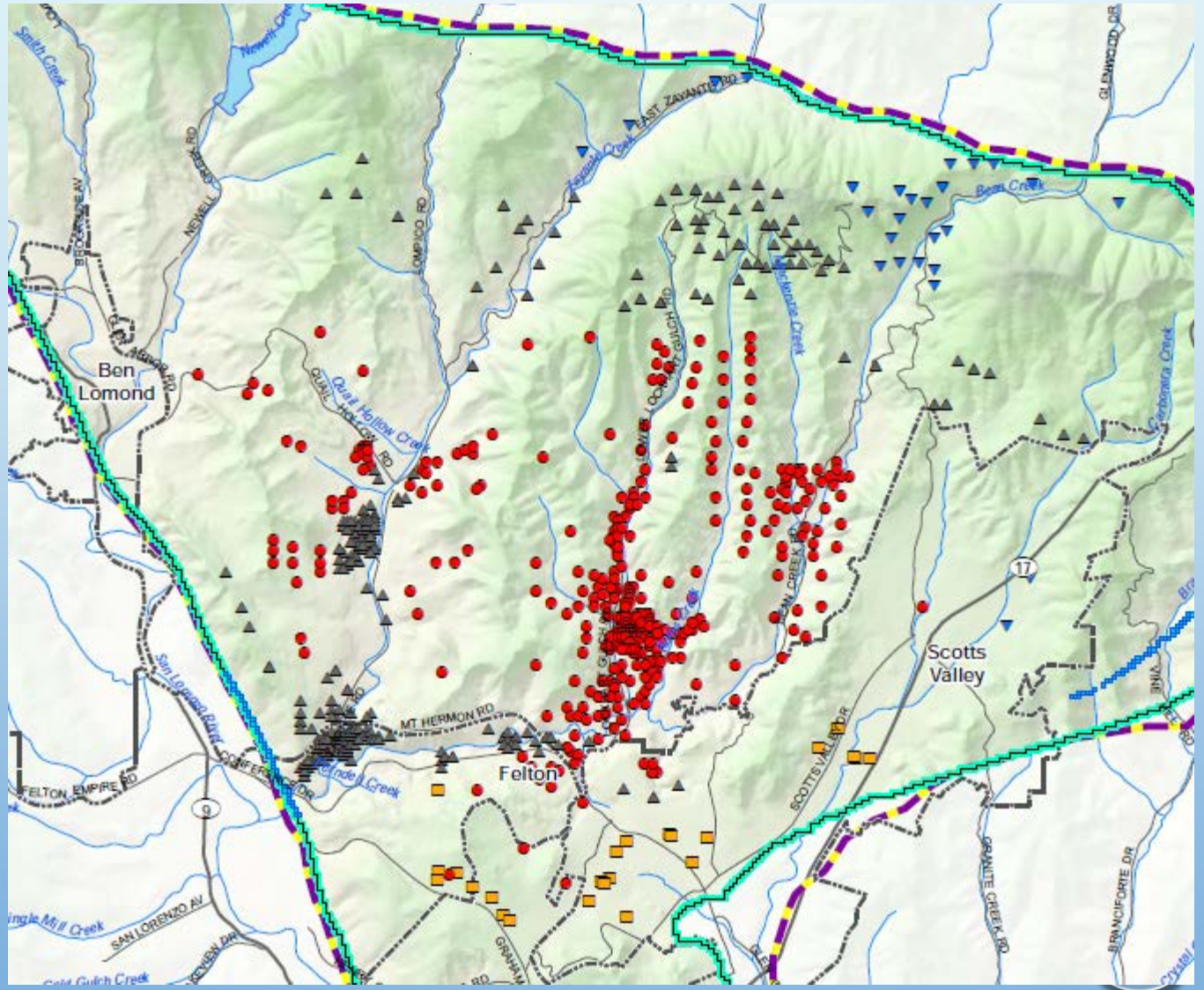




GEOLOGY
NORTHWEST TO SOUTHEAST



WELLS IN DIFFERENT AQUIFERS: SANTA MARGARITA, MONTEREY, LOMPICO, BUTANO



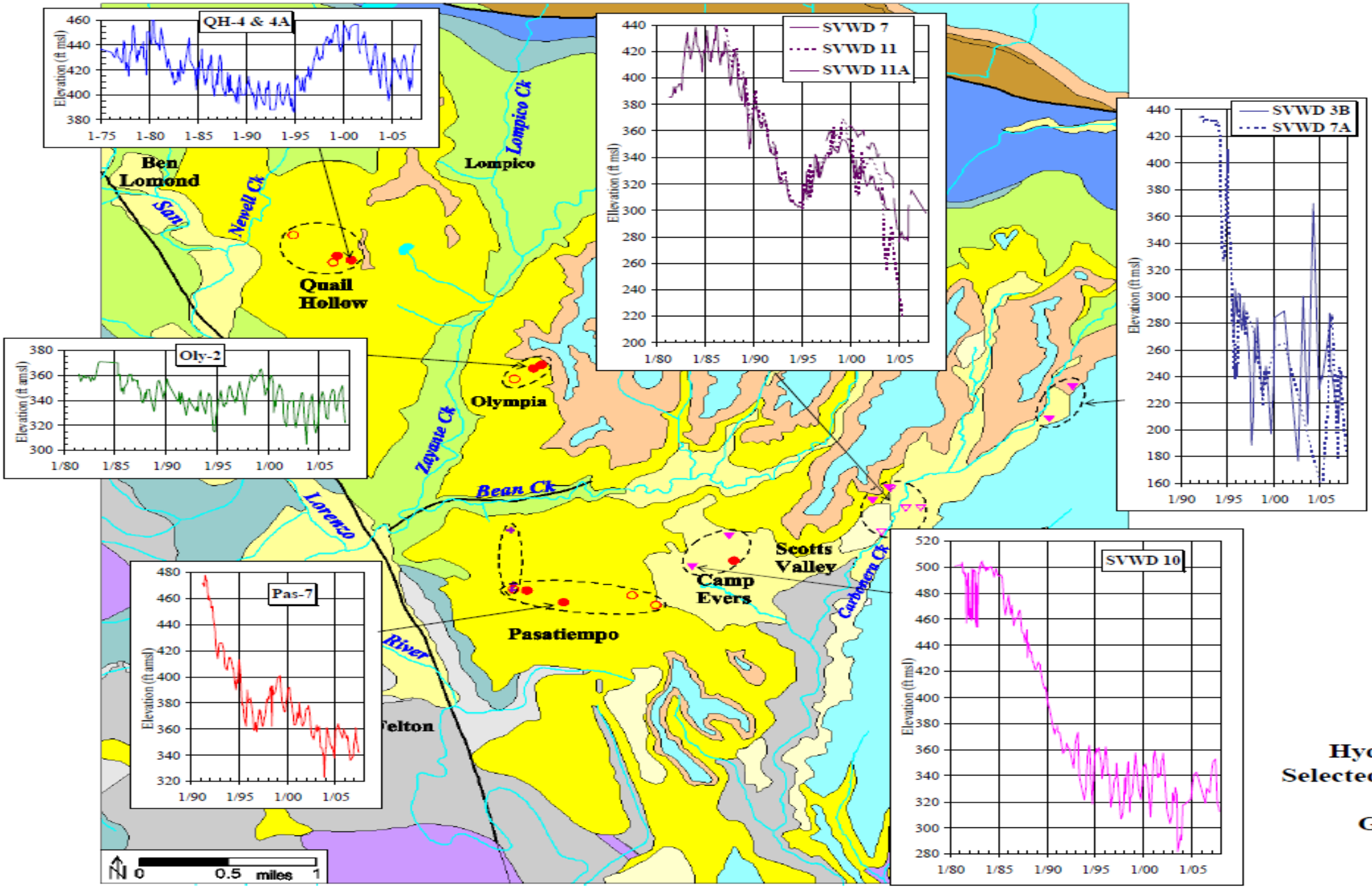
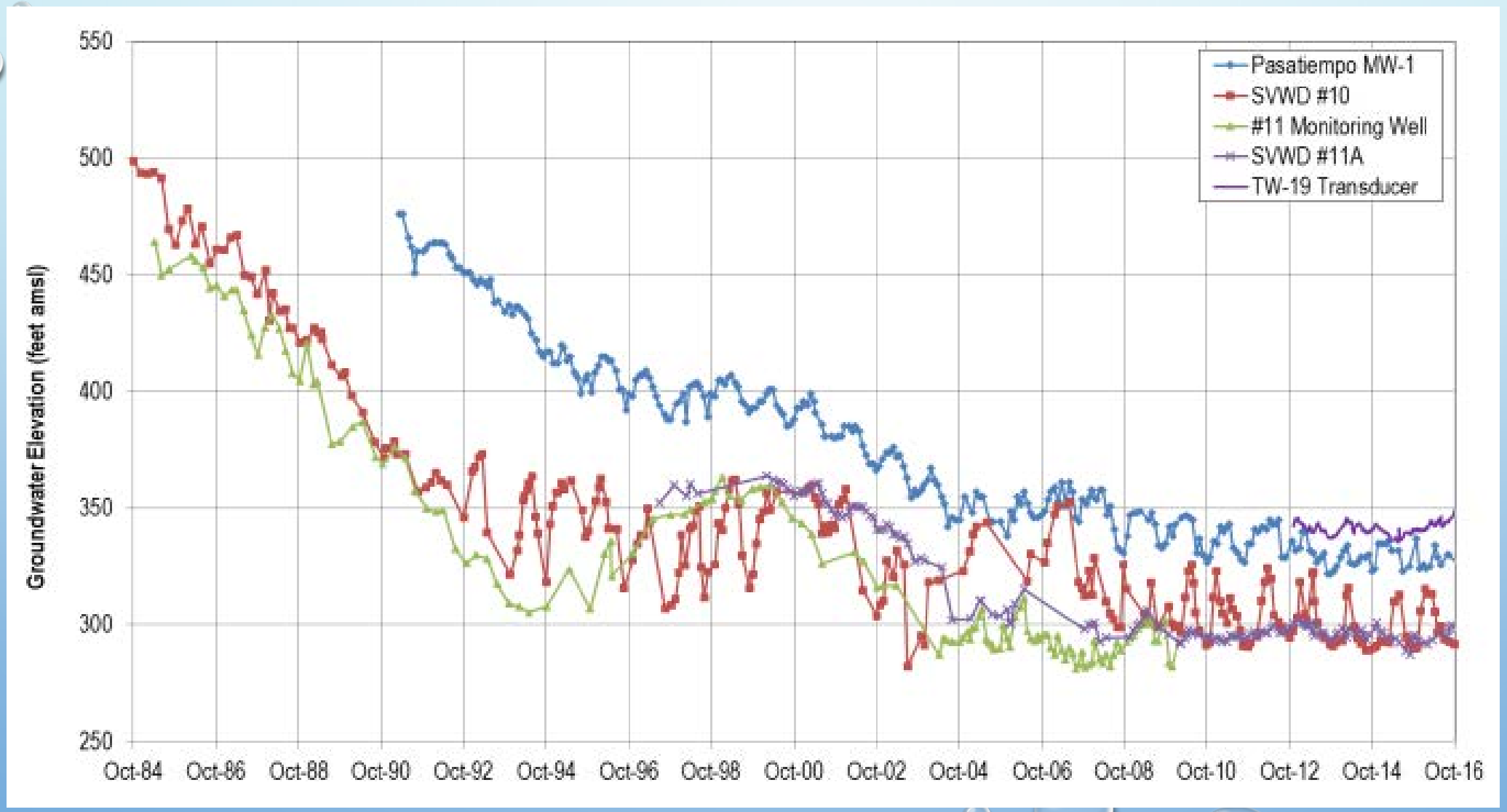
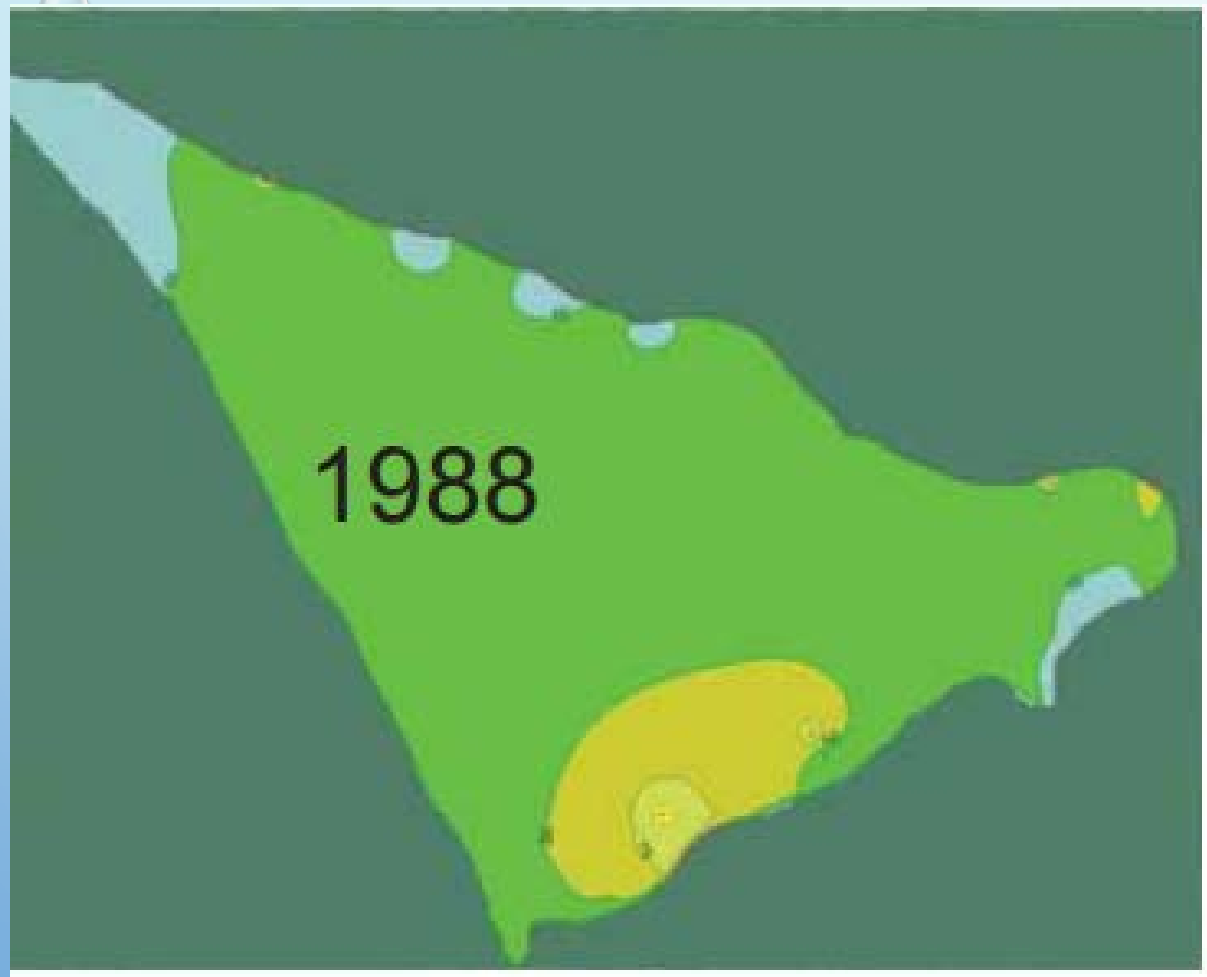


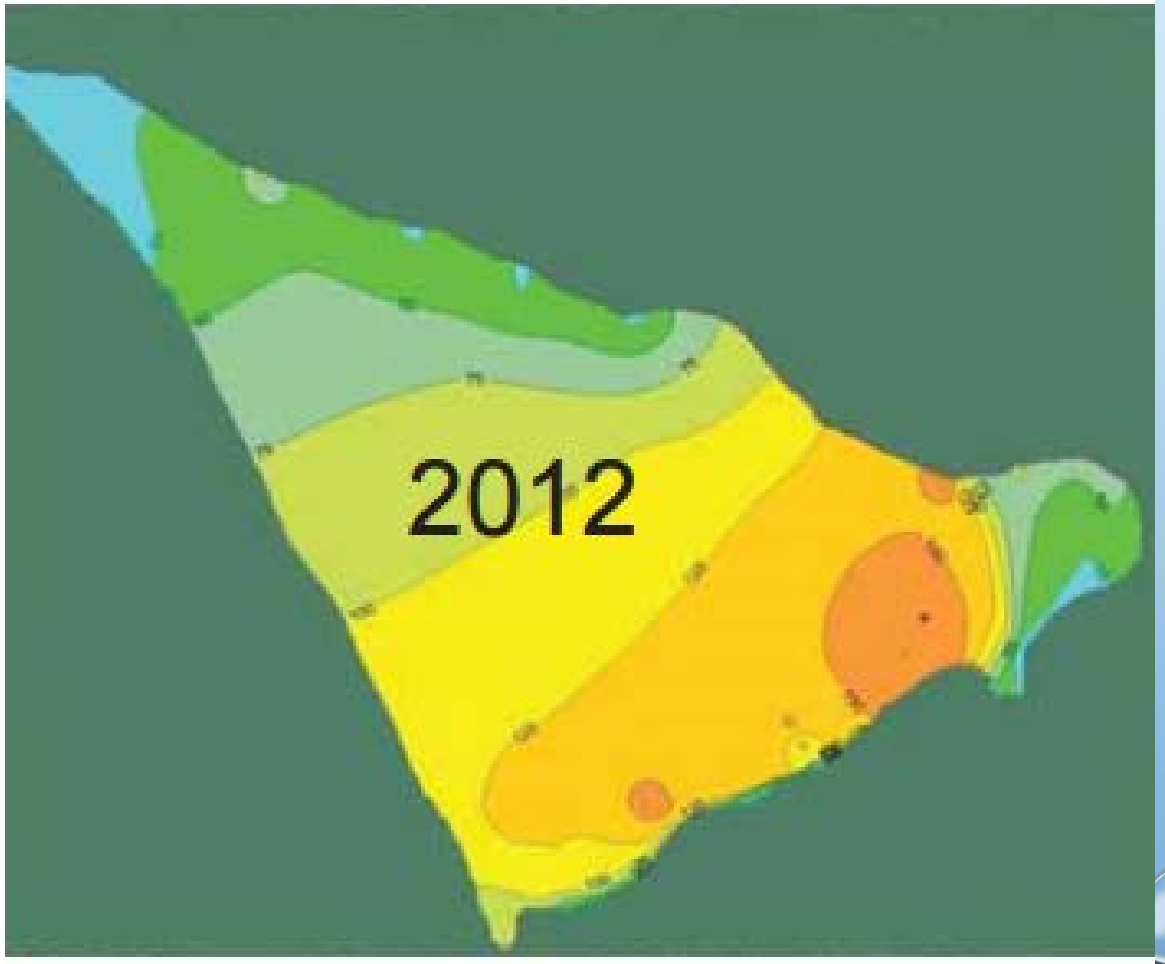
Figure 5-24
Hydrographs of Selected Production Well Static Groundwater Elevations, 1980–2006

DEPRESSED GROUNDWATER LEVELS IN SCOTTS VALLEY



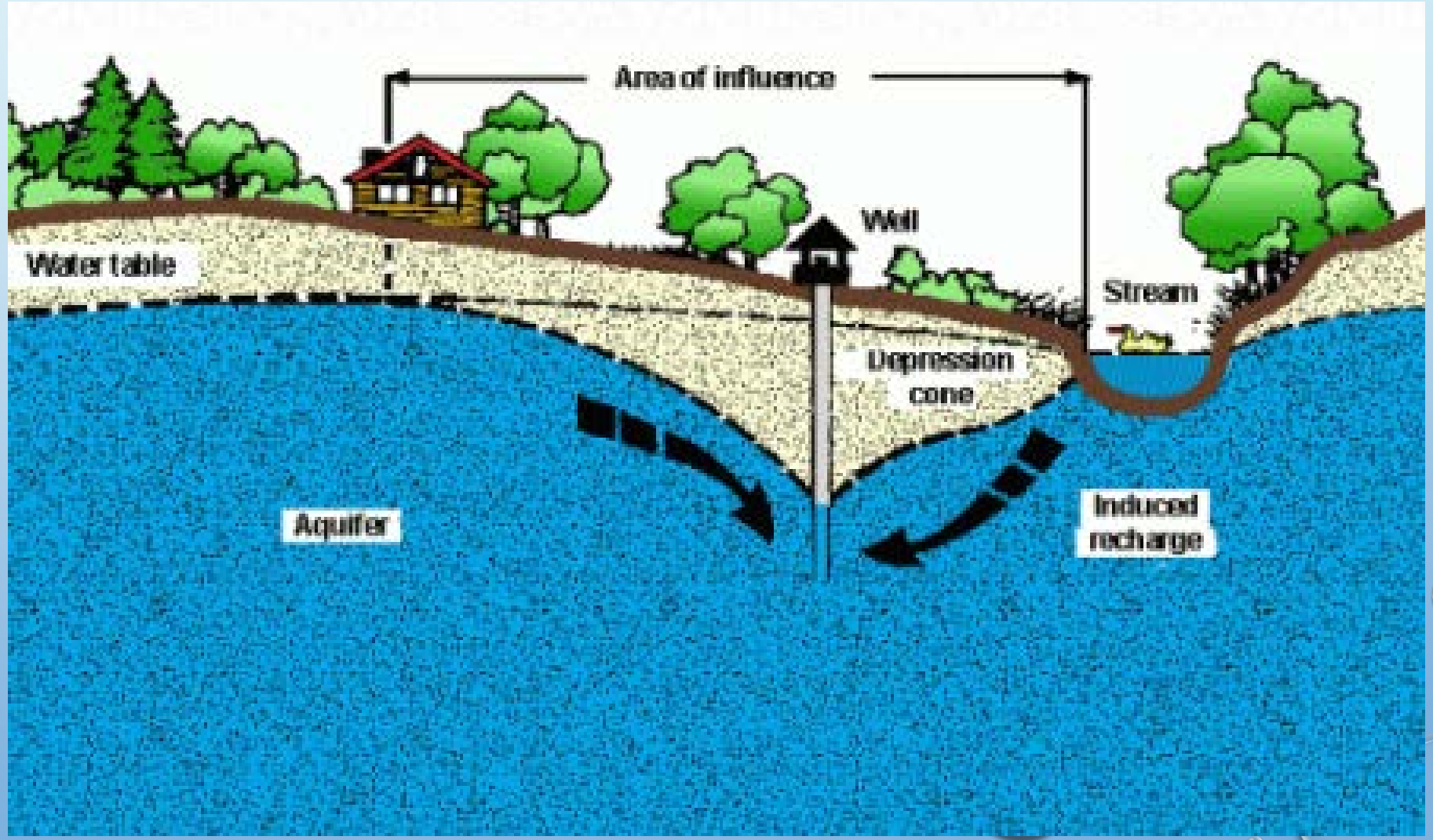
BASIN OVERDRAFT, LOMPICO



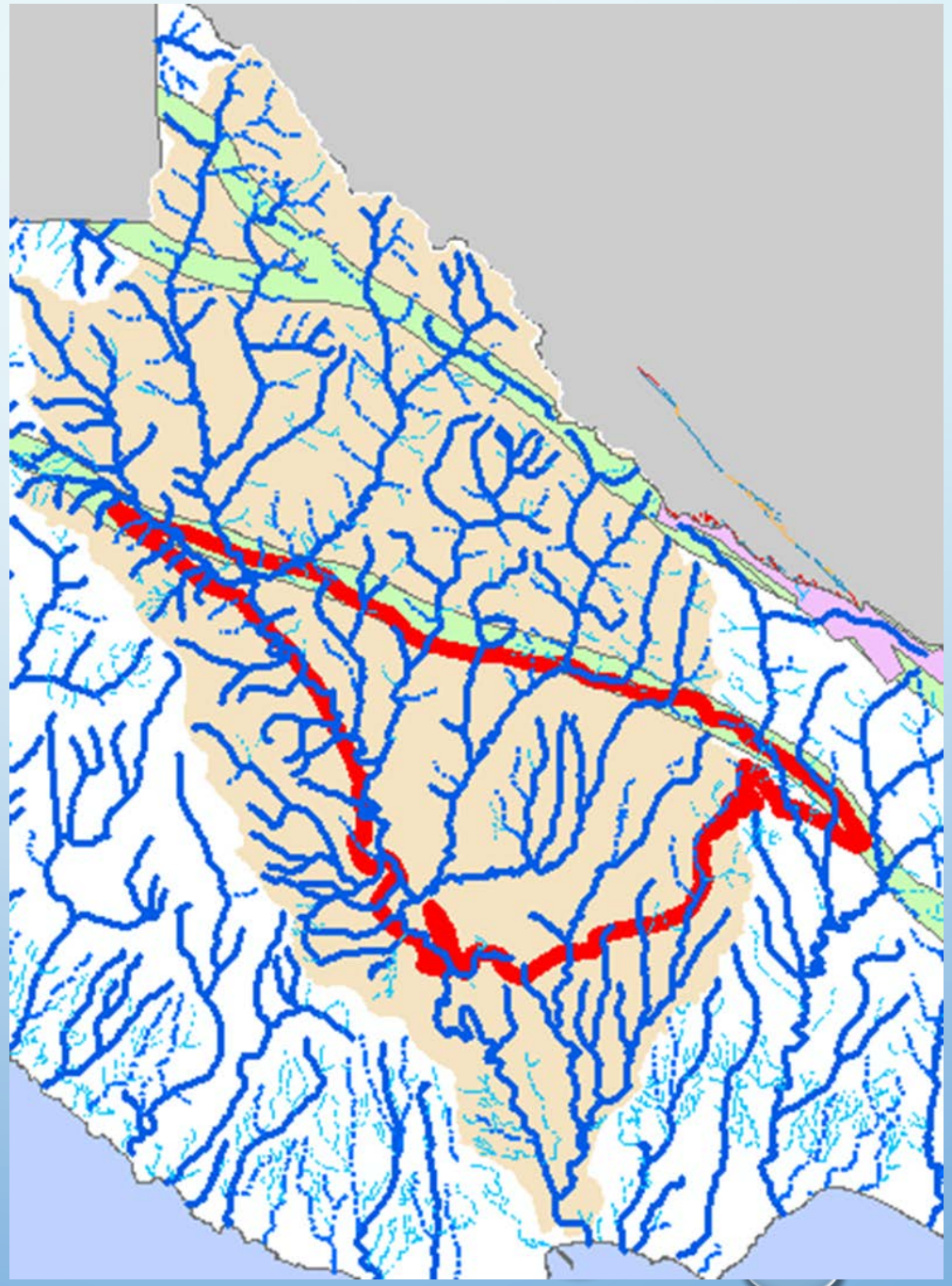


CONTRIBUTION TO STREAMFLOW

Groundwater is Connected to Surface Water



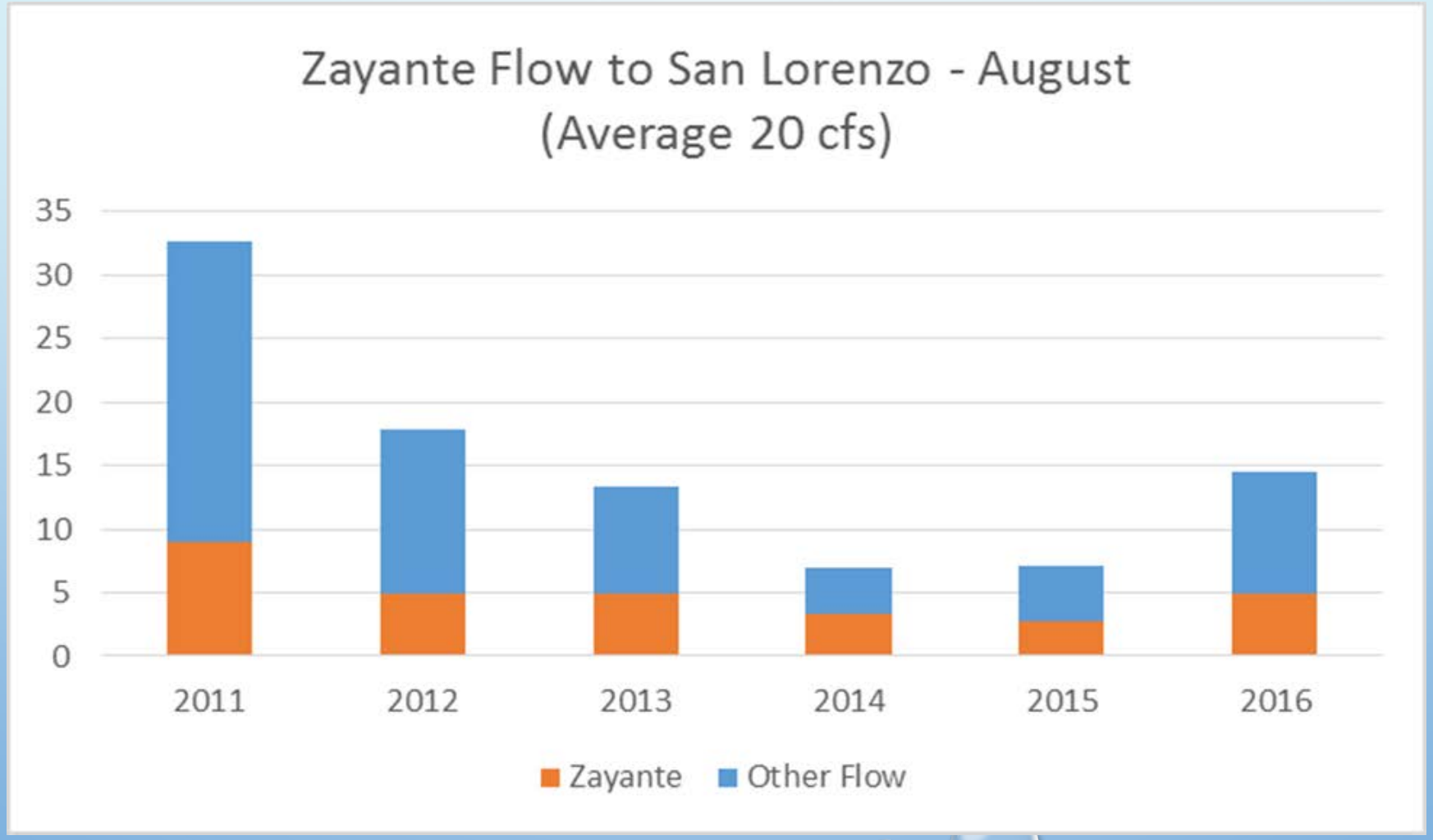
The Santa Margarita Groundwater Basin supplies 40% of the Baseflow of the San Lorenzo River



SANTA MARGARITA BASIN CONTRIBUTION TO STREAMFLOW

- Love Creek, Newell Creek
- Lompico Creek, Zayante Creek, Bean Creek
- Carbonera Creek, Branciforte Creek
- San Lorenzo River – 40-50% of Dry Season Flow
- Groundwater Declines of up to 250 ft. have reduced flow by 0.2-0.5 cfs. 10-20% in Lower Bean Creek
- There has been a cumulative estimated loss of storage of 28,000 af. (9 years of pumping)
- Basin has stabilized at lower than historical levels
- Future threat of climate change: 30% reduced recharge, increased demands

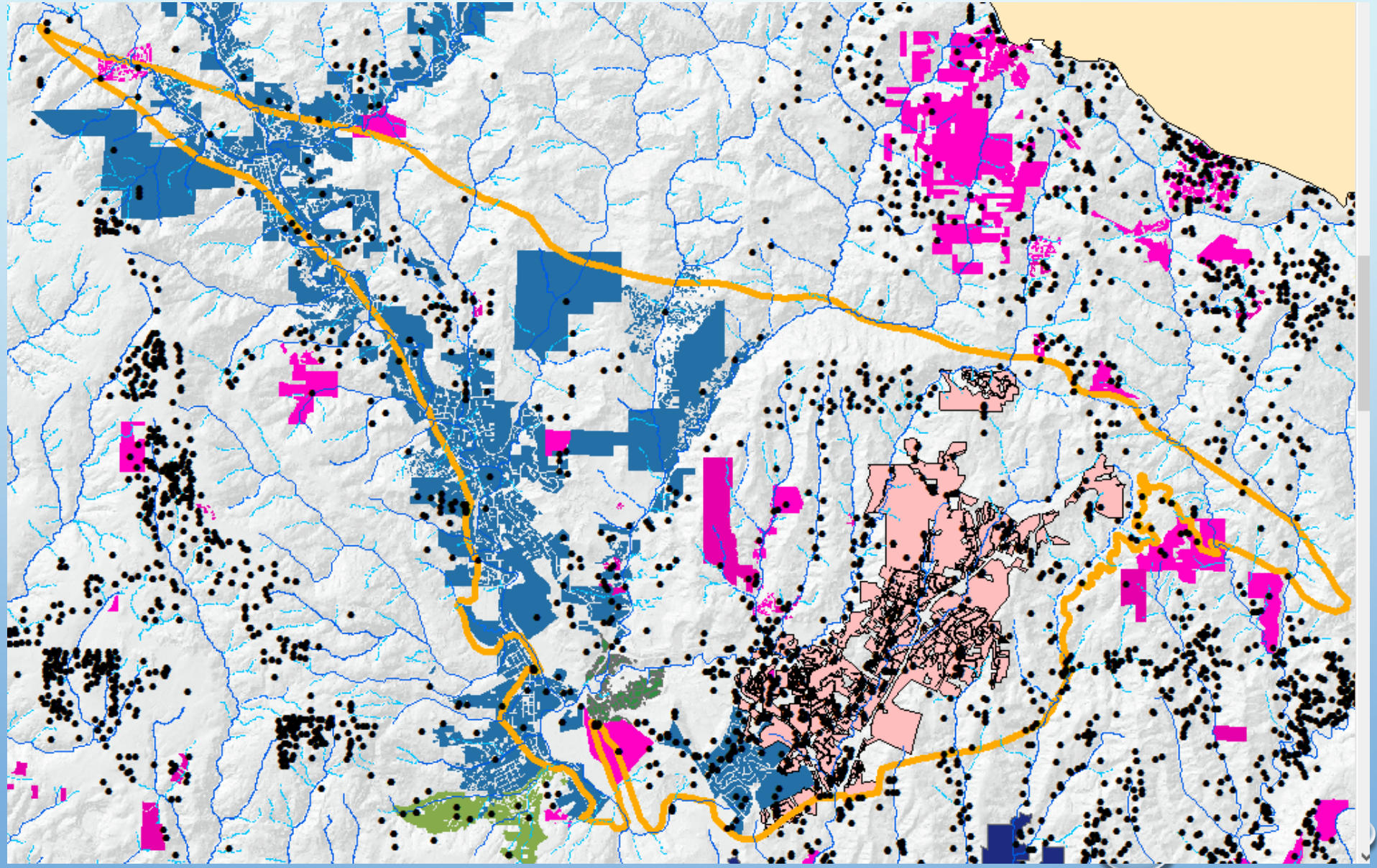
EFFECT OF DROUGHT



WATER QUALITY ISSUES

- Sandy soils very susceptible to surface and subsurface contamination
- Historic contamination from dry cleaners gas stations, industrial sites
  - Much has been cleaned up
  - Can limit management options
- Nitrate from septic systems and sewage discharge
  - Addressed by septic system management and sewer outfall
  - Nitrogen management required by State
  - Treatment of recycled water for nitrogen reduction
- Water quality protection is an ongoing concern

WATER USERS

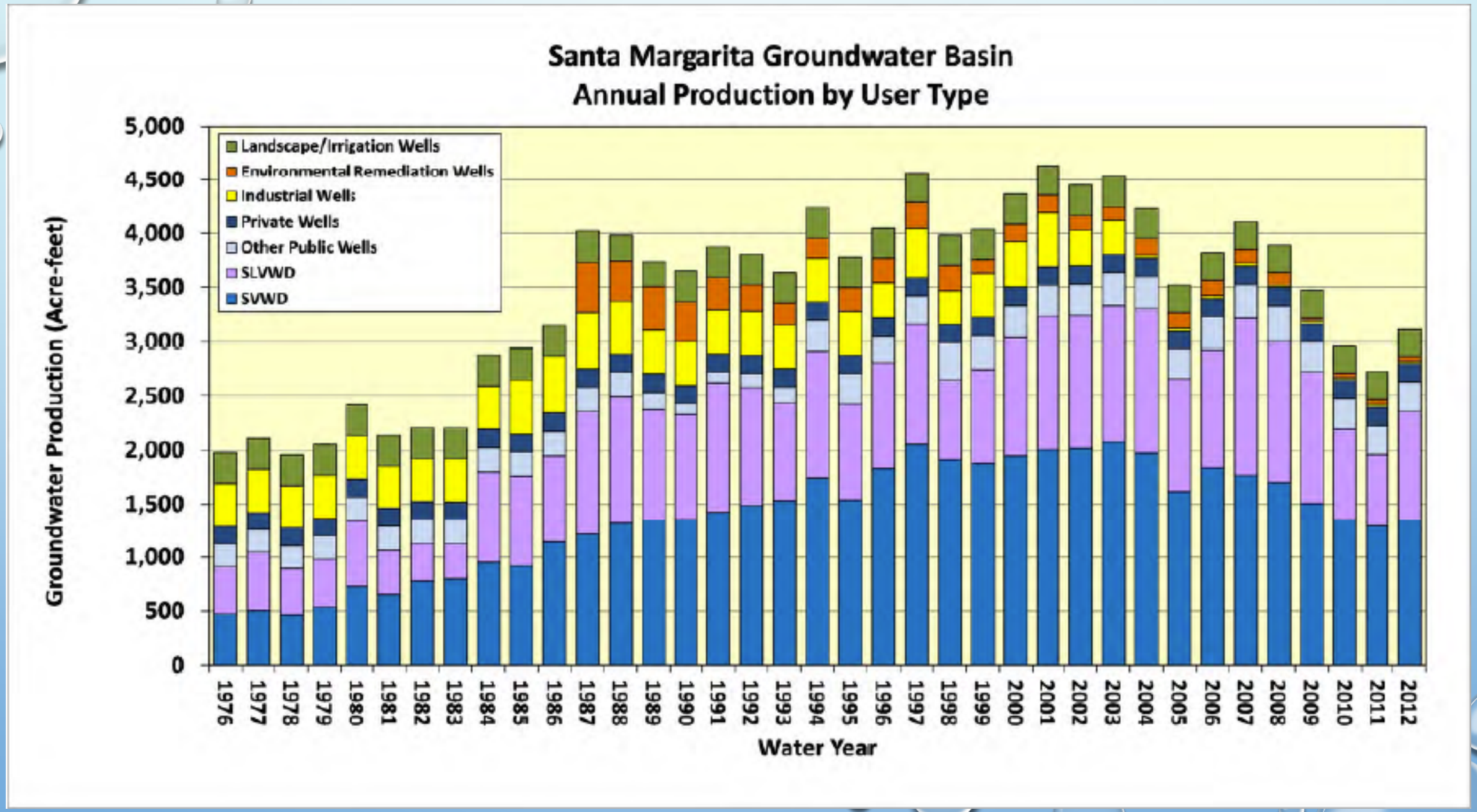


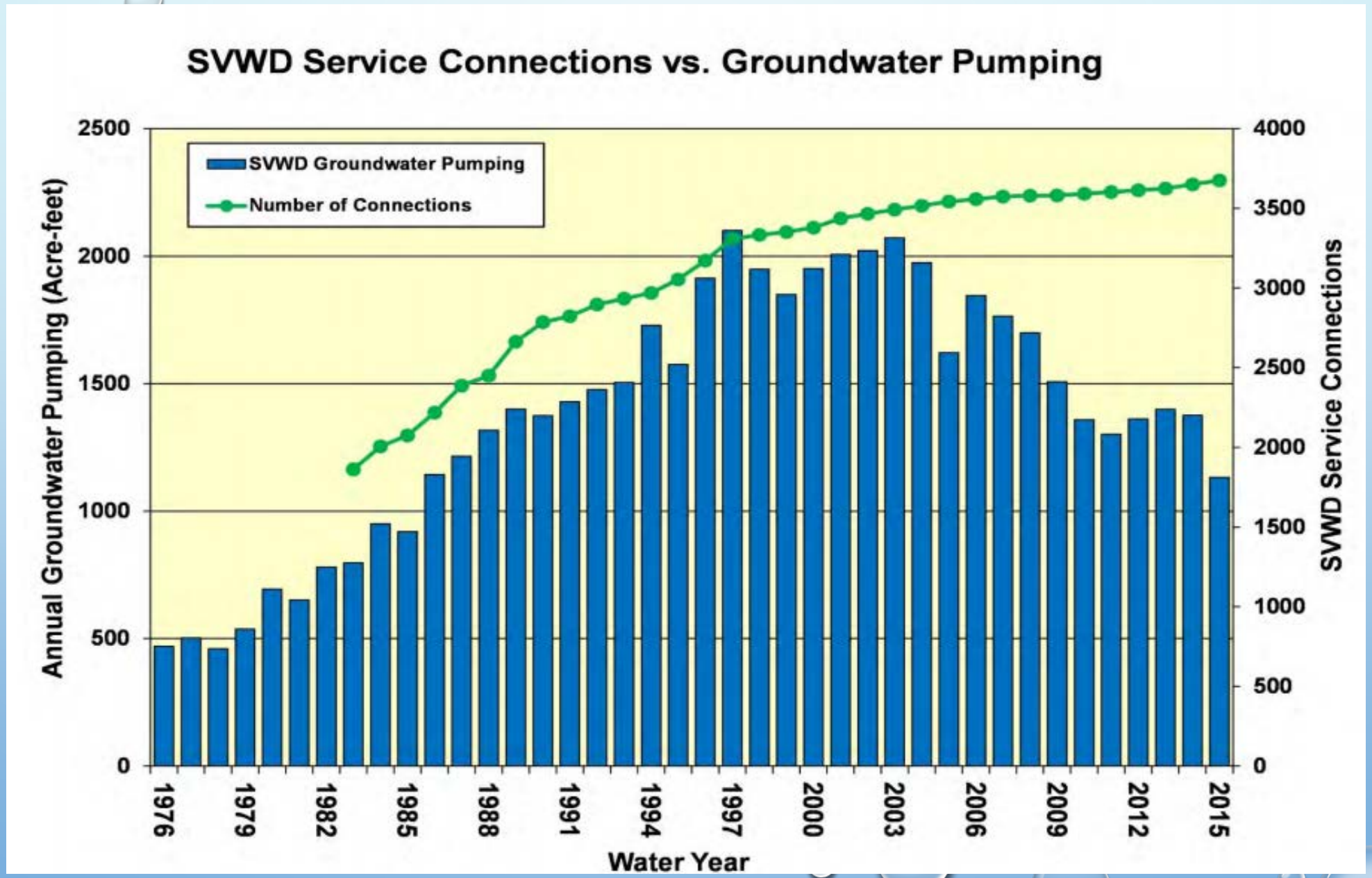
WATER USE

	Connections using Groundwater	2016 Use Acre-feet	
Scotts Valley Water District	3,728	1,098	45%
San Lorenzo Valley Water District	3,248	713	29%
Mount Hermon Association	499	142	6%
Small Water Systems (13)	410	84	3%
Commercial, Industrial, Institutional, and Ag. Users	30	160	7%
Individual Well Users	1,100	220	9%
Total Pumpage*		2,417	
Base Streamflow: Fish and the City of Santa Cruz		~6,000	
City of Santa Cruz	2,800	~2,500	
* Estimated 850 af/y return flow			

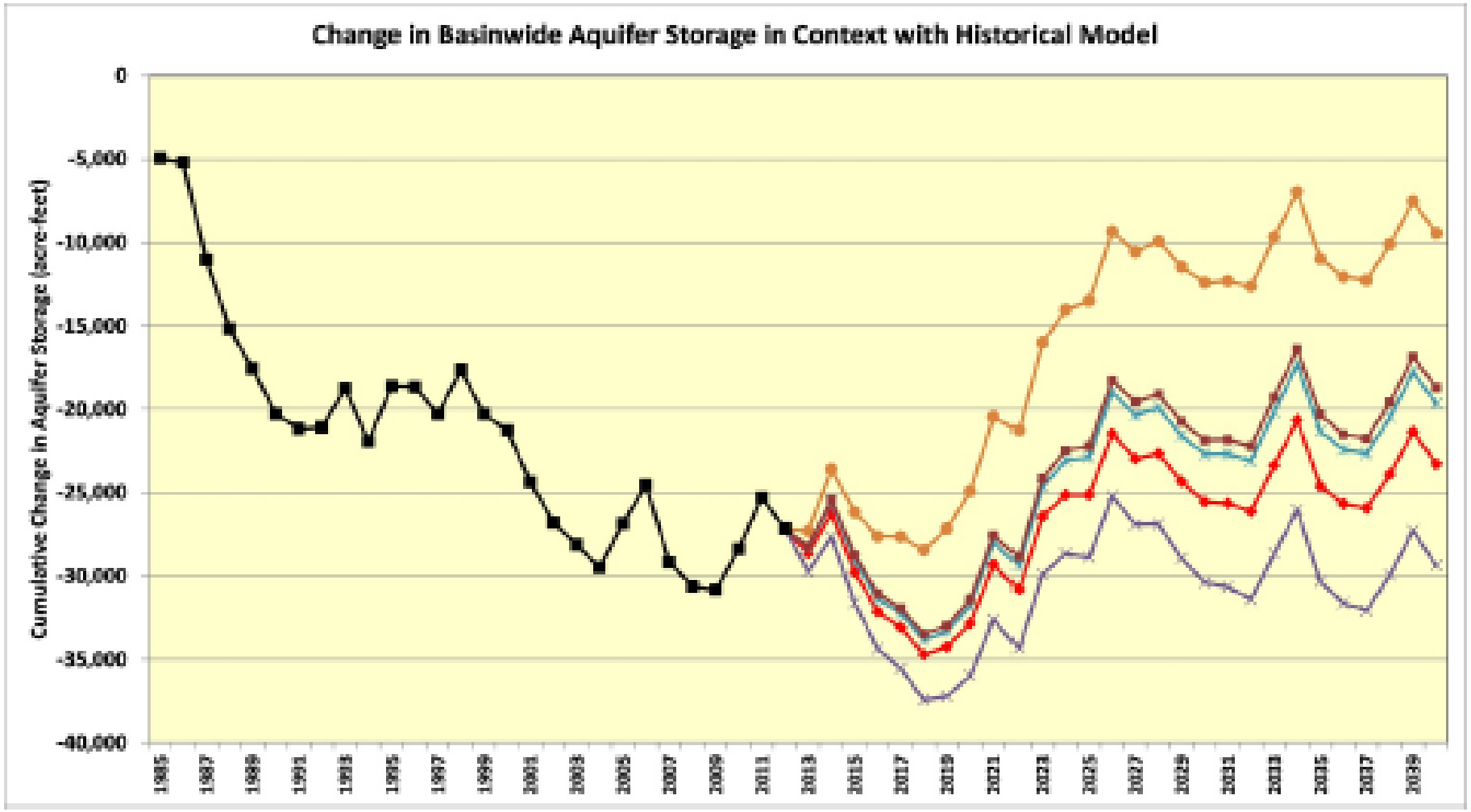
MANAGEMENT EFFORTS

- SMGWA begins process of developing Groundwater Sustainability Plan
- Will build on previous AB 3030 Management Plan, adopted 1994
- Related Efforts
  - Water Conservation
  - Groundwater Recharge
  - Assessment of streamflow contributions and impacts of surface diversions
  - SLVWD/County Conjunctive Use and Streamflow Enhancement Study
  - Use of Interties for Conjunctive Use
  - City of Santa Cruz Aquifer Storage Feasibility Study
  - Memorandum of Agreement with City of Santa Cruz. Scotts Valley Water District, San Lorenzo Valley Water District, County

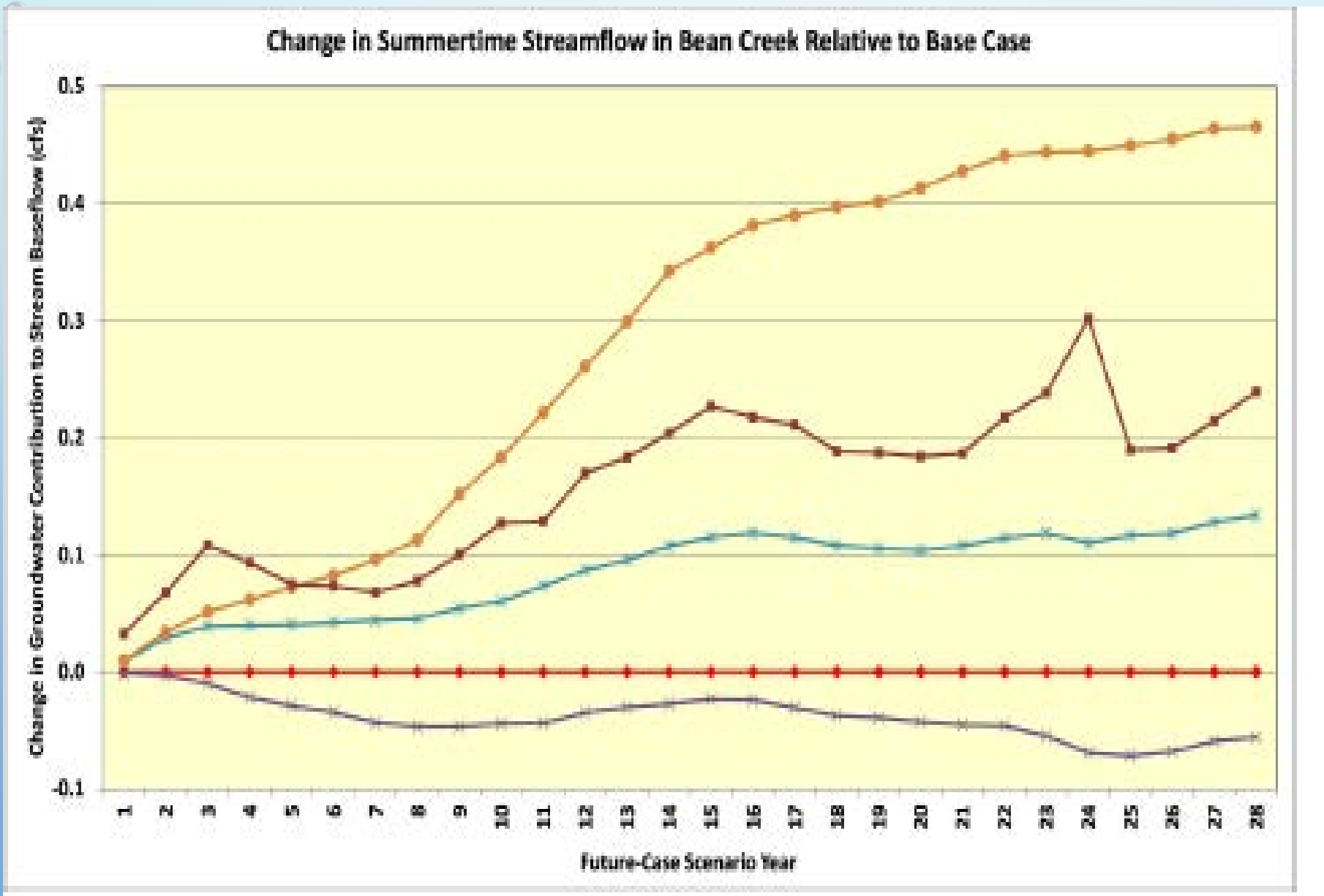

Santa Margarita Groundwater Basin
Annual Production by User Type
Groundwater Production (Acre-feet)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Landscape/Irrigation Wells
Environmental Remediation Wells
Industrial Wells
Private Wells
Other Public Wells
SLVWD
SVWD
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Water Year


SVWD Service Connections vs. Groundwater Pumping
SVWD Groundwater Pumping
Number of Connections
Annual Groundwater Pumping (Acre-feet)
SVWD Service Connections
Water Year
0
500
1000
1500
2000
2500
3000
3500
4000
1976
1979
1982
1985
1988
1991
1994
1997
2000
2003
2006
2009
2012
2015

POTENTIAL CHANGE IN AQUIFER STORAGE IN SCOTTS VALLEY- 1000 AF/YR INJECTION



POTENTIAL BENEFITS TO STREAMFLOW



QUESTIONS AND DISCUSSION

For more information:

SMGWA.ORG

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