



# South County Water Resources

## A Current View

Ed Eby  
November 2015



## SOUTH CENTRAL COAST WATER SUPPLIES

**San Luis Obispo** ..... ① groundwater; ② Nacimiento Lake; ③ Santa Margarita Lake; ④ Whale Rock Reservoir; and ⑤ recycled water

**Avila Beach** ..... ① Lopez Lake and ② State Water Pipeline.

**Pismo Beach** ..... ① groundwater; ② Lopez Lake; and ③ State Water Pipeline.

**Grover Beach** ..... ① groundwater and ② Lopez Lake.

**Arroyo Grande** ..... ① groundwater and ② Lopez Lake.

**Oceano** ..... ① groundwater; ② Lopez Lake; and ③ State Water Pipeline.

**Guadalupe** ..... ① groundwater and ② State Water Pipeline.

**Santa Maria** ..... ① groundwater; ② Twitchell Reservoir; and ③ State Water Pipeline.

**Vandenberg AFB** ..... ① groundwater and ② State Water Pipeline.

**Lompoc** ..... ① groundwater; ② recycled water; and ③ surface water from Frick Springs.

**Buellton** ..... ① groundwater and ② State Water Pipeline.

**Goleta** ..... ① groundwater and ② State Water Pipeline.

**Santa Barbara** ..... ① groundwater; ② Lake Cachuma; and ③ State Water Pipeline.

South  
County

### SOUTH COUNTY WATER SUPPLIES

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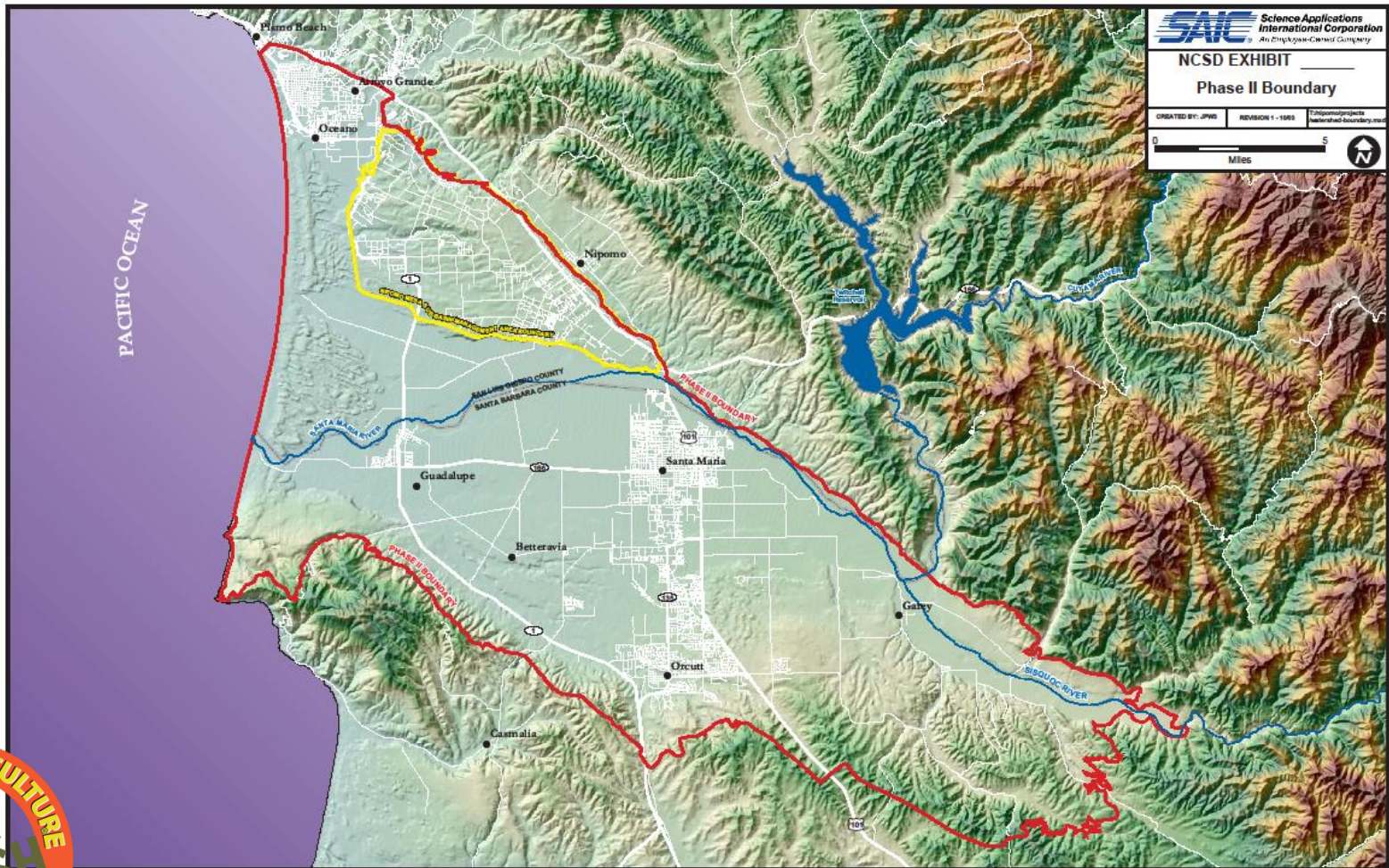
| Community     | Groundwater | Lopez Lake | State Water Pipeline |
|---------------|-------------|------------|----------------------|
| Pismo Beach   | X           | X          | X                    |
| Grover Beach  | X           | X          |                      |
| Arroyo Grande | X           | X          |                      |
| Oceano        | X           | X          | X                    |
| Nipomo*       | X           |            |                      |

\*Plus Santa Maria Pipeline starting July, 2015

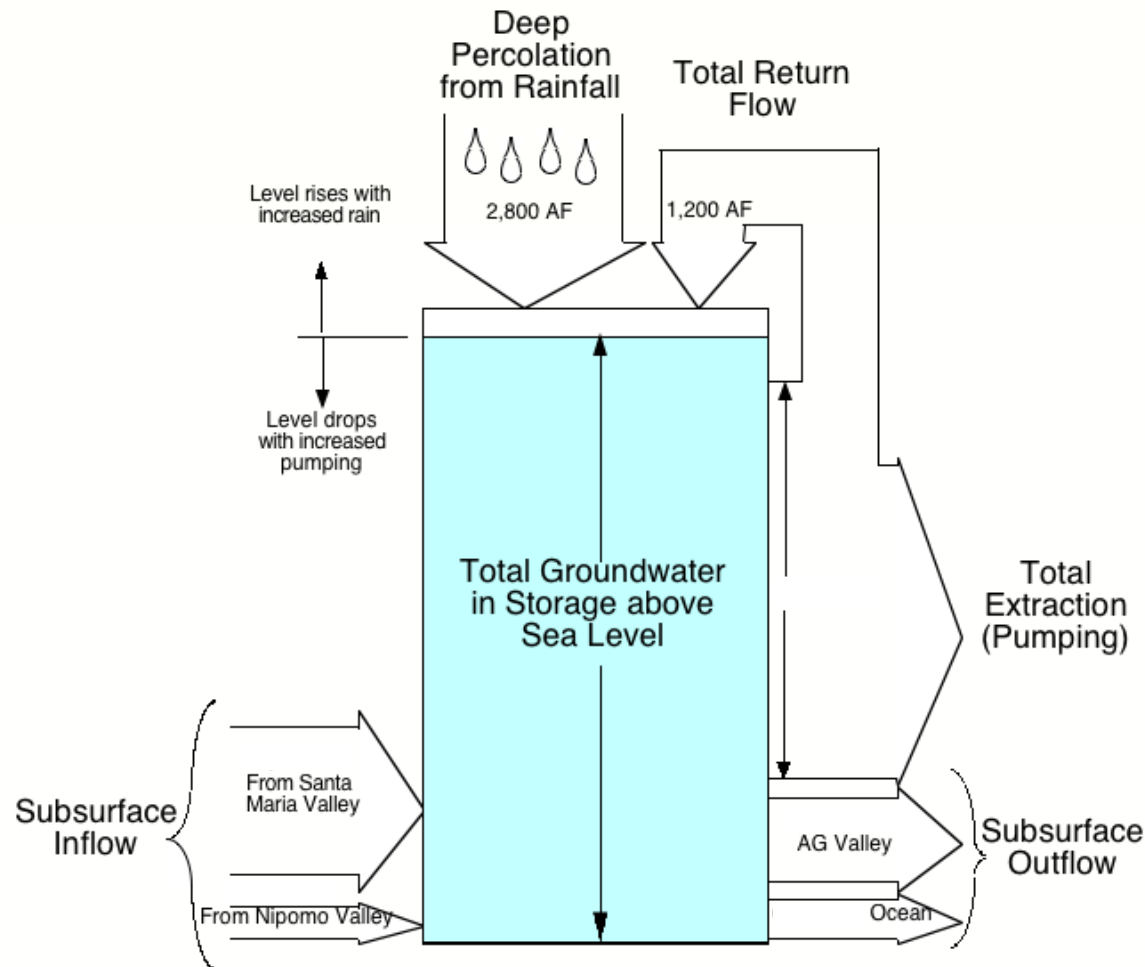




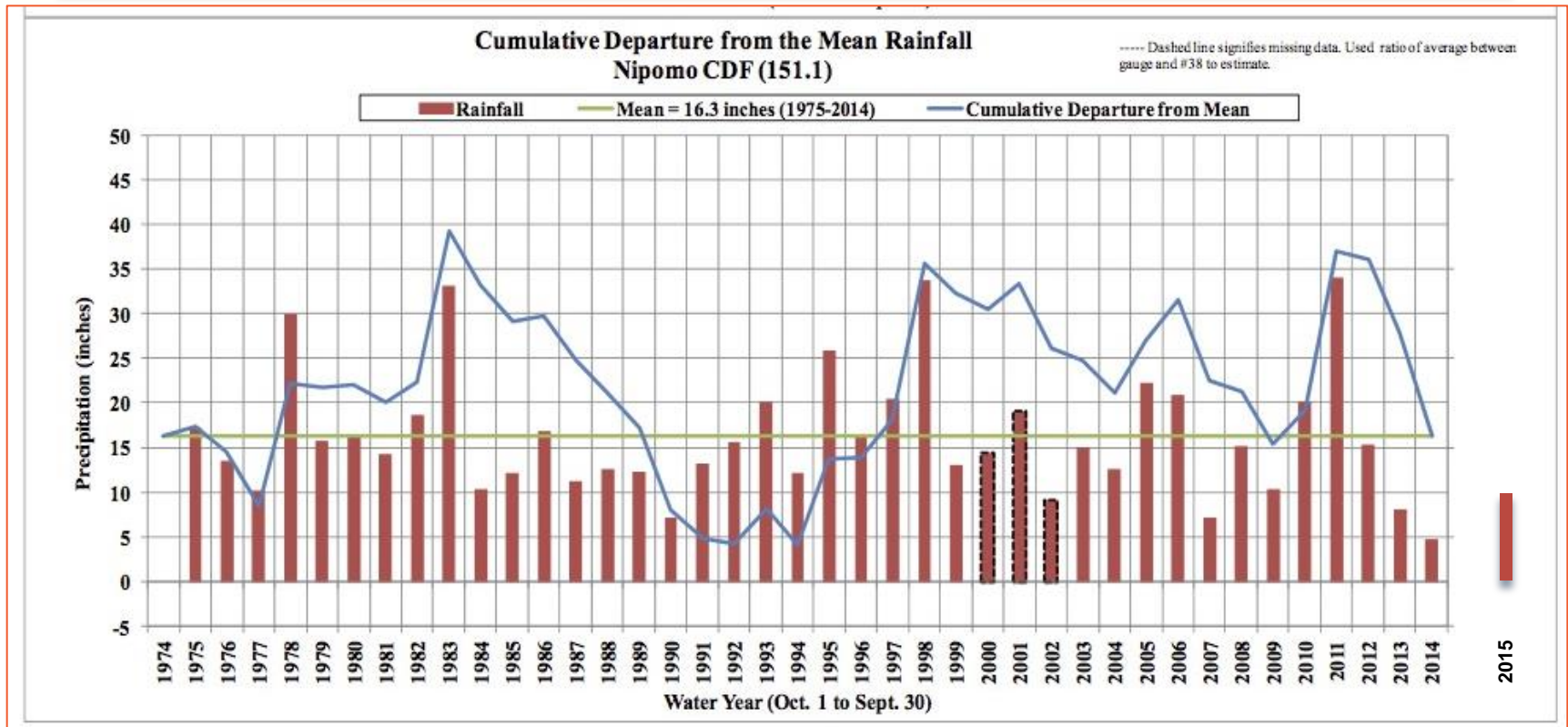
### SANTA MARIA GROUNDWATER BASIN



### NIPOMO MESA WATER “BALANCE”

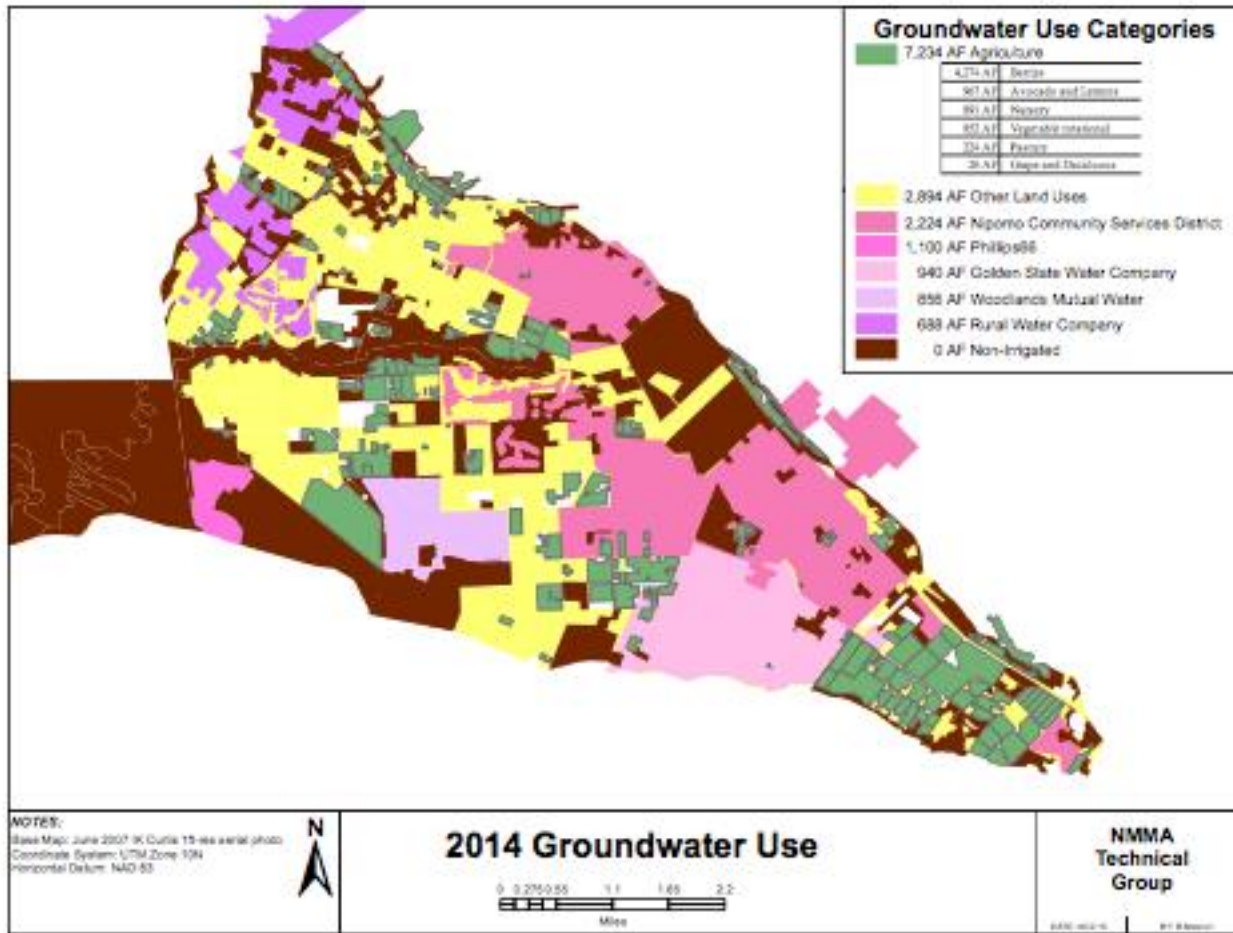


## 40 YEAR RAINFALL HISTORY



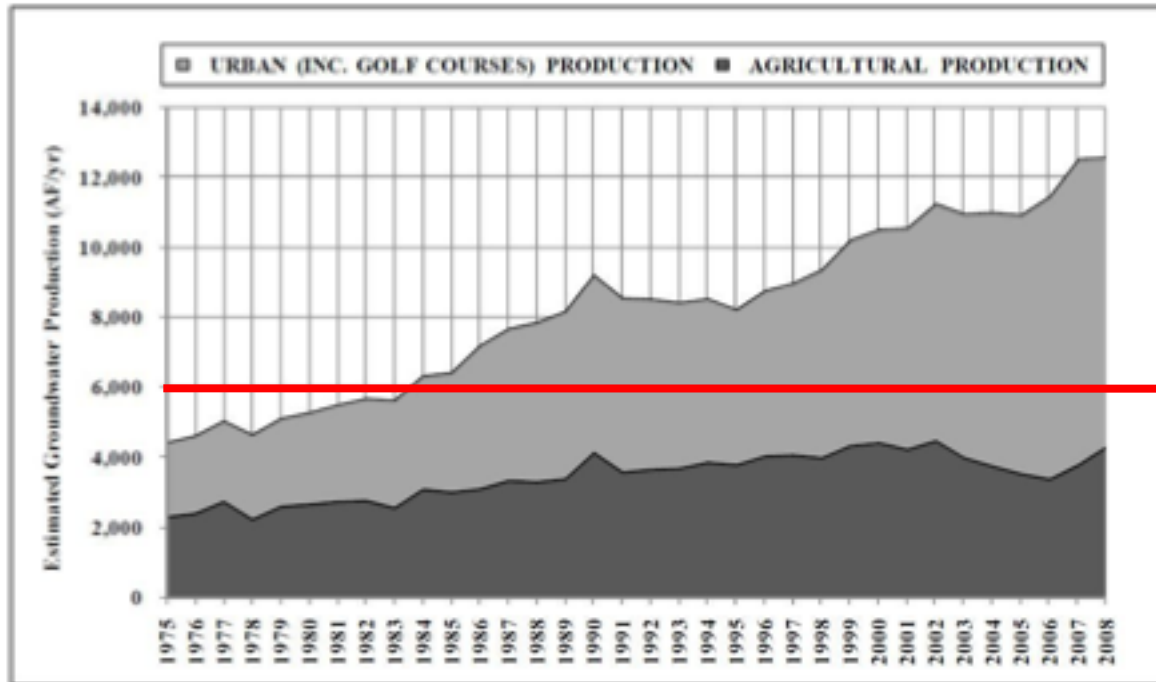


## NIPOMO MESA GROUNDWATER USE



WE ARE PUMPING MORE THAN TWICE THE  
**DEPENDABLE YIELD**

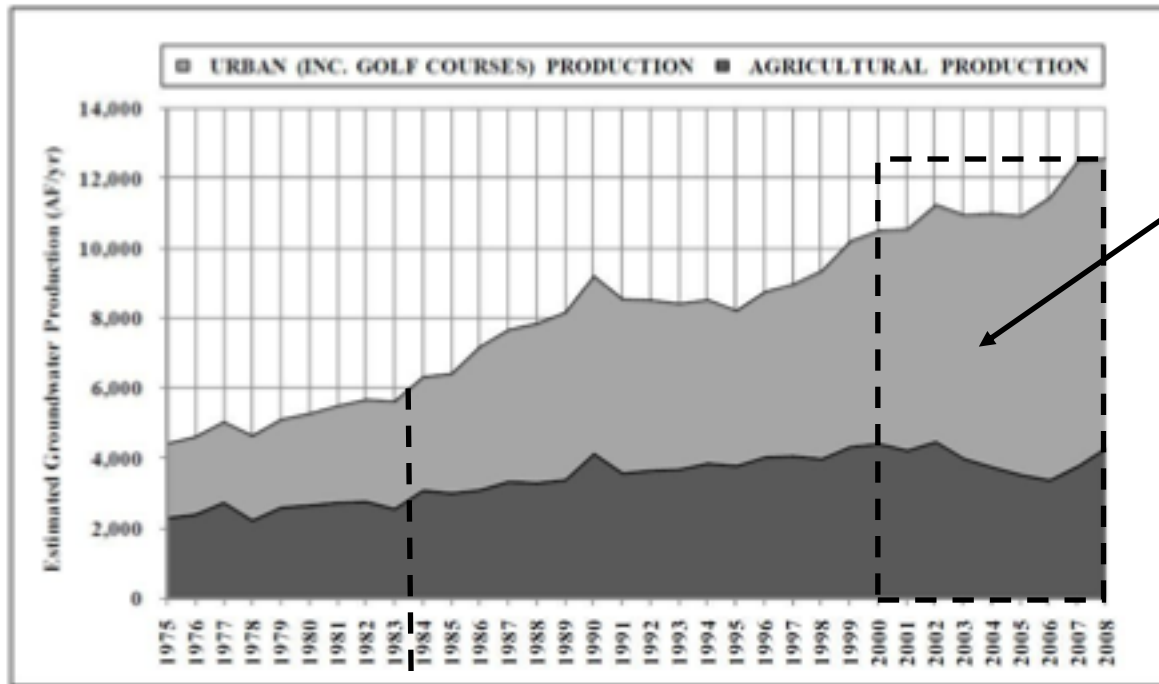
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Dependable Yield



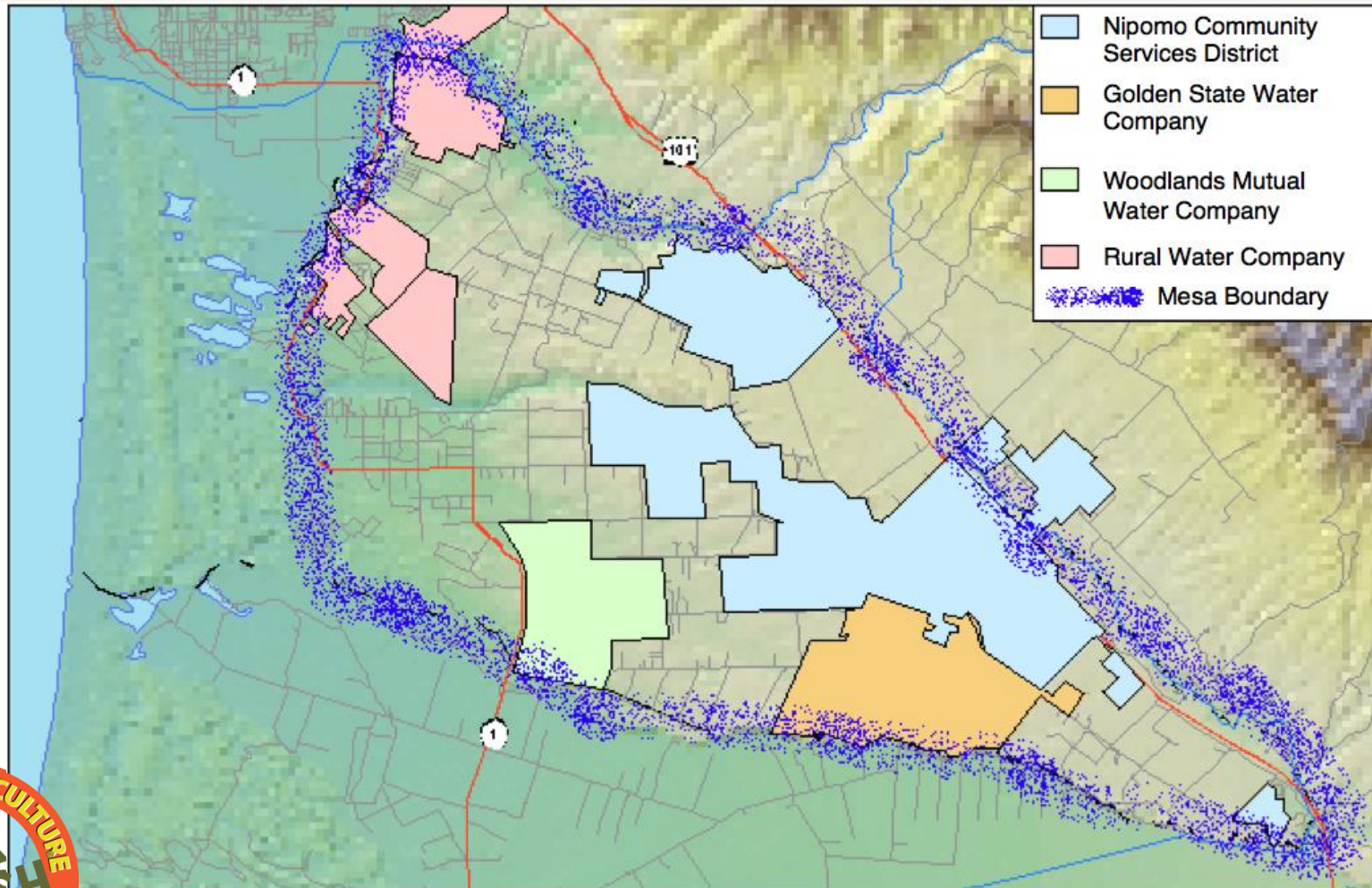
### NIPOMO MESA WATER USE



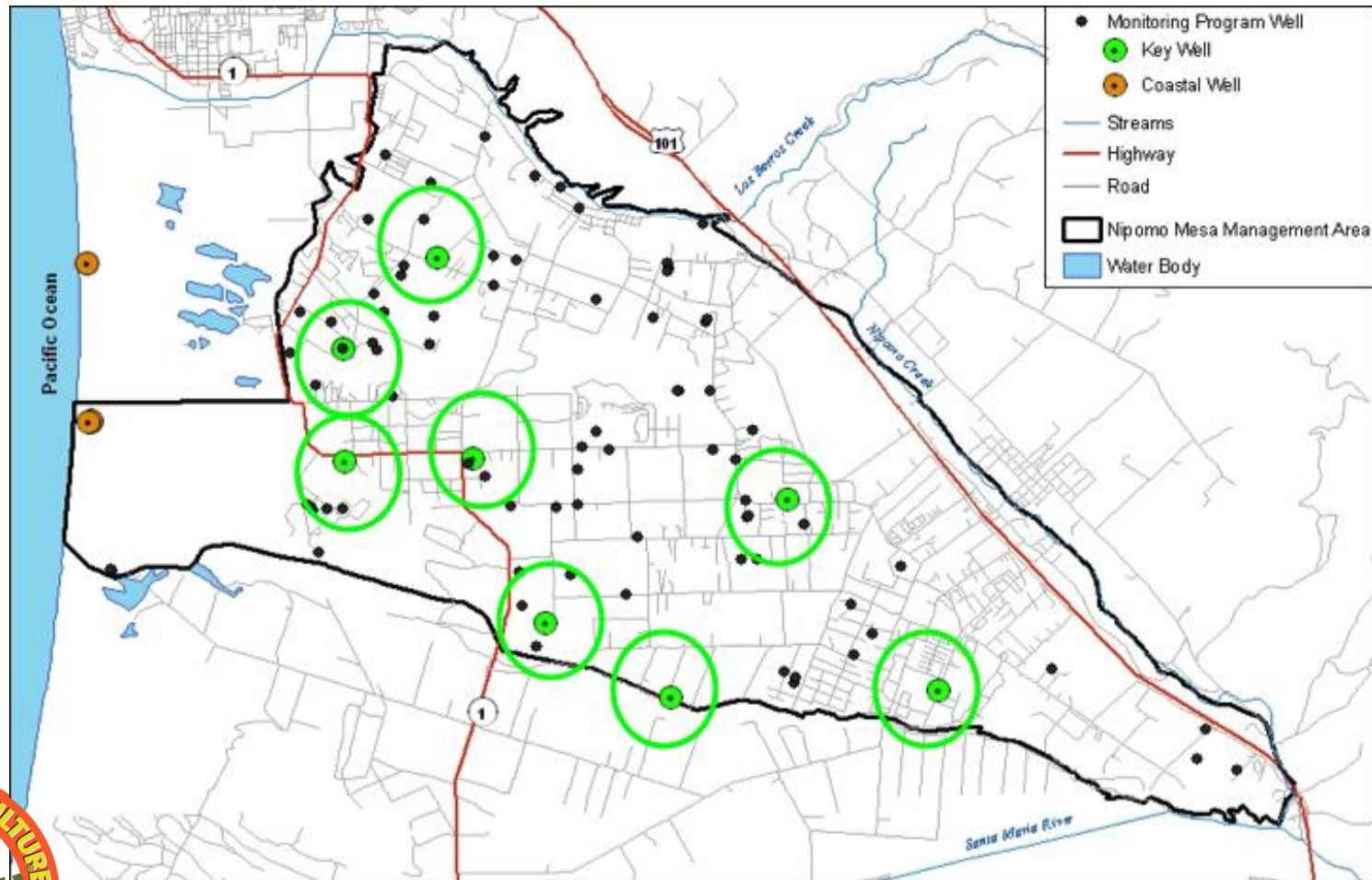
Dependable  
yield reached

Urban water  
consumption increased  
50% between 2000 and  
2008

### NIPOMO MESA WATER PURVEYORS

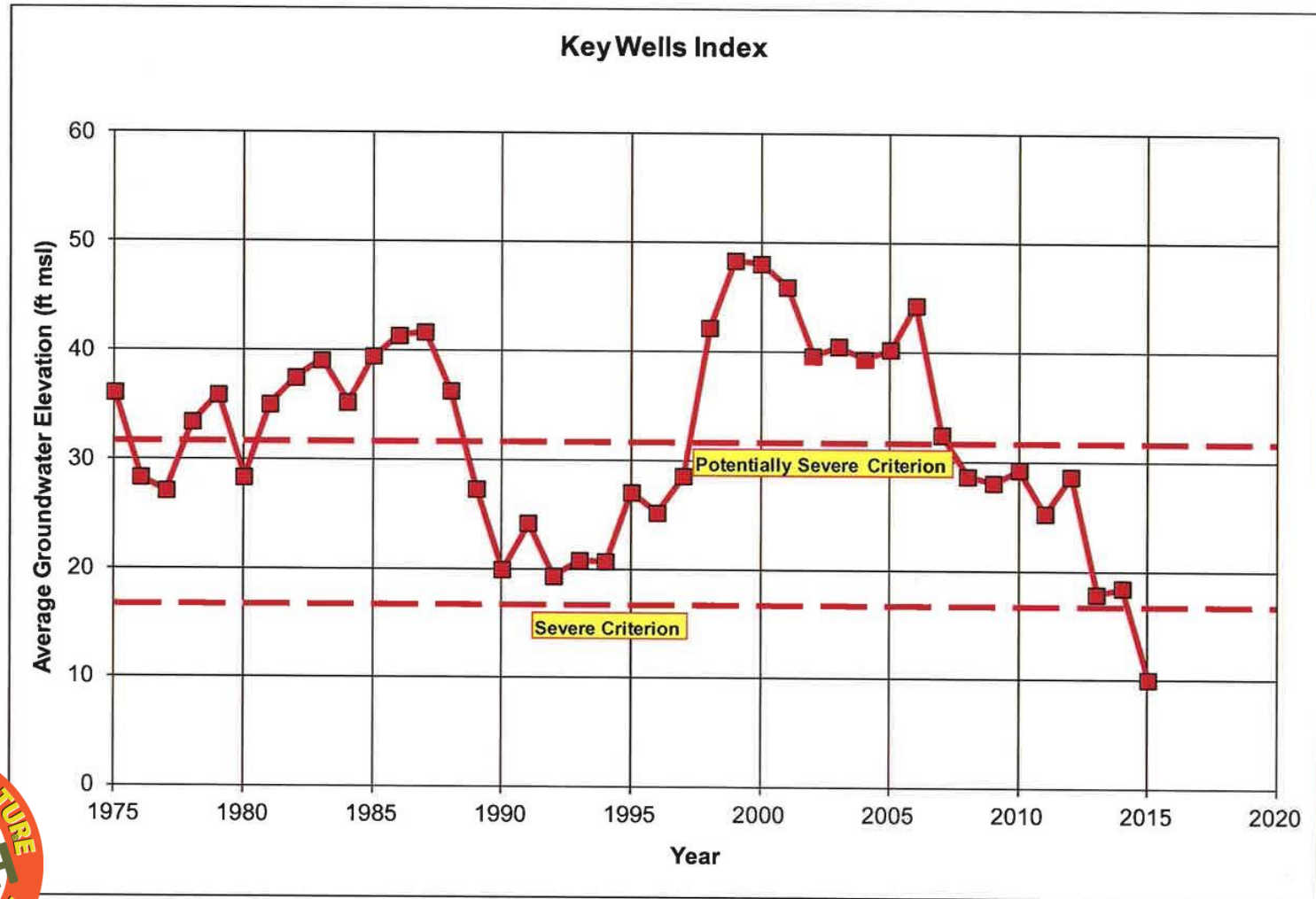


### KEY WELLS





### 2015 KEY WELL INDEX

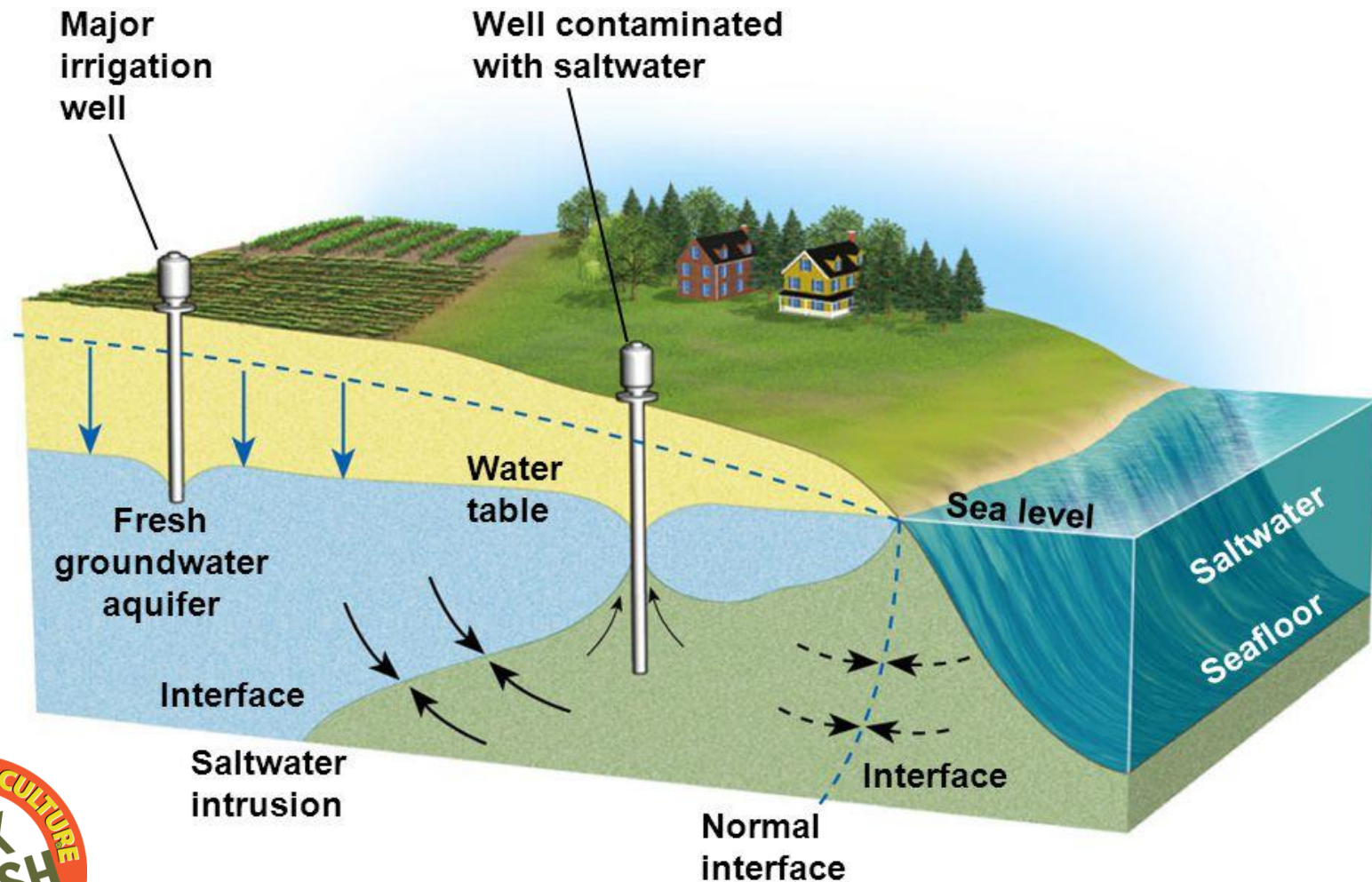




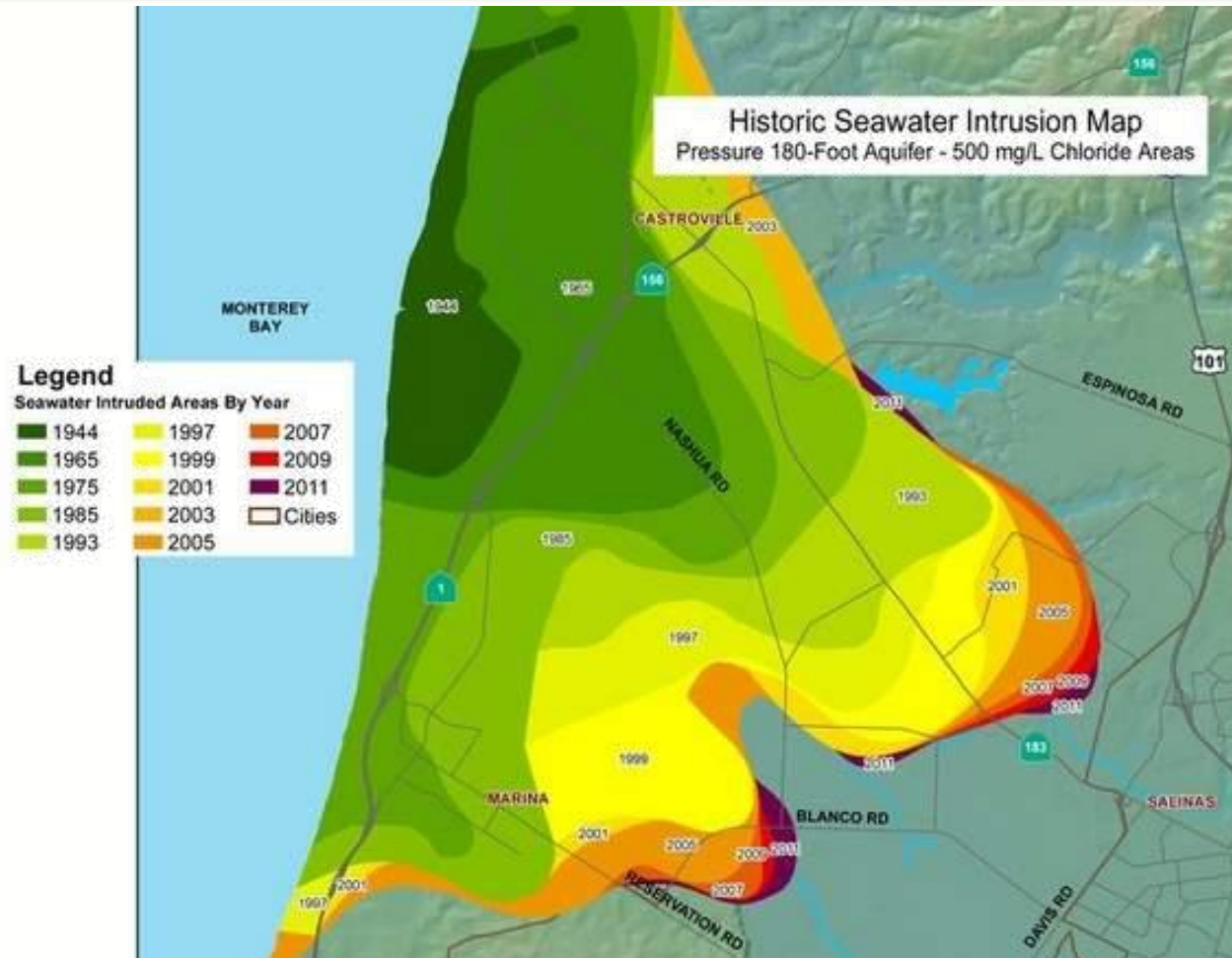
### CONSEQUENCES OF DROPPING WATER LEVEL

- 🥑 Deeper wells required
- 🥑 Lower water quality (TDS)
- 🥑 No water at bedrock
- 🥑 Seawater Intrusion

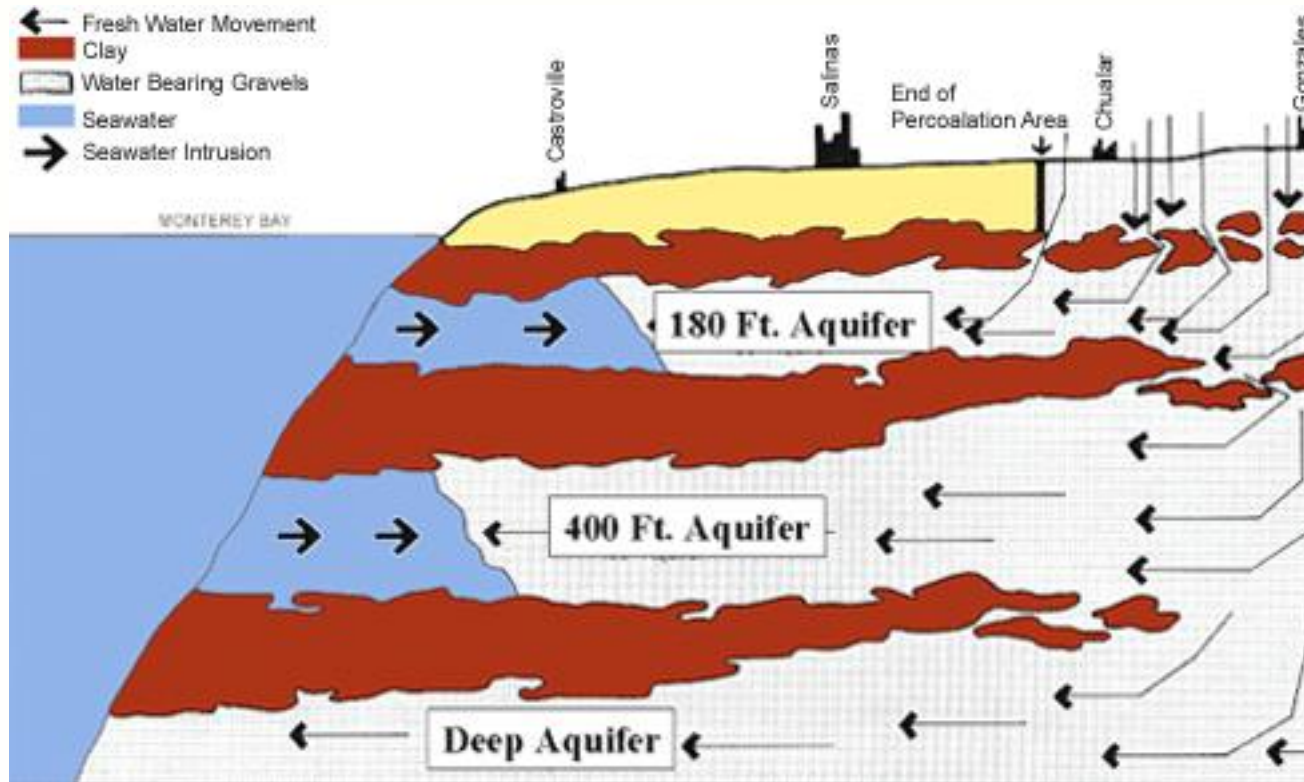
### SEAWATER INTRUSION



### SEAWATER INTRUSION IN MONTEREY COUNTY

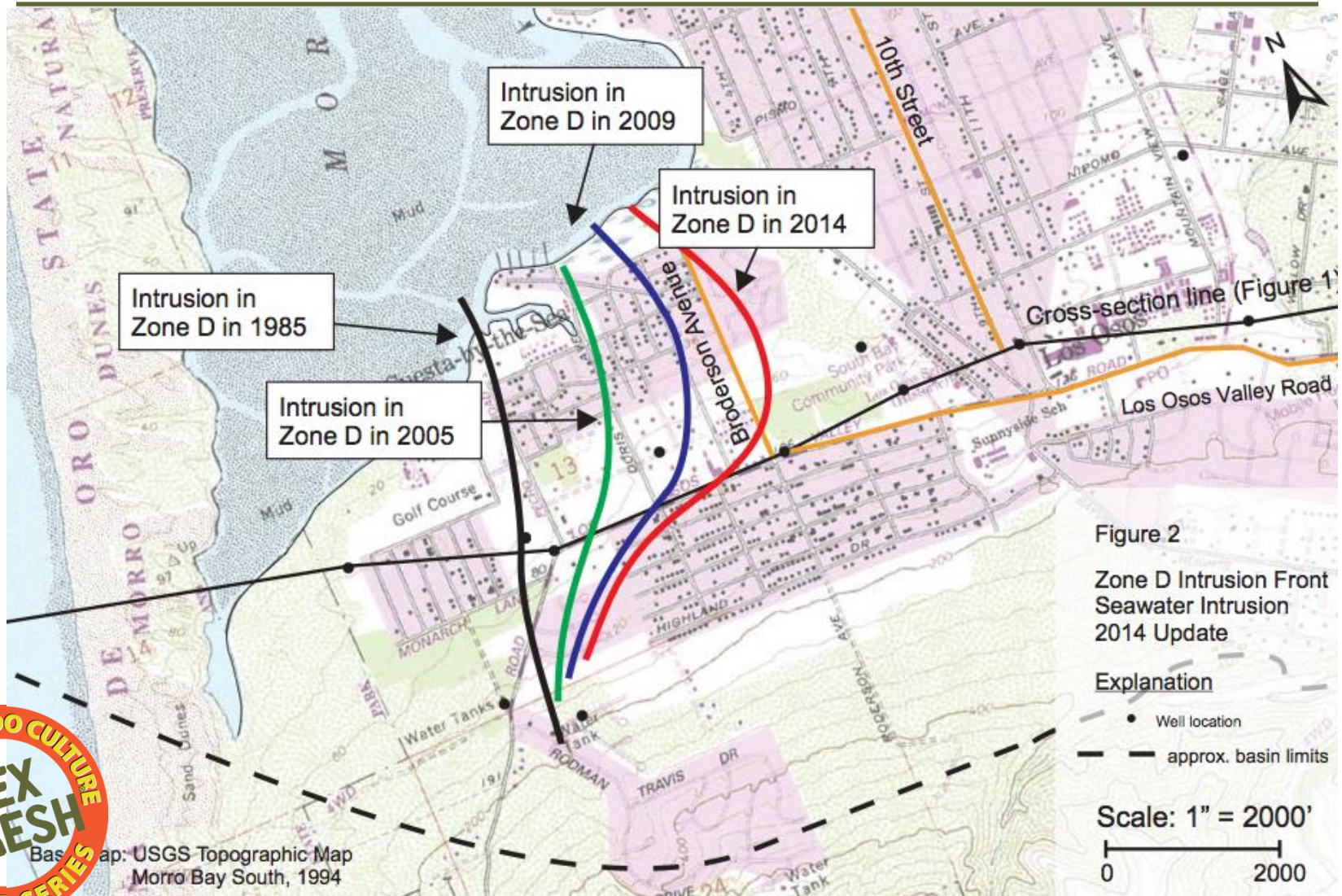


### SEAWATER INTRUSION IN MONTEREY COUNTY



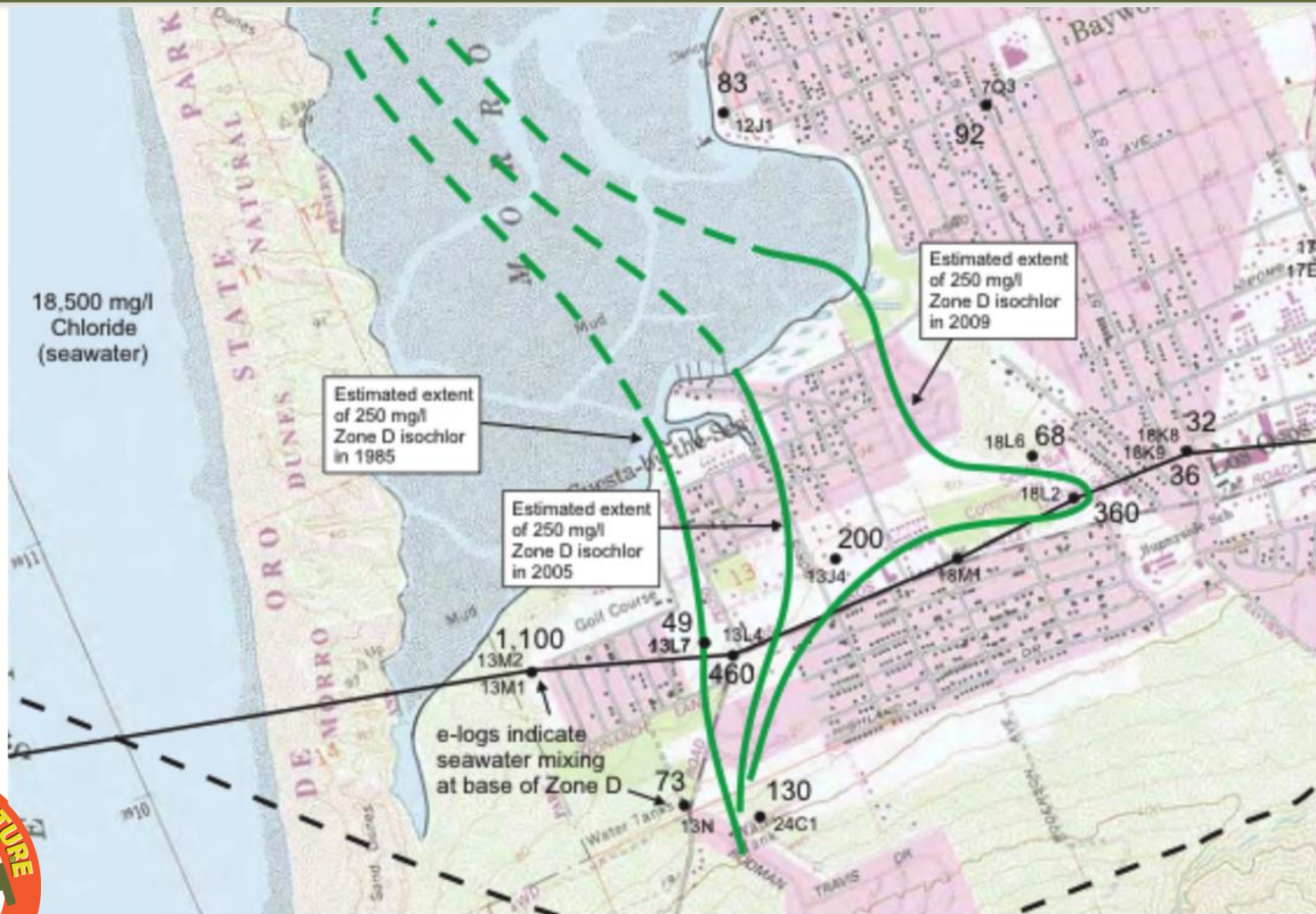


## SEAWATER INTRUSION IN LOS OSOS





### SEAWATER INTRUSION IN LOS OSOS



The diagram is a geological cross-section oriented West to East. The vertical axis represents 'Elevation in feet above sea level' from 200 to -800. The horizontal axis represents distance, with a 2-mile scale bar at the bottom. Key features include:

- Surface Features:** Pacific Ocean, Exposed bedrock, Sand spit, and wells 14B1, 14B2 (projected), 13M1, 13M2, 13L4, 13L7, 18M1, B-2, and 18L2.
- Geological Zones:**
  - 1985-2005 transition zone:** Shaded orange, with chloride concentrations  $>2,500$  mg/l.
  - 2005 transition zone:** Shaded yellow, with chloride concentrations  $<250$  mg/l.
  - 2009 transition zone:** Shaded blue, with chloride concentrations  $<250$  mg/l.
- Structural Features:**
  - Fault-bounded basin boundary:** Indicated by a dashed line on the left.
  - Sandstone/mudstone (projected):** Shaded orange at the base.
  - Siltstone:** Shaded grey.
  - Base of permeable sediment:** Indicated by a dashed line.
- Other Labels:** 'Sandspit wells not sampled in 2009', 'Zone C', 'Zone E', 'Qs', 'Qpr', 'Tca', and '18M'.



### (WHEN) WILL IT RAIN?

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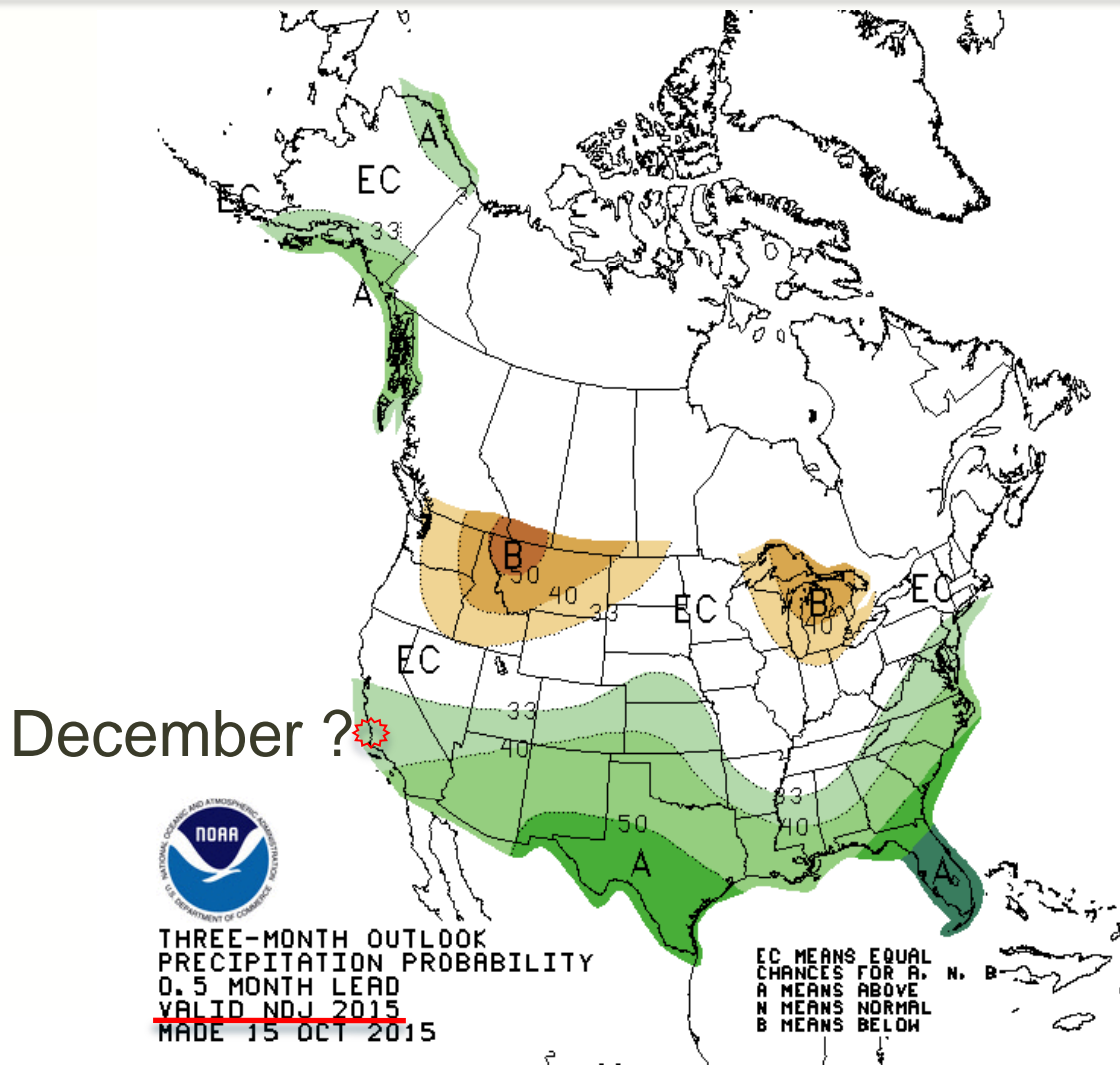
Ask NOAA for seasonal probabilities of above/below normal precipitation

[http://www.cpc.ncep.noaa.gov/products/predictions//multi\\_season/13\\_seasonal\\_outlooks/color/churchill.php](http://www.cpc.ncep.noaa.gov/products/predictions//multi_season/13_seasonal_outlooks/color/churchill.php)

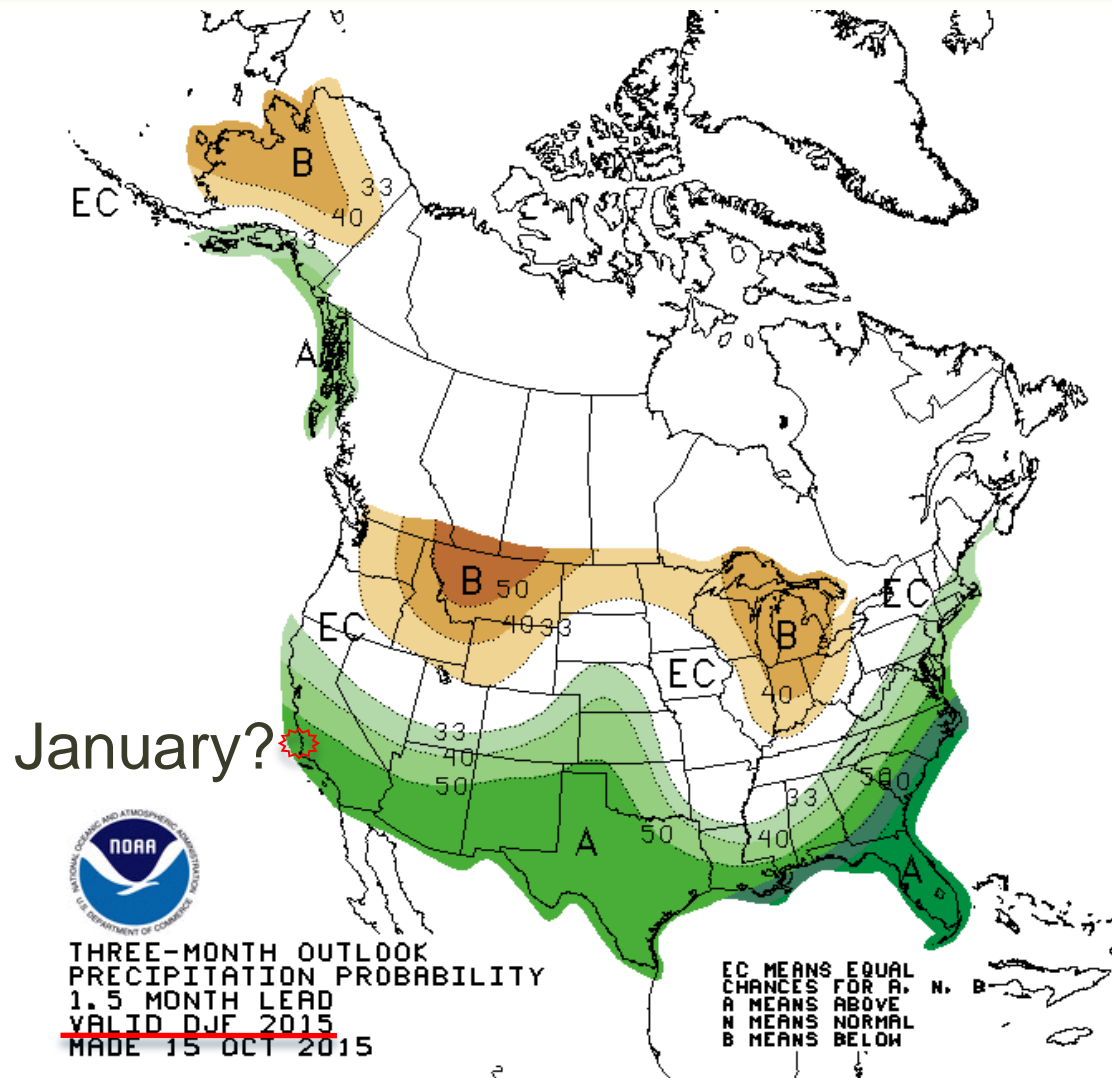




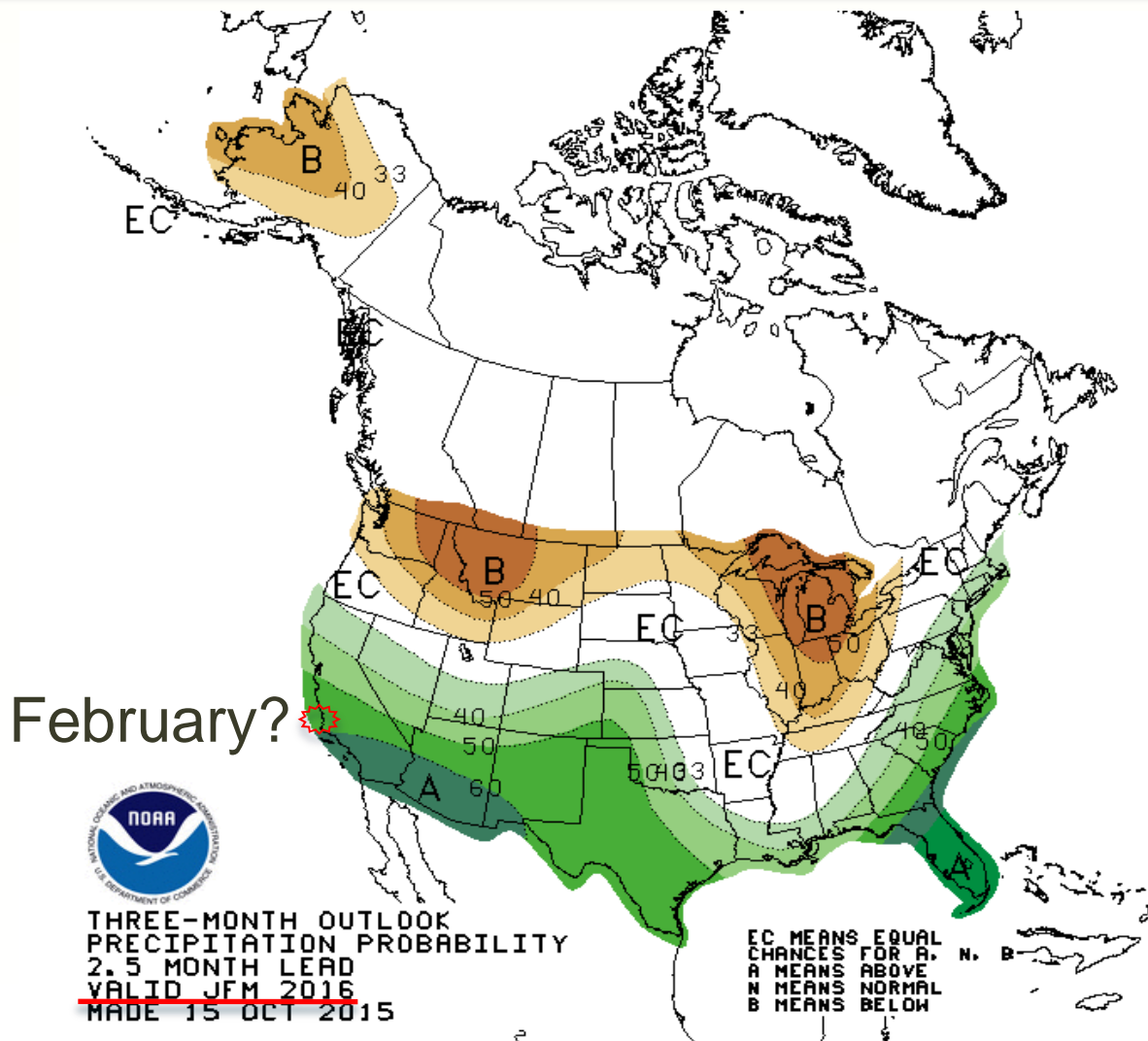
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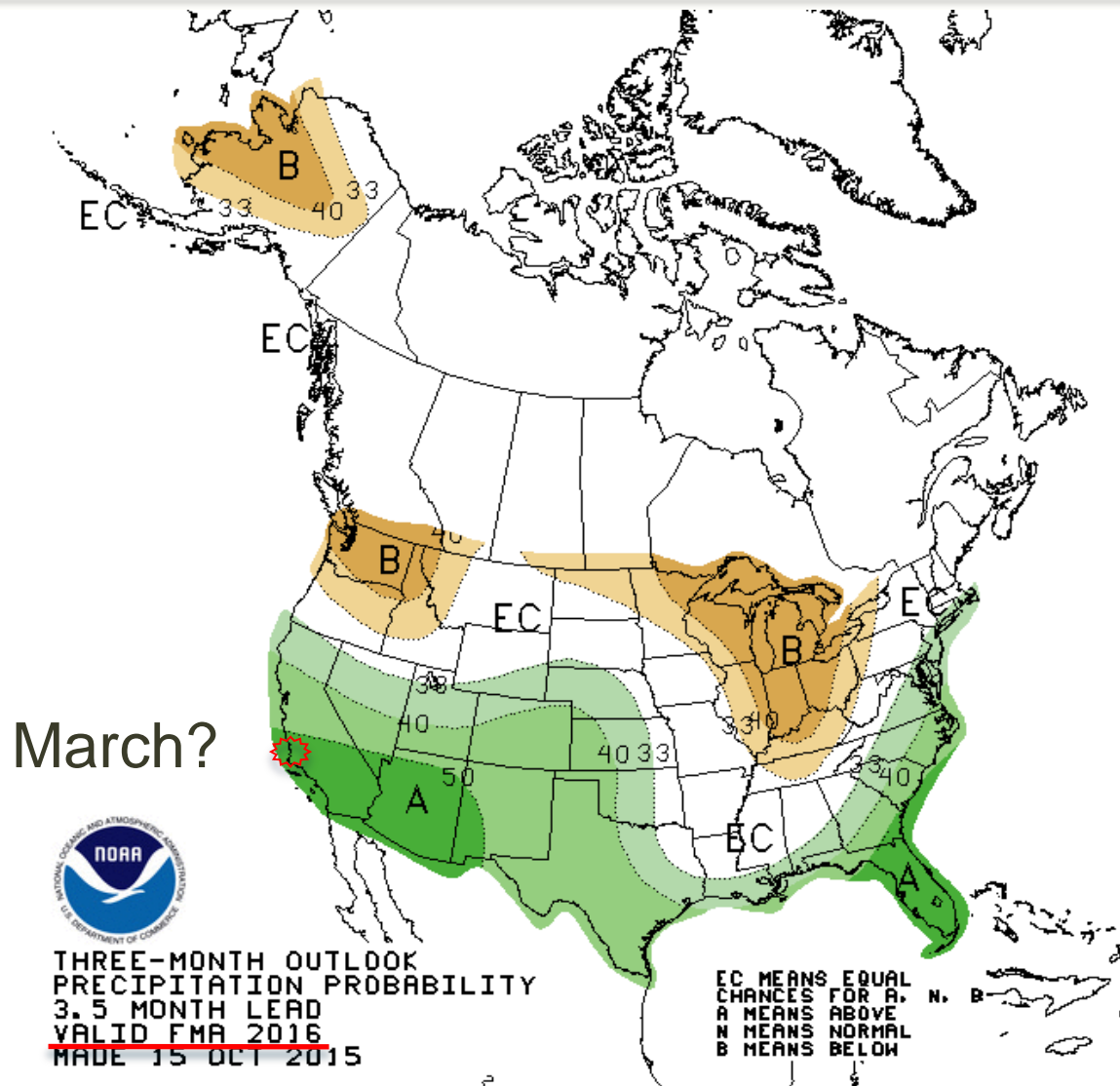
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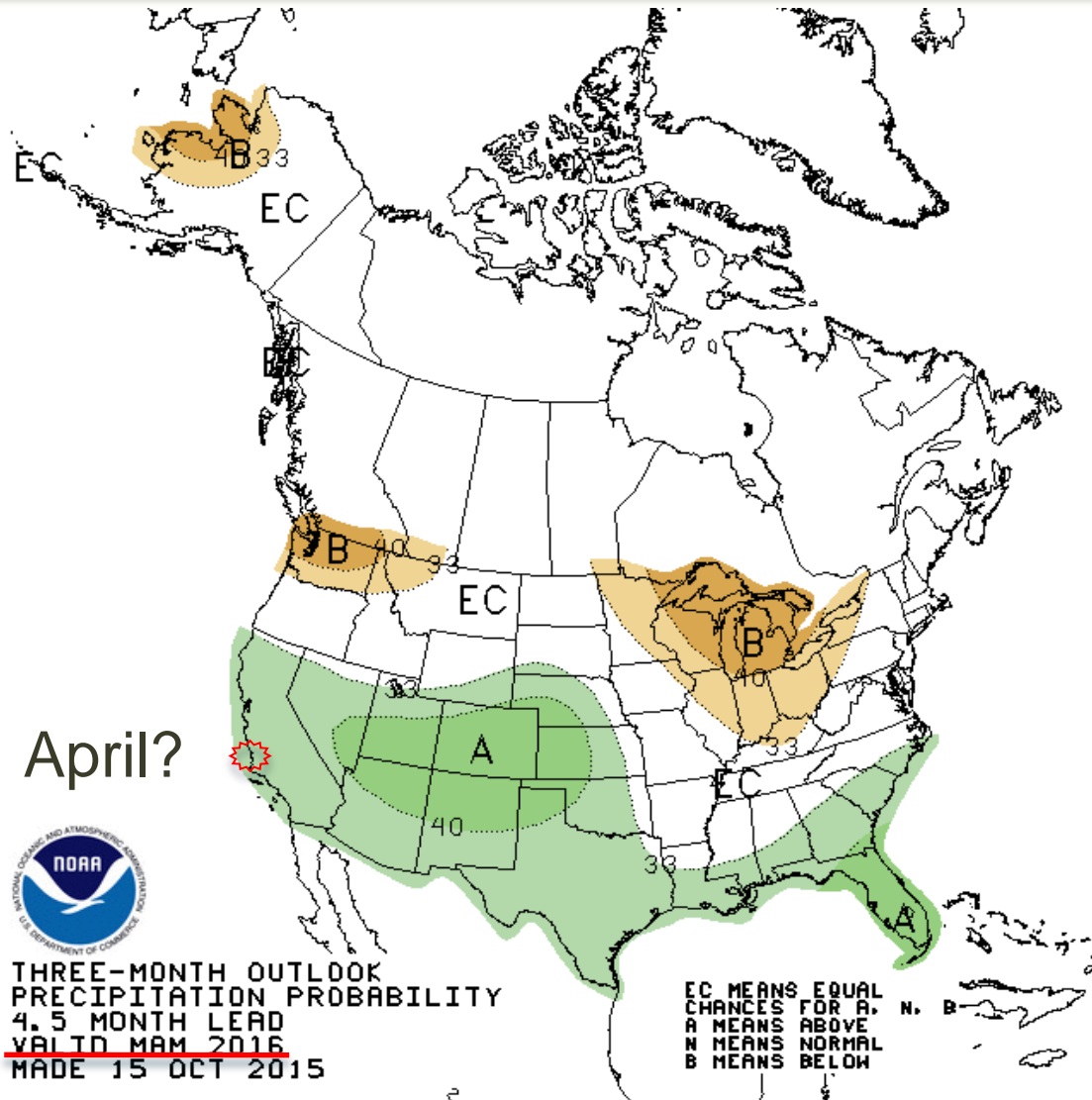


### (WHEN) WILL IT RAIN?

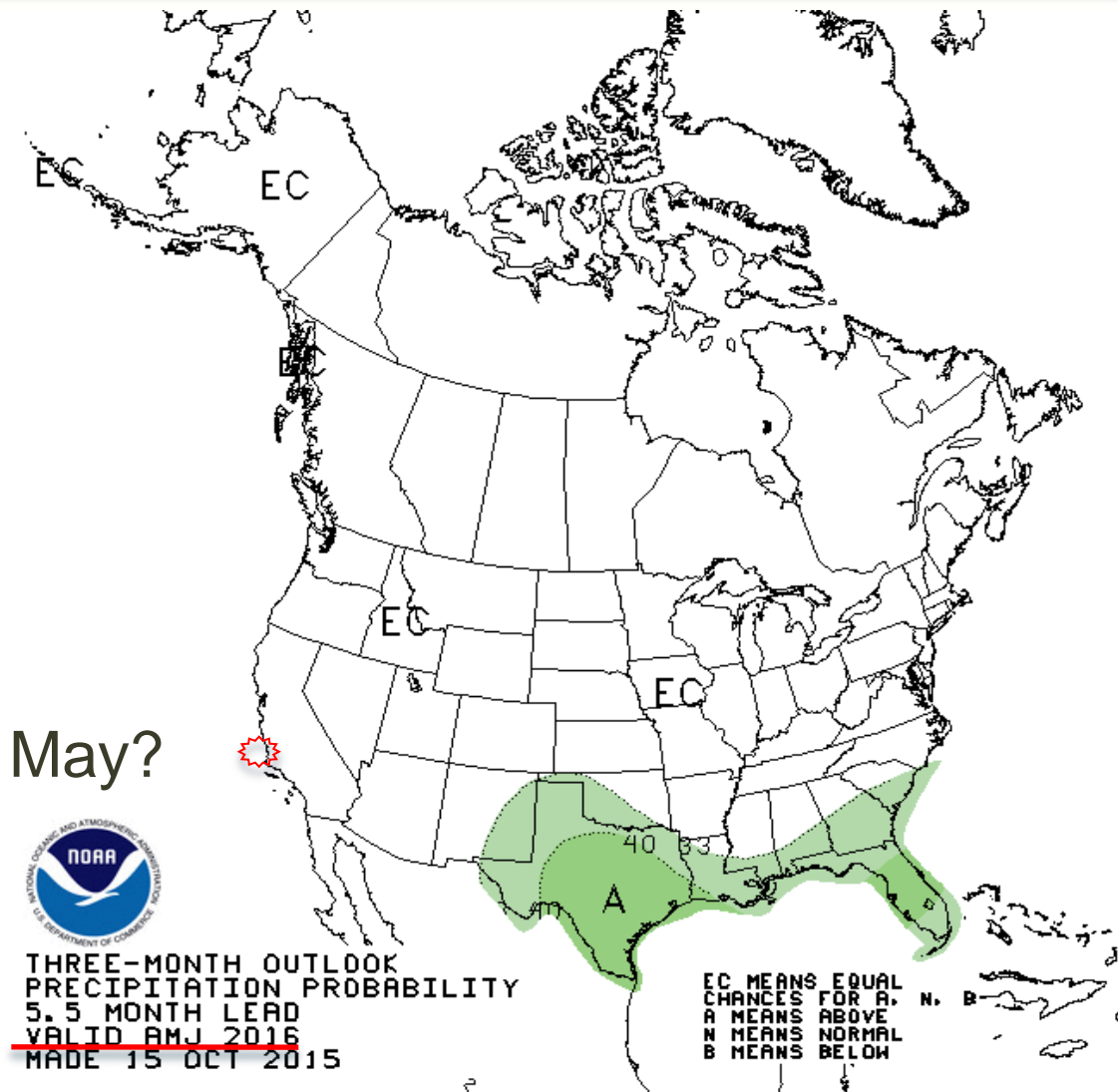




### (WHEN) WILL IT RAIN?



### (WHEN) WILL IT RAIN?



### WATER SHORTAGE SOLUTION PROJECTS

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- 🥑 Imported (Supplemental) Water
  - Santa Maria Pipeline
    - 650 AFY (\$17M operational)
    - 3,000 AFY (\$40M) – Per Court Order
    - 6,000 AFY (?)
  - Increase State Water Project (treatment) Capacity
- 🥑 Desal
  - Diablo Excess – 500-1,000 AFY, January 2016 estimate due Conceptual
    - NCSD 2007 Study - \$100M, 6,000 AFY, \$3,600/AF
    - Monterey (2020) - \$300M, 6-9,000 AFY, \$3,000/AF
  - Carlsbad – Brackish Water NA
- 🥑 Reclaimed Wastewater
  - NCSD Study - \$15M, 1,600 AFY
  - South County Sanitation District – no recent estimate, 3,000 AFY
  - Pismo Study – underway, groundwater injection