



**Comments to  
Proposed USTCF Closures  
in Sacramento County  
October 19, 2010**

**Barry Marcus, P.G.**

# Resolution 92-49

“(The) cleanup and abatement proposal (is) to have a substantial likelihood to achieve compliance, within a *reasonable time frame*, with cleanup goals and objectives that implement the applicable Water Quality Control Plans and Policies...”

- Res. 92-49 III(A)

# "Reasonable Time Frame" for Cleanup

"What is a reasonable time frame should be evaluated in the context of the likelihood of, and time frame for, future groundwater use."

- SWRCB

# "Reasonable Time Frame" for Cleanup

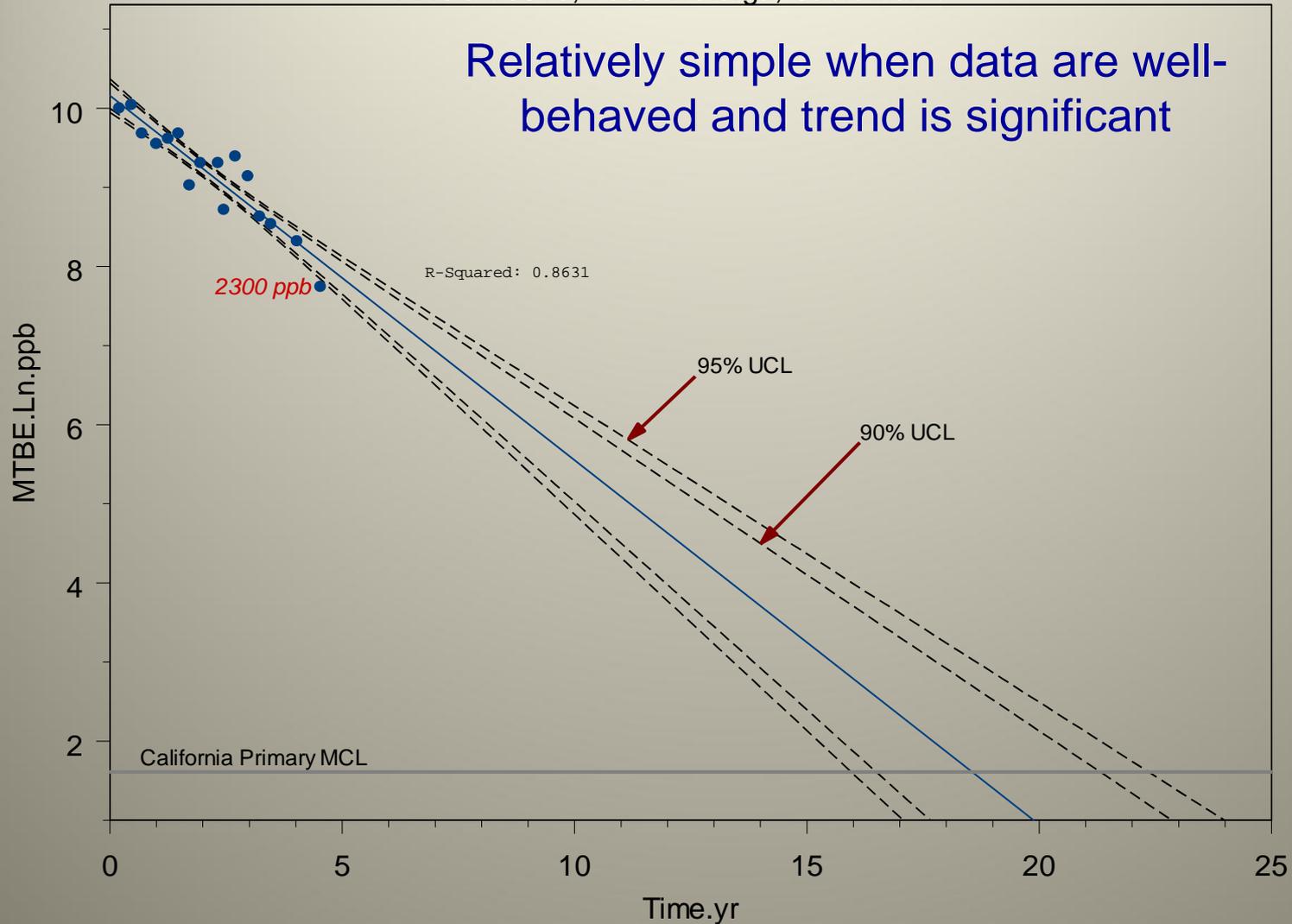
Thus, determining a "reasonable time frame" apparently requires that:

1. One can estimate when the water is likely to meet WQOs
2. One can estimate when the water is likely to be used

# Estimating Time to WQOs

## MW1 MTBE Time Projections

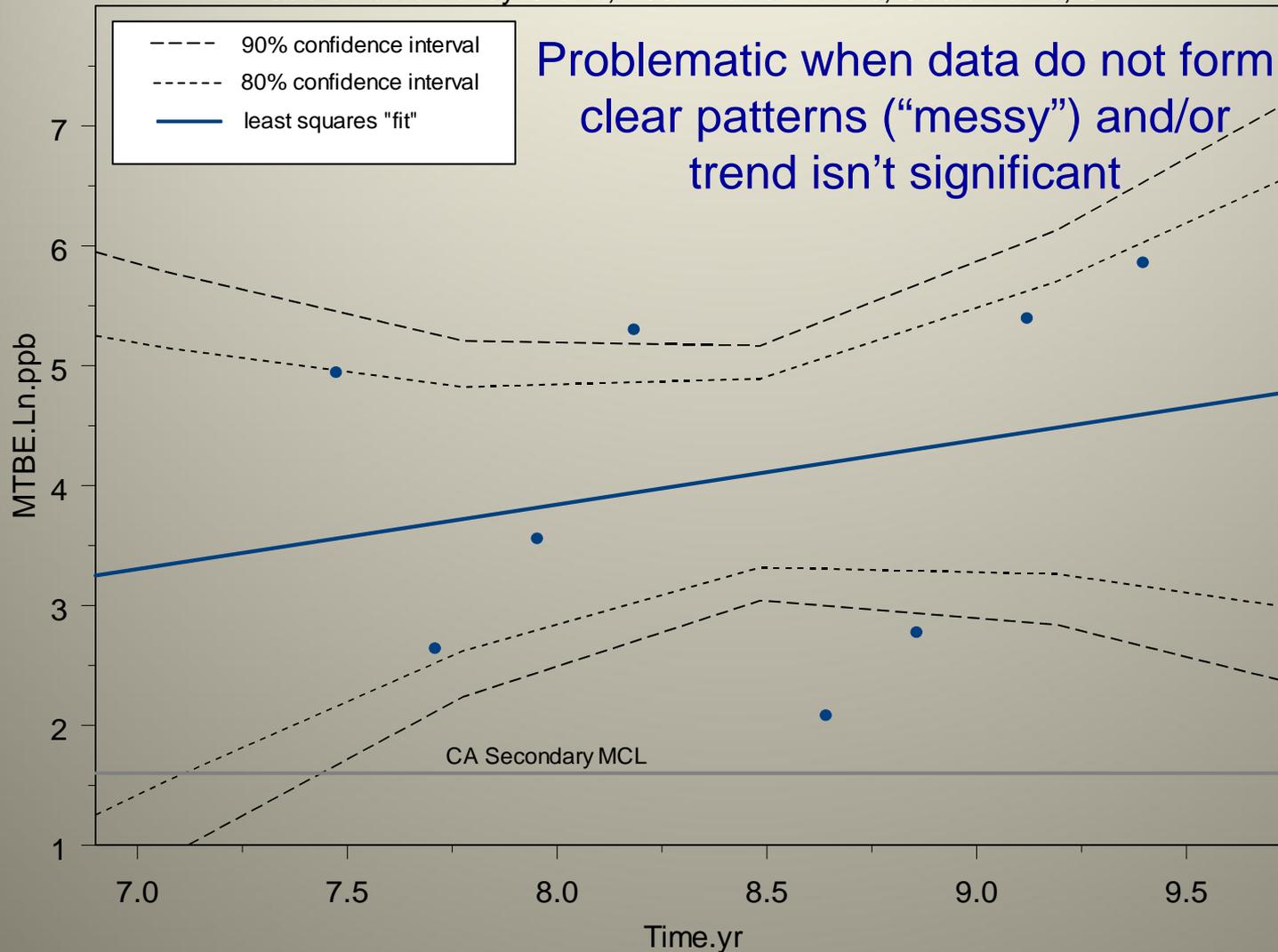
ARCO #6513, 7969 Walerga, Sacramento



# Estimating Time to WQOs

## MW2 MTBE (Last Two Years)

Sacramento Valley Crane, 7037 Power Inn Rd, Sacramento, CA



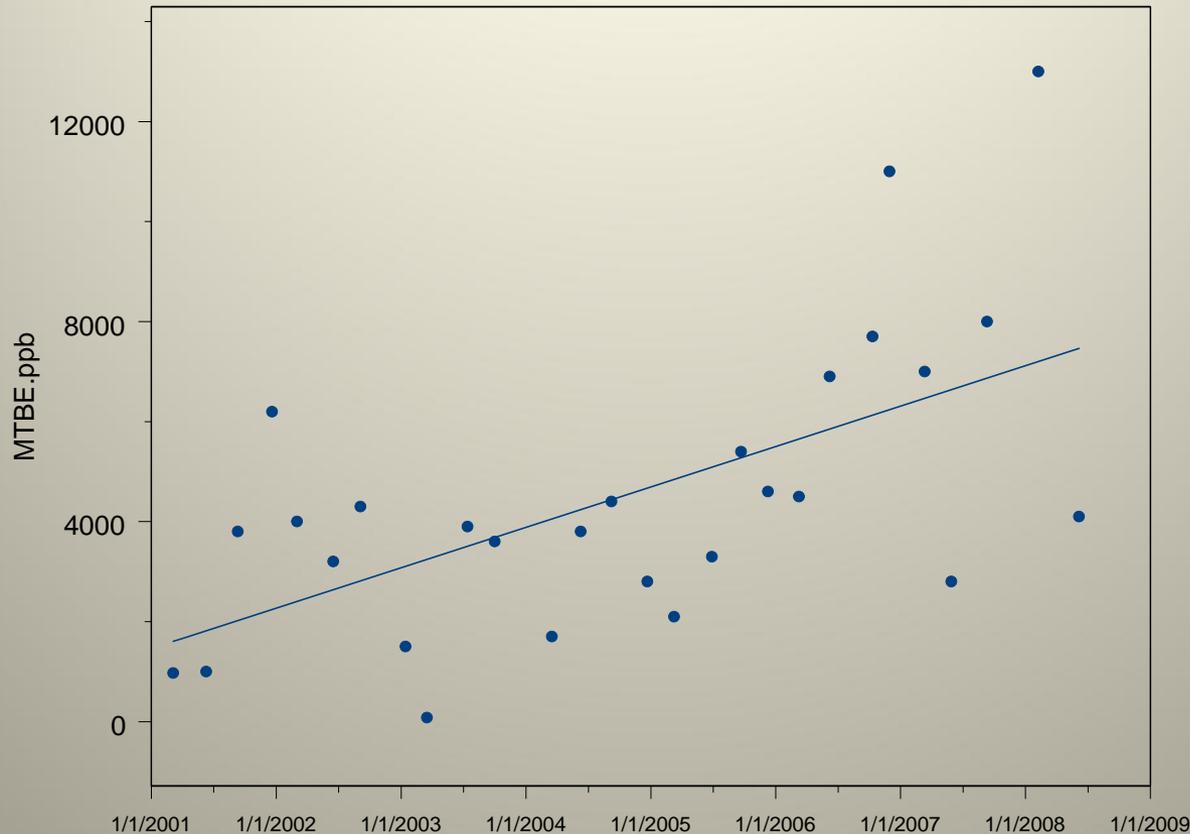
# Who Cares About Statistics?



*If it looks like it's going down, it is going down! Right??*

# Who Cares About Statistics?

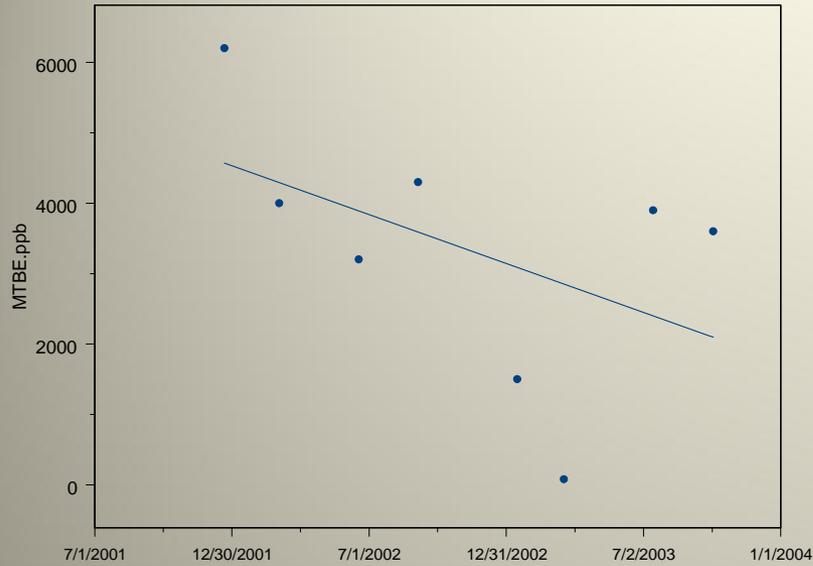
Full Data Set



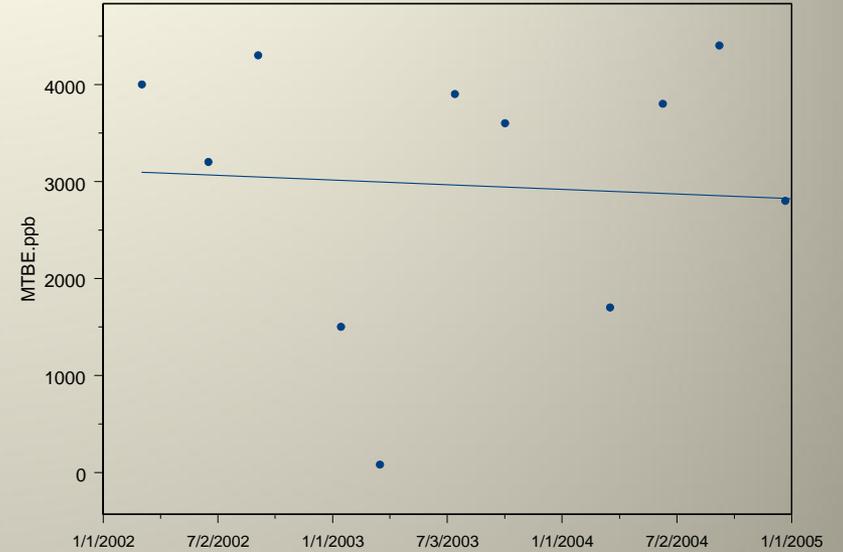
These are data from an **actual site** in Sacramento County with a statistically significant increasing trend.

# Who Cares About Statistics?

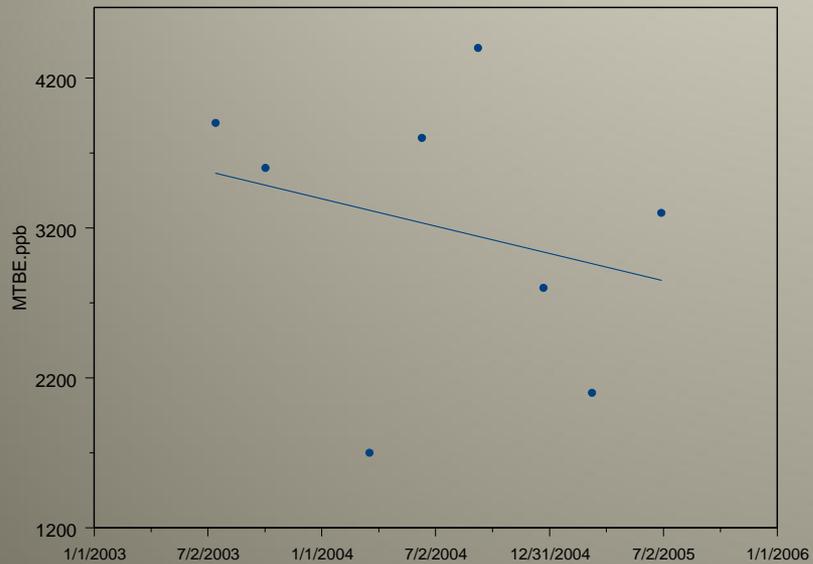
4Q01 - 4Q03



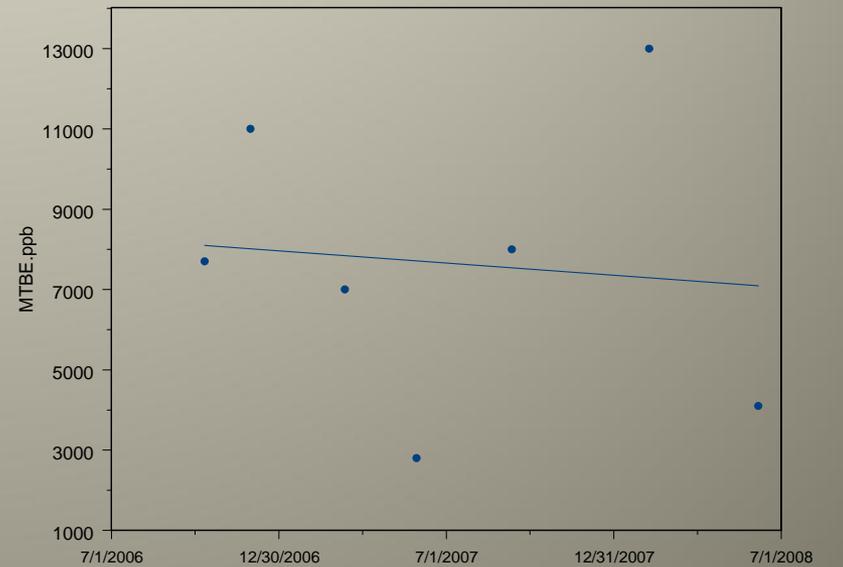
1Q02 - 1Q05



3Q03 - 03Q05



3Q06 - 2Q08



# Who Cares About Statistics?

The previous slides show that it is easy to be misled due to the inherent problems of limited and variable sampling data.

While absolute certainty is unattainable, substantial likelihood is not. In the sciences, substantial likelihood is commonly evaluated by calculating statistical significance, which can be defined simply as: “The probability that one is making an incorrect conclusion due to limited and variable data.”

The significance of a groundwater trend can be easily calculated after collecting a *sufficient* number of *representative* data. More specifically:

- While a year of data may be sufficient to evaluate rebound, *three or more years* are required to evaluate the significance of a trend.<sup>1</sup>
- The data need to represent the conditions of interest. Typically this means using *only post-remediation data* to evaluate post-remedial trends.

<sup>1</sup> Richard O. Gilbert, 1987, *Statistical Methods for Environmental Pollution Monitoring*

When we don't see what we want, or don't have the data...

...should we speculate?

“Water quality objectives will be achieved via natural attenuation in decades to hundreds of years.”

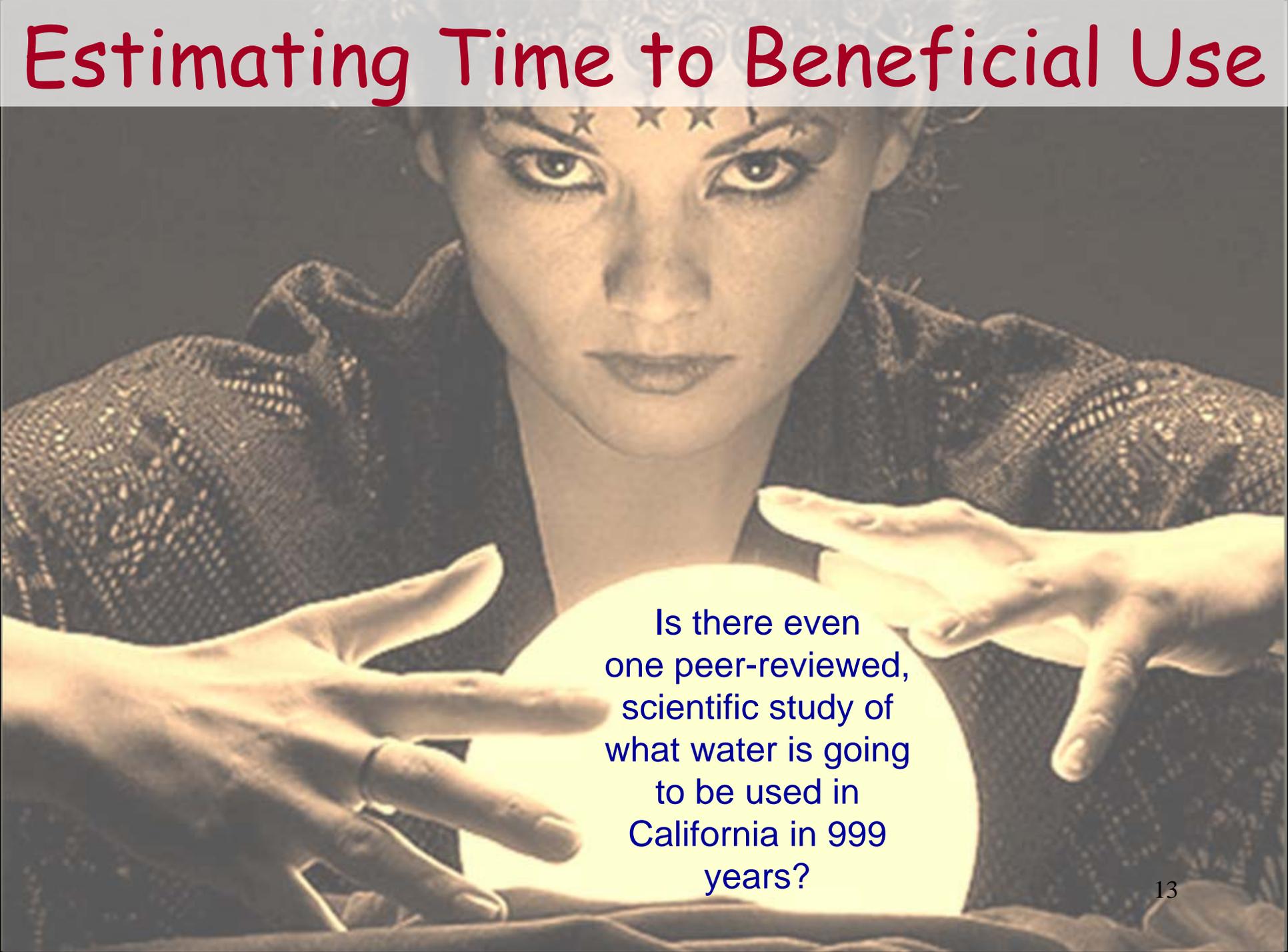
- SWRCB, Walker Petition



999 Years?

Maybe! 140 years and counting...

# Estimating Time to Beneficial Use

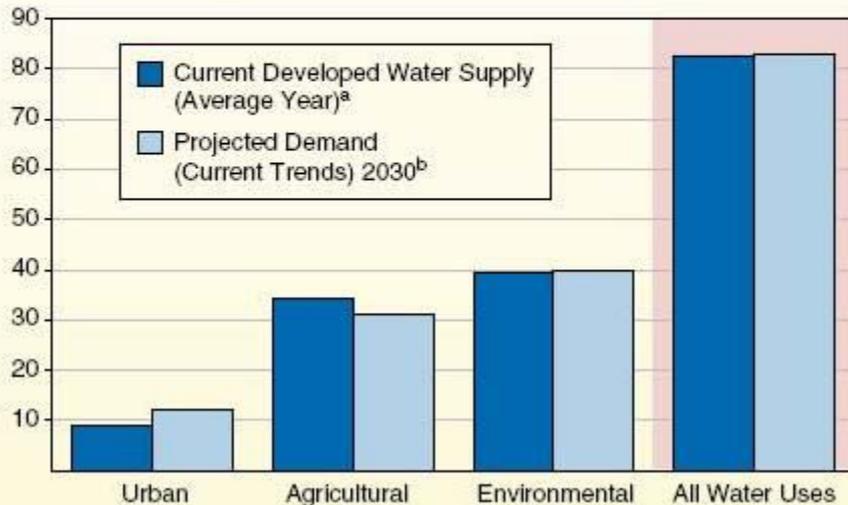
A woman with star tattoos on her forehead and hands is looking intensely at a glowing orb. The orb is the source of light, illuminating her face and hands. The background is dark, making the woman and the orb stand out.

Is there even  
one peer-reviewed,  
scientific study of  
what water is going  
to be used in  
California in 999  
years?

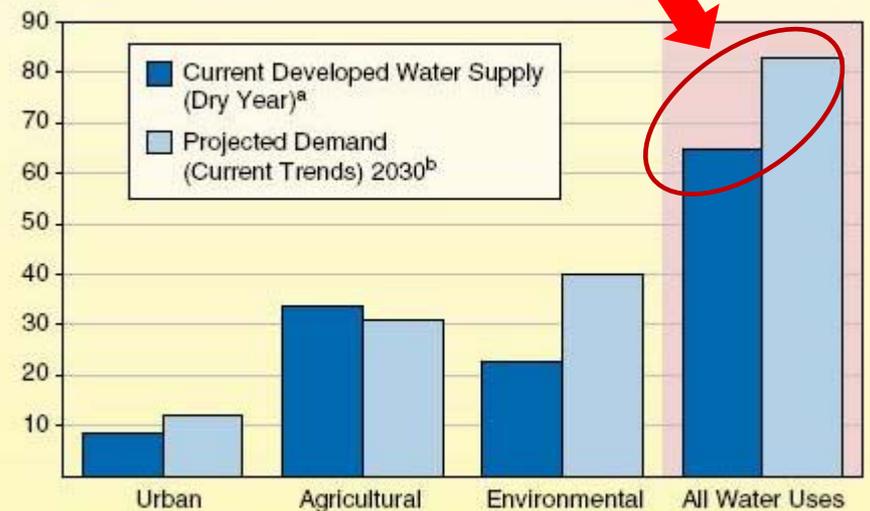
# Water Supply & Demand Projections

**Figure 1**  
**Supply and Demand Projected to Be Nearly Equal Under Average-Year Conditions in 2030...**

(Million Acre-Feet)



**...But Dry-Year Demand Projected to Exceed Supply**



<sup>a</sup>Developed water supply is the amount of precipitation, surface water, or groundwater made available for use, generally through construction of storage or delivery systems.

<sup>b</sup>Demand projections from Department of Water Resources, 2005 California Water Plan.

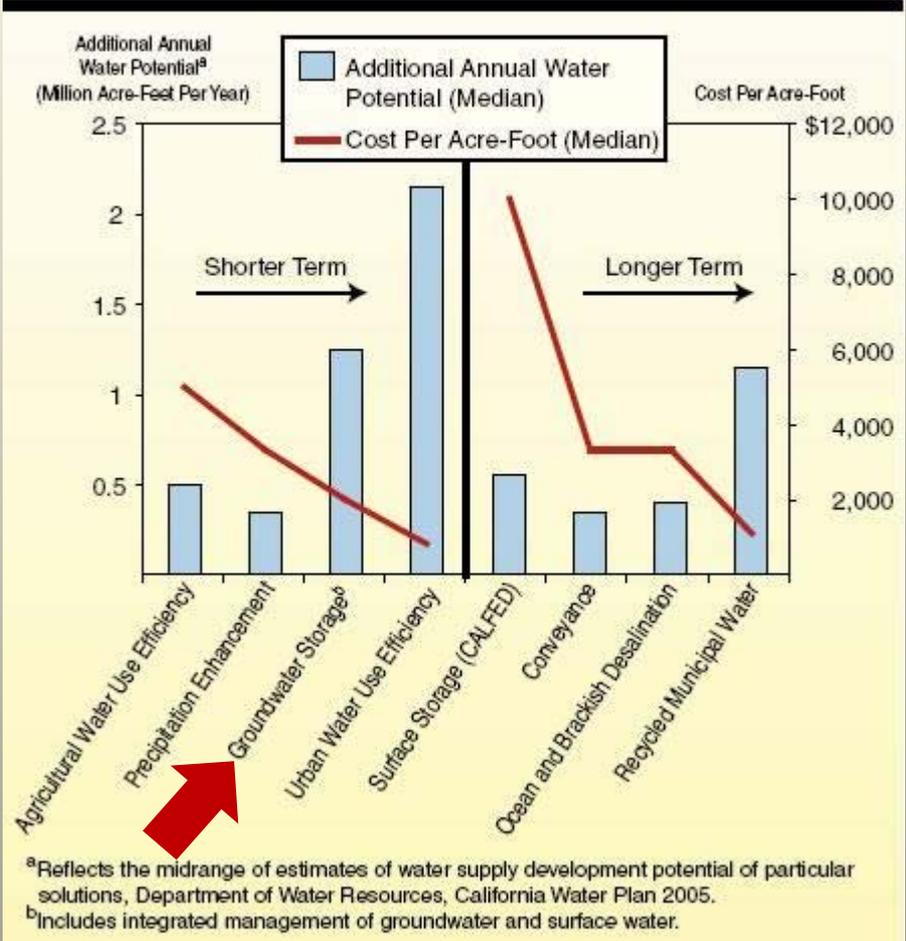
The answer to the previous question is: we don't have the foggiest idea what water is going to be used in 999 years, but we do know we're potentially in trouble in 20 years.

# Water Supply & Demand Projections

Other than increasing urban water use efficiency, the cheapest and most available option for addressing the projected shortfall is **groundwater**.

Figure 2

## Options for Additional Water Supply: Benefits and Costs



# California Water Plan:

“State government must **lead** an effort with local agencies and governments to **remediate** the causes and effects of contaminants on surface water and groundwater quality.”

- DWR, Update 2005, *California Water Plan*

“California must **protect** the quality of its surface water and groundwater and use available supplies with greater care because water will always be a precious resource.”

- DWR, Update 2009, *California Water Plan*

“(The) health of our watersheds and groundwater basins...is essential to California’s resources and economic future. California’s public agencies must **manage** these public trust resources for generations to come.”

- DWR, Update 2009, *California Water Plan*

# Sacramento Valley Crane

7037 Power Inn Rd, Sacramento

FWW Well



~350'

Est. GW Flow

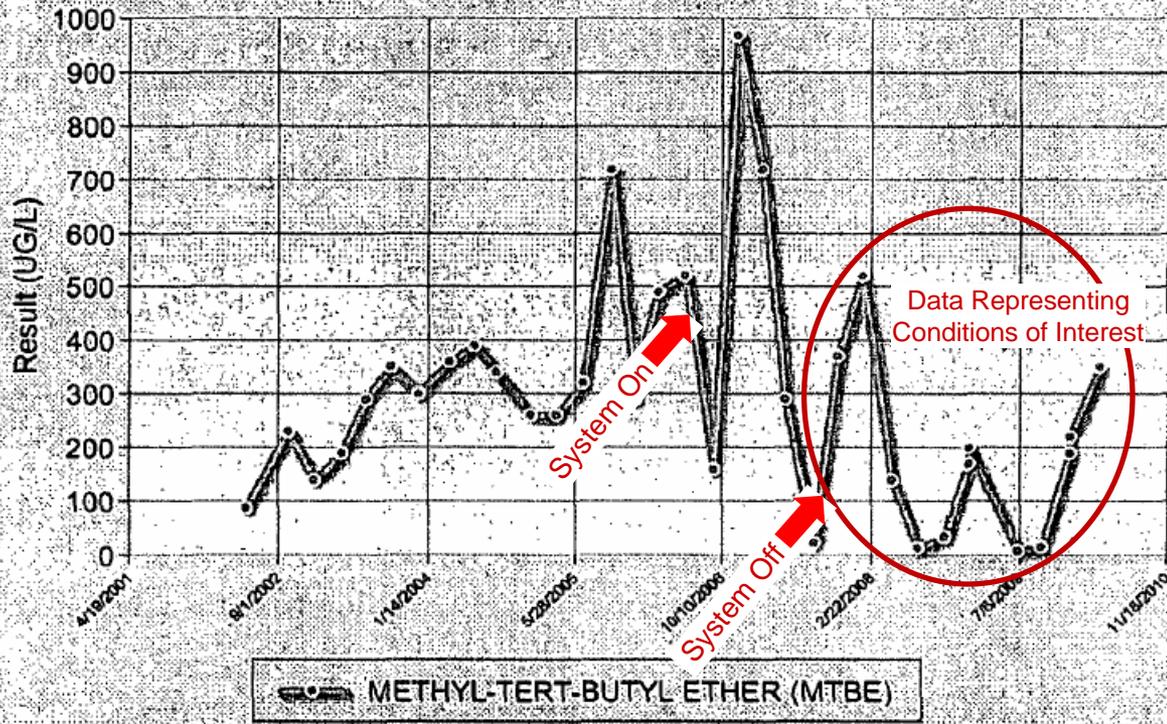
MW-2



# Sacramento Valley Crane

7037 Power Inn Rd, Sacramento

METHYL-TERT-BUTYL ETHER (MTBE) Results for MW-2



Despite our objections, the USTCF continues to base recommendations on data that are not representative of the conditions of interest. The facts are:

- 1.MTBE was increasing prior to remediation.
- 2.Remediation appeared to bring MTBE under control.
- 3.The post-remedial trends are not significant in either direction (could be going down or up).

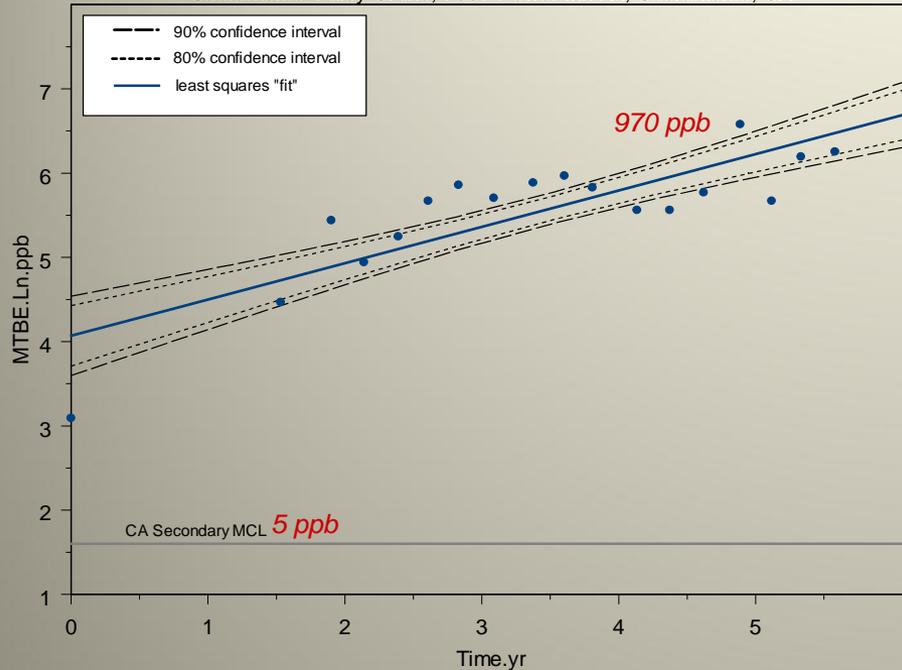
barely exceeds the WQO of 0.15 ug/L. Conservative degradation calculations and trends analysis conducted by Fund staff using water quality data collected from MW-2 for the past 8 years found that water WQOs are expected to be achieved in MW-2 within 25 years.

# Sacramento Valley Crane

7037 Power Inn Rd, Sacramento

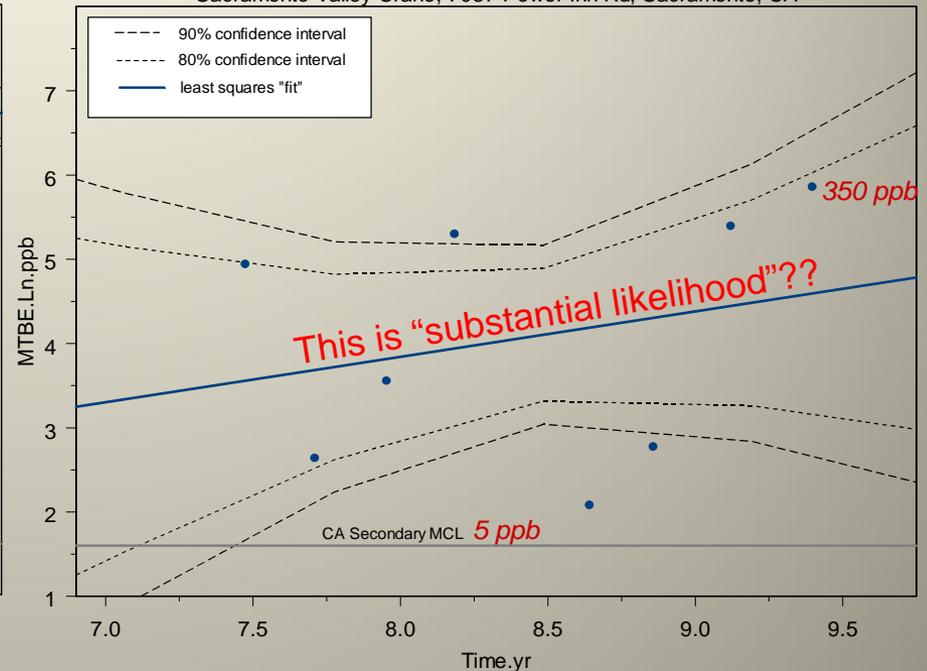
MW2 MTBE (Pre-Remediation)

Sacramento Valley Crane, 7037 Power Inn Rd, Sacramento, CA



MW2 MTBE (Last Two Years)

Sacramento Valley Crane, 7037 Power Inn Rd, Sacramento, CA

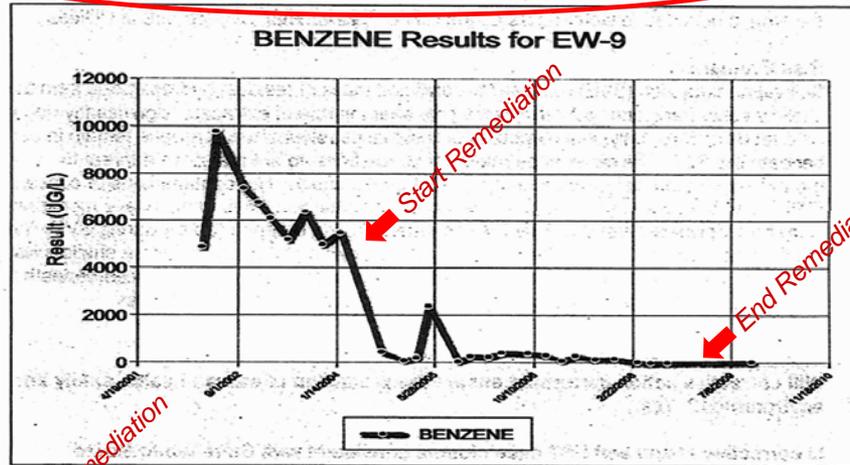


1. The evidence that WQOs are likely to be met prior to desired use is weak: (a) MTBE concentrations cannot be confirmed to be decreasing **now** with substantial likelihood; and (b) vicinity domestic use is **historically shallow** (i.e., the impacted zone appears useable).
2. FWW well is potentially at risk because: (a) it is proximal and down- to cross-gradient; (b) it is a conduit, with no seal in the saturated zone; (c) MW-2 had a significant pre-remedial increasing concentration trend; and (d) the last two years of monitoring suggest MTBE may be increasing again in MW-2.

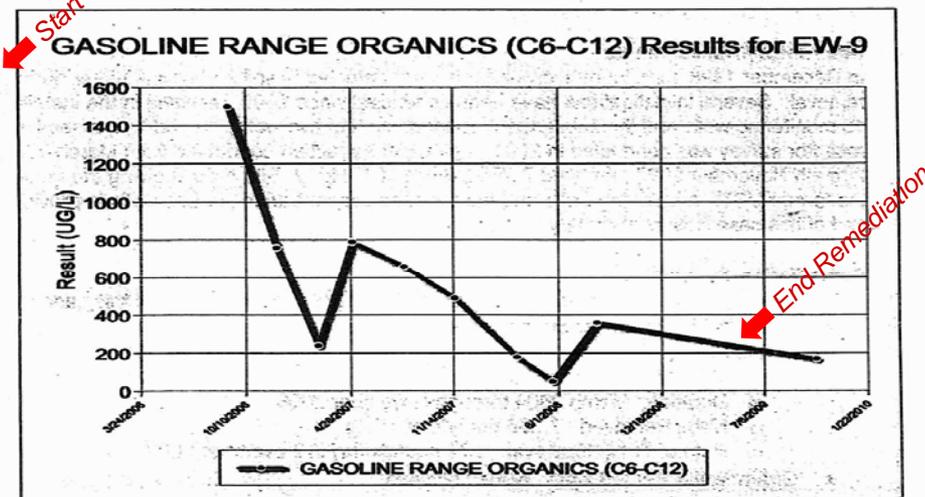
# Geremia Pools, Inc.

3264 Ramona St, Sacramento

Groundwater Trends: Benzene and TPHg concentrations in groundwater rapidly declined after soil vapor extraction began.



This is, to a large degree, what the USTCF is basing their closure recommendation on. Again, while it's a useful evaluation of the effectiveness of active remediation, it tells us **nothing** about what is happening now that the system is turned off.

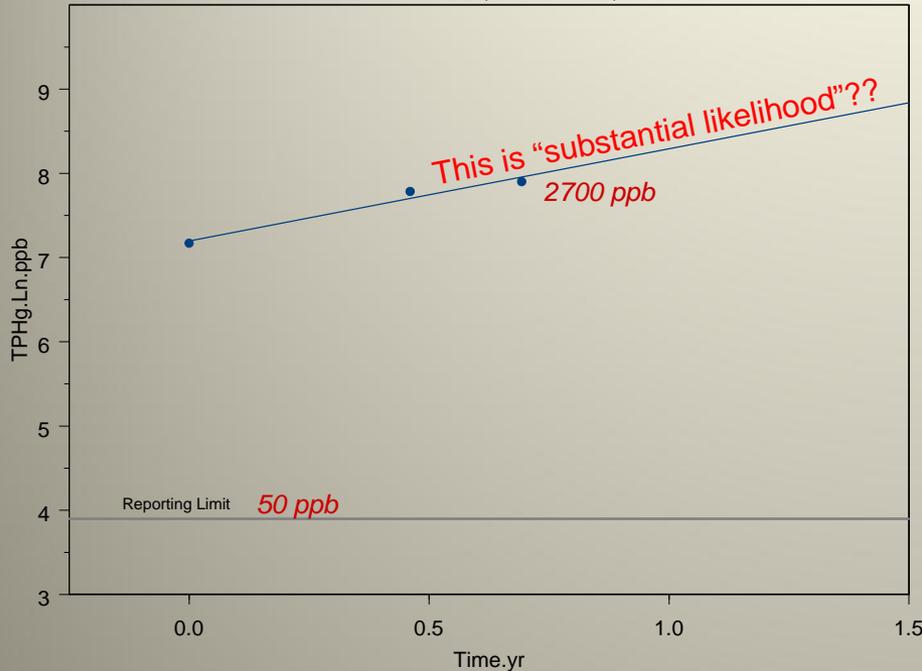


- Time to Meet Water Quality Objectives: Estimated to be 5 to 10 years for benzene and TPHg. All other water quality objectives have been attained.

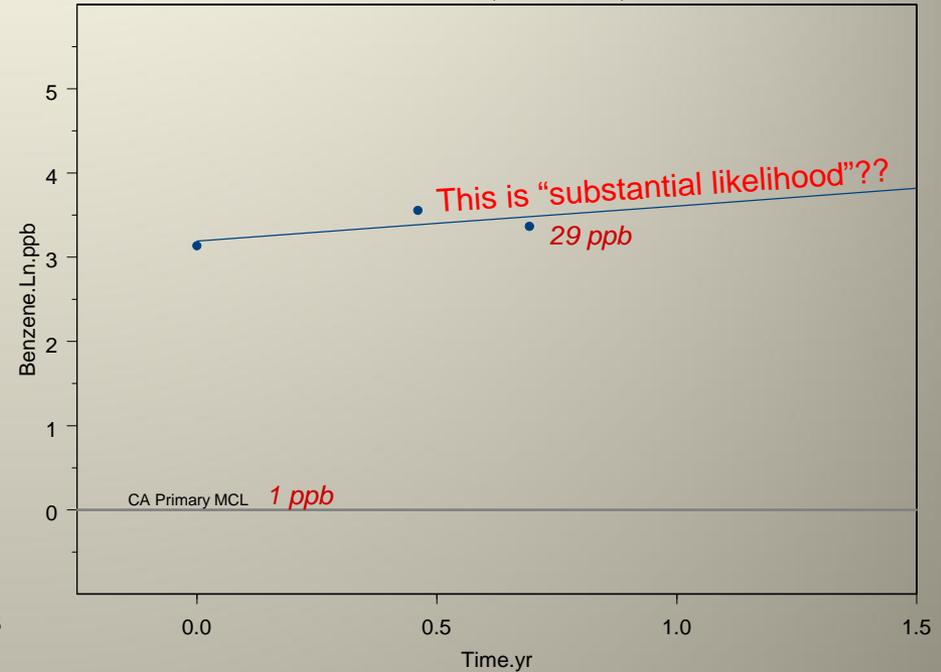
# Geremia Pools, Inc.

3264 Ramona St, Sacramento

MW3A TPHg (Post Remediation)  
3264 Ramona St, Sacramento, CA



MW3A Benzene (Post Remediation)  
3264 Ramona St, Sacramento, CA



1. One cannot reasonably project when WQOs will be met with three post-remedial data points.
2. **The basin plan has designated this water for municipal use.** It should be assumed the shallow water is useable, or is in connection with water that is useable, until shown otherwise.

# Northgate Food & Liquor

3016 Northgate Blvd, Sacramento

## Petroleum Hydrocarbon Constituent Concentration

Contaminant	Soil (mg/kg)		Water (ug/L)		WQOs (ug/L)
	Maximum	Latest	Maximum	Latest (3/2010)	
TPHg	270	NA	56,000	<50	5
Benzene	0.69	NA	5,200	<0.3	0.15
Toluene	5.2	NA	5,500	<0.3	42
Ethylbenzene	3.2	NA	1,100	<0.3	29
Xylenes	22	NA	4,900	<0.3	17
MTBE	53	NA	11,000	6.1	5
TBA	59	NA	16,000	<50	12
1,2-DCA	<0.005-<0.020	NA	210	4.1	0.4

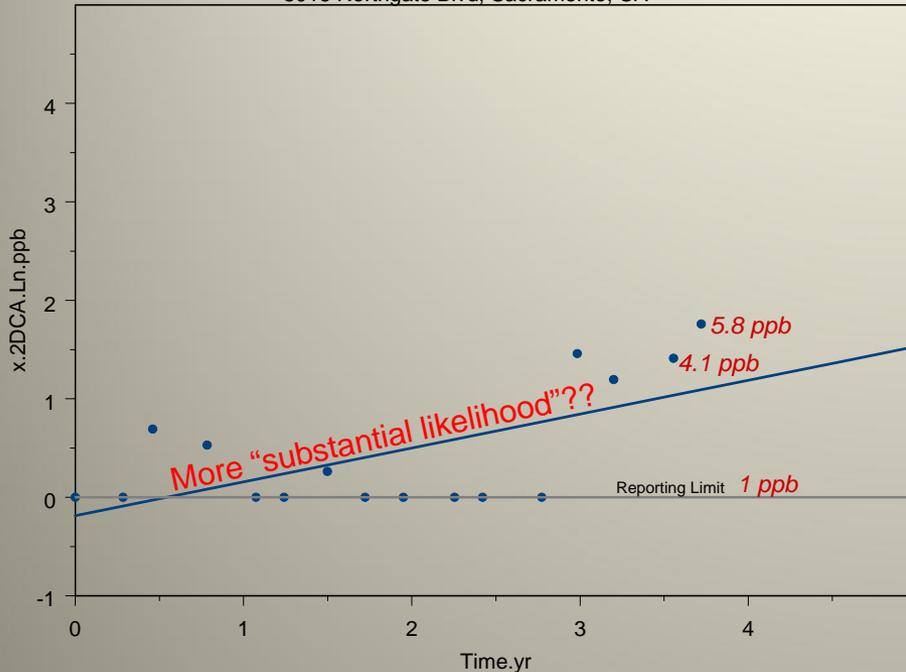
This is, to a large degree, what the USTCF is basing their closure recommendation on. While it is encouraging that active remediation was effective in reducing concentrations, it is only part of the story...

# Northgate Food & Liquor

3016 Northgate Blvd, Sacramento

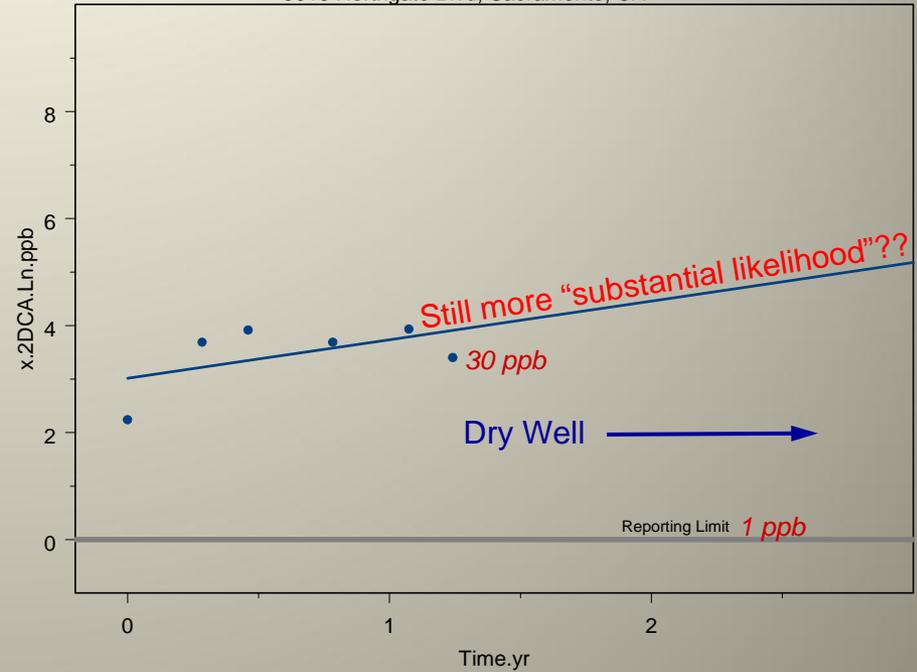
MW104 12-DCA (Post Remediation)

3016 Northgate Blvd, Sacramento, CA



MW101 12-DCA (Post Remediation)

3016 Northgate Blvd, Sacramento, CA



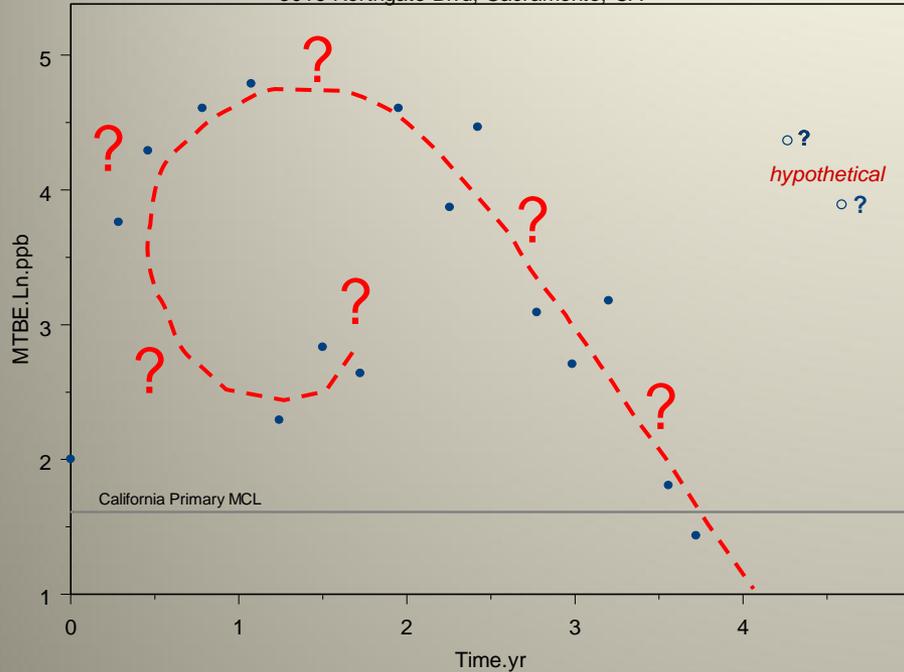
One cannot reasonably project when the WQO for 1,2-DCA will be met because:  
(a) 1,2-DCA was last detected in the source area well at 30 ppb and appeared to have been increasing, and (b) concentrations of 1,2-DCA currently appear to be increasing in MW104.

# Northgate Food & Liquor

3016 Northgate Blvd, Sacramento

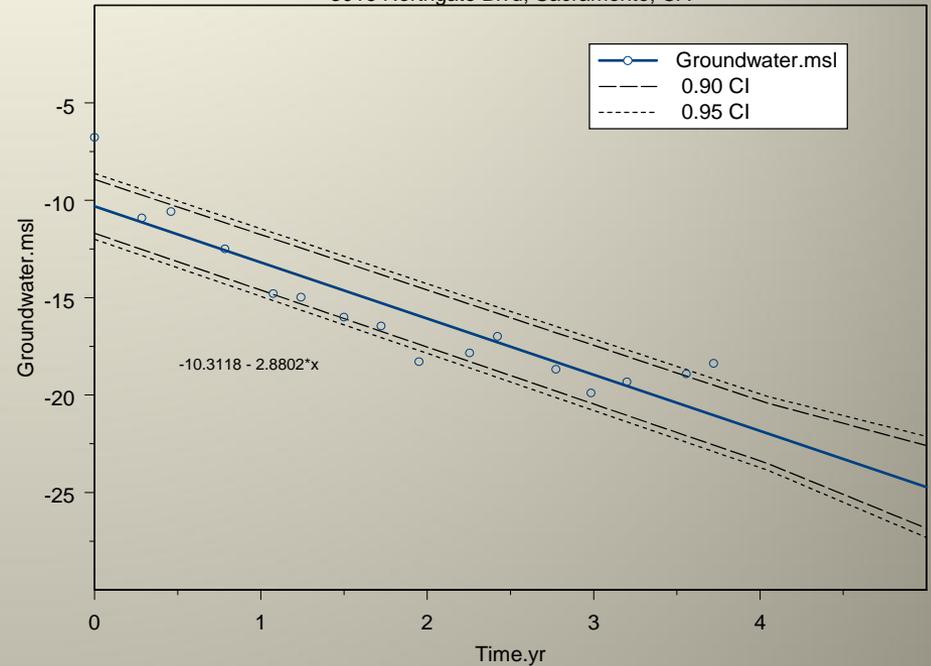
MW102 MTBE (Post Remediation)

3016 Northgate Blvd, Sacramento, CA



MW102 Groundwater MSL Projection

3016 Northgate Blvd, Sacramento, CA



1. One cannot reasonably project when the WQO for MTBE will be met because: (a) while the concentration decrease is significant at 0.2 (80% probability), fitting a defensible model (e.g., line or curve) in order to make a projection is problematic; (b) groundwater elevations have decreased over the post-remedial monitoring period at a little over 2.5 feet/year, and the scenario of a return to historic water level elevations has not been evaluated.
2. **The basin plan has designated this water for municipal use.** Domestic wells exist in the vicinity. It should be assumed the shallow water is useable, or is in connection with water that is useable, until shown otherwise.

# Silver Gas & Food

4625 El Camino Ave, Sacramento

We agree with the USTCF that **existing** data suggest this site is likely to present a low risk to human health and groundwater resources (after the monitoring wells are destroyed). However:

- 1.The RP is recalcitrant and has not followed our direction to re-sample the site monitoring wells and submit the analytical data with a closure request.
- 2.We are concerned that the wells may have become re-contaminated from surface spillage because: (a) they are not being properly maintained in accordance with our well ordinance, (b) they have not been sampled in 2½ years, (c) this is a very busy service station with auto repair facilities.
- 3.We are pursuing enforcement, and feel we need every enforcement tool available to us to ensure that groundwater has not been re-contaminated and the wells are properly destroyed. The existing monitoring wells currently remain as open, direct conduits to groundwater.
- 4.We have been told by environmental consultants that they will not work for the RP because of the RP's alleged nonpayment after receiving USTCF reimbursements.
- 5.If a closure letter is issued, two things happen: (a) our most effective enforcement tool is taken away, and (b) the RP will apparently be rewarded by the same agency that should be investigating the RP for improperly using USTCF reimbursements.

# Gold Rush Recycling

6545 Fair Oaks Blvd, Carmichael

The USTCF recommends closure of the UST issue, and transfer of the PCE issue to CVRWQB. Our office agrees. However, **we** cannot consider site closure because we have not received the required certification from the active RP that the fee title holders have been notified of a site closure proposal:

(When operating under the LOP) The local agency **shall not consider** cleanup or **site closure** proposals...unless all current record owners of fee title to the site of the proposed action have been notified of the proposed action **by the primary or active responsible party**...The primary or active responsible party shall **certify to the local agency** in writing that the notification requirement in this subdivision has been met...

Health & Safety Codes, § 25297.15(a)

If the USTCF Manager can close this site without the certification, our office does not object.

# Orbit Gas & Mini Store

8994 Greenback Ln, Orangevale

The USTCF recommends closure of the UST issue because the remaining mass of hydrocarbons in soil and groundwater is minor, the extent of contamination is defined, the groundwater plume is shrinking, and WQOs will be achieved in a few years. Our office agrees. However, **we** cannot even consider site closure because we do not have the required certification from the active RP that the fee title holders have been notified of a site closure proposal

If the USTCF Manager can close this site without the certification, our office does not strongly object. However, we have some reservations about making a habit of closing sites prior to destruction of monitoring wells.

# Walnut Grove Elementary School

14181 Grove St, Walnut Grove

Although we never received a closure request from the consultant or RP, we have no remaining objection to closure.

# Olympian Citrus Rd

2732 Citrus Rd, Rancho Cordova

We have no remaining objection to closure.

# Unintended Consequences?

1. Confusion. What does a municipal water designation mean if the waters are of such poor quality, or of such low yield, that they aren't expected to be used for 999 years? If SWRCB really believes that certain waters are not useable, and are not in connection with waters that are useable, then they should be de-designated.
2. Unequal treatment. It appears to us that the same standards are not being applied to non-UST sites (e.g., dry cleaners, railyards, plating facilities).