

Selenium Contamination of Groundwater & Surface Waters: A case history in the failure to enforce water quality standards

Irrigated Lands Framework
Comments Agenda Item #7
April 7, 2011



Permit History for Selenium Discharges From Grasslands Basin to Mud Slough and San Joaquin River: A Case History in the Failure to Enforce Water Quality Standards

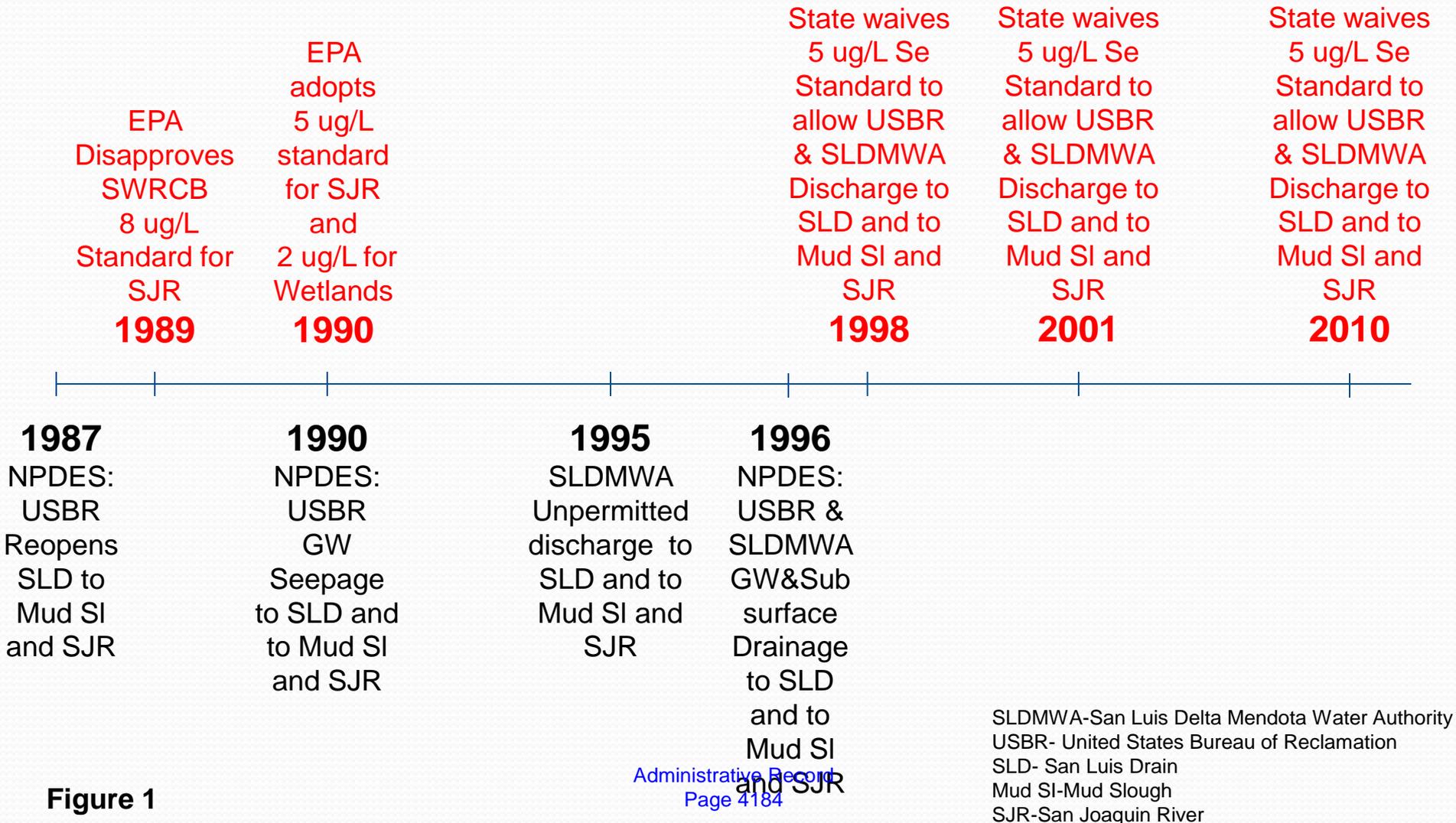
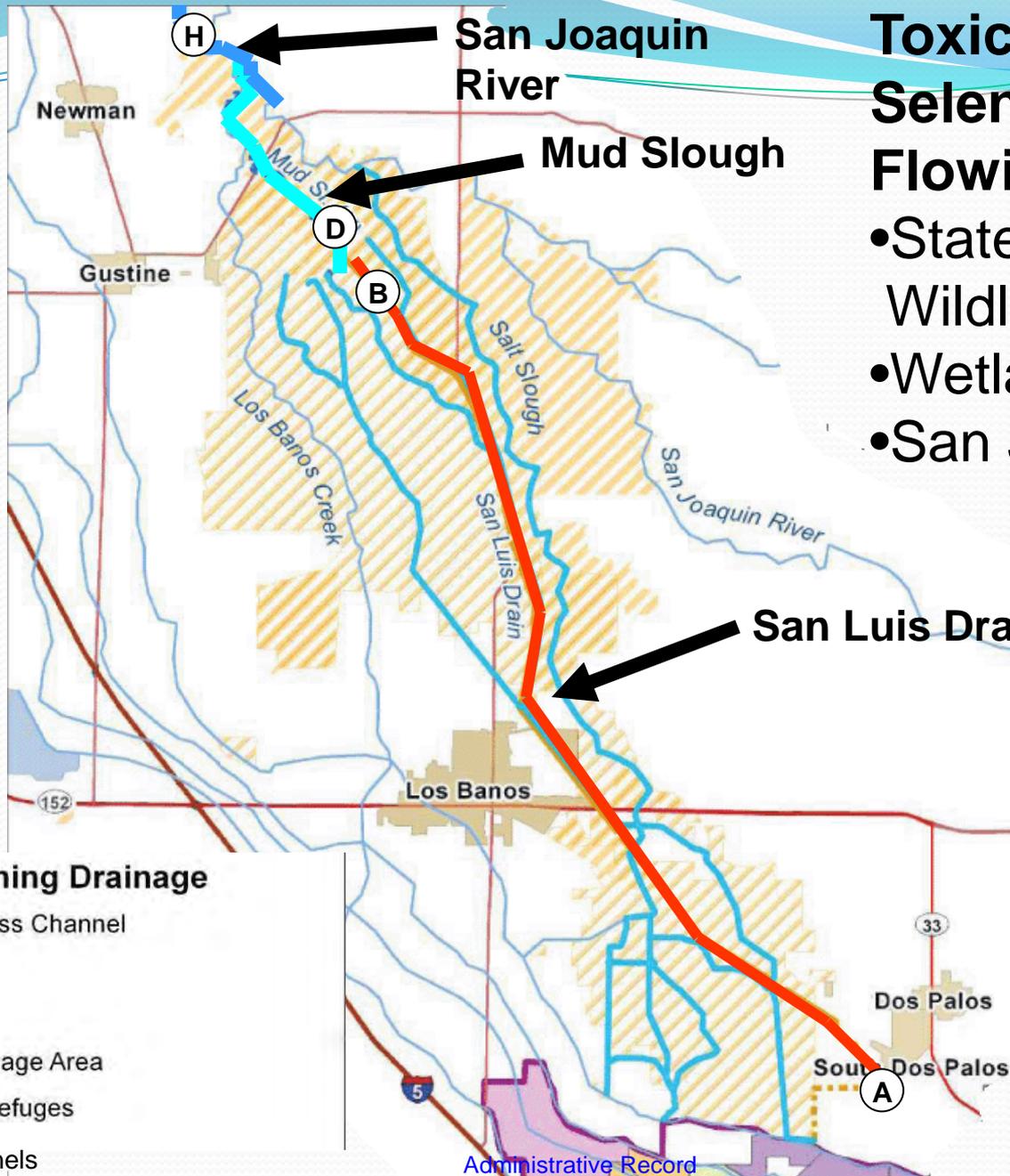


Figure 1

Toxic Levels of Selenium Flowing Through:

- State & Federal Wildlife Refuges
- Wetlands
- San Joaquin River



Legend

Channels Containing Drainage

- - - - - Grassland Bypass Channel
- San Luis Drain
- - - - - Mud Slough (N)
- Grassland Drainage Area
- Wetlands and Refuges
- Wetland Channels

Figure 2

Lethal Concentrations of Selenium in Irrigation Drainage Discharged from the San Luis Drain (Site B)

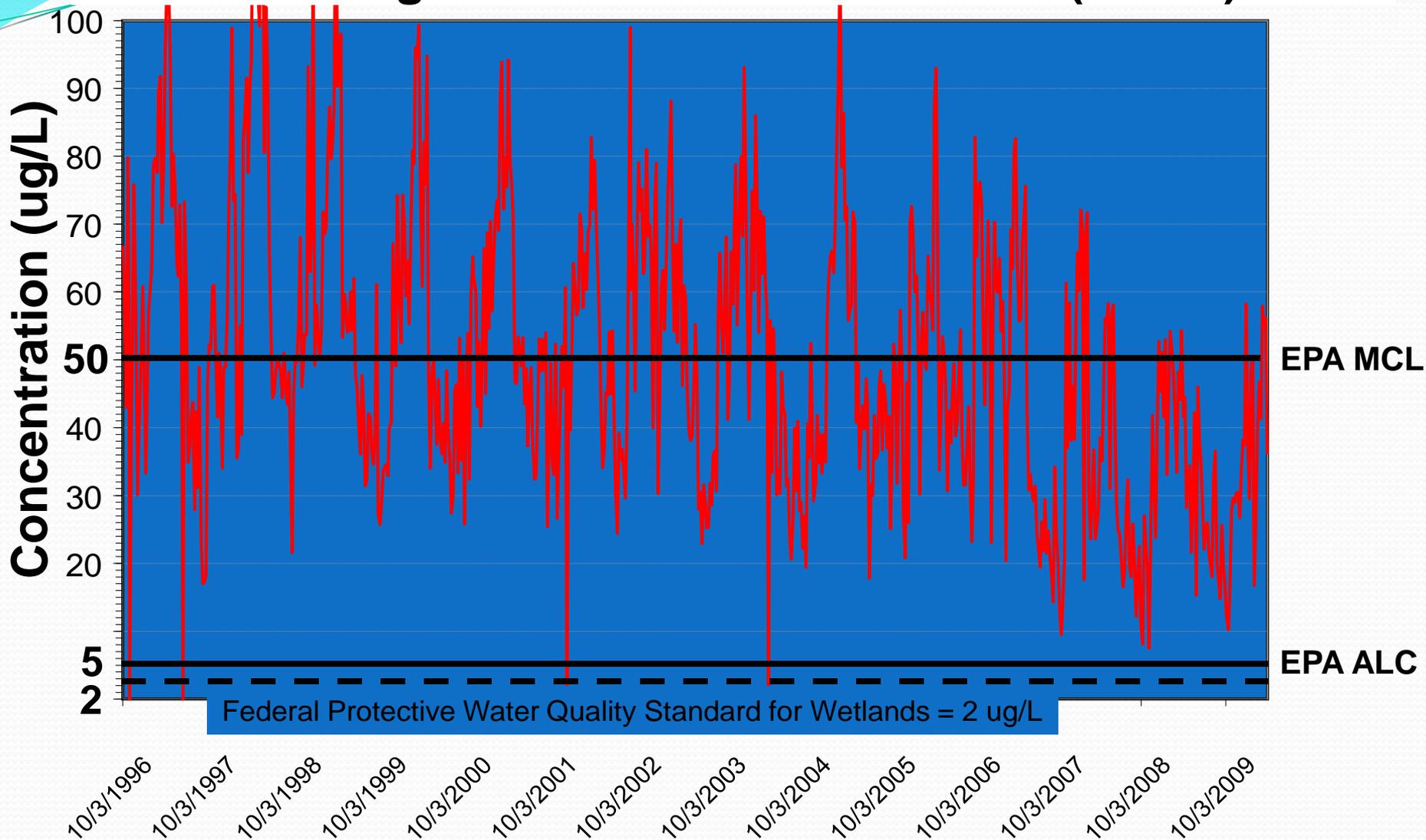


Figure 3

Lethal Concentrations of Selenium in Mud Slough (Site D) Through State and National Wildlife Refuges

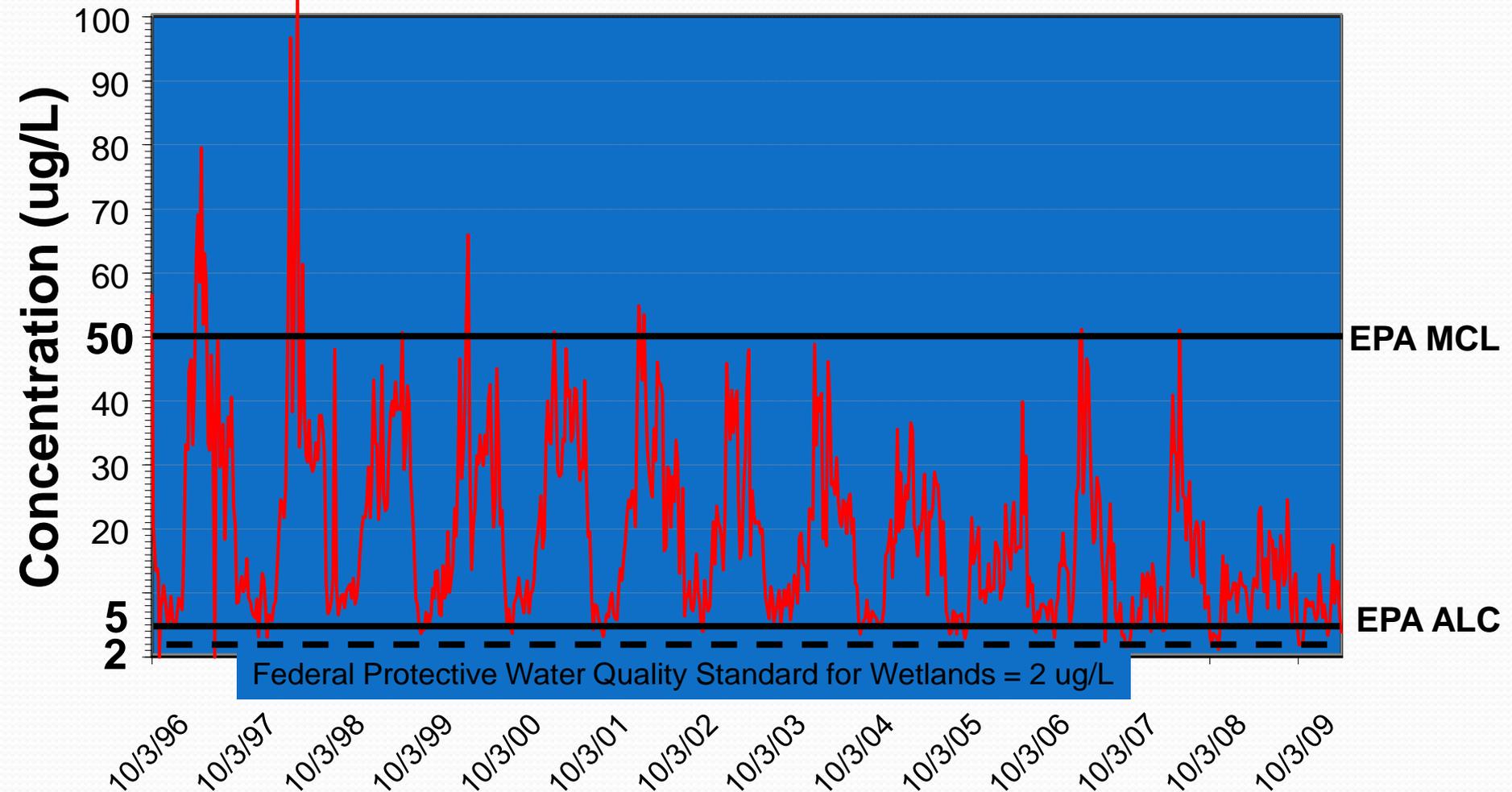


Figure 4

Lethal Concentrations of Selenium in San Joaquin River (Site H) Downstream of Mud Slough

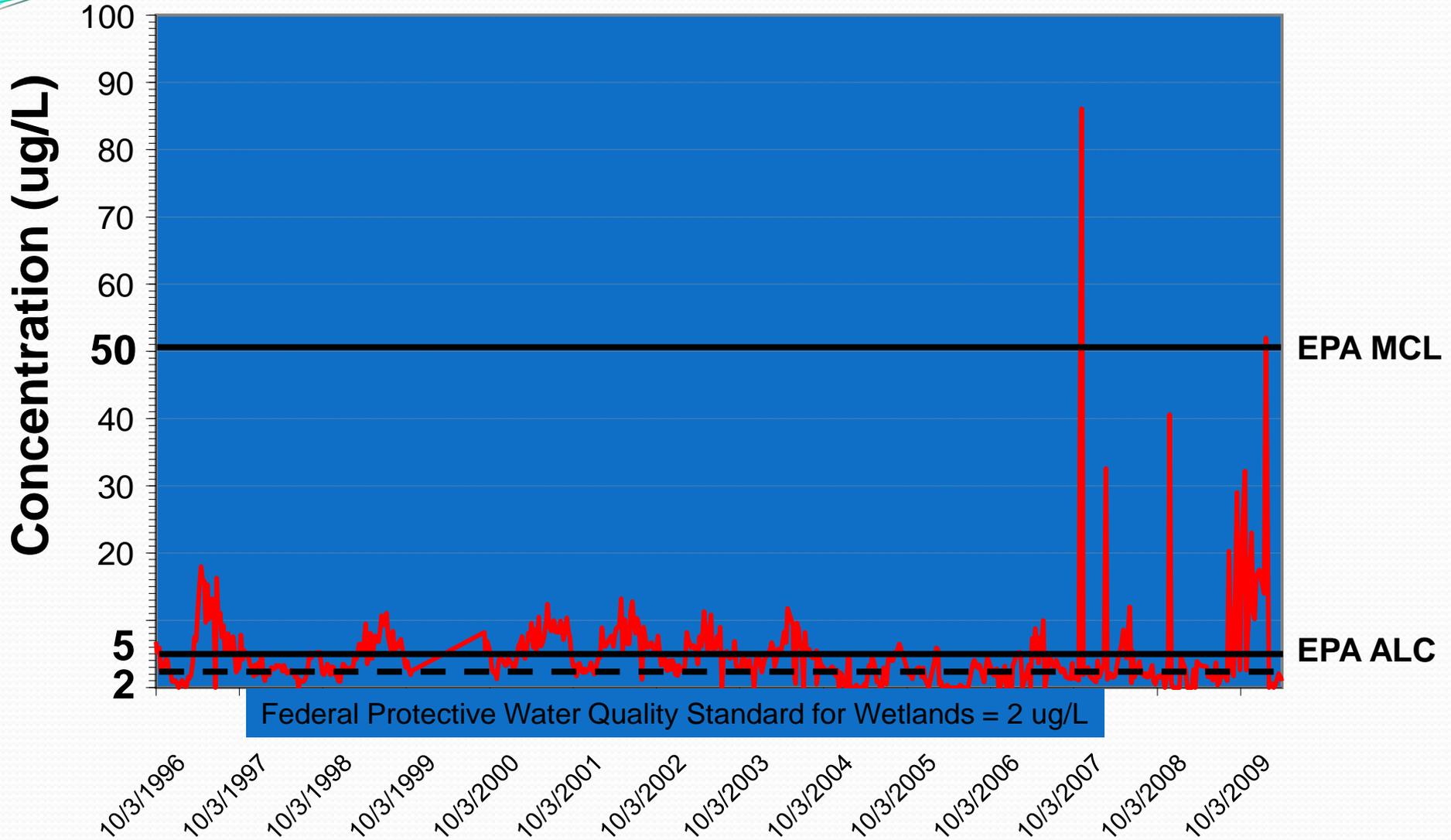
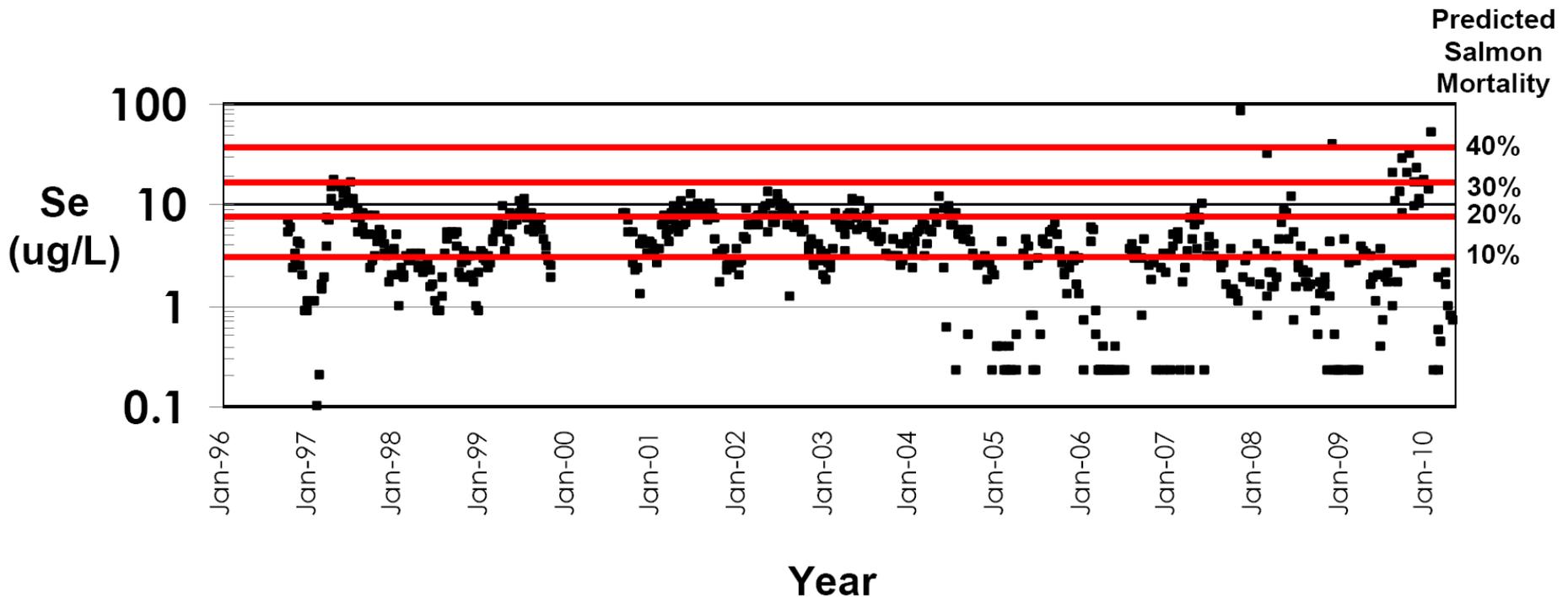


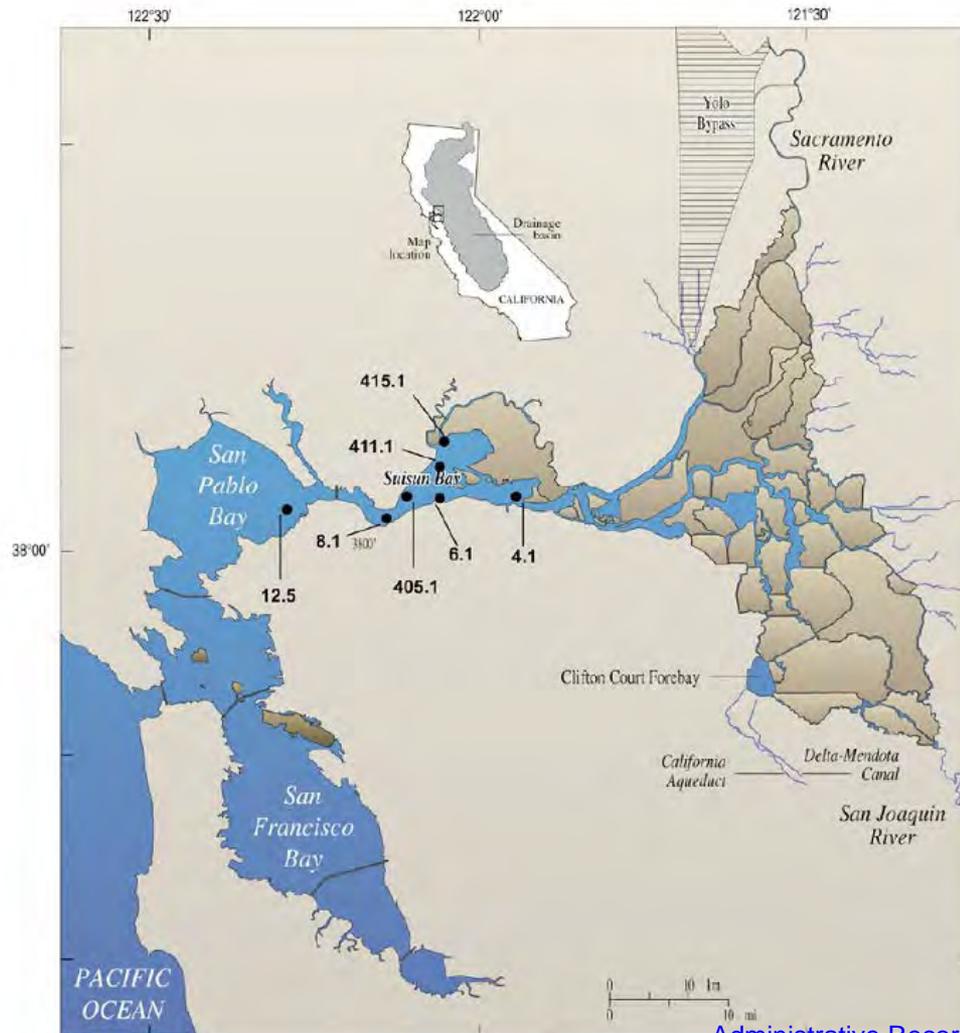
Figure 5

Selenium Levels in the San Joaquin River are not Safe for Salmon



Selenium concentrations measured in the San Joaquin River at Hills Ferry (data from the U.S. Bureau of Reclamation)

Selenium Impacts in Bay-Delta



Administrative Record
Page 4190

Unsafe levels of Selenium concentrations found in Suisun Bay and Northern San Francisco Bay. (2 to 22 ppb)

Selenium loads per day from Westside irrigators contribute approximately 10 to 30 times daily selenium load compared to the Sacramento and Oil refineries combined.

Figure 7

Imported irrigation leaches selenium and moves it into aquifers and surface waters. Unregulated and unmonitored, highly toxic Selenium-laden wastewater is being stored in aquifers harming beneficial uses.

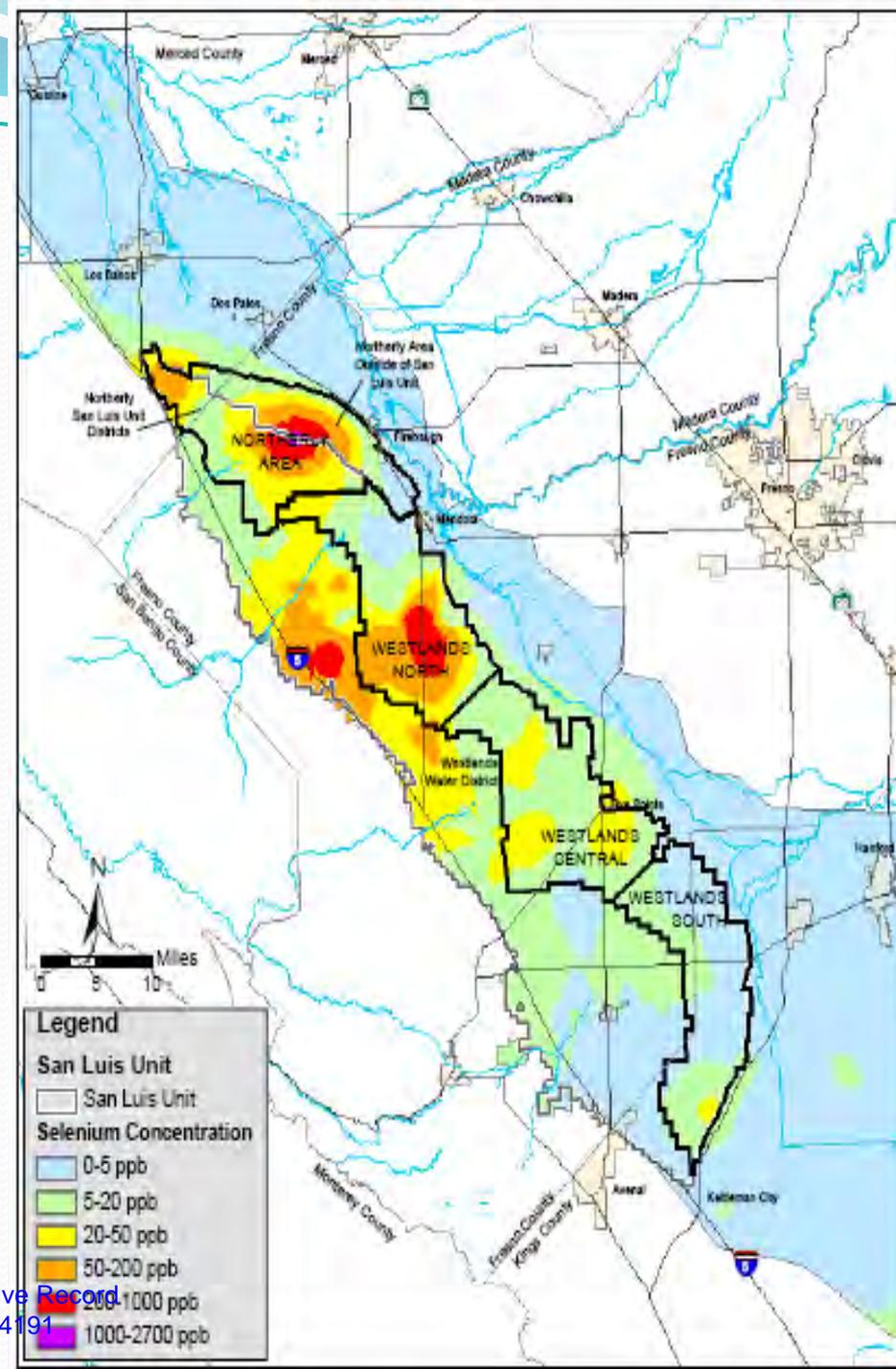


Figure 8

Ecological Threat

Don't repeat the problems found in the San Joaquin Valley in the Delta

2003 CVRWQCB Measured 1480 ppb Selenium in Shallow Groundwater Near Five Points



2003 University of California Salinity Drainage Program Annual Conference: Drainage Solutions, Joseph Skorupa, U.S. Fish and Wildlife Service Available at: http://www.wr.com/wr.usgs.gov/Selenium/Library_articles/joepond.pdf

Administrative Record
Page 4192

Figure 9