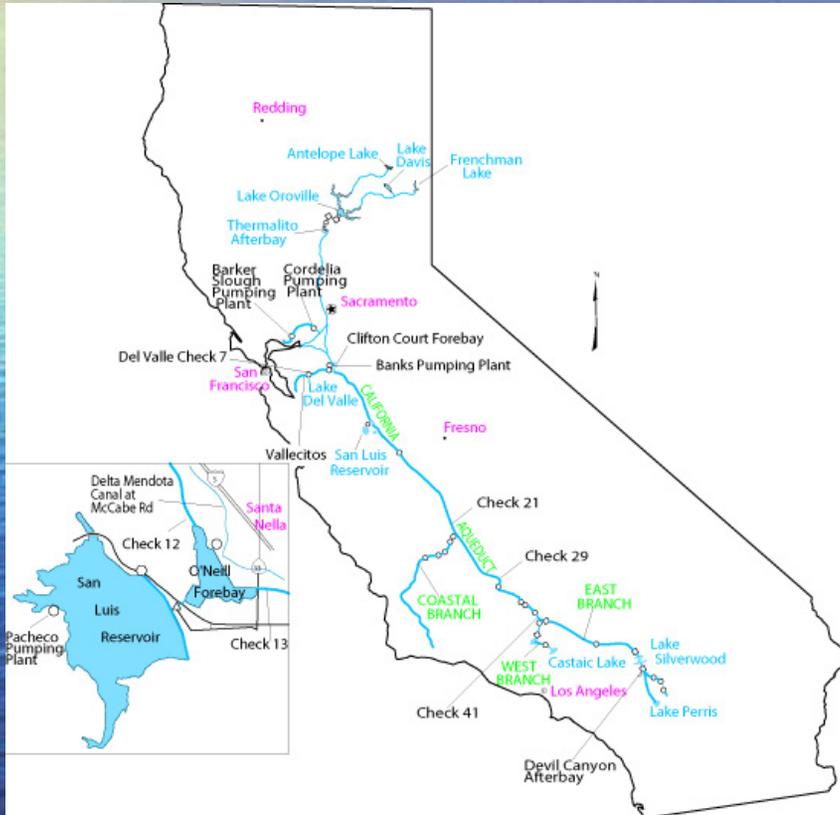


# STATE WATER PROJECT WATER QUALITY MONITORING PROGRAM

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# Overview of SWP Monitoring



- ◆ 12-Continuous Automated Stations
- ◆ 9-Primary Monthly Grab Sample Stations
- ◆ 7-Primary Organic Compound Sample Stations

# History of SWP WQ Monitoring

- ◆ In early 1960's long term water supply contracts included the Article 19 Water Quality Objectives.
- ◆ In 1965, Metcalf & Eddie Report recommended an extensive water quality sampling program.
- ◆ SWP became operational in 1968 & the Water Quality program began.
  - ▼ 57 monitoring stations established with monthly & thrice yearly sampling.
  - ▼ Parameters included metals, minerals, organics, nutrients, algae, etc.

# SWP Water Quality Monitoring Mandates

- ◆ Article 19 Objectives & Standards
- ◆ Drinking Water Standards
- ◆ CUWA/CALFED

# Article 19 Water Quality Objectives

Average for any

Constituents	Unit	Monthly Average	10-year period	Maximum
TDS	ppm	440	220	-
Total Hardness	ppm	180	110	-
Chloride	ppm	110	55	-
Sulfate	ppm	110	20	-
Boron	ppm	0.6	-	-
Sodium %	%	50	40	-
Fluoride	ppm	-	-	1.5
Lead	ppm	-	-	0.1
Selenium	ppm	-	-	0.05
Hexavalent Chromium	ppm	-	-	0.05
Arsenic	ppm	-	-	0.05
Iron & Magnesium	ppm	-	-	0.3
Magnesium	ppm	-	-	125.0
Copper	ppm	-	-	3.0
Zinc	ppm	-	-	15.0
Phenol	ppm	-	-	0.001

# Program Purpose

- ◆ Assess the influence of hydrological conditions & project operations on water quality.
- ◆ Document long-term changes in SWP Water Quality.
- ◆ Provide water quality data to assess water treatment plant operational needs.
- ◆ Identify, monitor, & respond to water quality emergencies & determine impacts to the project.
- ◆ Provide data needed to determine if Article 19 & DHS Drinking Water Standards are being met.
- ◆ Assess Water Quality issues of concern through special studies.

# Current Monitoring Program

- ◆ The SWP WQ monitoring program has expanded to include drinking water, fish & wild life, & recreational concerns.
- ◆ Chemical, physical, & biological parameters are monitored at < 40 sites including <200 constituents.
- ◆ Discrete grab samples are collected monthly at key sites.
- ◆ 12 automated stations continuously record physical water quality data.
- ◆ These data are available online at [www.womwq.water.ca.gov](http://www.womwq.water.ca.gov)
- ◆ These data are summarized monthly in SWC Monthly Board Meeting Reports.
- ◆ Comprehensive summary and analysis is presented in the Biennial Report.

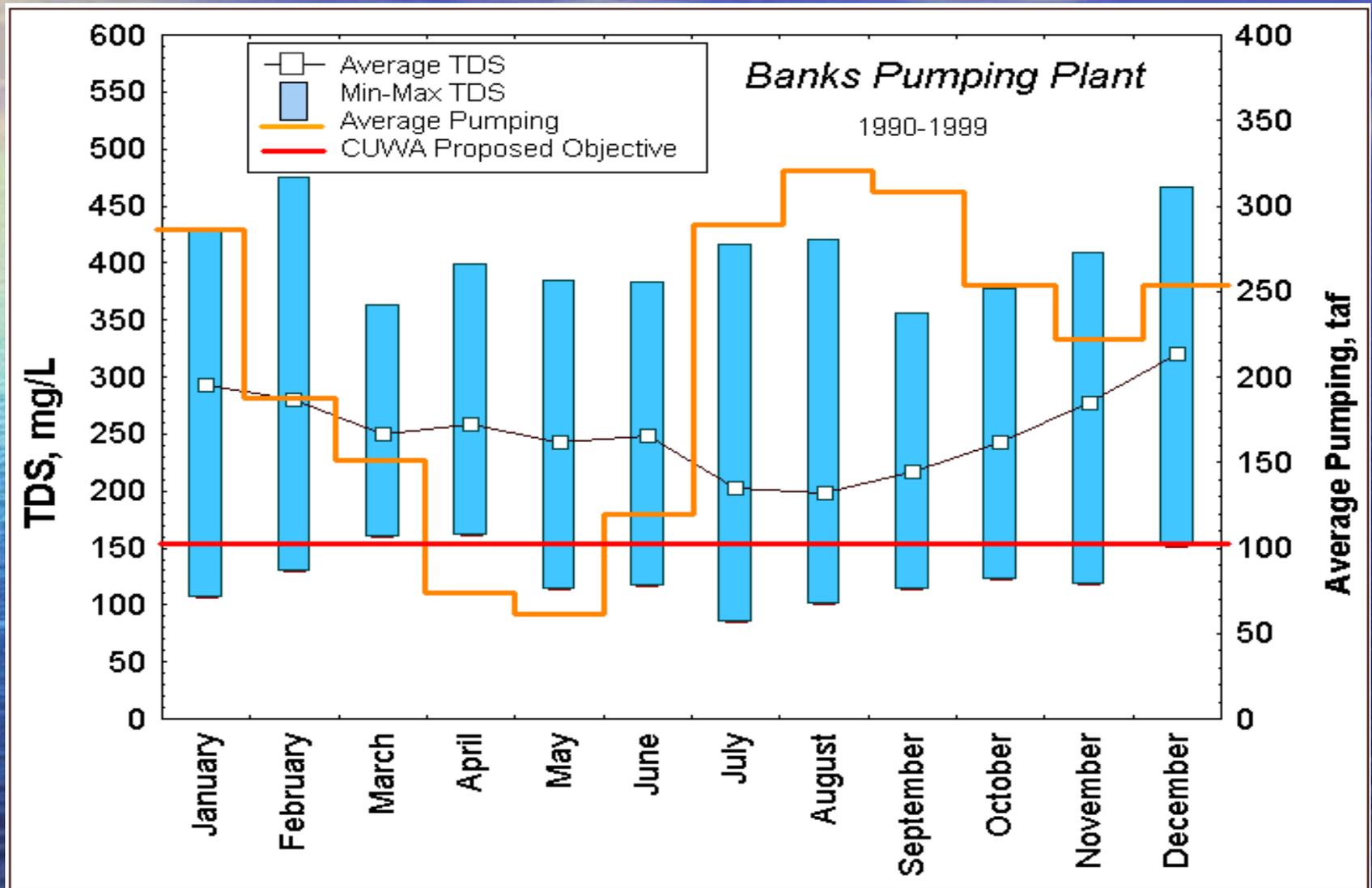
# Banks Pumping Plant Automated Station



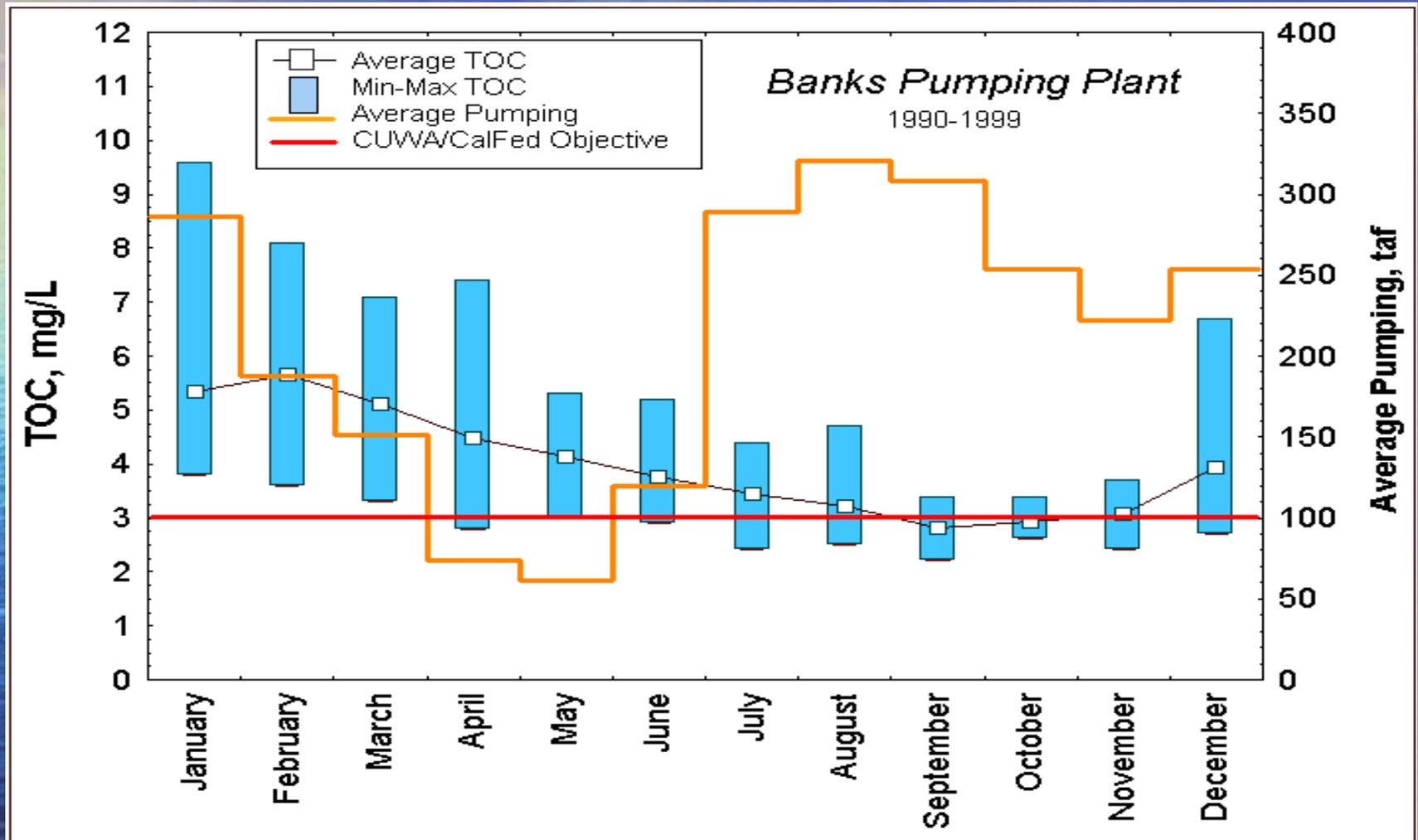
# Water Quality Issues

- ◆ Salinity
- ◆ Total Dissolved Solids
- ◆ Total Organic Carbon
- ◆ Pathogens
- ◆ Taste and Odor Compounds

# Salinity

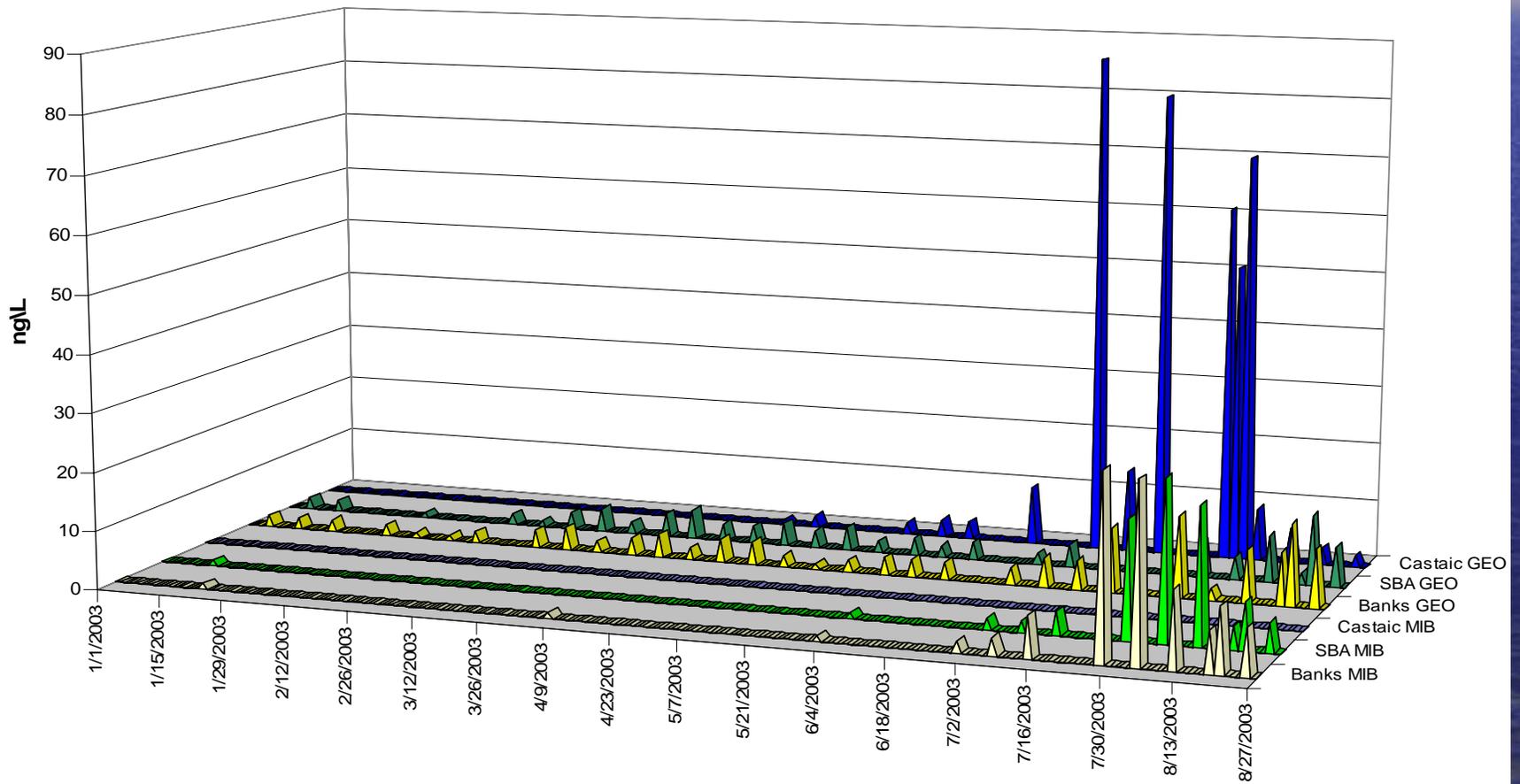


# Organic Carbon



# Taste and Odor Compounds

## 2003 SWP MIB & Geosmin Concentrations



# Pathogens

- ◆ Include cryptosporidium, e. coli, Giardia, fecal coliform
- ◆ Monitoring has shown that pathogen contamination in the SWP is rare
- ◆ Pathogen concentrations are so low and rare in the SWP that monitoring is ineffective

# SWP Operation Effects on Water Quality

## ◆ North of the Delta

- ▼ Operations at the Oroville-Thermalito Complex (Flow and delta salinity)

- ▼ Delta Cross Channel Gate Operations (USBR) (Salinity at Banks Pumping Plant)

# SWP Operation Effects on Water Quality Cont.

## ◆ Delta

- ▼ Clifton Court Gate Operations (Water level and salinity)
- ▼ Timing and Volume of Delta Exports (Salinity and TOC)
- ▼ Placement of South Delta Temporary Barriers (Water level and Salinity)
- ▼ In-Project Treatments for Aquatic Plants & Blue-green Algae (Taste and odor)

# SWP Operation Effects on Water Quality Cont.

## ◆ South of Delta

- ▼ Joint-use Facility Operations (Floodwater inflow)
- ▼ Kern River Intertie Inflows (High quality water)
- ▼ Non-Project Groundwater Pump-in Program (Water quality trade-off)
- ▼ Operations at SWP Southern Reservoirs (Algae, taste & odor, EWA)
- ▼ Recreation (Pathogens)

# The Future of SWP Water Quality

- ◆ Integrate water quality into water operations  
– *Maybe*
- ◆ Water quality forecasting – *Maybe*
- ◆ Increased use of automated equipment – *Yes*
- ◆ UV light disinfection - *Yes*