


NUTRIENTS IN THE SAN FRANCISCO BAY

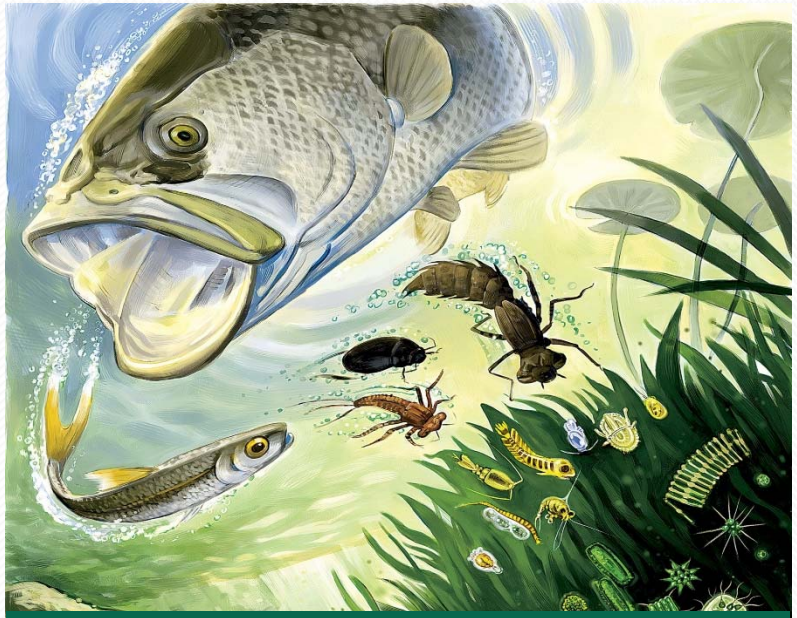
David Williams, BACWA Executive Director
May 13, 2015
BACWA/BAAQMD Joint Meeting

Overview

1. Why the concern about nutrients?
2. SF Bay Looks OK - Is it?
3. SF Bay Nutrient Strategy
4. Watershed Permit Approach
5. BACWA's Role
6. Optimization/Upgrade Studies

Why the concern about nutrients?

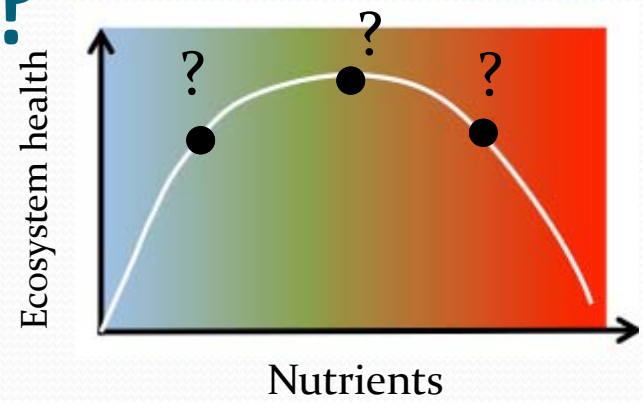
- Potential Environmental Impacts of Nitrogen and Phosphorus



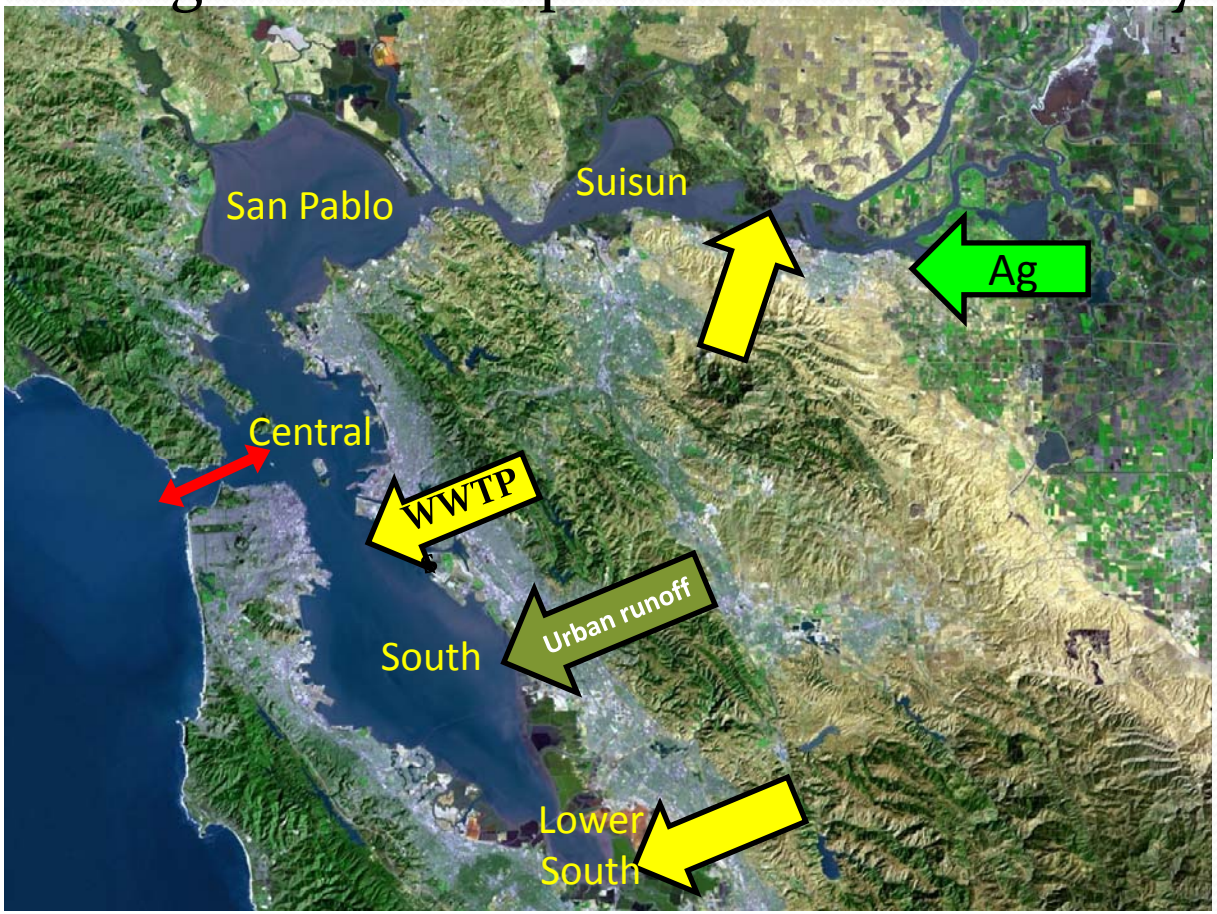
Why the concern about nutrients?

- Regulatory Mandates – Dischargers in other part of the country have been given nutrient limits that are below the limit of technology, based on overly precautionary science.
- High cost to address – Full nitrogen/phosphorus removal is $millions/mgd (estimated $10 billion regionally)
  - e.g. Nutrient Limits in Sacramento Regional NPDES permit 2010:
    - Ammonia 2.2 mg/L
    - Nitrate 10 mg/L
    - Estimated $1.5 - $2 billion for upgrades

SF Bay looks OK – is it?

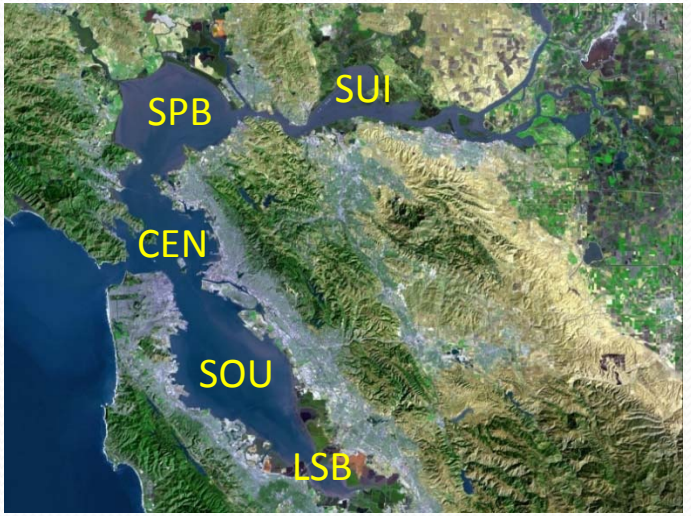


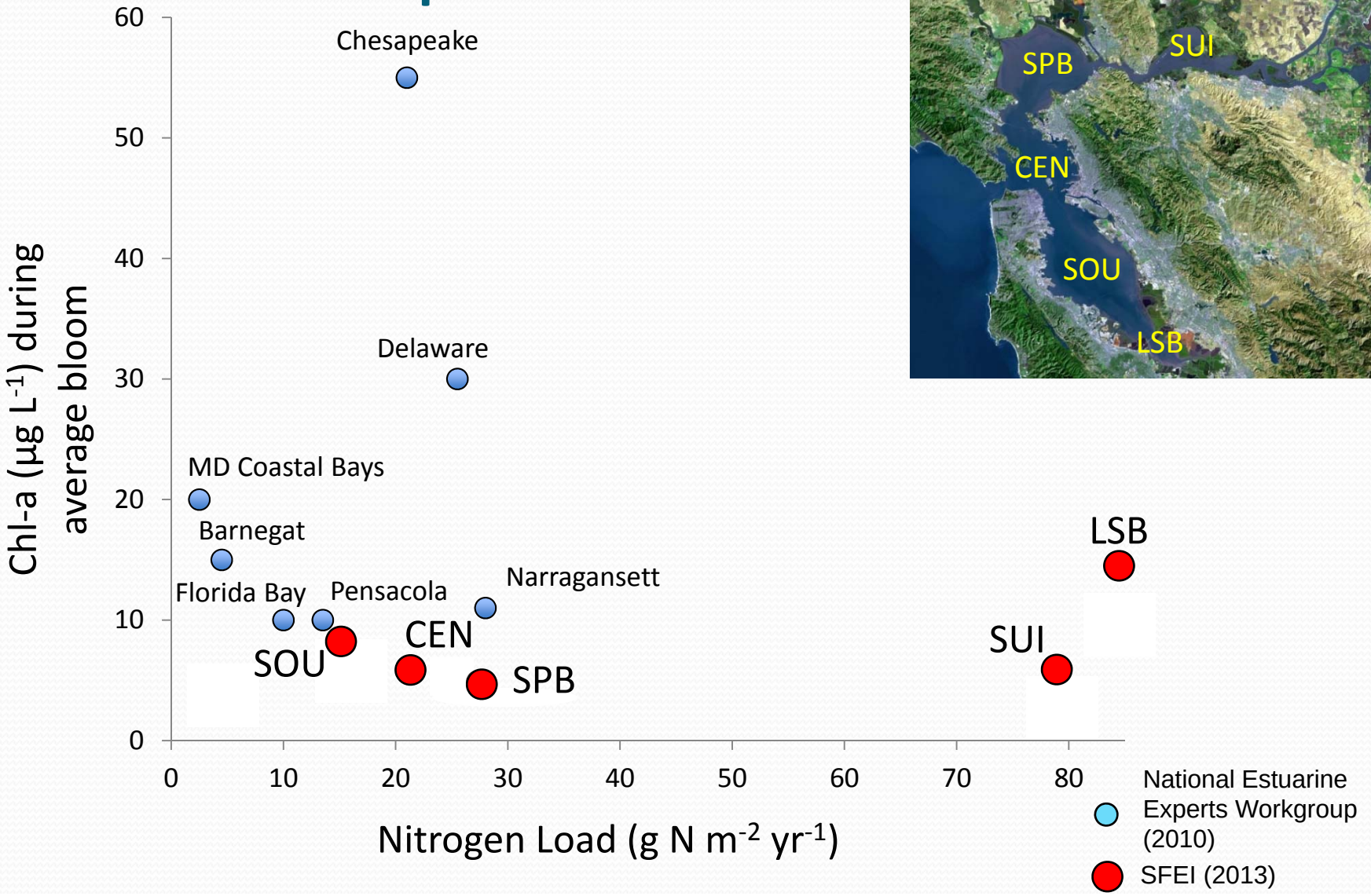
Nitrogen and Phosphorus Loads to the Bay



- Largest CA estuary
- Population = 7.6 M
- 42 WWTPs
- Drains 40% of CA
- Nitrogen and Phosphorus
  - Large loads
  - High concentrations

High Direct Nitrogen loads to SFB, but low impacts





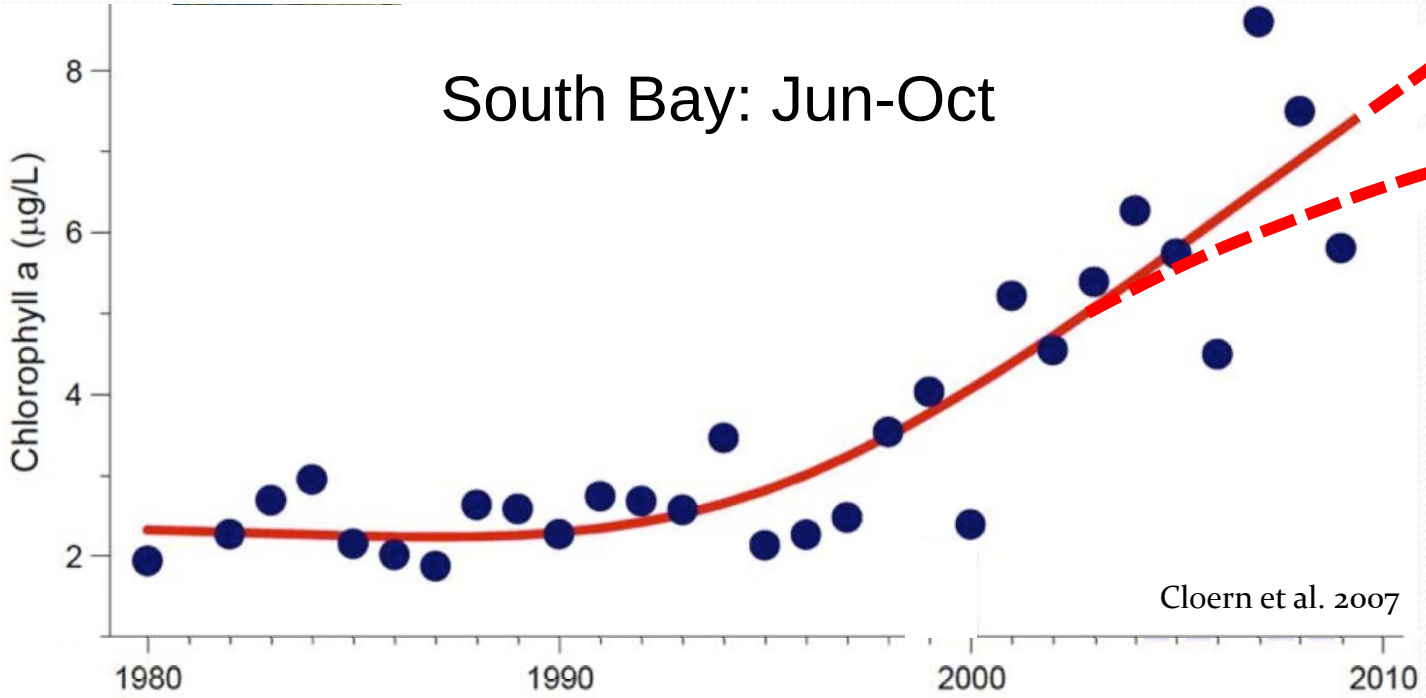
Why has San Francisco Bay been resilient to nutrients?

1. High turbidity blocks the light phytoplankton needs to grow
2. Strong tidal mixing reduces nutrient concentrations
3. Filter-feeding clams reduces phytoplankton concentrations

BUT

There has been a recent reduction in turbidity due to sediment capture by upstream dams, and clam populations are on the decline.

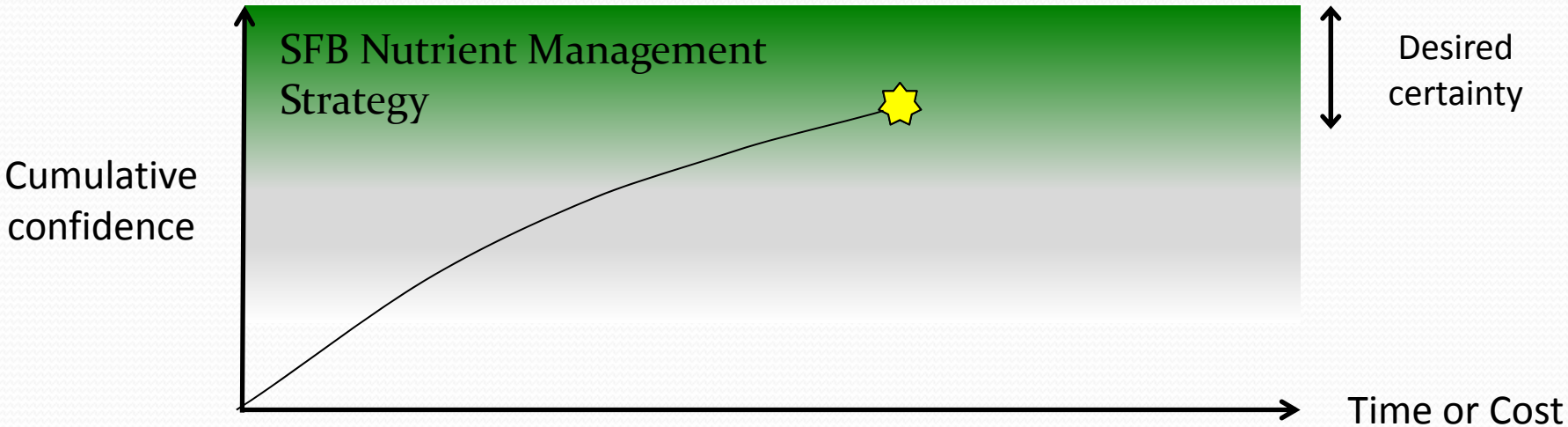
Ecosystem response is changing in San Francisco Bay



Will impacts continue to increase, or reach a new plateau?

The Regional Water Board and POTWs are working collaboratively to answer the following questions:

1. What constitutes impairment? Which areas are impaired?
2. Does SFB's trajectory signal future impairment?
3. What nutrient load reductions are needed? Where, how much?
4. How much time for science, planning, and implementation?

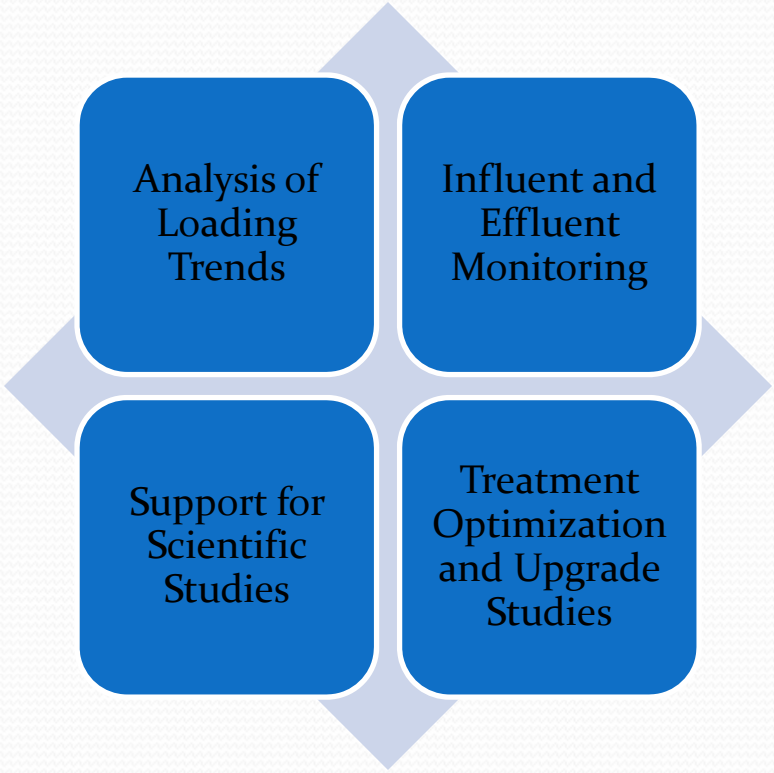


Watershed permit approach

- In 2013, the Regional Water Board began to work with BACWA to develop a regional watershed permit governing nutrients. This approach had the following advantages:
  - Stakeholders don't need to negotiate over nutrients on a permit-by-permit basis
  - Ensures regulatory certainty for dischargers for five years
  - Nutrients are a regional issue and negotiations are best conducted on a regional basis.
- BACWA convened a nutrient watershed permit negotiating team comprised of representatives of large and small POTWs from each of the five subembayments who met regularly with the Regional Water Board during the permit development period.

Watershed Permit Tenets

There are four main element of the 2014 Nutrient Watershed Permit:



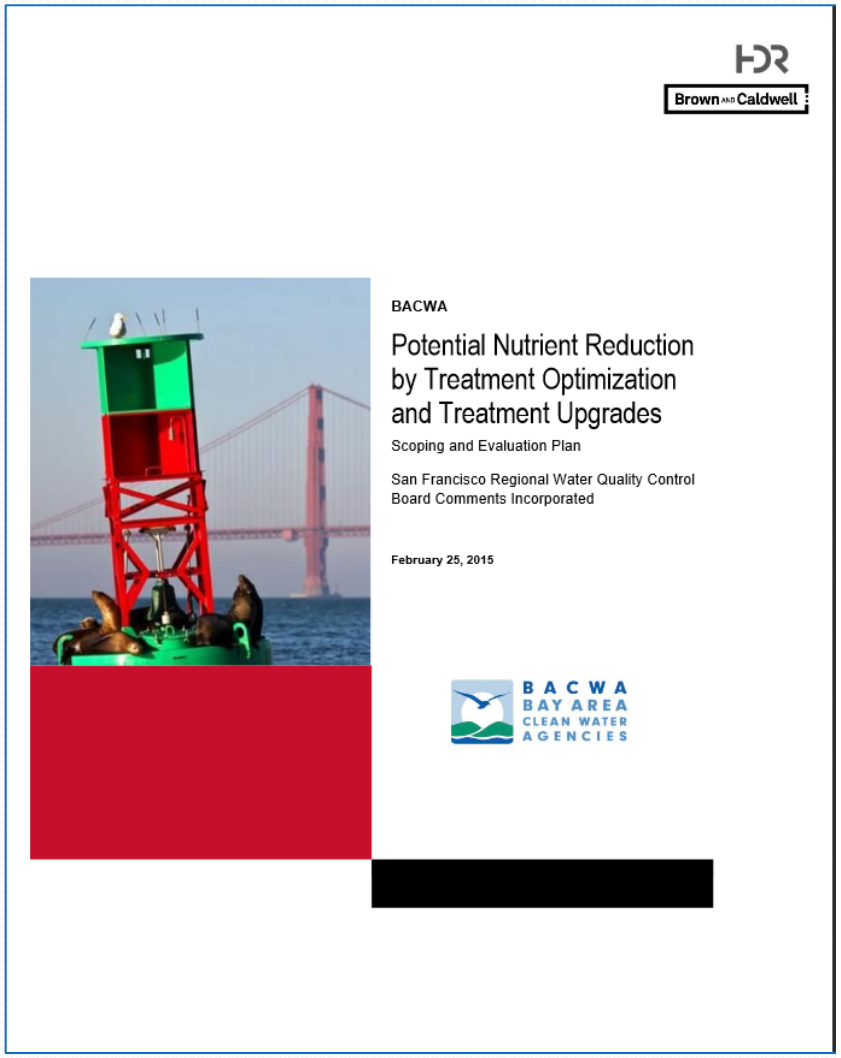
Future permits may require further contributions to scientific studies, and may seek to control nutrient discharges, depending on the results of these studies.

BACWA's Role moving forward

- Both the annual report and the optimization/upgrade studies allow a regional reporting option. BACWA will provide the annual report and consulting services to develop the Optimization/Upgrade studies on behalf of all members who wish to participate.
  - More efficient and cost effective option than if each agency prepares its own reports
  - Ensures regional consistency in reporting
  - Conduct of the studies will be managed by a contract management group of representatives from participating agencies.
- BACWA has two voting seats on the steering committee that governs the prioritization of the scientific studies

Optimization/Upgrade Studies

- BACWA has contracted a team led by HDR to lead the optimization and upgrade studies
- Team is conducting site visits in 2015, looking for opportunities for optimization and sidestream treatment, and identifying upgrade technologies that make sense
- GHG emissions will be quantified for all alternatives
- Final Report to be completed in Summer 2016



Questions? Please Contact

David R. Williams

BACWA Executive Director

dwilliams@bacwa.org

(925) 765-9616

More information at bacwa.org/nutrients/