

# California State Water Boards' Framework and Strategy for Freshwater Harmful Algal Bloom Monitoring

## Freshwater Harmful Algal Blooms (FHABs) impact water quality and occur across all California counties

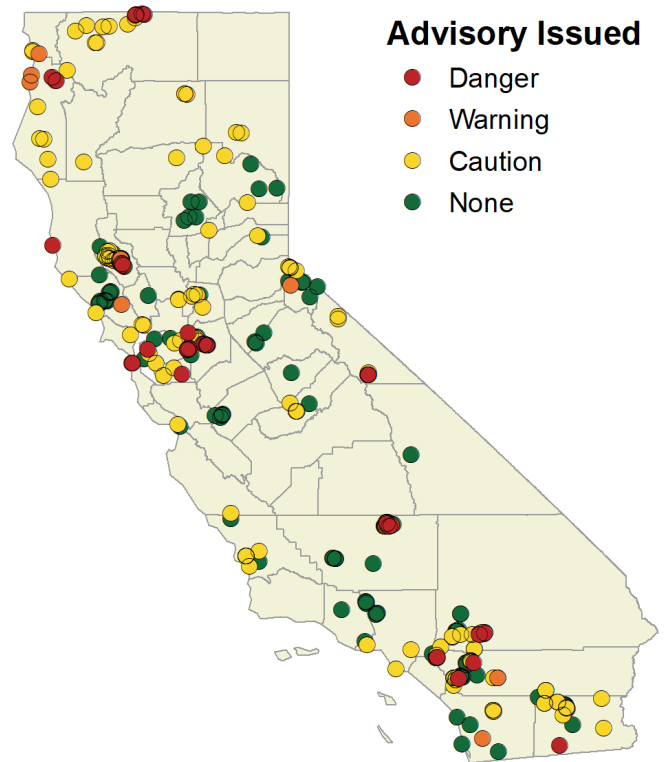
- Overgrowths of cyanobacteria or algae can produce toxins and impact aquatic conditions, such as lowering dissolved oxygen.
- FHABs threaten multiple beneficial uses related to drinking water, recreation, tribal culture, fishing, aquatic life, and agriculture.

## FHAB monitoring is needed to protect water quality and public health, but is sparse in Water Boards' programs and policies

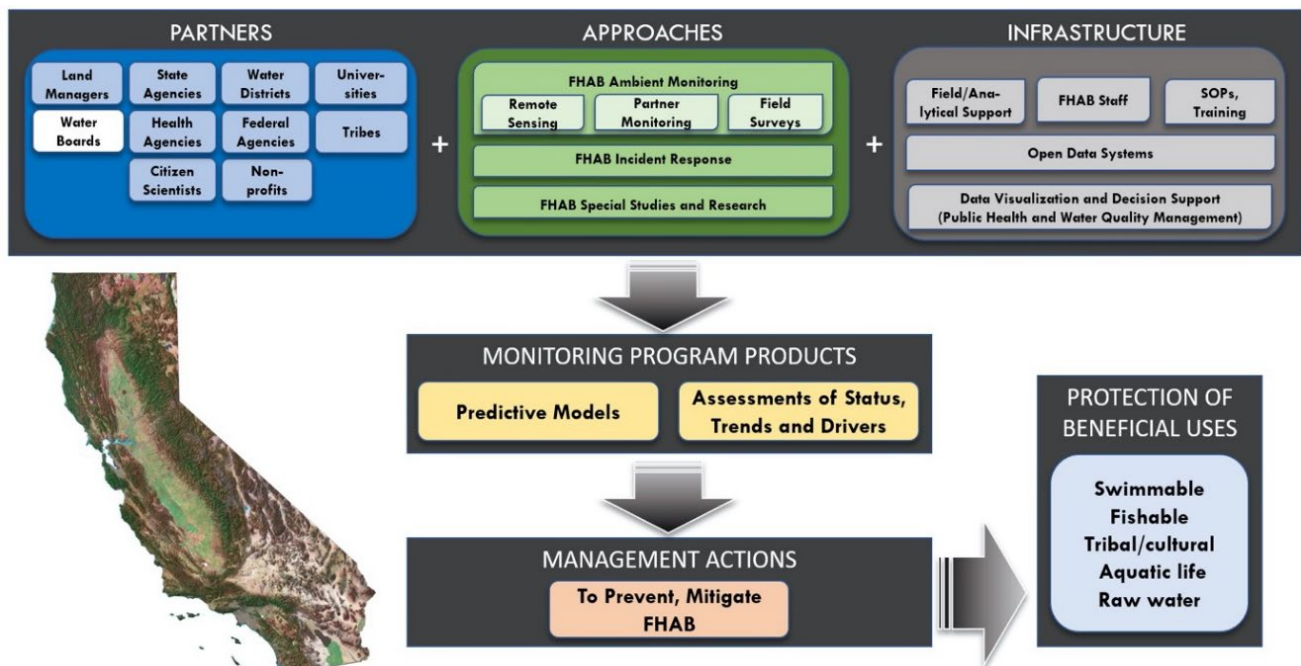
- Since 2016, the Water Boards has focused on short-term incident response to FHABs. Ambient monitoring to assess status and trends and compliance monitoring associated with permits has not been thoroughly developed.

## A comprehensive *Framework and Strategy for FHABs Monitoring* has been created to build California's FHAB ambient monitoring capacity in the coming years

- The monitoring strategy describes how multiple partners and monitoring approaches can be combined in phases to generate data to inform management decisions.
- The strategy report was co-authored by SWAMP (Surface Water Ambient Monitoring Program) and SCCWRP (Southern California Coastal Water Research Project).
- The strategy incorporates the recommendations and feedback of a 34-member Technical Advisory Committee.



FHABs occurrence across all counties shown in August 2020, FHAB incidents are color-coded by severity.



California's multi-pronged FHAB monitoring strategy will require participation by diverse **partners** implementing multiple types of monitoring **approaches** that are supported by a robust monitoring **infrastructure**.

## Six priority recommendations for FHABs monitoring

- 1. Develop and implement an FHAB partner monitoring program:** Given the challenge of deploying WB staff to collect samples, California should build capacity to leverage the efforts of private and public waterbody managers to help generate consistent FHAB data statewide. Partners could include Tribal governments, local health and park departments, drinking water agencies, private waterbody managers, and scientific non-governmental organizations.
- 2. Strengthen the incorporation of remote sensing into the program:** Given the ability of remote sensing data to complement field data for FHABs, the Water Boards should continue and expand the use of FHAB remote sensing products in lakes and reservoirs. This will enhance how remotely sensed data get used within the agency.
- 3. Implement field surveys focused on human health:** In addition to supporting partner monitoring, the Water Boards should use their limited internal resources to conduct – or coordinate – FHAB monitoring at high-priority waterbodies, with a goal to focus on protecting human health.
- 4. Conduct focused assessments of FHAB drivers:** Improved understanding of FHAB environmental drivers will help guide corrective management actions. Water Boards should conduct a drivers assessment to use existing data to screen available watersheds for FHAB risk, then prioritize high-risk watersheds for in-depth drivers assessments.
- 5. Synergize incident response with ambient monitoring:** To improve efficiency in responding to FHAB reports submitted by the public, the Water Boards should harmonize incident response protocols with ambient monitoring efforts.
- 6. Integrate FHAB monitoring elements into all relevant Water Board programs and policies:** Because the causes and consequences of FHABs are complex, the Water Boards should strive to incorporate FHAB monitoring and decision tools into applicable programs. The framework provides a staged integration of FHAB monitoring elements, as resources become available, which over time will create a unified and holistic approach across the agency to assess, manage, and prevent FHABs.

## Expanded Water Board efforts to address FHABs

- In 2019, California passed the Freshwater and Estuarine HAB Program [bill](#), which formalized the Program in the Water Boards.
- As a result of the bill, the Water Boards now has dedicated FHAB positions and an annual program budget.
- In January 2021, the Division of Drinking Water [announced](#) plans to develop cyanotoxin notification levels for public water systems.

## Outcomes of FHAB Ambient Monitoring for the Water Boards

The Monitoring Program will be operationalized in stages as resources become available. Anticipated outcomes include:

1. Strong collaborative partnerships to generate high-quality data to inform management decisions
2. Data and science products to fill information-gaps
3. Decision support tools to protect public health and to guide Water Boards' decisions and policies

Ultimately, the Program will provide complementary, cost-effective, actionable information to protect public health and mitigate water quality degradation from FHABs.



*An FHAB in a Southern California lake impairing recreation activities.*

Implementation of the strategy will be the most successful through the collaboration with multiple partners – across the Water Boards and beyond – to coordinate, pool, and leverage resources effectively. To explore potential partnership opportunities with the Water Boards' FHAB Program, please contact us at [cyanoHAB.reports@waterboards.ca.gov](mailto:cyanoHAB.reports@waterboards.ca.gov).

The FHAB Strategy [Executive Synthesis](#) and [Full Report](#) are available online. For more information about the FHABs Program, visit the CA FHABs Portal: <https://mywaterquality.ca.gov/habs>.

*The monitoring framework and strategy were co-authored by the Southern California Coastal Water Research Project and the State Board's Office of Information Management and Analysis under contract agreement # 17-070-270*