

New Developments in California's "My Water Quality" Portals

Harmful Algal Blooms (HABs) Estuaries



Jon Marshack, DEnv
Executive Director

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Assistant Director

Monitoring Council Statute

CA Senate Bill 1070



- Became California law in 2006
- Required formation of the California Water Quality Monitoring Council
- Required recommendations – December 2008
 - Maximize efficiency and effectiveness of existing water quality data collection and dissemination
 - Ensure data available to decision makers and public
- *A Comprehensive Monitoring Program Strategy for California* – December 2010

The Monitoring Council's Solution

Don't get mired in technical details!

- Focus first on streamlined data access
 - Theme-based web portals
 - Directly address users' questions
 - Single global point of entry
- Theme-specific workgroups
- Overarching Monitoring Council guidance
- Portal development highlights problems





Theme-Specific Workgroups and Portals

WATER BODY TYPES	THEMES				
	Drinking	Swimming & Contact Recreation	Fish Consumption	Aquatic Ecosystem Health	Stressors Affecting Multiple Uses
Streams & Rivers	Safe Drinking Water Workgroup	Inland Beaches Workgroup	Bioaccumulation Oversight Group	Healthy Watersheds Partnership	Cyanobacteria and Harmful Algal Bloom Network
Lakes				Coastal Beach Water Quality Workgroups	
Estuaries		Estuary Monitoring Workgroup			
Ocean Waters	N/A	N/A		Diagonal Hatched	
Wetlands	N/A		Diagonal Hatched	Wetland Monitoring Workgroup	
Tap Water	Safe Drinking Water Workgroup	N/A	N/A	N/A	
Groundwater		N/A	N/A	N/A	



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Wetlands	N/A		Wetland Monitoring Workgroup		
Tap Water	Safe Drinking Water Workgroup	N/A	N/A	N/A	
Groundwater		N/A	N/A	N/A	N/A

California Cyanobacteria and HAB Network



- Partnership of state, federal, and local agencies, tribes, and non-governmental organizations



- Under the overarching guidance of the California Water Quality Monitoring Council

California CyanoHAB Network (CCHAB)

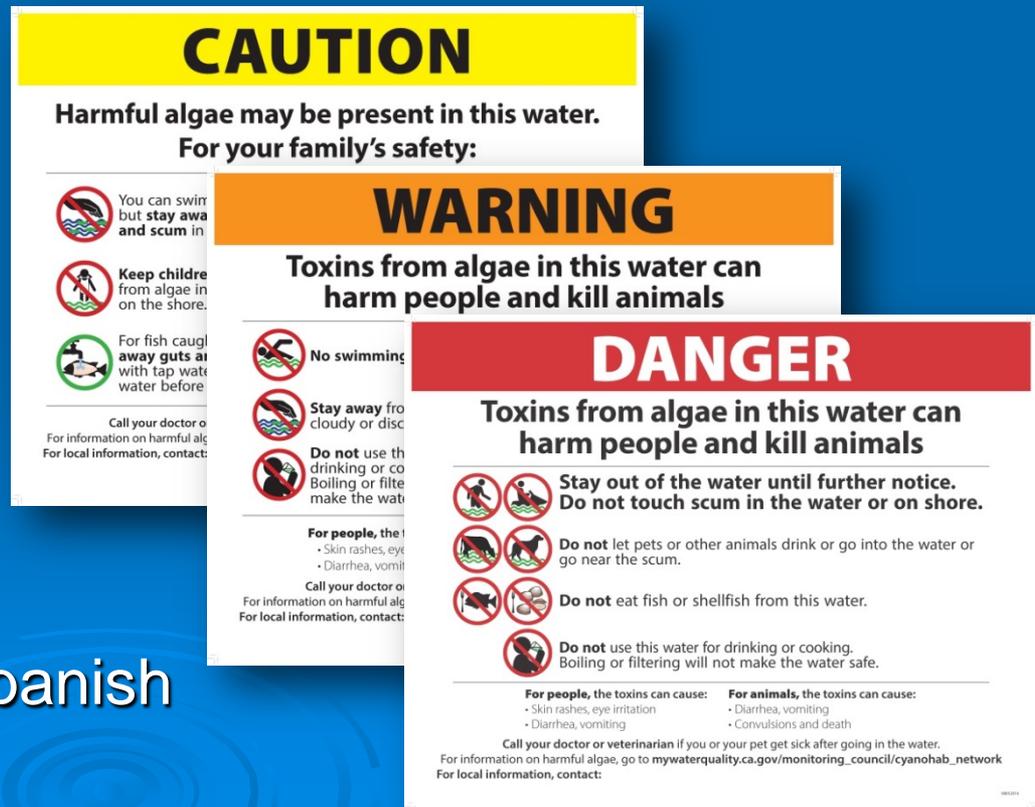


💧 Mission

- 💧 Work towards a comprehensive, coordinated program to identify and address the causes and impacts of cyanobacteria and HABs in California
- 💧 Cyanotoxin Voluntary Guidance for Recreational and Related Water Uses (2010)
 - 💧 Framework for interpreting monitoring data on cyanobacteria and cyanotoxins present in a water body and communication of the risks to public health and domestic animals

Recent Guidance Updates

- 💧 Decision Tree and narrative to guide posting and de-posting health advisories at water bodies
- 💧 Cyanotoxin Trigger Levels for protection of human health
- 💧 Signage for posting water bodies
 - 💧 In English and Spanish



CAUTION
Harmful algae may be present in this water.
For your family's safety:

-  You can swim but stay away from scum in the water.
-  Keep children from algae in on the shore.
-  For fish caught with tap water water before.

Call your doctor or veterinarian for information on harmful algae.
For local information, contact:

WARNING
Toxins from algae in this water can harm people and kill animals

-  No swimming
-  Stay away from cloudy or discolored water
-  Do not use this water for drinking or cooking. Boiling or filtering will not make the water safe.

For people, the toxins can cause:
• Skin rashes, eye irritation
• Diarrhea, vomiting

For animals, the toxins can cause:
• Diarrhea, vomiting
• Convulsions and death

Call your doctor or veterinarian if you or your pet get sick after going in the water.
For information on harmful algae, go to mywaterquality.ca.gov/monitoring_council/cyanohab_network
For local information, contact:

DANGER
Toxins from algae in this water can harm people and kill animals

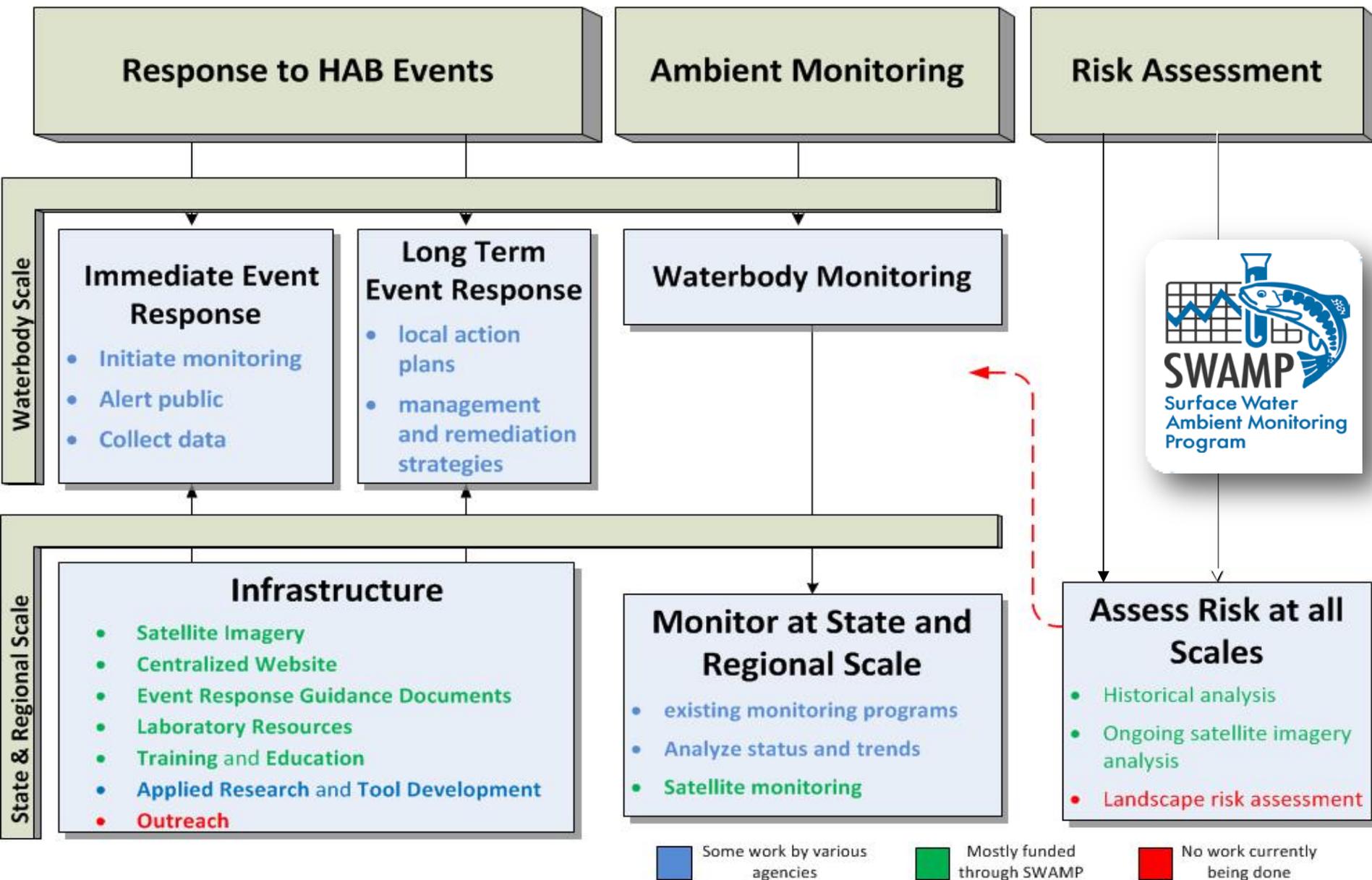
-  Stay out of the water until further notice. Do not touch scum in the water or on shore.
-  Do not let pets or other animals drink or go into the water or go near the scum.
-  Do not eat fish or shellfish from this water.
-  Do not use this water for drinking or cooking. Boiling or filtering will not make the water safe.

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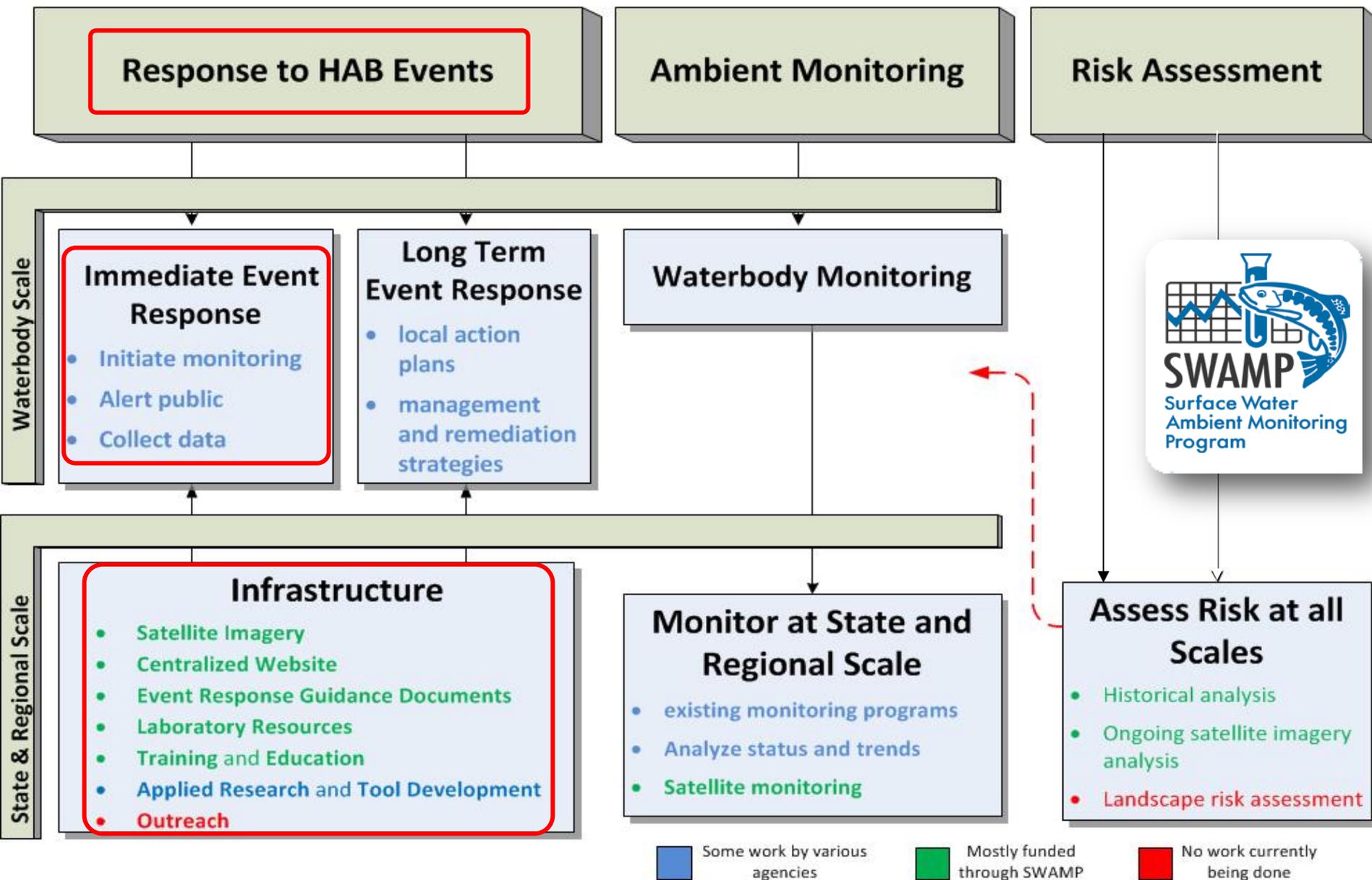
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Freshwater HABs Assessment and Support Strategy Framework



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California Harmful Algal Bloom Portal



www.MyWaterQuality.ca.gov



Portals

About Us

Work Groups

These web portals, supported by a wide variety of public and private organizations, present California water quality and aquatic ecosystem monitoring data and assessment information that may be viewed across space and time.



Welcome to My Water Quality

Is Our Water Safe to Drink?



Safe drinking water depends on a variety of chemical and biological factors regulated by a number of local, state, and

federal agencies. [\[Future Portal\]](#)

Are Our Aquatic Ecosystems Healthy?



The health of fish and other aquatic organisms and communities depends on the chemical, physical, and

biological quality of the waters in which they live.

[Learn more >>](#)

Is it Safe to Swim in Our Waters?



Swimming safety of our waters is linked to the levels of pathogens that have the potential to cause

disease. [Learn more >>](#)

Are Harmful Algal Blooms Affecting Our Waters?



Harmful algal blooms can make water unsafe for swimming and other recreational activities. The

toxins they produce can harm pets, livestock, and people. [Learn more >>](#)

Is it Safe to Eat Fish and Shellfish From our Waters?



Aquatic organisms are able to accumulate certain pollutants from the water in which they live, sometimes reaching

levels that could harm consumers. [Learn more >>](#)

About Us



The Monitoring Council seeks to provide multiple perspectives on water quality information and to highlight existing data gaps and inconsistencies in data collection and interpretation. [Learn more >>](#)

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- [More detailed information on freshwater HAB events](#)



News and Announcements

- [Report a Bloom](#)
- [Current Advisories](#)
- [Bulletins & Newsletters](#)
- [California CyanoHAB Network](#)

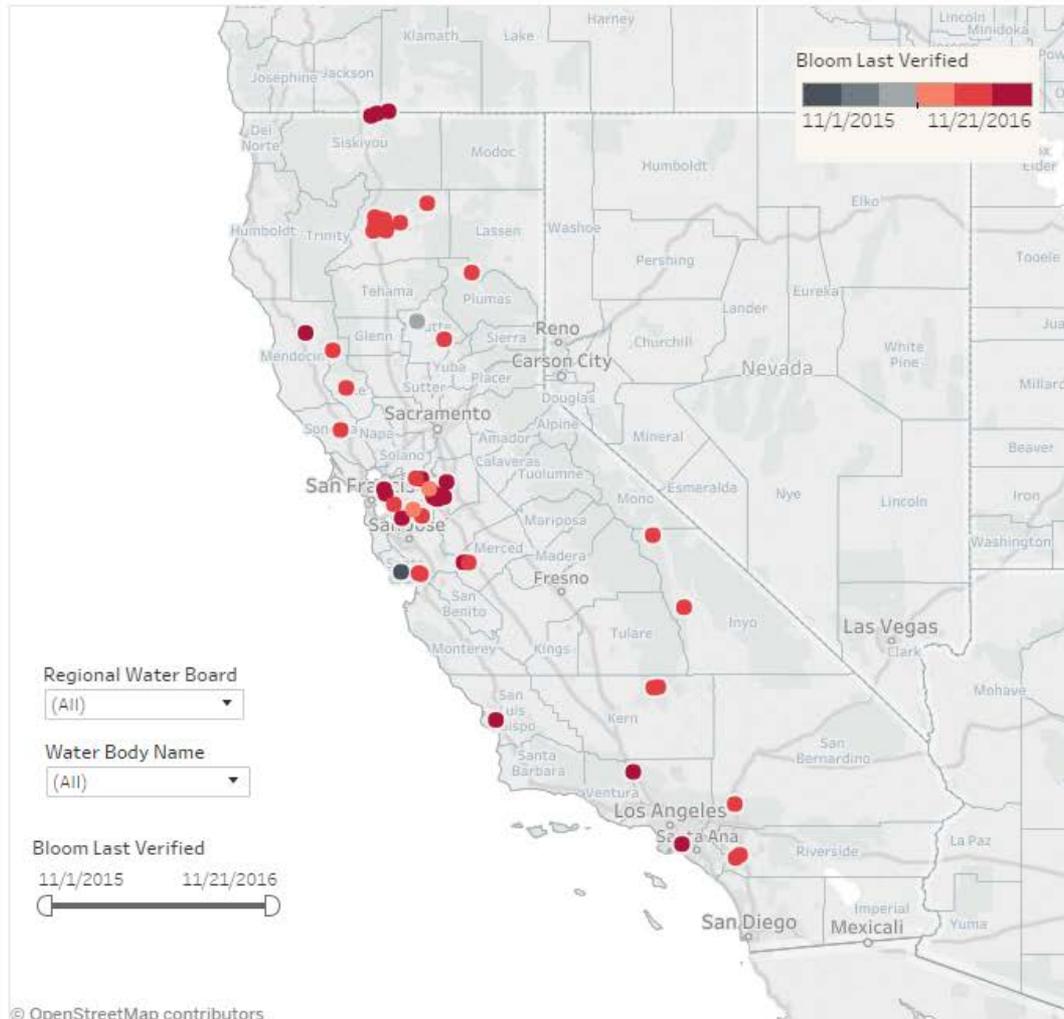
Questions Answered

- **What are harmful algal blooms?**
 - What are harmful algae?
 - Why are they important?
 - Where do they come from?
 - Why should I be concerned?
 - What are the impacts?
 - Swimming & recreation
 - Drinking water
 - Fish & shellfish harvesting
 - Domestic animals
 - Wildlife
- **Where are harmful algal blooms occurring?**
 - HABs event maps
 - Freshwaters
 - Marine waters
 - Satellite map
- **What can I do about a bloom?**
 - How do I identify harmful algae?
 - How can I report a bloom, or a related animal illness or human illness?
- **What resources and guidance are available to address harmful algal blooms?**
 - Recreational Water Uses

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 - Shellfish Harvesting
 - Monitoring
 - Laboratory Resources
 - Freshwater Assessment and Support Strategy
 - Freshwater Incident Response and Interagency Coordination
 - Informational Presentations
 - Other Resources



What are harmful algal blooms?

What are cyanobacteria and harmful algae?

At the base of the food chain in fresh, brackish, and marine systems are photosynthetic cyanobacteria and algae. Both single-celled microscopic and larger multicellular forms exist. When conditions are optimal, including light and temperature, levels of nutrients, and lack of water turbulence, cyanobacteria and some algae can quickly multiply into a **harmful algal bloom (HAB)**. Some cyanobacteria and harmful algae can produce toxic chemicals, including cyanotoxins, domoic acid, and other algal toxins.

Why are they important?

Cyanobacteria and algae are present in most freshwater and marine aquatic ecosystems, and perform many roles that are vital for ecosystem health. Cyanobacteria and algae provide organic matter and energy to higher trophic levels, such as aquatic insects and fish.

Where do they come from?

There are a large number of environmental factors that have been linked to bloom increases and toxin production. These include climate change, nutrient over-enrichment (nitrogen and phosphorus), higher temperatures, salinity, water residence time (stagnation), vertical lake stratification, organic matter enrichment, and high pH (more alkaline).

Why should I be concerned?

Cyanobacteria and harmful algal blooms (HABs) can have negative impacts on the environment, people, pets, wildlife, or livestock, as well as the economy. Some HABs can produce large amounts of cyanotoxins or algal toxins, which can poison livestock, wildlife, and humans. Certain other types of cyanobacteria are nontoxic but can impart an unpleasant taste to water and fish as well as giving off an unpleasant smell as they die and decay. Cyanotoxins and algal toxins pose risks to the health and safety of people and pets recreating in water bodies, eating fish, and drinking water. They can accumulate in fish and shellfish to

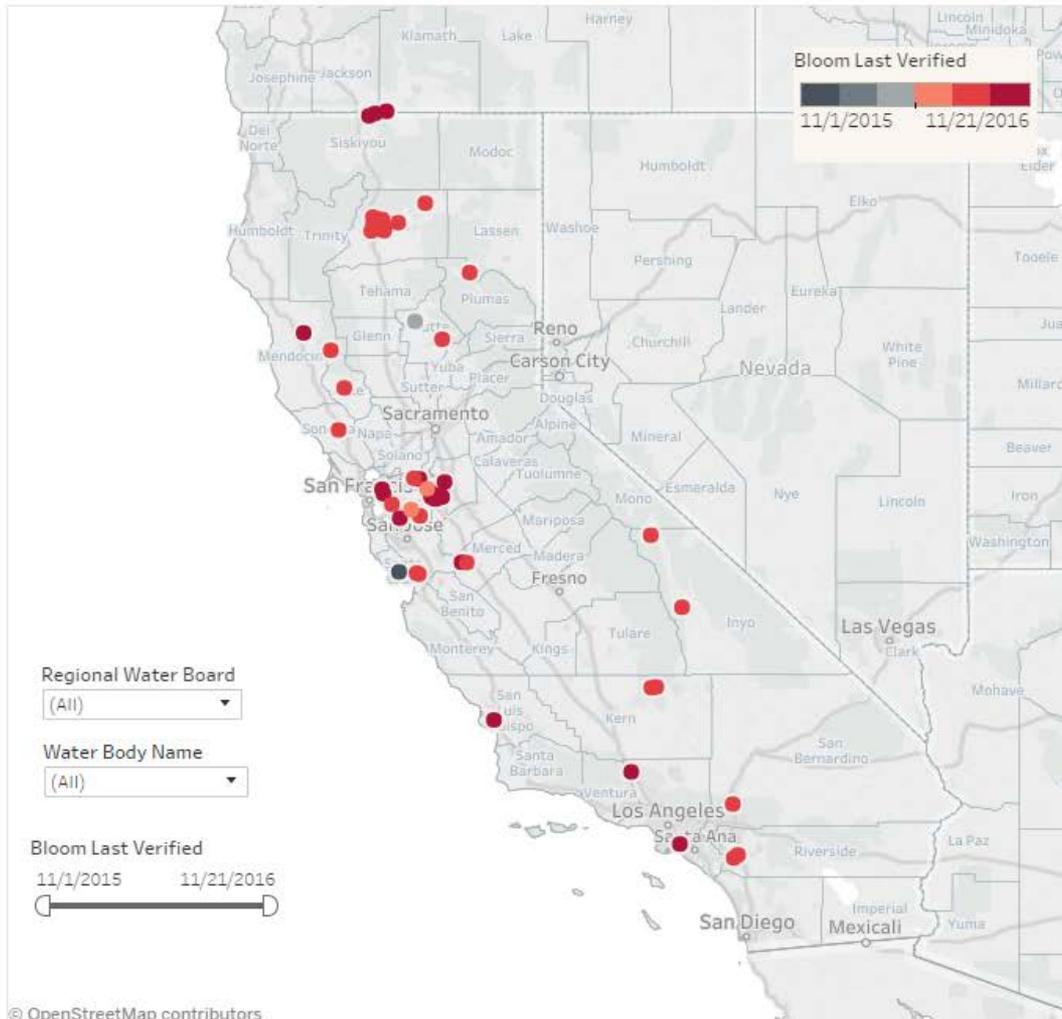
- What are the impacts of cyanobacteria and harmful algal blooms?
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 - Domestic animals
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- [How do I identify harmful algae?](#)



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Where are harmful algal blooms occurring?

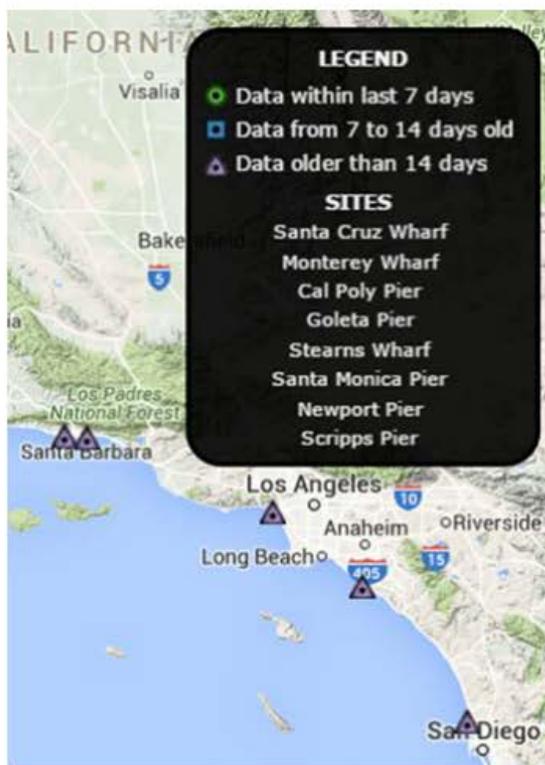
Freshwater HABs Event Map

Recreational closures and advisories



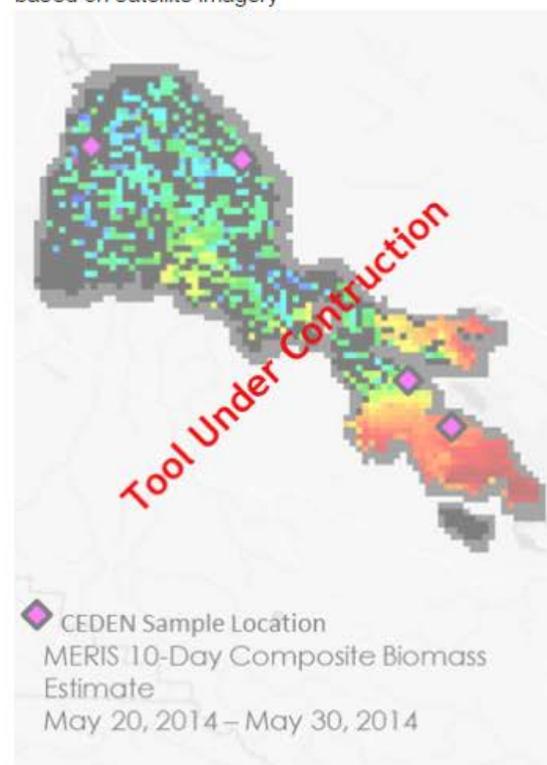
CalHABMAP

Marine HABs information



Satellite Maps

Where HABs are occurring in larger water bodies based on satellite imagery

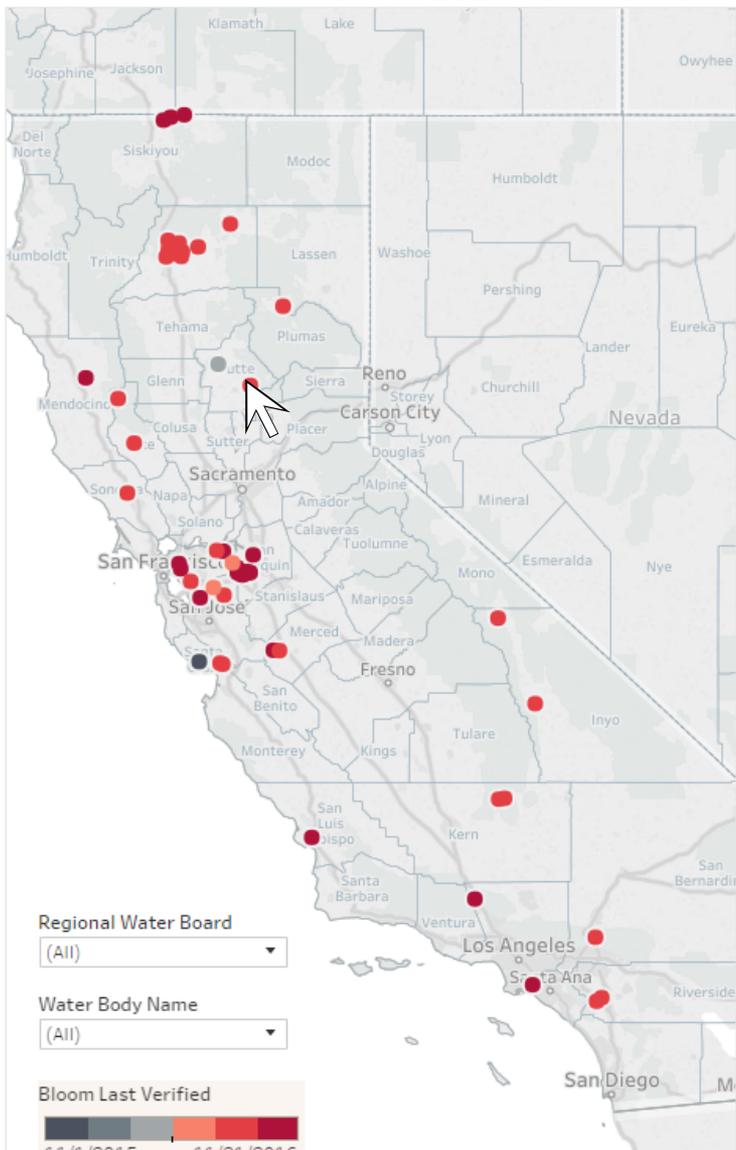


- Klamath Basin Monitoring Program, Blue-Green Algae Tracker

Where are freshwater harmful algal blooms occurring in California?

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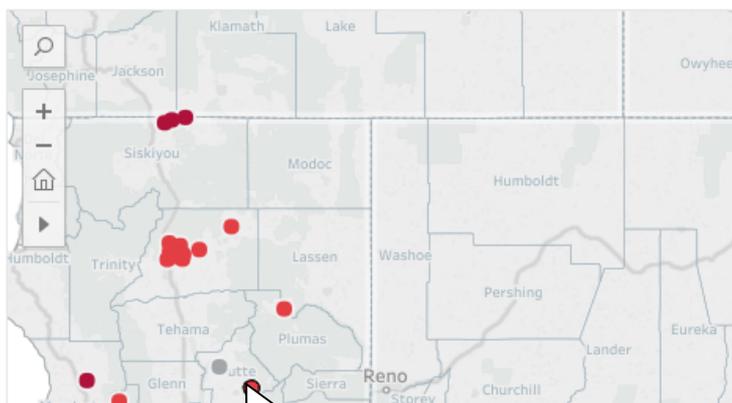


Regional Water Board	Waterbody Name	Day of First Observed	Day of Bloom Last Verified	Details
Central Coast	Kelly Lake	July 15, 2016	August 2, 2016	Details
	Laguna Lake	September 27, 2016	September 22, 2016	Details
	Pinto Lake	August 2, 2016	August 2, 2016	Details
	San Lorenzo River Lagoon	September 15, 2015	November 1, 2015	Details
Central Valley	Big Break Regional Shoreline	July 25, 2016	September 29, 2016	Details
	Buckley Cove	September 21, 2016	September 22, 2016	Details
	California Park Lake	April 24, 2016	April 30, 2016	Details
	Clear Lake	June 19, 2016	July 28, 2016	Details
	Discovery Bay	July 15, 2016	July 15, 2016	Details
	Fabian Canal Site along Grant..	September 14, 2016	September 20, 2016	Details
	Grant Line Canal	September 14, 2016	September 20, 2016	Details
	Grant Line Canal (Site GLC)	September 14, 2016	September 20, 2016	Details
	Grant Line Canal (Tracy Oasis ..	September 14, 2016	September 20, 2016	Details
	Isabella Lake	August 10, 2016	August 10, 2016	Details
	Kern River	August 3, 2016	September 9, 2016	Details
	Lake Britton	July 22, 2016	September 9, 2016	Details
	Lake Oroville	July 26, 2016	July 28, 2016	Details
	Mountain Meadows Reservoir	August 5, 2016	September 9, 2016	Details
	O'Neill Forebay	July 11, 2016	September 9, 2016	Details
	Old River - Tracy Wildlife Are..	September 14, 2016	September 20, 2016	Details
	Old River (Kings Island)	September 14, 2016	September 20, 2016	Details
	Old River (ODM Site)	September 14, 2016	September 20, 2016	Details
	Old River (Rivers End Marina)	September 14, 2016	September 20, 2016	Details
	Old River (Upstream of Moun..	September 14, 2016	September 20, 2016	Details
	Old River at Clifton Court For..	September 14, 2016	September 20, 2016	Details
	Old River at Doughty Cut (Sit..	September 14, 2016	September 20, 2016	Details
	Old River at the Delta Mendo..	September 14, 2016	September 20, 2016	Details
	Old River Downstream of OD..	September 14, 2016	September 20, 2016	Details
	Old River Upstream of DGL site	September 14, 2016	September 20, 2016	Details
	Old River Upstream off ORM ..	September 14, 2016	September 20, 2016	Details
	San Joaquin River (Stockton ..	June 2, 2016	September 9, 2016	Details
	San Luis Reservoir	July 26, 2016	October 31, 2016	Details
Shasta Lake	July 5, 2016	September 9, 2016	Details	
Shasta Lake - Bridge Bay	August 24, 2016	September 2, 2016	Details	
Shasta Lake - Digger Bay	August 24, 2016	September 2, 2016	Details	
Shasta Lake - Holiday Harbor	August 24, 2016	September 2, 2016	Details	

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				Details

Lake Oroville

Bloom Last Observed: [7/28/2016](#) **First Date Observed:** 7/26/2016

Signs Posted: None **Bloom Determined by:** Observation

Latitude: 39.557 **Longitude:** -121.410
County: Butte **Regional Water Board:** Central Valley

Type of Waterbody: Lake

Waterbody Manager: Department of Water Resources **Land Manager:** Department of Water Resources

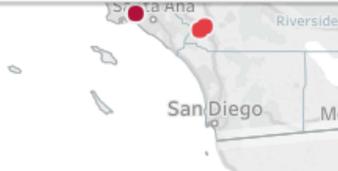
Incident Description: *In July a cyanobacteria bloom was reported occurring in the upper portion of the Middle Fork Feather River arm of Lake Oroville. The bloom occurred in a small, remote location of the lake. The Department of Water Resources conducted monitoring and worked with California State Parks staff to notify park visitors and post caution signs at downstream recreational areas. Monitoring conducted over the past three weeks found no detections of cyanotoxins. A visual check of the bloom area showed no signs of the bloom, indicating it has subsided. With the absence of toxins in the water, caution signs were removed. Water Resources and State Parks staffs are partnering to continue routine monitoring of the area. For more information on this cyanobacteria bloom event, contact Eric See of the Department of Water Resources, Oroville Field Division, at (530) 534-2324.*

The exact location, extent and toxicity of the reported bloom may not be accurate and may not be affecting the entire waterbody.

Regional Water Board
 (All)

Water Body Name
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Bloom Last Verified



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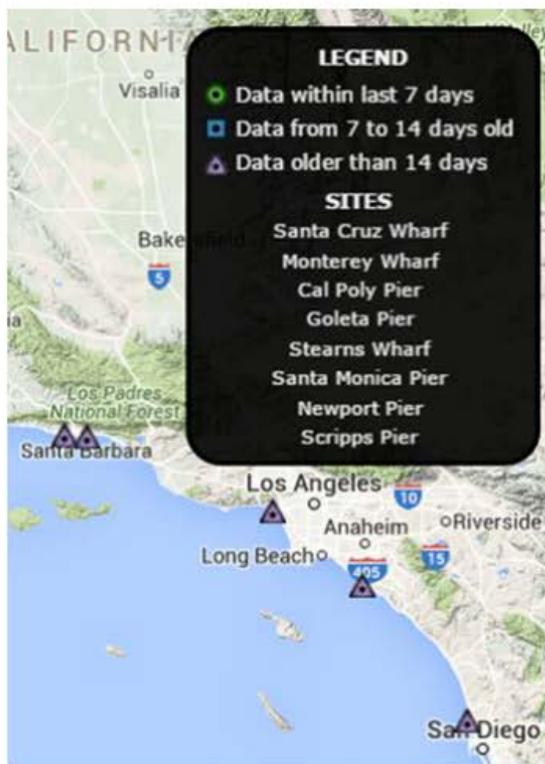
Freshwater HABs Event Map

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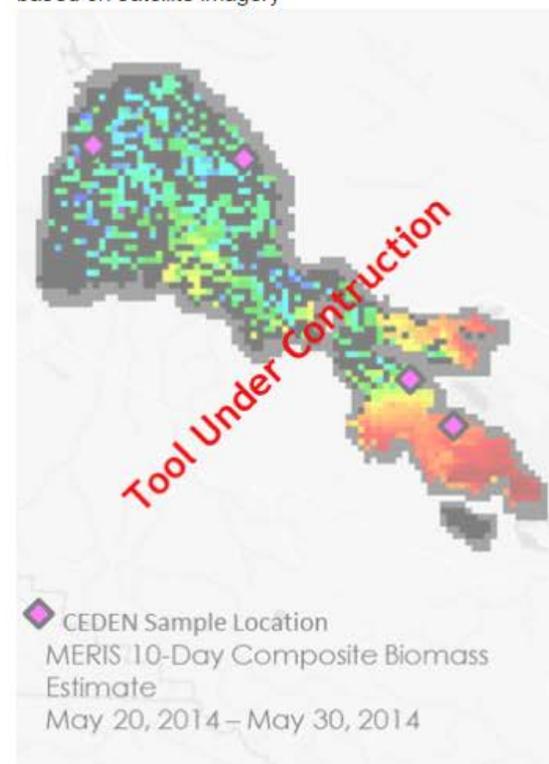
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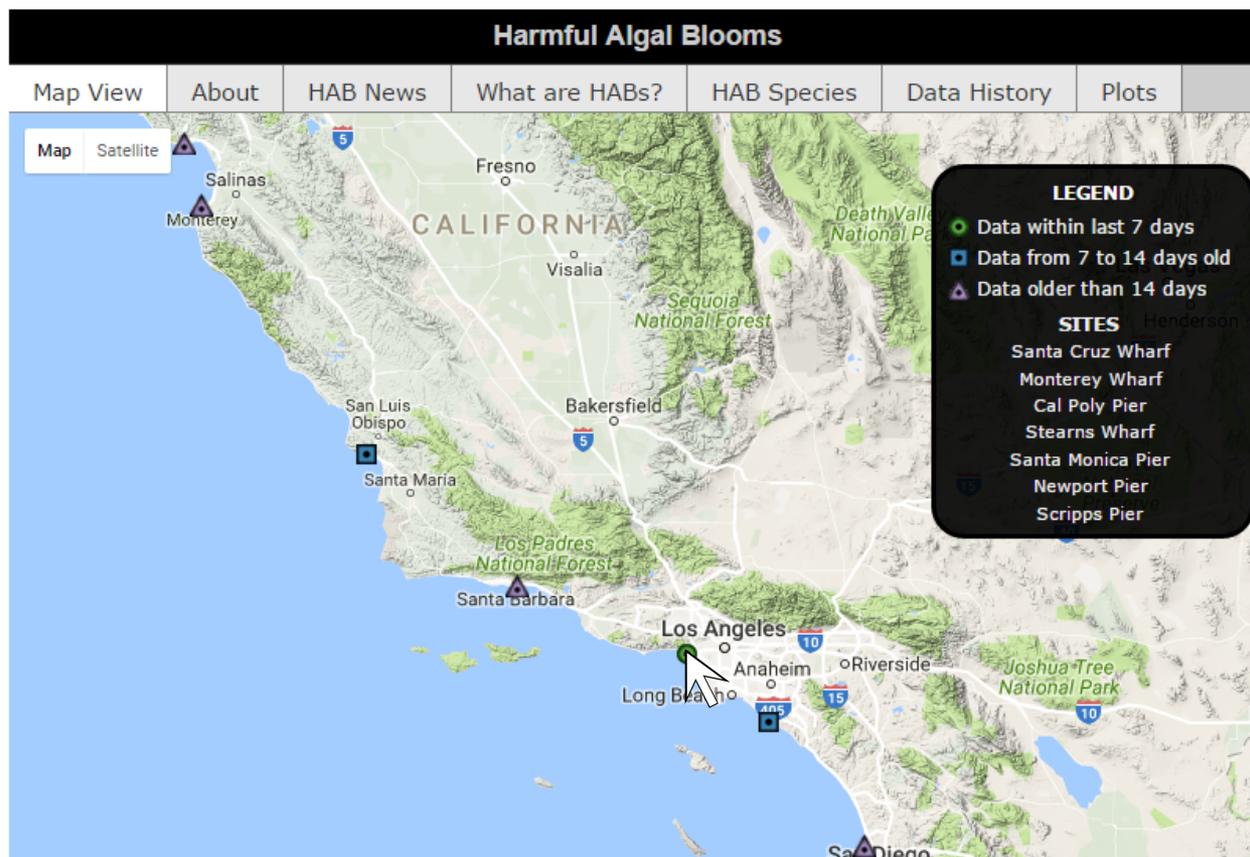
Monitoring & Alert Cal HAB Program

Implementing a statewide HAB network and forecasting system for California

home news about data projects contact

Interactive map showing data from sampling stations along the California coast. Click on each map icon or the inset station list to see the most recent data for that station. For more information, visit <http://www.sccoos.org/data/habs/index.php>.

For current predictions of *Pseudo-nitzschia* blooms and domoic acid events along the California coast, visit <http://www.cencoos.org/data/models/habs>

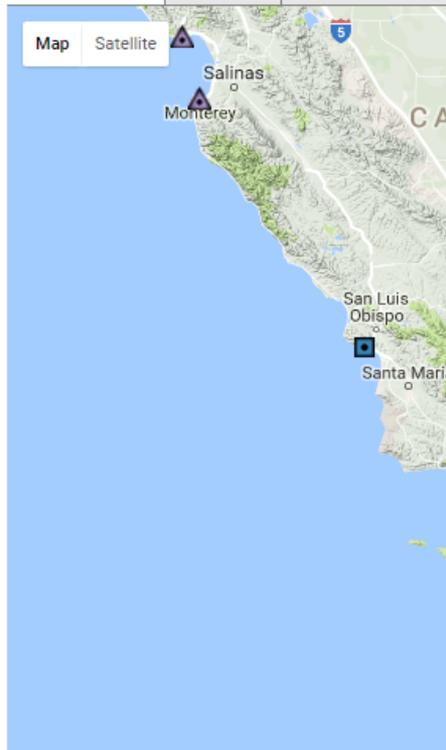


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Harmful Algal Blooms

Map View
About
HAB News
What are HABs?
HAB Species
Data History
Plots



SANTA MONICA PIER

34° 0.48' N, 118° 29.94' W

Provider / PI: UCLA / Rebecca Shipe

HAB Species	
SPECIES	CELL/ML
Akashiwo sanguinea	1870
Alexandrium spp.	0
Avg Chloro (mg/m3) or	
Dinophysis spp.	0
Lingulodinium polyedrum	0
Prorocentrum spp.	10845
Pseudo-nitzschia delicatissima group	0
Pseudo-nitzschia seriata group	0

Observations	
OBSERVATION	VALUE
Domoic Acid	
Water Temperature	18.9 °C 66.0 °F

Last Sampled: 2 days ago
2016-11-21 19:00 UTC - 2016-11-21 11:00 PST

NaN: not analyzed - nd/bd: below detection limit

Previous Observations

LEGEND

- Data within last 7 days
- Data from 7 to 14 days old
- △ Data older than 14 days

SITES

- Santa Cruz Wharf
- Monterey Wharf
- Cal Poly Pier
- Stearns Wharf
- > Santa Monica Pier <
- Newport Pier
- Scripps Pier

22

Where are harmful algal blooms occurring?

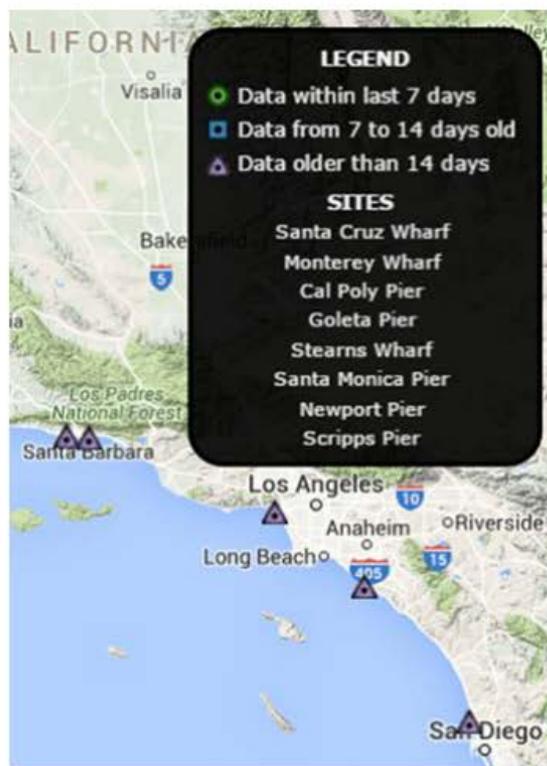
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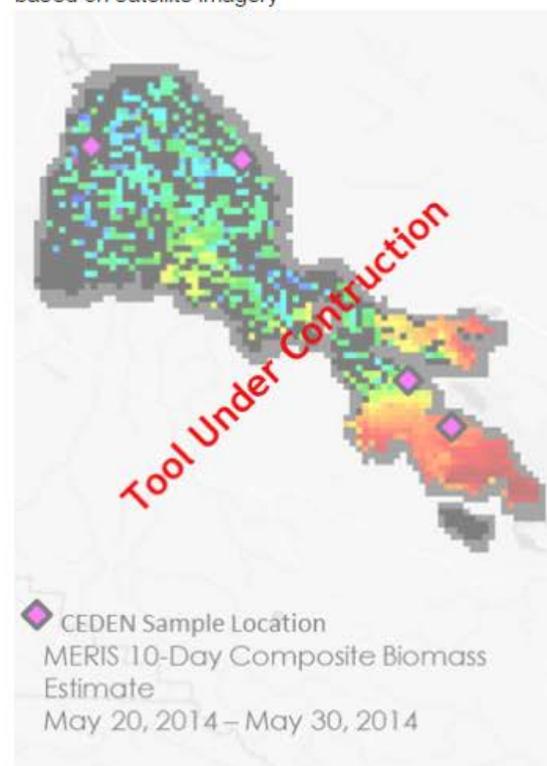
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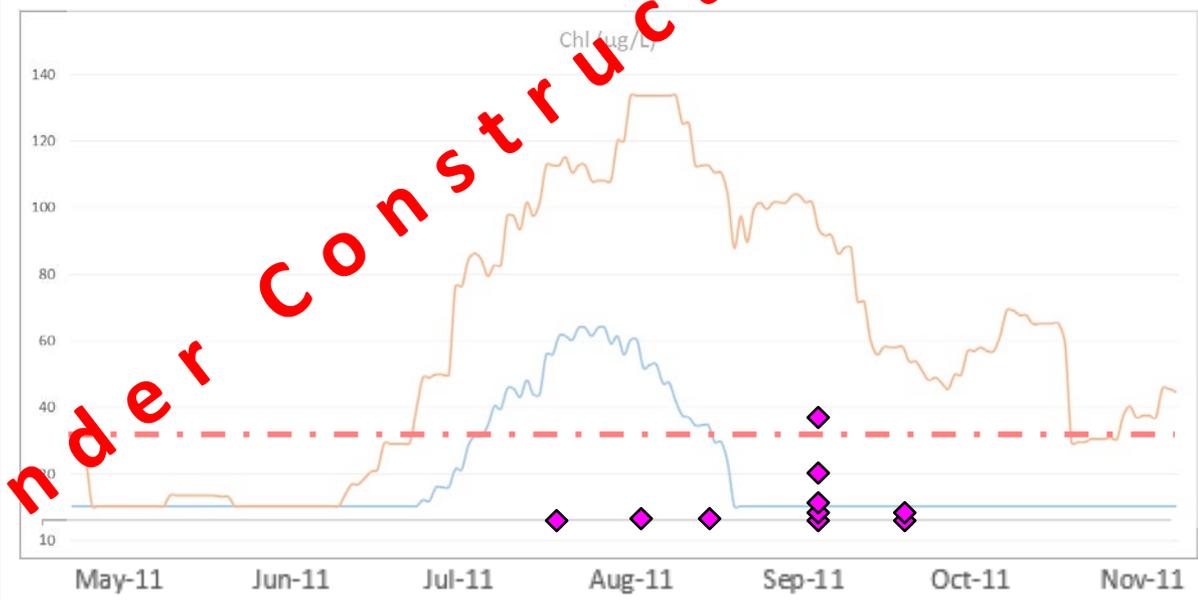
Clear Lake, Lake County, CA

Current Advisory: State and county agencies are urging swimmers, boaters and recreational users to avoid contact with blue-green algae now blooming in Clear Lake located in Lake County, CA. The lake has been posted with advisories warning of any contact with the water because of possible toxins associated with the algae. ([Read More](#))



Trends Water Quality Data Table Display Last 10 Days

Cyanobacteria Estimated Biomass & Toxicity



- - - Advisory Threshold
 - Lake Biomass Mean
 - Lake Biomass Median
- Clear Lake CEDEN Anilities
- Microcystin Total (ug/L)

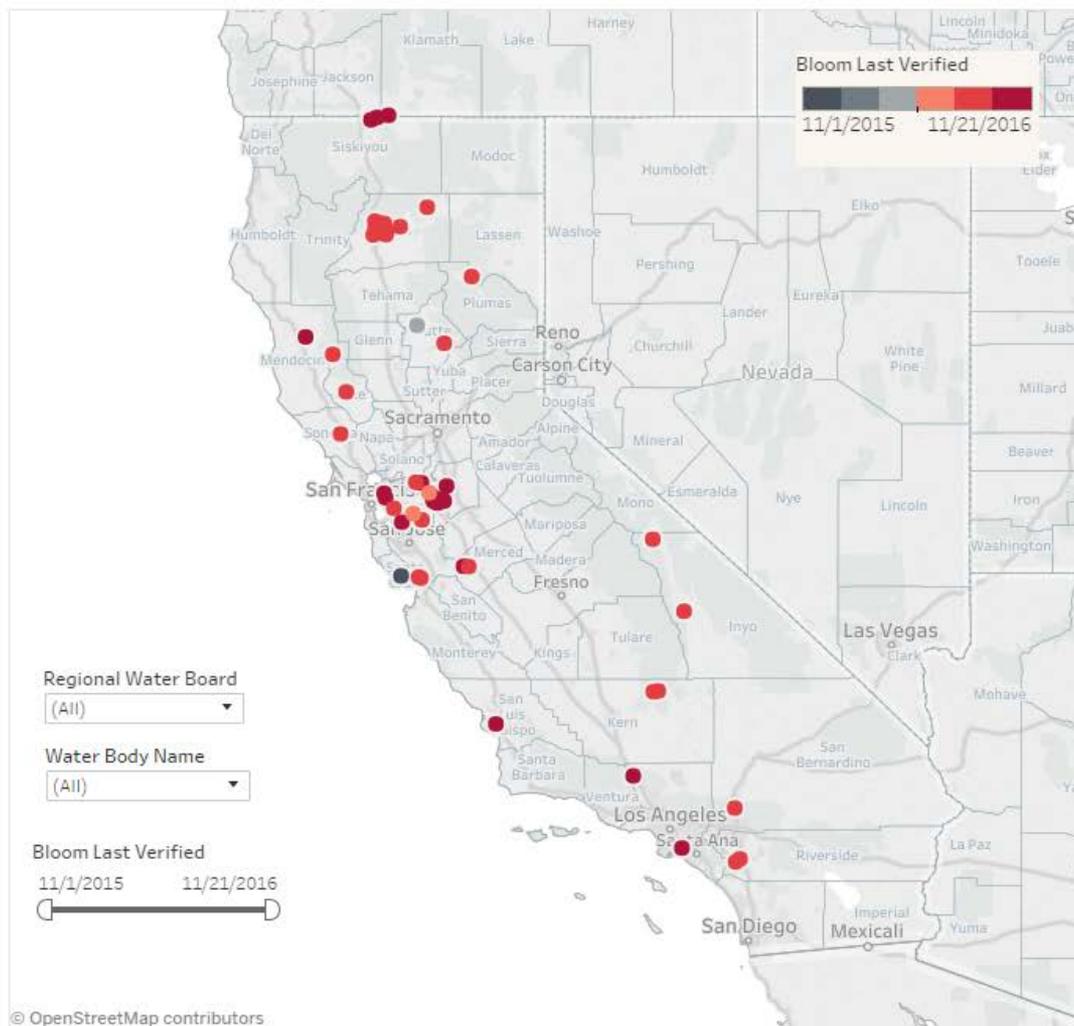
TOOL UNDER CONSTRUCTION

◇ CEDEN Sample Location
MERIS 10-Day Composite Biomass Estimate
May 20, 2014 – May 30, 2014

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What can I do about a harmful algal bloom?

If you see a harmful algal bloom, there are things you can do to help.

How do I identify harmful algae?

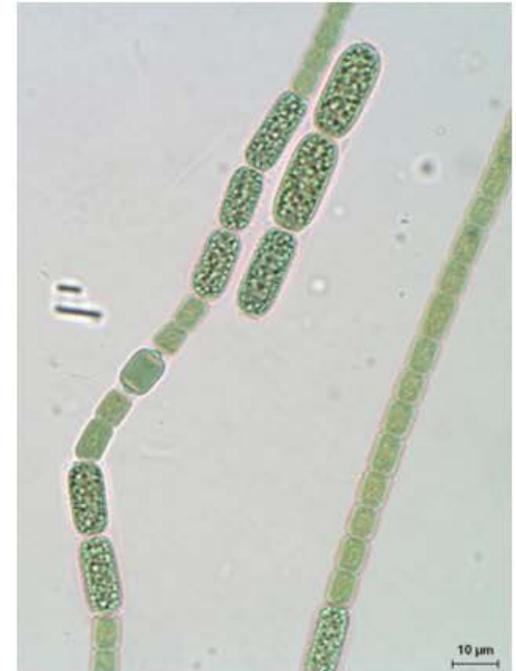
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- These are harmful algae (*under development*)
- These are **not** harmful algae (*under development*)
- US Geological Survey, [Field and Laboratory Guide to Freshwater Cyanobacteria Harmful Algal Blooms](#) Pages 4 through 15 provide photos of harmful algae and of non-harmful green algae and aquatic plants. Microscope images are also included.
- [Key to Algal Phyla/Classes](#)
- Western Washington University, [Freshwater Algae in Northwest Washington, Volume I, Cyanobacteria](#)

How can I **report a bloom**, or an animal illness or human illness related to a bloom?

Reporting a harmful algal bloom or an animal or human illness associated with exposure to a bloom helps authorities understand where problems are occurring and to respond appropriately

- [Freshwater Bloom Incident Form](#)
 - Human Illness Incident Form (*under development*)
 - Animal Illness or Mortality Incident Form (*under development*)
- [Report a red tide or other unusual marine sighting](#)
- **Bloom reporting and information**
 - Call: 1 (916) 341-5357
 - Call toll free: 1 (844) 729-6466
 - Email: CyanoHAB.Reports@waterboards.ca.gov



California Freshwater Harmful Algae Bloom Report Form

Please provide information about the harmful algae bloom observed. Click the submit button at the end of the form to send the information to the State Water Resources Control Board. Please submit one report per water body.

For more information on harmful algae blooms, visit:

[What are harmful algal blooms?](#)

For more information about the state's activities to address harmful algae blooms, visit:

[CA Cyanobacteria and Harmful Algal Bloom \(CCHAB\) Network](#)

This form will not support the upload of photographs or other files directly. Please send photographs of the incident and any additional informational documents to the email address provided after the form has been submitted. You will be provided an Incident Tracking ID to include in your email to link the attachments to this report. If you have questions or concerns please email CyanoHAB_Reports@waterboards.ca.gov or call 1-844-729-6466.

Waterbody Information

Report Type (*): New Report
 Follow Up from Previous Report

Incident ID from previous report, if known:

Waterbody Name and Type (*):

County:

Latitude (decimal) :

Longitude (decimal):

Datum :

Coordinates were taken from: GPS
 Online Map
 Other

Or Nearest Landmark:

Contact Information

Name:

Organization:

Email :

Phone:

May we contact you for more information? (*): Yes
 No

Would you like to receive a follow-up message regarding this incident? Yes
 No

Algae Bloom Information

Date of Algae Bloom Observation (*):

Will you be sending pictures? (*): Yes
 No



What can I do about a harmful algal bloom?

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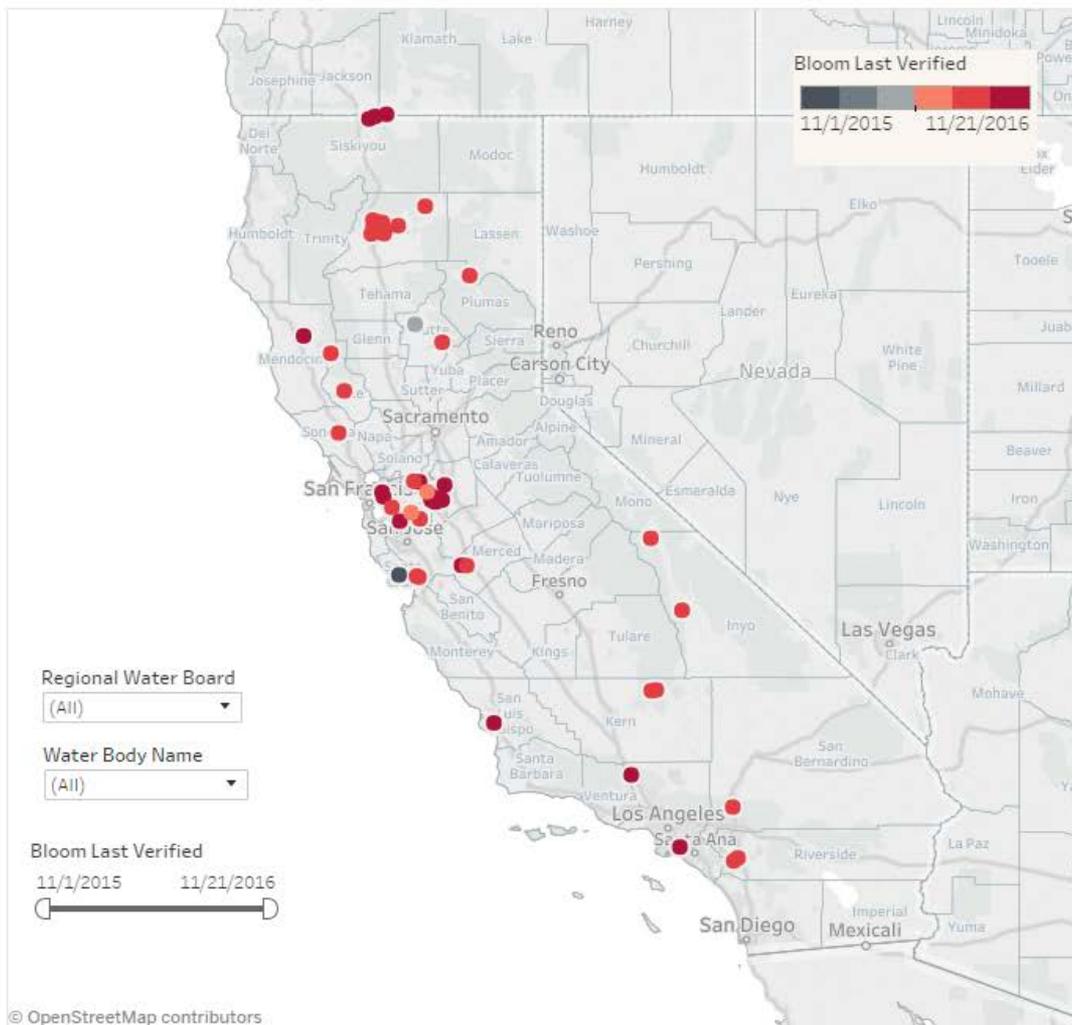
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California Harmful Algal Blooms (HABs)

HAB events represented below are voluntarily reported to the State Water Board's Surface Water Ambient Monitoring Program. Data provided are for general information purposes only and may contain errors. The exact location, extent and toxicity of the reported bloom may not be accurate and may not be affecting the entire waterbody. The data are subject to change as new information is received. Please check back for updates.

- [More detailed information on freshwater HAB events](#)



- [Report a Bloom](#)
- [Current Advisories](#)
- [Bulletins & Newsletters](#)
- [California CyanoHAB Network](#)

Questions Answered

- **What are harmful algal blooms?**
 - What are harmful algae?
 - Why are they important?
 - Where do they come from?
 - Why should I be concerned?
 - What are the impacts?
 - Swimming & recreation
 - Drinking water
 - Fish & shellfish harvesting
 - Domestic animals
 - Wildlife
- **Where are harmful algal blooms occurring?**
 - HABs event maps
 - Freshwaters
 - Marine waters
 - Satellite map
- **What can I do about a bloom?**
 - How do I identify harmful algae?
 - How can I report a bloom, or a related animal illness or human illness?
- **What resources and guidance are available to address harmful algal blooms?**
 - Recreational Water Uses
 - Drinking Water
 - Shellfish Harvesting
 - Monitoring
 - Laboratory Resources
 - Freshwater Assessment and Support Strategy
 - Freshwater Incident Response and Interagency Coordination
 - Informational Presentations
 - Other Resources



What resources and guidance are available to address harmful algal blooms?

Help is out there for local health agencies, lake managers, park rangers, and the public.

- [Recreational and Related Water Uses](#)
- [Drinking Water](#)
- [Shellfish Harvesting and Biotoxins](#)
- [Monitoring](#)
- [Laboratory Resources](#)
- [Freshwater Assessment and Support Strategy](#)
- [Freshwater Incident Response and Interagency Coordination](#)
- [Informational Presentations](#)
- [Other Resources](#)
- [Related Programs and Organizations](#)

Cyanotoxin Guidance for Recreational and Related Water Uses

When a cyanoHAB is occurring, it is critical that there is understanding of the cyanobacteria and cyanotoxins present and communication of the risk to protect public health. Currently, there are no federal or state standards for cyanotoxins in drinking water and recreational waters. Participating agencies - State Water Board, OEHHA, and CDPH - have developed and are further refining suggested guidelines for addressing health concerns for cyanotoxins in recreation waters. The Department of Public Health, county health departments, and water body managers are encouraged to use this guidance for posting of water bodies when cyanoHABs pose a health threat.

- [Blue-Green Algae Draft Voluntary Guidance Document, prepared by CCHAB Network, 2010](#)
- 2016 Updates to the Document [Linked Directly Above](#)
 - [Decision Tree & Narrative for Posting and De-Posting Health Advisories for CyanoHABs](#)
 - [CyanoHAB Trigger Levels for Protection of Human Health](#)
 - [Appendix A - Description of cyanotoxin trigger levels in recreational water bodies](#)
 - SIGNS: The PowerPoint files allow deletion of individual icon/text message components that may not be appropriate for a specific water body. However, text with each component cannot be changed. Components may be moved to allow more space for local agency contact information (text box at the bottom of each sign). Signs are available in both English and Spanish. (version 8/5/2016)
 - In-House Printing (PowerPoint format)
 - [English](#)
 - [Caution](#)
 - [Warning](#)
 - [Danger](#)
 - [Spanish/en Español](#)
 - [Caution/Precaución](#)
 - [Warning/Advertencia](#)
 - [Danger/Peligro](#)
 - Commercial Printing (PDF format)
 - [English](#)
 - [Caution](#)



Drinking Water

Releases of cyanotoxins by harmful algal blooms create concerns for drinking water sources, treatment of drinking water, and the safety of drinking water.

- The State Water Resources Control Board's [Division of Drinking Water](#) is developing a communication strategy and resources for drinking water treatment plants to ensure the provision of safe drinking water.
- The U.S. Environmental Protection Agency posted [Health Advisories](#) in May 2015 to provide guidance for drinking water on the cyanotoxins microcystin and cylindrospermopsin.
 - [Health Advisories and health effects support documents](#)
Non-regulatory concentrations of the two algal toxins in drinking water at or below which adverse human health effects are not anticipated to occur over a ten-day exposure period.
 - [Support document for managing cyanotoxins in drinking water](#)
Provides information and a framework that public water systems (PWSs) and others can consider using to inform their decisions on managing the risks from cyanotoxins to drinking water. Includes a potential stepwise approach PWSs could use to inform their decisions on whether and how to monitor, treat, and communicate with stakeholders.



Shellfish Harvesting and Biotoxins

California Department of Public Health

- [Preharvest Shellfish Protection and Marine Biotxin Monitoring Program](#)
- Shellfish Information Line: 1-800-553-4133



Monitoring

Monitoring of cyanoHAB is critical to understanding the dynamics of a bloom, deciding on best management strategies, and protecting aquatic life and public health. There are many challenges to monitoring due to available resources, size and dynamics of the water body, and laboratory analytical techniques. The State Water Board's [Surface Water Quality Monitoring Ambient Monitoring Program \(SWAMP\)](#) is focused on developing a statewide monitoring strategy for cyanotoxins, guidance for field and laboratory protocols, and a satellite monitoring program to be a first alert system for cyanoHABs in larger water bodies. For more information on monitoring projects, please contact Bev.Anderson-Abbs@Waterboards.ca.gov.

- Surface Water Monitoring Forms – CyanoHAB field data sheet and Chain of Custody (COC) form that are compatible with SWAMP data reporting
 - [CyanoHAB Field Workbook](#) (Excel)
 - [CyanoHAB Field Workbook](#) (PDF)



Laboratory Resources

It is important to detect the presence of cyanobacteria and cyanotoxins in drinking and recreational water, as well as detecting



Laboratory Resources

It is important to detect the presence of cyanobacteria and cyanotoxins in drinking and recreational water, as well as detecting bioaccumulation in freshwater and marine organism tissues. Having rapid and accurate detection methods - including visual and qualitative methods along with quantitative laboratory techniques - are critical to ensure the proper management of cyanoHABs. **The State Water Board's Office of Information Management & Analysis is focused on bringing together laboratories to develop cyanoHAB data comparability and improve cyanoHAB data interpretation. Laboratories that are interested in joining the Cyano Lab Network, please contact marisa.vandyke@waterboards.ca.gov.**

- [Laboratory Services List](#) - provides contacts for laboratory analysis of cyanobacteria and cyanotoxins.

Freshwater Assessment and Support Strategy

The Surface Water Ambient Monitoring Program has released a [Statewide Freshwater Harmful Algal Bloom Assessment and Support Strategy](#) that outlines actions and infrastructure being developed to support local response to HAB events.

- [SWAMP Strategy Fact Sheet](#)

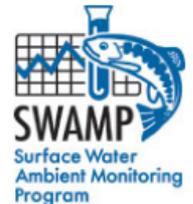
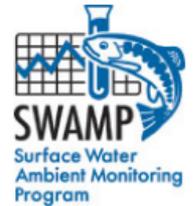
Freshwater Incident Response and Interagency Coordination

These documents were developed in July 2016 by an interagency team representing California State government organizations charged with responsibilities to address harmful algal blooms (HABs) through either notification or management tasks and activities. The team broke into two groups, one focused on incident response and interagency coordination and communication and the other focused on how to coordinate and best communicate this critical information to the public. These documents are "working drafts" and may be updated regularly to be made more useful to the teams and stakeholders using them. If you have any comments on these documents or questions about their use please contact Greg Gearheart at greg.gearheart@waterboards.ca.gov or (916) 341-5892.

- [Draft Protocol for Publicizing Harmful Algal Blooms \(HABs\) in State Waterbodies](#)(10/3/16)
- [Draft Blue-Green Algae Talking Points](#)(8/22/16)
- [Draft Press Release Template](#) (MS Word)(10/3/16)
- [Draft State Agency Notification Coordination System for CyanoHAB Incidents](#) (8/22/16)

Informational Presentations

- 2016 One Day Workshop on **Identifying and Responding to Cyanobacteria Harmful Algae Waterblooms in California** - Recorded June 14, 2016 at the University of California, Davis
These lectures, organized by the State Water Resources Control Board's Training Academy and OIMA's Surface Water Ambient Monitoring Program (SWAMP) in cooperation with UC Davis Extension, were recorded and can be viewed on YouTube.
 - [HABs Workshop Video Playlist](#)
 - [Introduction: Goals of Workshop](#) 9:35



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 - [HABs Workshop Video Playlist](#)
 - [Introduction: Goals of Workshop](#) 9:35
 - [Lecture 1: History and Biology of Harmful Algae Blooms \(HABs\) National and International Approaches to Detection, Management and Mitigation](#) 56:18
 - [Lecture 2: Sampling, Handling, Storage and Shipment of CyanoHABs](#) 46:09
Includes guidance on their classification as hazardous substances.
 - [Lecture 3: Cyanobacteria taxonomy, identification, enumeration and biovolume determination](#) 1:07:16
 - [Lecture 4: SWAMP Freshwater HABS Program and Resources & CCHAB Voluntary Guidance Updates](#) 52:47
 - [Lecture 5: Management and mitigation options, a ground level approach](#) 46:20
 - [Lecture 6: Lab – Identification of CyanoHABs-discussion of taxonomy keys plus some discussion/demonstration of sampling, handling and enumeration](#) 23:15
 - [2015 Lecture: An Introduction to Using Dichotomous Keys to Identify Organisms Causing Harmful Algal Blooms \(HABs\)](#) 5:08
- California Water Quality Monitoring Collaboration Network's Cyanobacteria (Blue-green algae), January 2016
 - [Widespread Prevalence of Cyanobacteria & Cyanotoxins from a Variety of California Waterbodies](#) 1:09:28
 - [The California CyanoHAB Network \(CCHAB\)](#) 42:21
 - [Genetic Testing of Cyanobacteria Blooms](#) 49:27
 - [Biotxin Gene qPCR Assay for the Aquatic Motoring and Management of Biotxin Risk](#) 49:58
- Other Presentations
 - [CyanoHABs Field Testing Presentation](#) - May 31, 2016
 - [Western Regional Epidemiology Network](#) - May 21, 2015
 - [Monitoring and Assessment Partnership Webinar](#) - May 19, 2015



Other Resources

- [California Surface Water Ambient Monitoring Program FHAB webpage](#)
 - [California Freshwater Harmful Algal Bloom Assessment and Support Strategy - Phase 1](#)
Outlines actions and infrastructure being developed to support local response to HAB events
- [Field and Laboratory Guide to Freshwater Cyanobacteria Harmful Algal Blooms for Native American and Alaska Native Communities](#), prepared by US Geological Survey
- [Harmful Algal Blooms and Cyanobacterial Toxins - Frequently Asked Questions and Resources, July 2015](#), Prepared by USA EPA Region 9
- [Ocean Science Trust, Harmful Algal Blooms and California Fisheries](#)
- [Office of Environmental Health Hazard Assessment Suggested Action Levels for Six Cyanotoxins, 2012](#)
 - [Cyanotoxin Action Levels for Humans and Domestic Animals, July 2012](#) - presentation by Regina Linville, OEHHA
- [The National Science and Technology Council Subcommittee on Ocean Science and Technology report on HABS](#)

