Peer-to-Peer Network

Recording and Presentation Sides

Available after the webinar on the IoW website and will be distributed via email to those registered for the webinar.

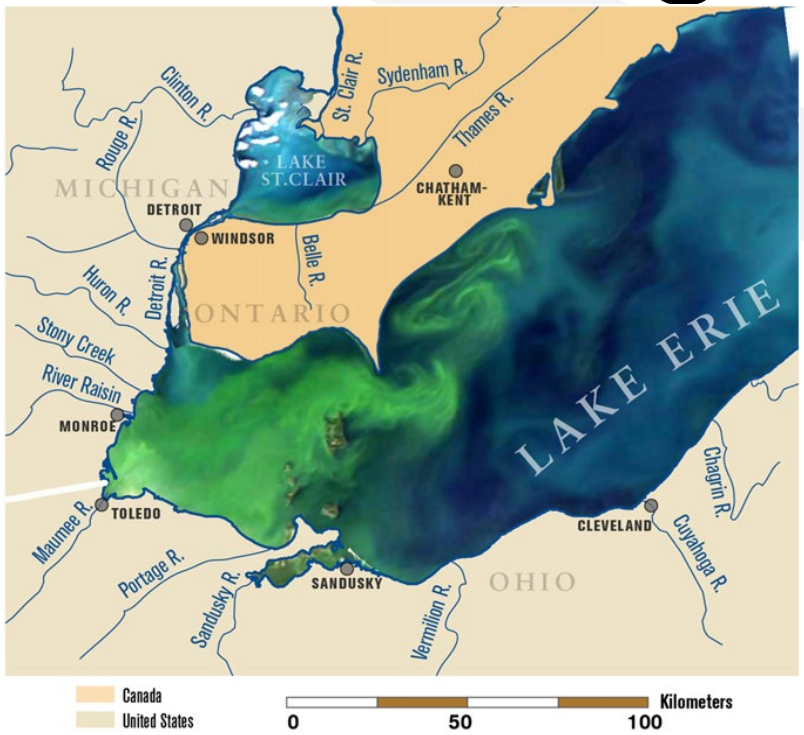
Q & A

Please submit your *content-related questions* in the webinar's **Q&A box**. The moderator will read your question aloud.

Administrative questions can be placed in the **"Chat" box**.

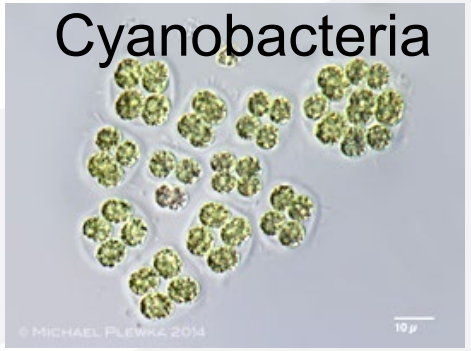
Internet of Water

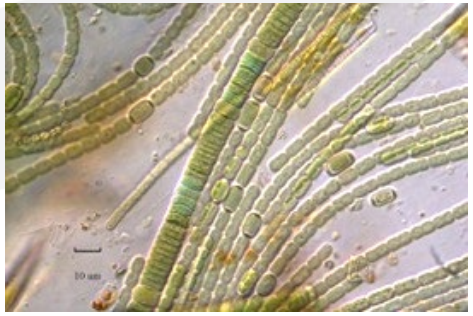
Harmful Algal Blooms (HABs)



Michalak et al. 2013, *PNAS*

http://ngm.nationalgeographic.com/2013/05/fertilized-world/charles-text?_ga=2.76816656.424317726.1512142752-1048308631.1469734927

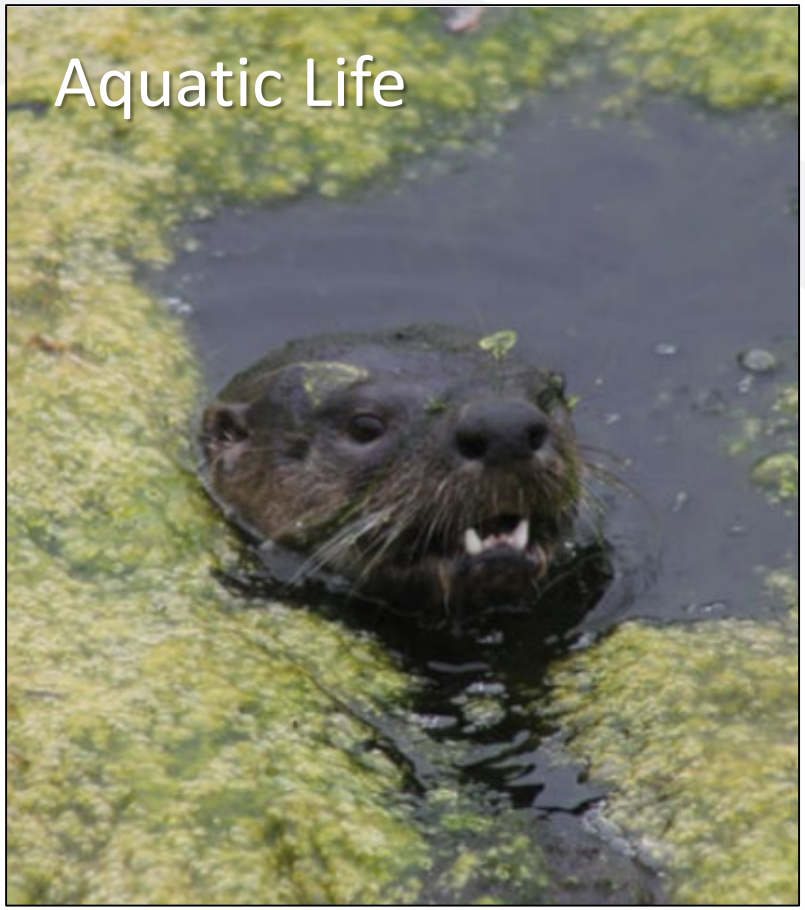


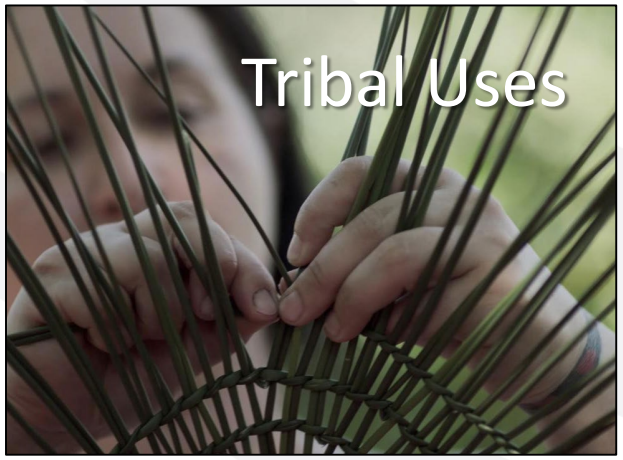


https://www.pbs.org/newshour/science/chinas-blueprint-clean-lakes-stop-algae-blooms-working

Photo: Ohio EPA

Photo: Richard Graulich/The Palm Beach Post via AP





Freshwater HAB Impacts

- Freshwater harmful algal blooms (FHABs) are on the rise in California and occurring year round
- Toxins from HABs can cause dermal, liver, kidney, and neurological illnesses
- Multiple beneficial uses are at risk
  - Difficult to quantify impacts to all uses
  - In many places, lack of monitoring data prevents management and mitigation actions
- High number of priority lakes and streams impacted

History of FHABs in California

1970s: Clear Lake blooms; Horne and Goldman

2000s: Klamath River reservoirs blooms reach record levels

2006: California Cyanobacteria and Harmful Algal Bloom (CCHAB) Network formed

2014: Toledo, OH water crisis

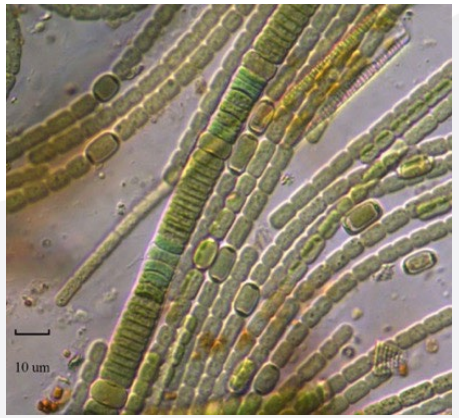
2016: CA FHAB Program begins, and formal tracking of FHABs

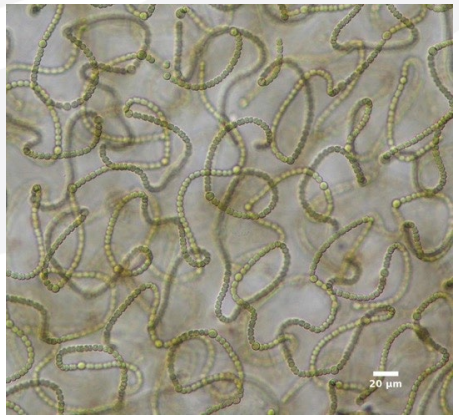
2019: Initiate FHAB Database Modernization Project

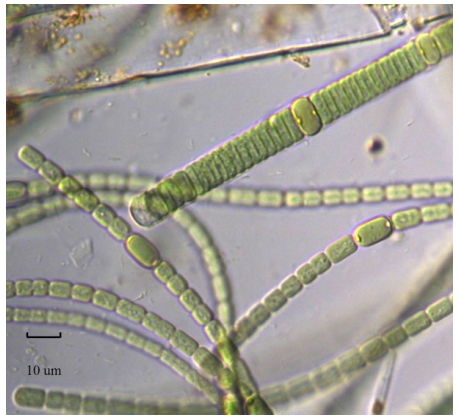
2020: Partner with IoW and The Commons

2021: Fulltime FHAB Program staff and resources in place

2022: Launch data framework for Tribes and community orgs



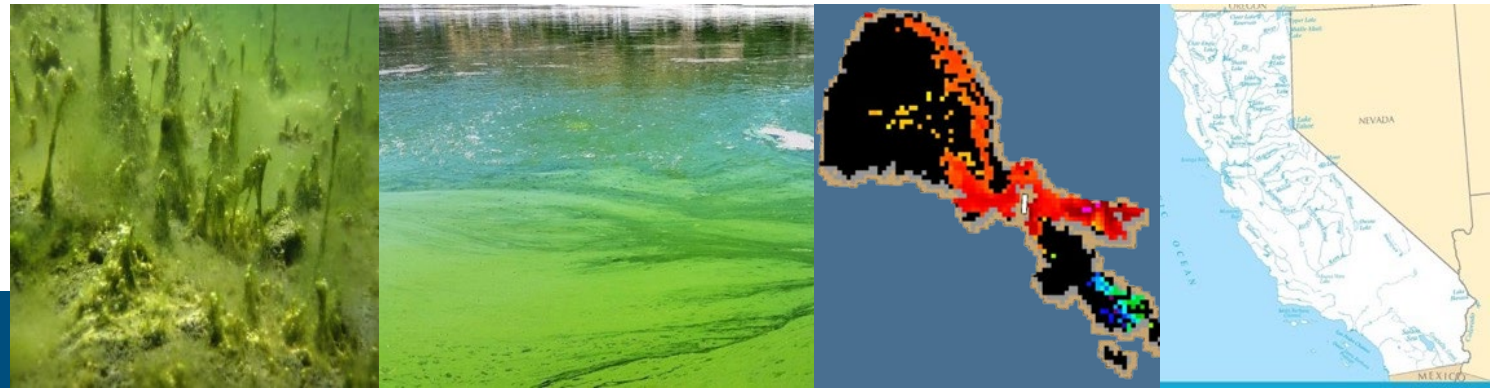




CA FHAB Program

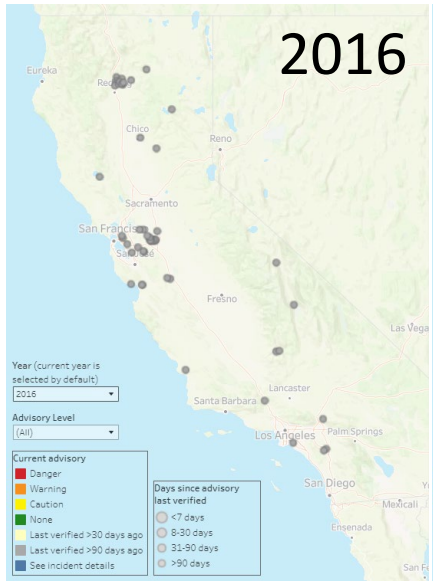
- Since 2016, the FHAB Program's purpose is to lead:
  - FHAB event response,
  - coordinate assessment, and
  - communication
- Focus on recreational exposures, and source water protections where recreational and drinking water uses overlap

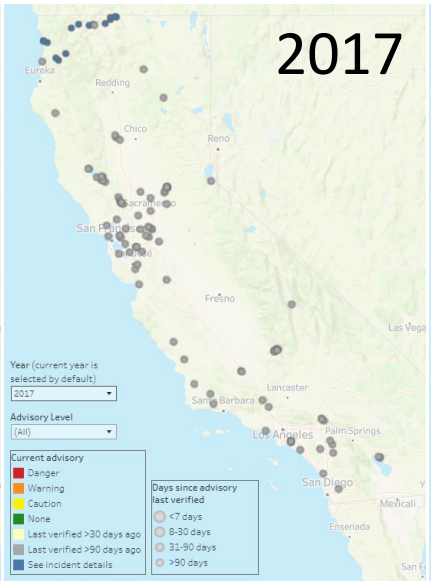
- Assembly Bill 834 (2019) requires the program to significantly expand to conduct statewide monitoring, risk assessment, interagency consultation, and develop comprehensive data infrastructure and decision support tools

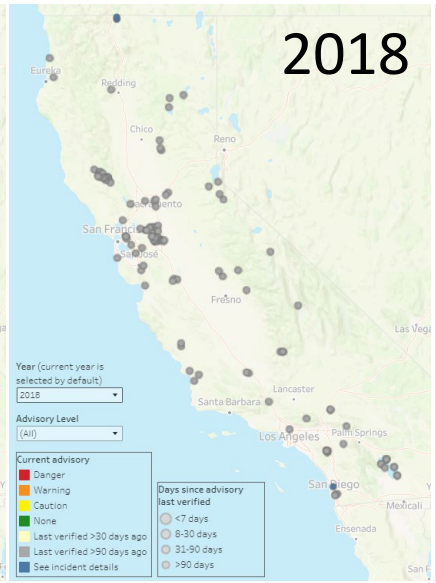


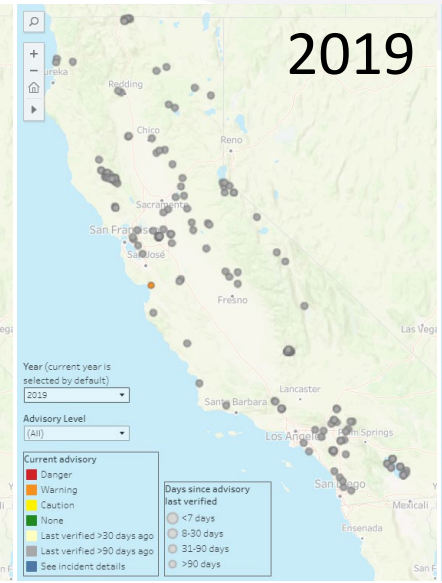
FHAB Events in California

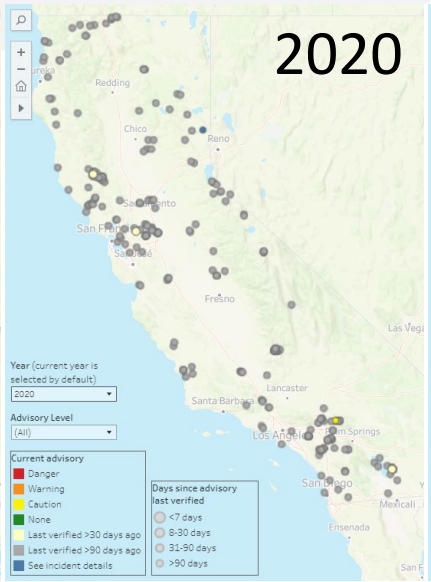
	2016	2017	2018	2019	2020	2021
Total reports	91	181	190	241	370	580+

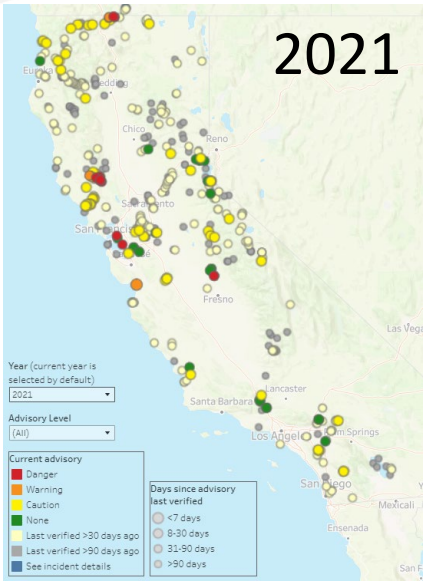






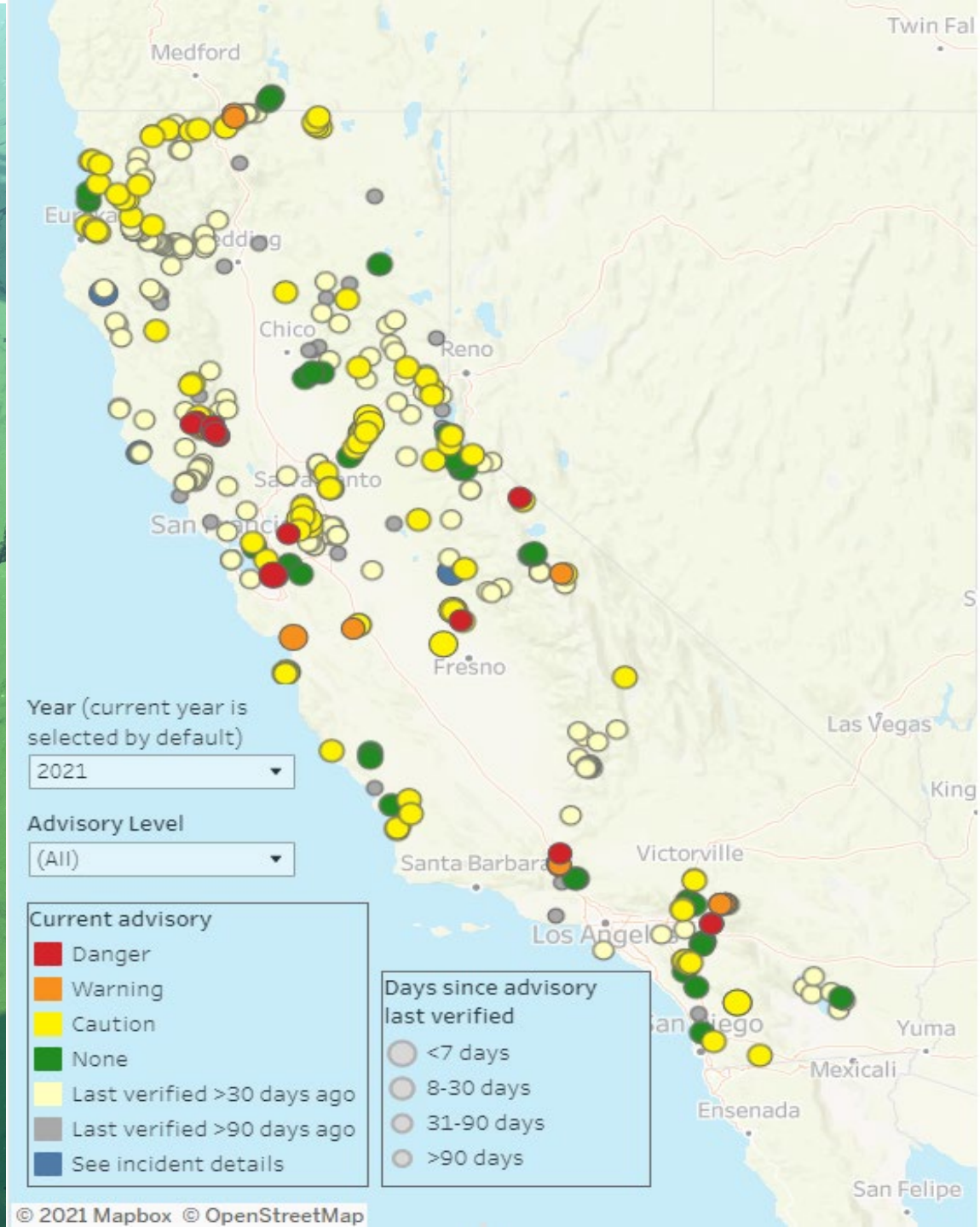






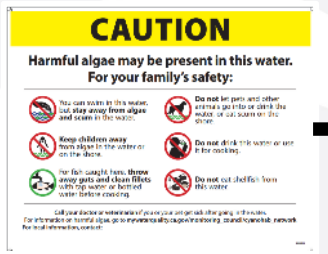
California HAB Tracking

YEAR	HAB INCIDENT REPORTS RECEIVED	HAB-RELATED ILLNESS REPORTS RECEIVED
2019	241	24
2020	370	29
2021	580+	80+



Pre-Labor Day Advisory Levels

Data published on Sept. 1, 2021



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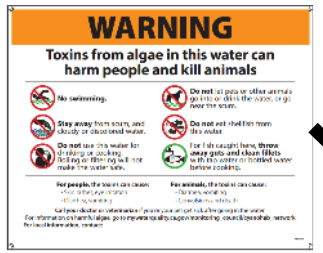
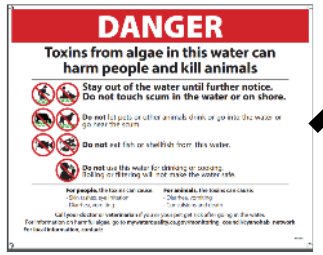
Advisory recommends children avoid contact with impacted, dogs do not contact water





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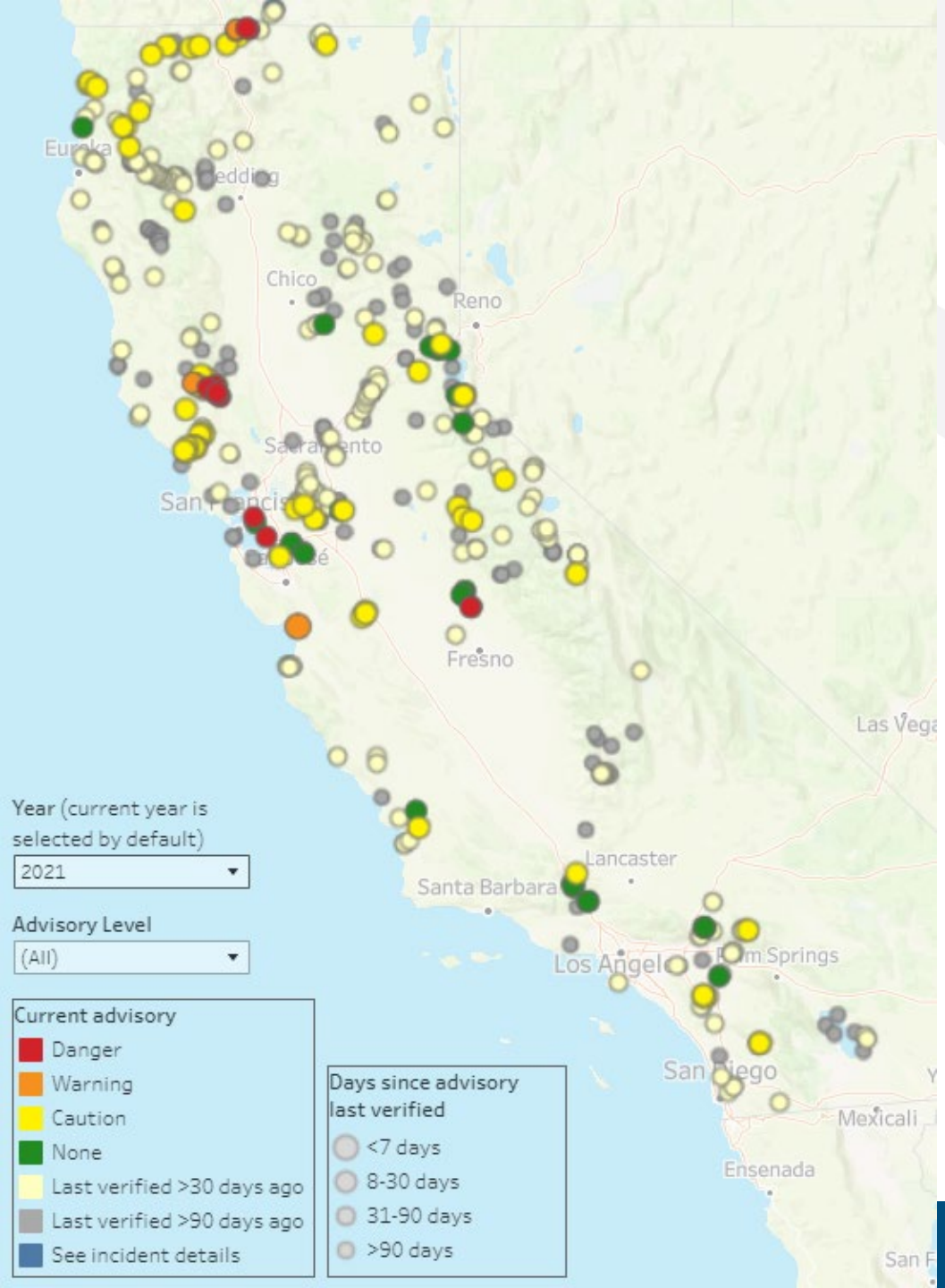
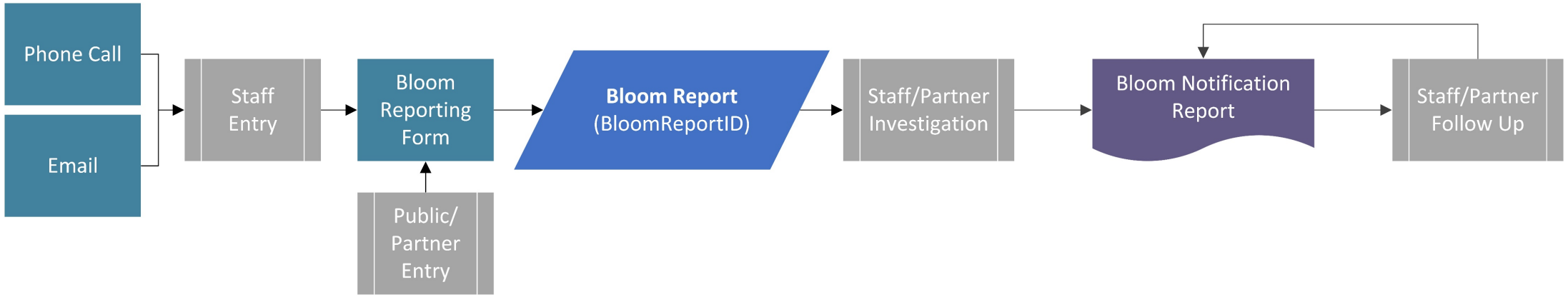
Advisory recommends no swimming
-OR-
No swimming, no watercraft, and no fishing (i.e., closure)



CA FHAB Program Data System

Old Data Infrastructure

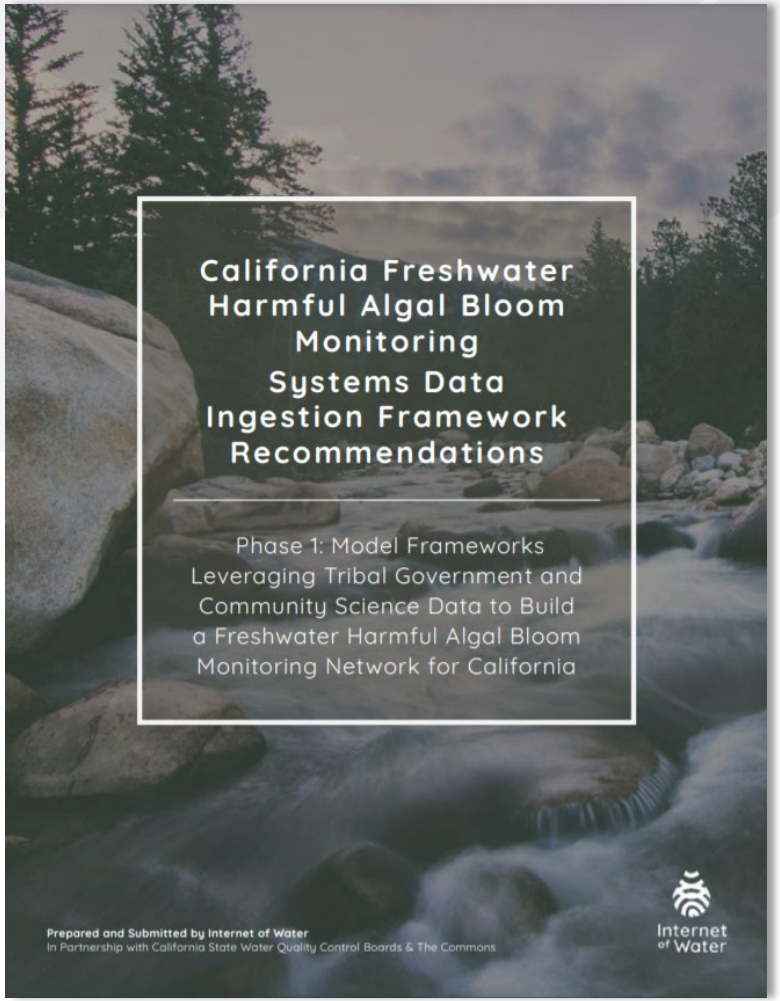
- Built in 2016 in response to the need to track reports of HABs
- Contains data from Bloom Reports
- Didn't support addition of monitoring data
- Didn't support addition of response activity data
- Didn't allow for data submitted by external sources
- Inefficient and unable to fully support program response and communication needs



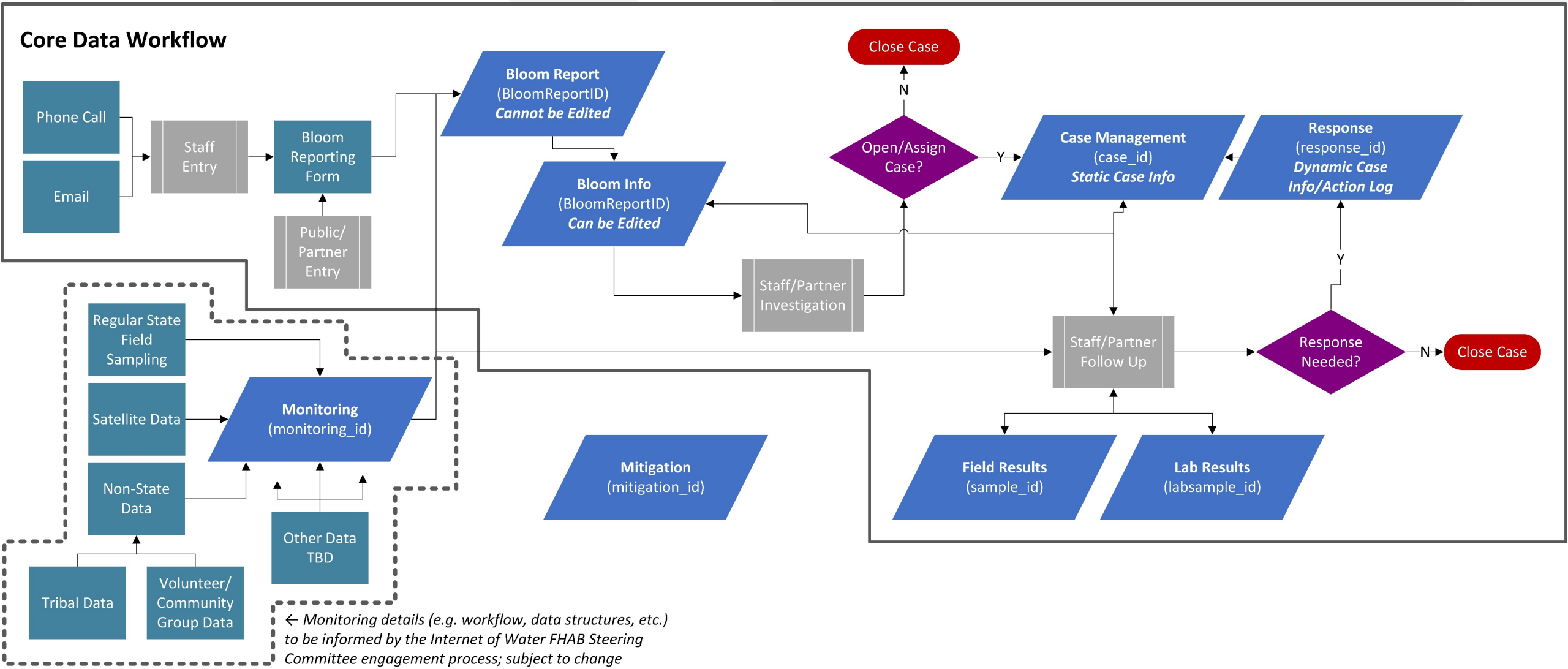
CA FHAB Program Data System

New Data Infrastructure

- Modernized in 2019 – 2021 to increase functionality and efficiency
- Developed using user-centered design
  - Users include FHAB Program Staff, response partners, Tribes and community organizations conducting monitoring
- Contains data from Bloom Reports, monitoring and response activities
- Enables external partners to easily submit monitoring information



CA FHAB Program Data System



Why invest in the collaborative process?

- Begin to operationalize equity into the FHAB Program and process
- Increase access to data from external partners
- Better understanding of
  - Perspectives of data contributors and users
  - Barriers to accessibility and use of data
  - Additional needs and potential uses for FHAB data
- Inclusion of Tribal and community partners → massive returns on investment regarding:
  - Improving data infrastructure, systems, and workflows
  - Growing the FHAB community of practice and partner network

Process Reflections

Challenges

- Confines and limitations of large and complex agency
- Limited internal technological resources and support
- Limited resources (budget, staff time)
- Getting one system to meet needs of diversity of users
- Figuring out how to automate inclusion of external data into internal data systems

Lessons Learned

- Set intention of the project early – and stick to it!
- Begin internal and external engagement & partnerships early
- Communicate often
- Take the time to do the dirty work
- Include time for engagement and iteration into planning and process – it will take more time than you think!

Next Steps

- Launch Modernized FHAB Database!
- Integrate data from The Commons Water Reporter App into internal data systems
- Develop communication resources and visualizations with new data
- Continue fostering existing partnerships
- Continue to grow network of partners and community of practice
- Continue listening and iterating as FHABs, communities, and the Program continue to evolve

Thank you!

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