



East Bay   
Regional Park District

# ***East Bay Regional Park's***

***Blue-Green Algae – Cyanobacteria – CyanoHAB Monitoring Program***

*Hal MacLean  
Water Management Supervisor*

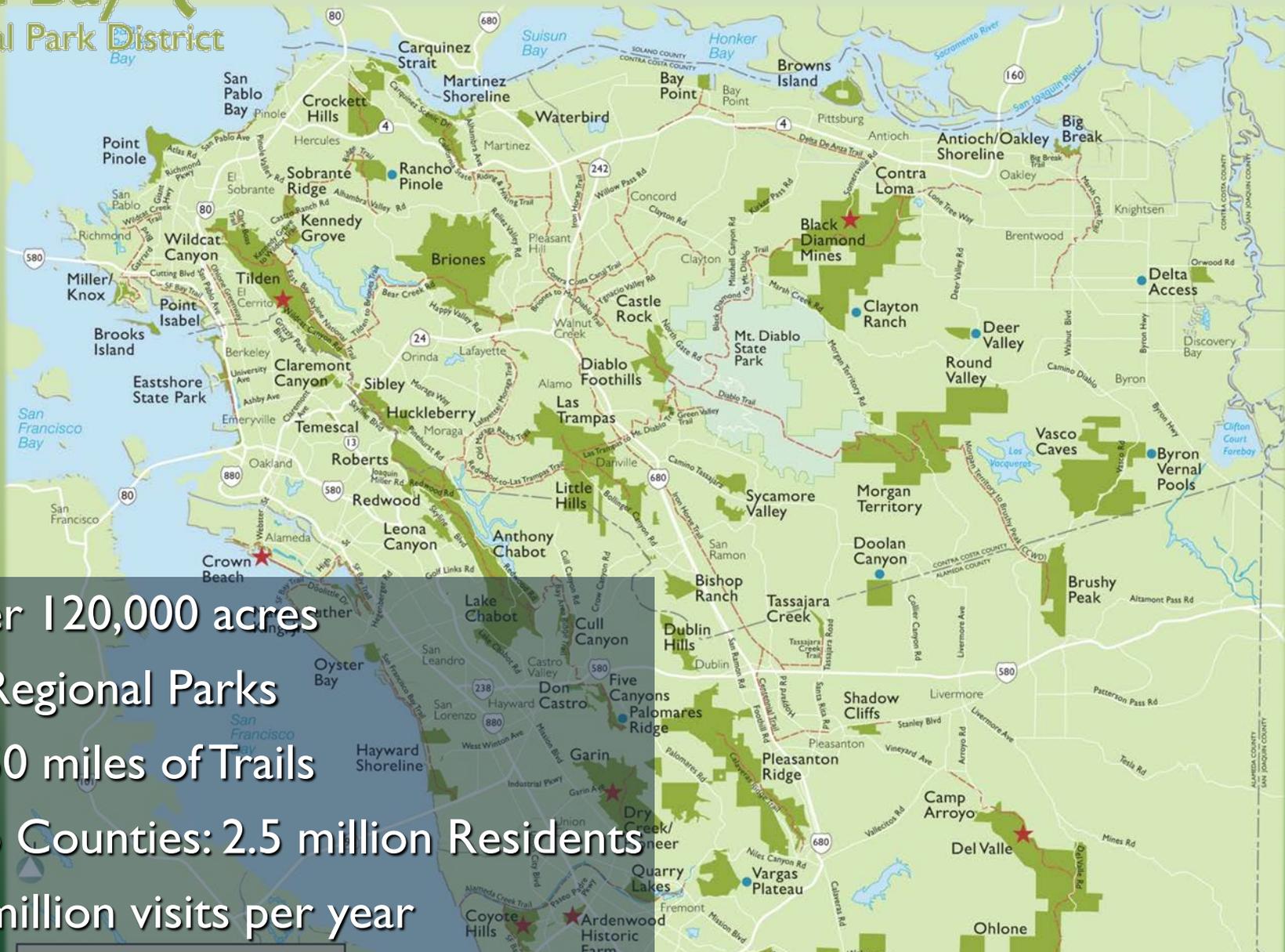
*HAB Workshop Trudeau Center*

*5/9/16*

# *Overview of Presentation*

- **Brief Introduction to EBRPD and Our Waters**
- **History of Blooms and HABs in EBRPD**
- **Monitoring and Response**
- **Future Plans**

## Nation's Largest Regional Park Agency



- Over 120,000 acres
- 65 Regional Parks
- 1,250 miles of Trails
- Two Counties: 2.5 million Residents
- 25 million visits per year



- District Operates and Manages 9 Lakes and Reservoirs
- 5 Lakes allow Swimming
- All allow Fishing and Dogs on Leash
- 2 allow Swimming with Dogs



# *History of Cyanobacteria in District Waters*

- Cyanobacteria detections in the 1970s in plankton tows
- Exceptional bloom at Lake Anza in 2008
- First toxic bloom detected in 2014

# HABs in District Waters Since 2014

Lake Temescal - July 2014

Lake Chabot - Sept 2014  
3 dog deaths 2015

Morgan Territory  
dog death April 2015

Quarry Lakes – May 2015

Lake Temescal - June 2015

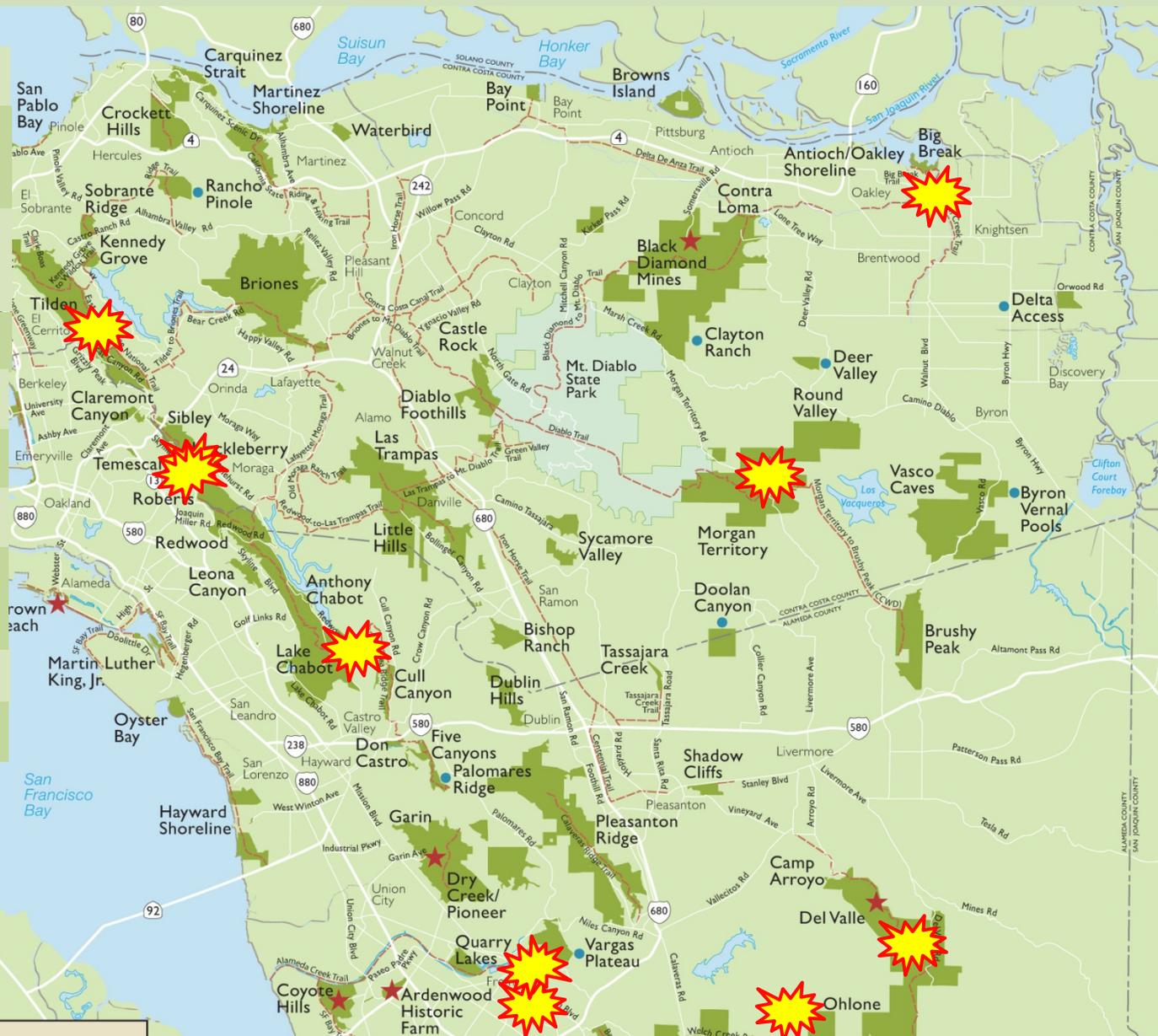
Lake Anza – Sept 2015

Big Break - October 2015

Sunol - Nov 2015  
dog illness

Del Valle – Dec 2015

Quarry Lakes – Feb 2016



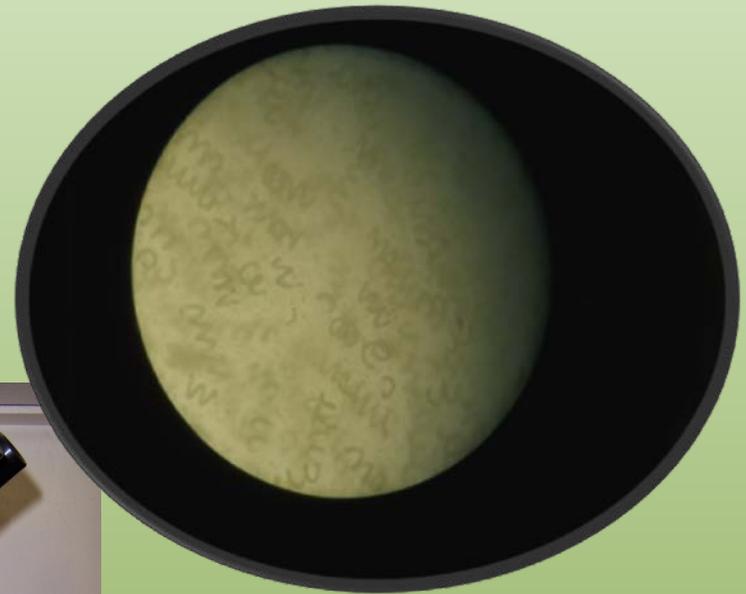
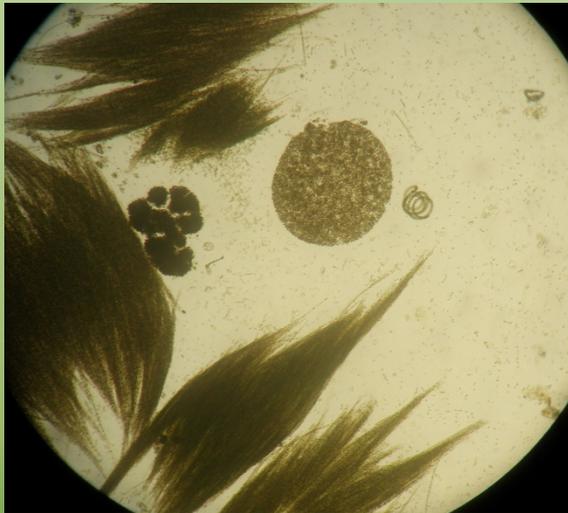
# *Typical HAB Monitoring & Response*

- Identify Bloom
  - Weekly Visual During Recreation Sampling
  - Interns conduct additional monitoring on Trouble Spots and Strategic Areas
  - Park Staff
  - Public



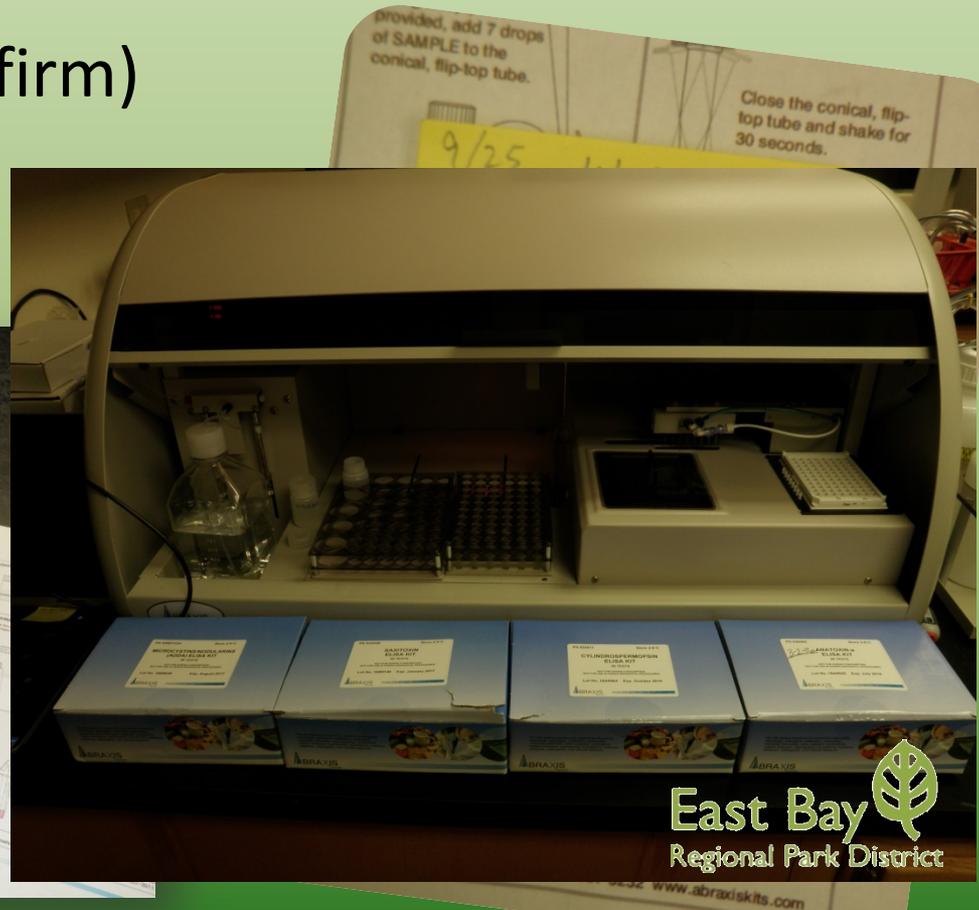
# *Typical HAB Monitoring & Response*

- Collect Samples
  - ID Cyanobacteria



# Typical HAB Monitoring & Response

- Initial Screening Test For Toxins
  - Microcystin Test (confirm)
  - PTOX (GreenWater)



# Typical HAB Monitoring & Response

- Staff and Health Department Coordination & Notifications
- Public Notification, Education and Outreach

**DANGER**

Toxins from algae in these waters can harm people and kill pets

*For your safety:*

-  **STAY OUT OF THE WATER UNTIL FURTHER NOTICE.** Do not touch green scum in the water or on the shoreline.
-  **DO NOT** use this water for drinking or cooking. Boiling or filtering will not make the water safe.
-  **DO NOT** let pets go into or drink the water, or eat green scum.
-  **DO NOT** eat fish from these waters

**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 more information, contact East Bay Regional Park District at (510) 544-2328 or visit the California Department of Public Health at [www.cdph.ca.gov/healthinf](http://www.cdph.ca.gov/healthinf)



# ***DECONTAMINATION!***

- Between Bodies of Water Clean and Disinfect



# *Temescal Monitoring*



Lake  
Temescal

13



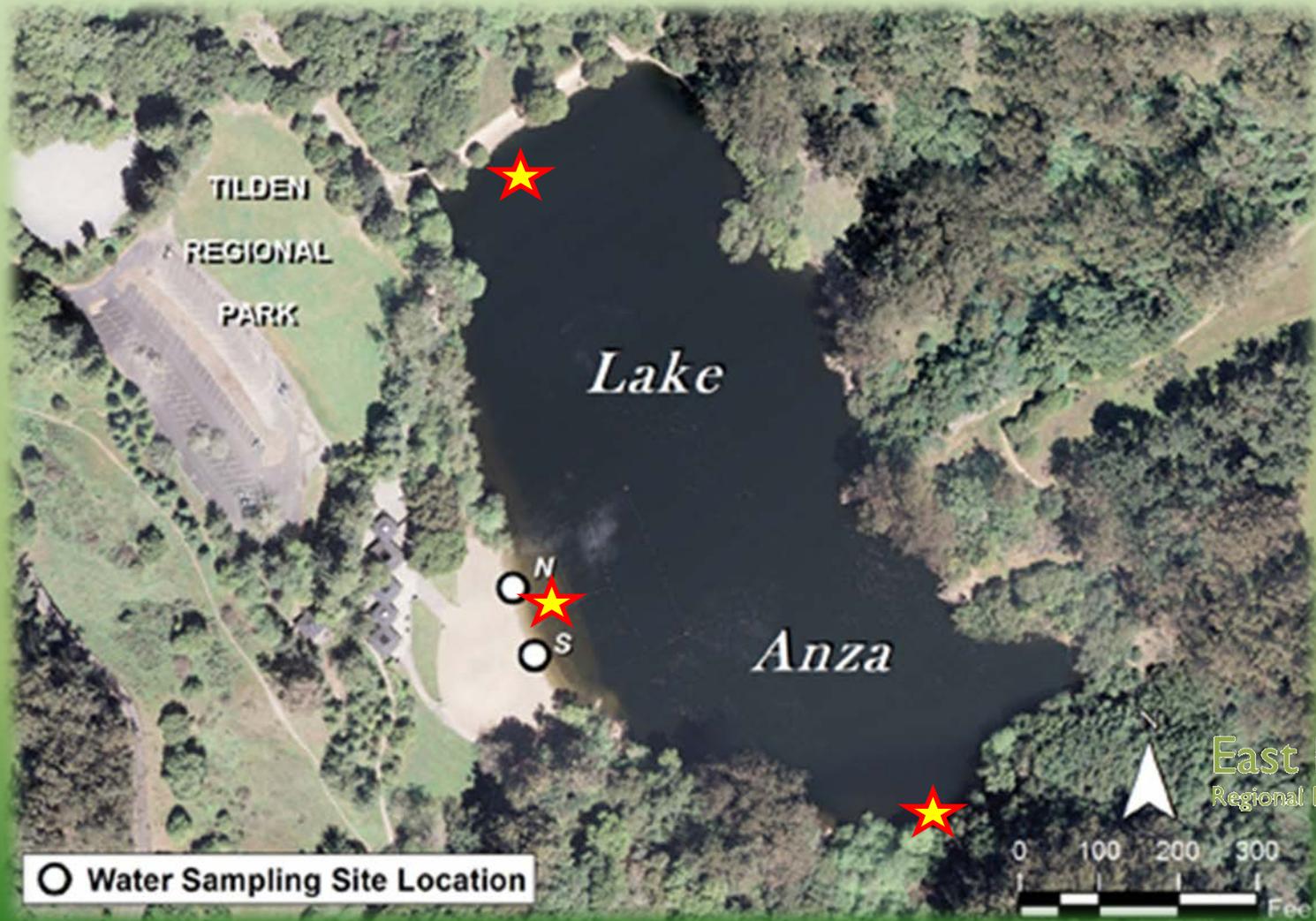
○ Water Sampling Site Location

# ***DECONTAMINATION!***

- Between Bodies of Water Clean and Disinfect



# Lake Anza Monitoring



# ***DECONTAMINATION!***

- Between Bodies of Water Clean and Disinfect



# Lake Chabot Monitoring



# ***DECONTAMINATION!***

- Between Bodies of Water Clean and Disinfect



# Quarry Lakes Challenge



*Flow of Water*

Quarry Lakes  
Regional  
Recreation  
Area

Niles  
Community  
Park

Alameda Creek

# Quarry Lakes Challenge



**Sample Sites**

Quarry Lakes  
Regional  
Recreation  
Area

Niles  
Community  
Park

Alameda Creek

# *Quarry Lakes Monitoring*

*Algae Stew!*

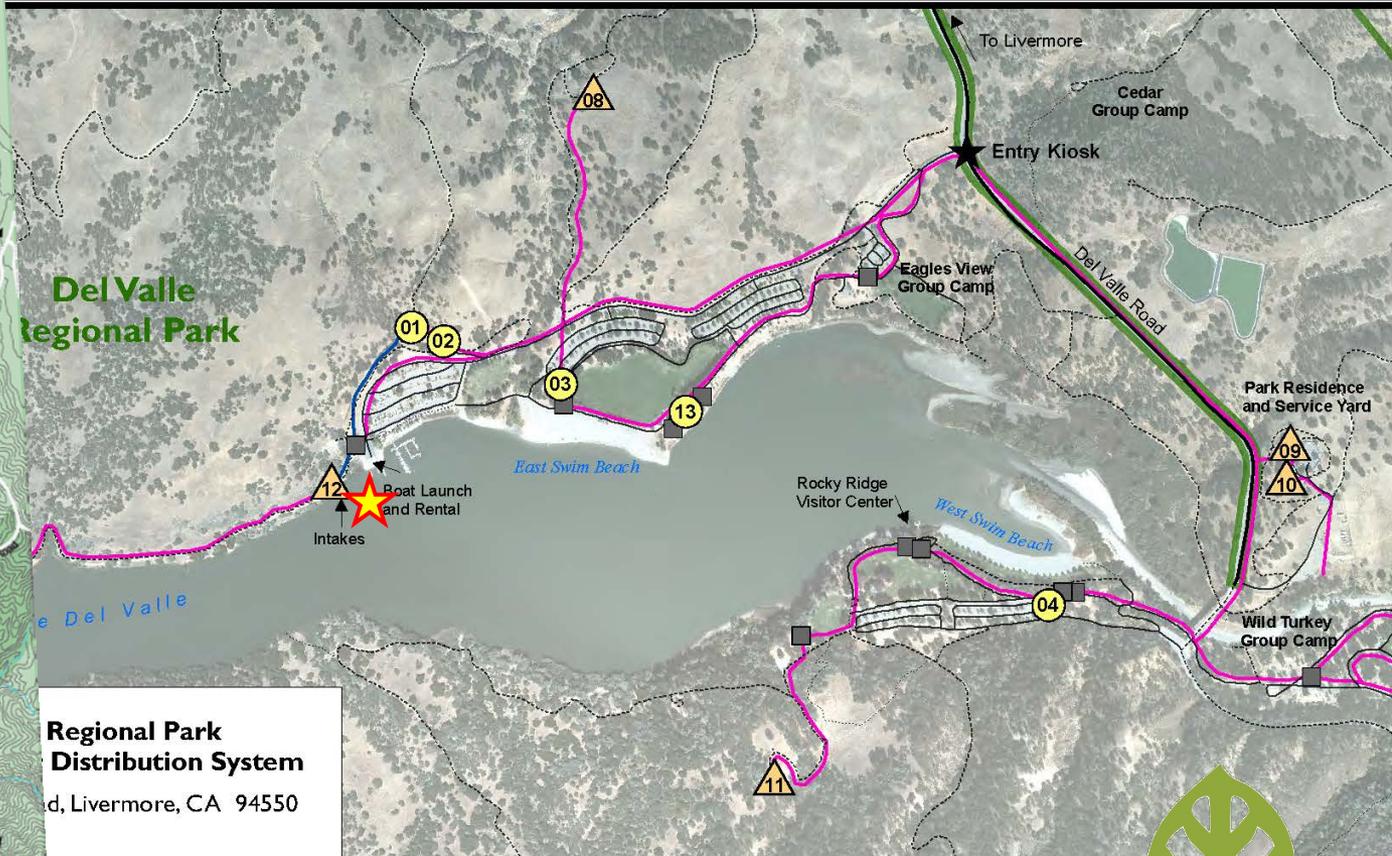


# ***DECONTAMINATION!***

- Between Bodies of Water Clean and Disinfect



# Del Valle Monitoring



**Regional Park Distribution System**  
 Livermore, CA 94550

- Drinking Water Distribution Line
- Intake Line

## Drinking Water Distribution System Features

Number	Description
01	Drinking Water Intake Sample Spigot
02	Water Treatment Room
03	East Beach Sample Spigot
04	West Beach Sample Spigot
05	Composites #0



# PTOX Test and Toxin Tests

**GreenWater**  
laboratories

aquatic analysis ... research ... consultation

## Potentially Toxigenic (PTOX) Cyanobacteria Screen East Bay Regional Park District

Prepared: January 22, 2016  
Prepared By: GreenWater Laboratories

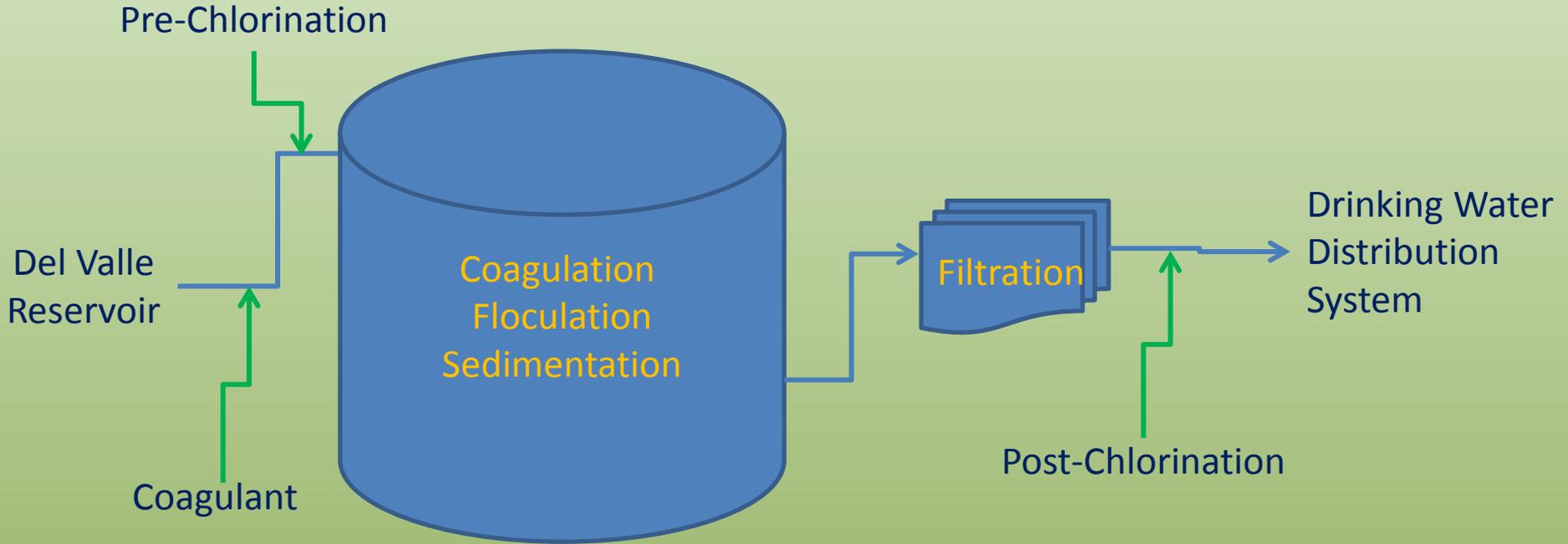
<u>Site</u>	<u>Collection Date</u>
Del Valle Clarifier	1/21/16

**Method**  
Wet mounts were prepared of the bloom material and scanned at 100X for the presence of potentially toxigenic (PTOX) cyanobacteria using a Nikon Eclipse TE100 inverted microscope equipped with phase contrast optics. Higher magnification was used as necessary for identification and micrographs.

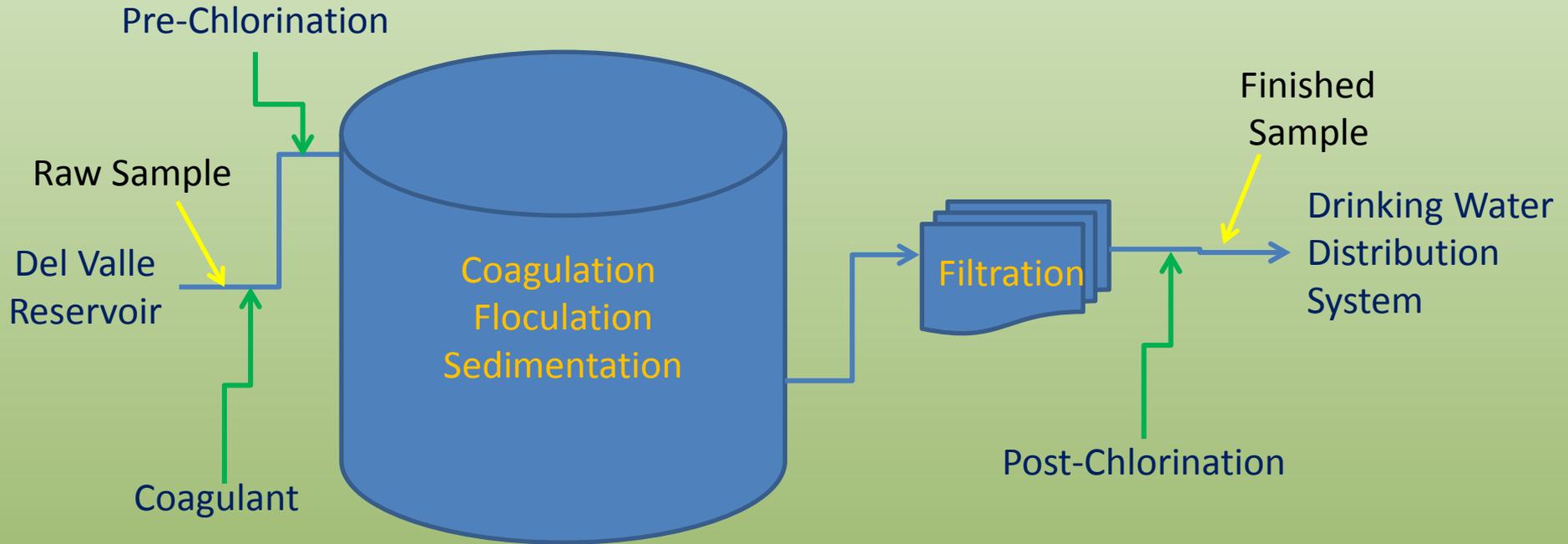
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**Results**

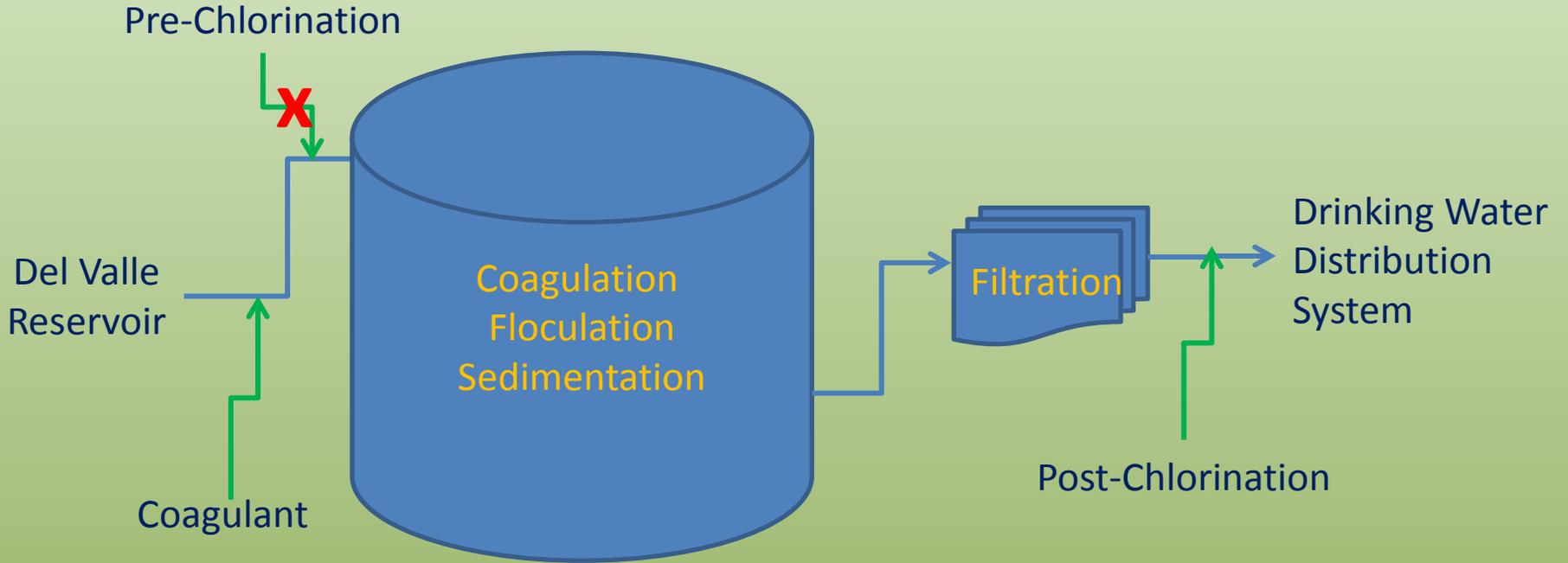
# Normal Drinking Water Strategy



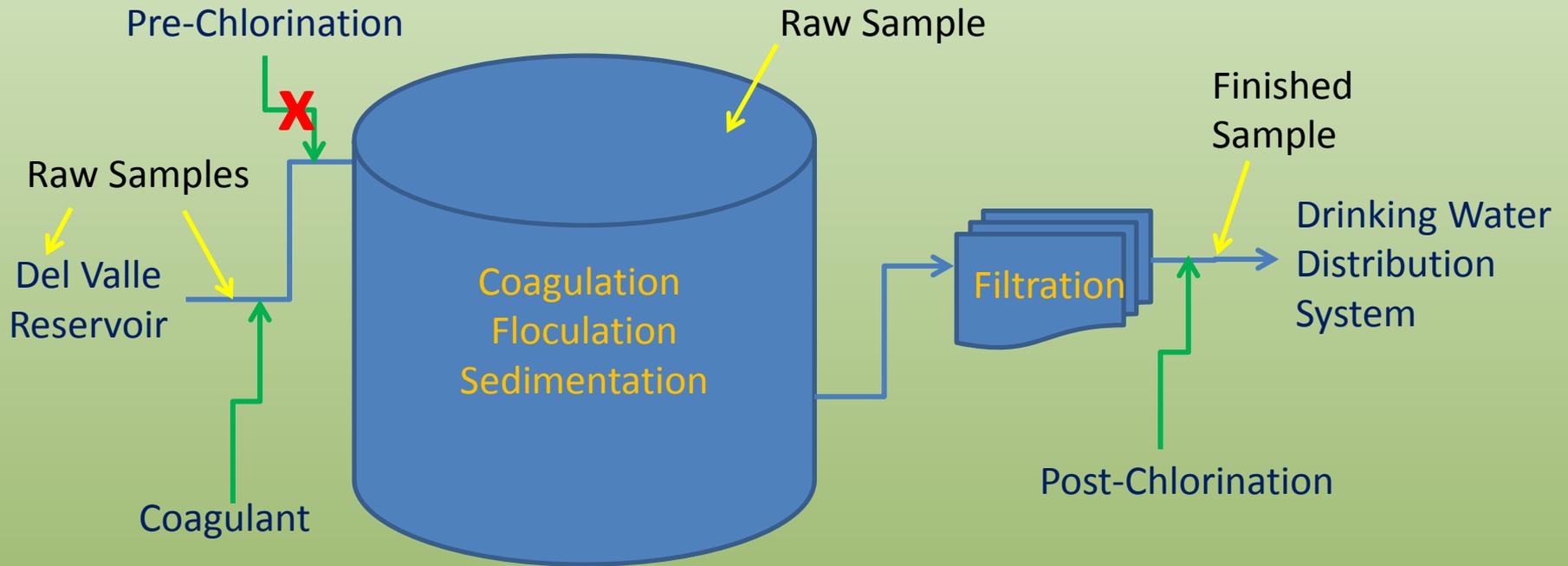
# Normal Drinking Water Sampling



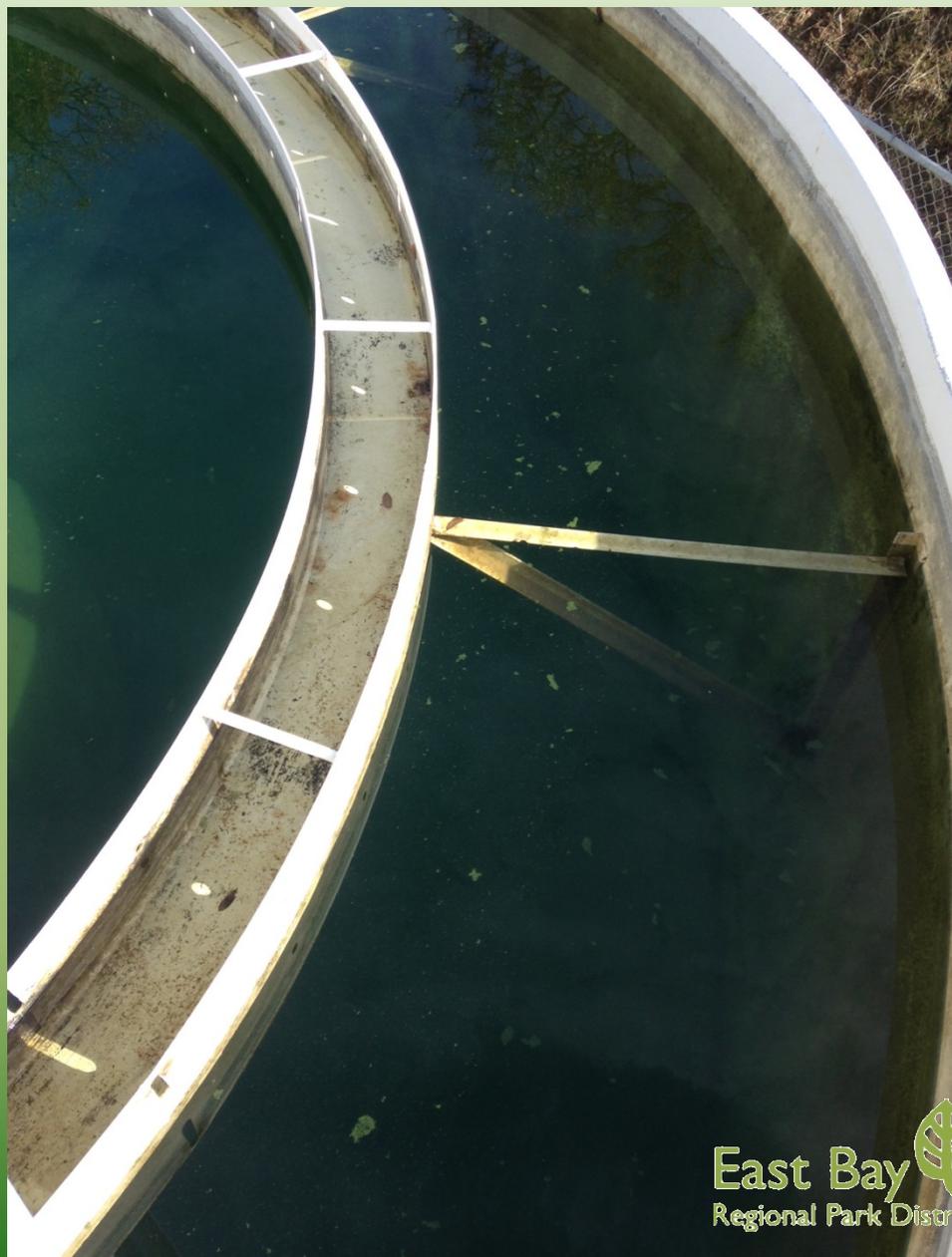
# Drinking Water Strategy with HAB



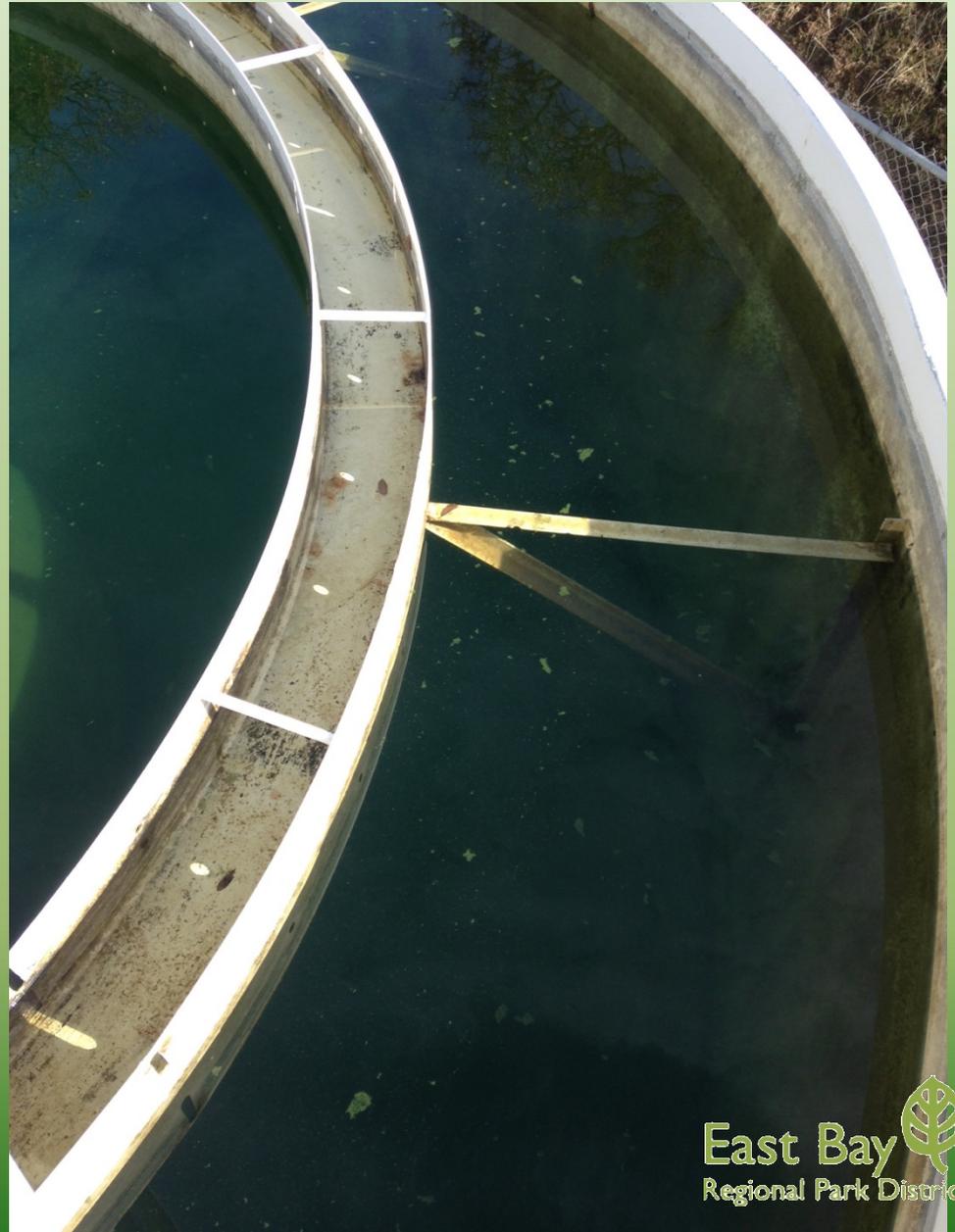
# Drinking Water Sampling with HAB



***Yikes!***

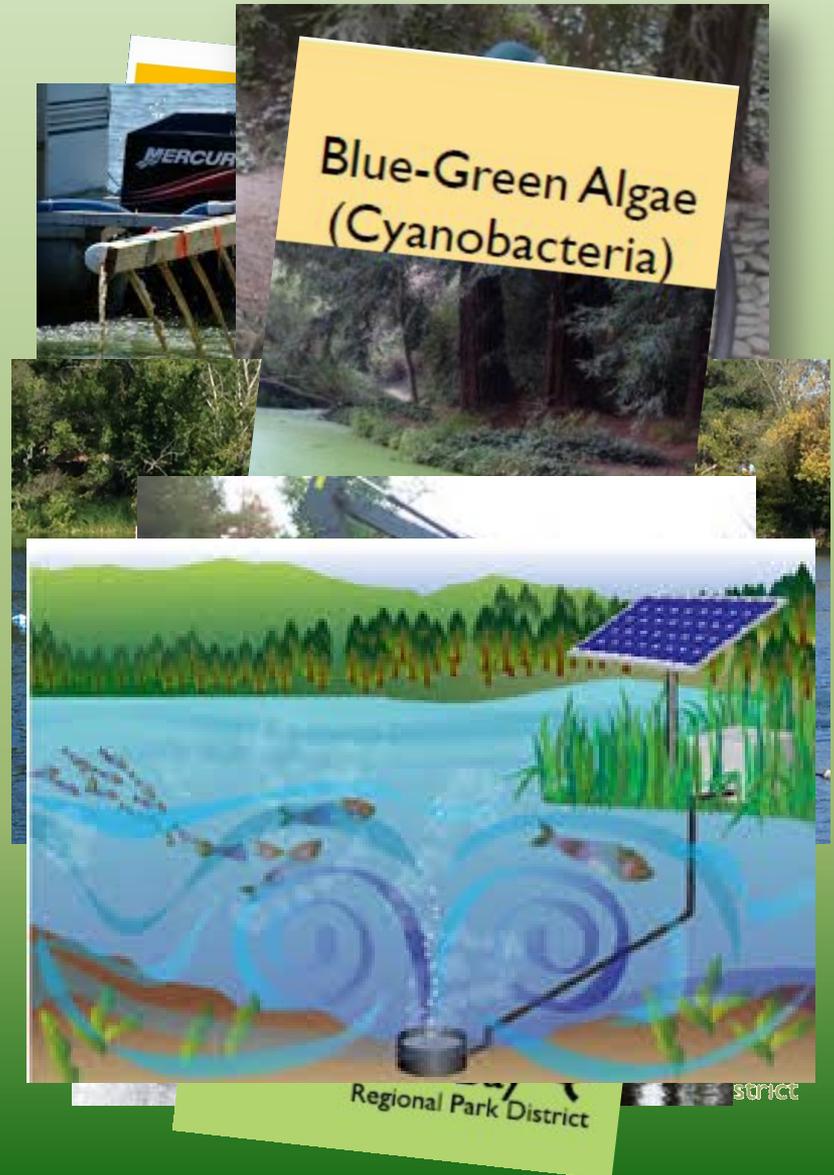


# Treatment Modifications and Special Sample Program



# Future Plans

- Adopt 2016 Guidance to our HAB Program
- Phoslock treatment for Lake Temescal (2016)
- Lake Chabot Anniversary
  - Removal
  - Pak 27 Treatment
- Floating Island for Temescal
- HAB Brochure
- Dredging Sedimentation Ponds at Temescal
- Aeration System for System Lake Anza (2017?)
- Continued Commitment with CSUEB and Nutrient Source Study
- Continued Coordination and Outreach



# Acknowledgement of Partners

- SF Bay Regional Water Quality Control Board
- US EPA Region 9 Laboratory and Staff
- Alameda Co. Dept. of Environmental Health
- UC Davis Veterinary Laboratory
- CA Department of Public Health
- CA Department of Public Health Lab
- CA State Water Resources Control Board

# Questions?



*Thank You*