Drought and Water Quality in the Russian River

June 3, 2021

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Water Boards

Drought-Related Water Quality Concerns

Ecological

- Increased water temperatures
- Decreased dissolved oxygen
- Altered pH
- Loss of habitat
- Turbidity (Reservoir discharge)

Public Health

- Elevated pathogen concentrations
- Harmful algal blooms (HABs)

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Drought-Related Water Quality Concerns

Ecological concerns:

Increased water temperatures

- Lower river flows → slower water, lower volume → higher temperatures

Decreased dissolved oxygen (DO)

- Lower river flows + increased algae → increased DO during daylight (photosynthesis), decreased DO at night (respiration)

Altered pH

- Changes in DO → water chemistry changes → increased pH daily range

Loss of habitat

- Lower river flows → fewer locations for aquatic organisms to survive

✓Stress to aquatic organisms

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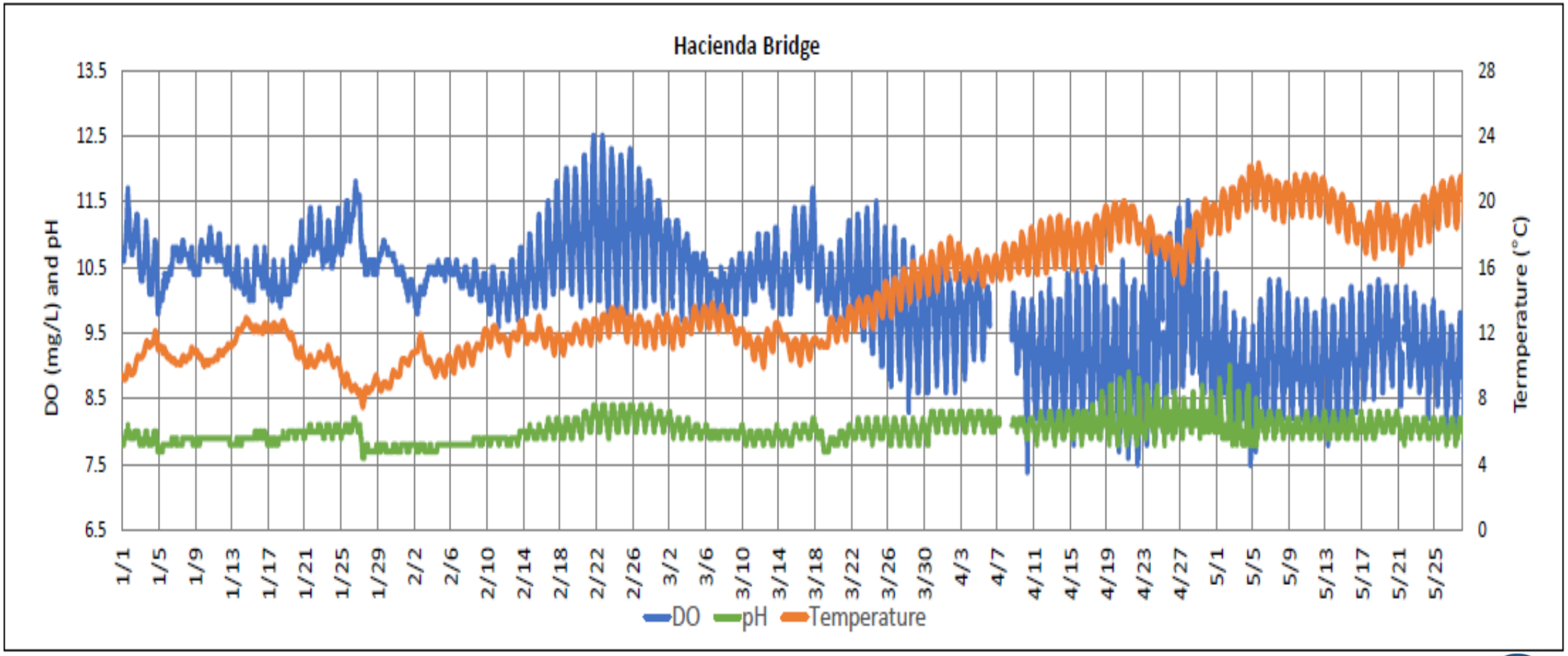
Lower Russian River Water Quality



Source: Sonoma Water

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Drought-Related Water Quality Concerns

Human-Related Water Quality Concerns

- Elevated pathogen concentrations
  - Reduced flow volumes may increase pollutant concentrations
  - Illness-causing bacteria on holiday weekends are the greatest concern

- Cyanobacteria harmful algal blooms (HABs)

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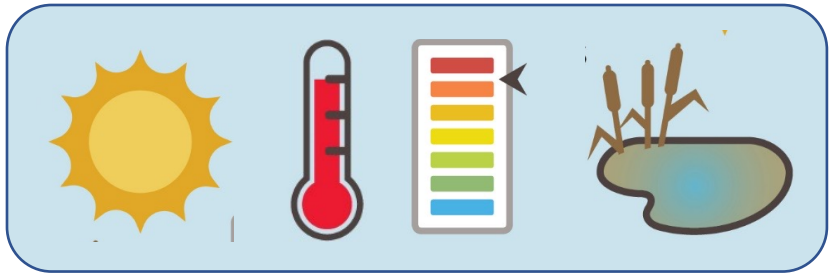
Factors Contributing to Increased Frequency and Severity of Harmful Algal Blooms (HABs)

- **Climate change altered precipitation patterns**
- **Warmer temperatures**
- **Reduced flows**
- Nutrient over-enrichment
- Reduced riparian canopy – high light / increased solar radiation
- High dissolved organic matter
- Degraded channel morphology
- Impoundments

Drought Enhanced



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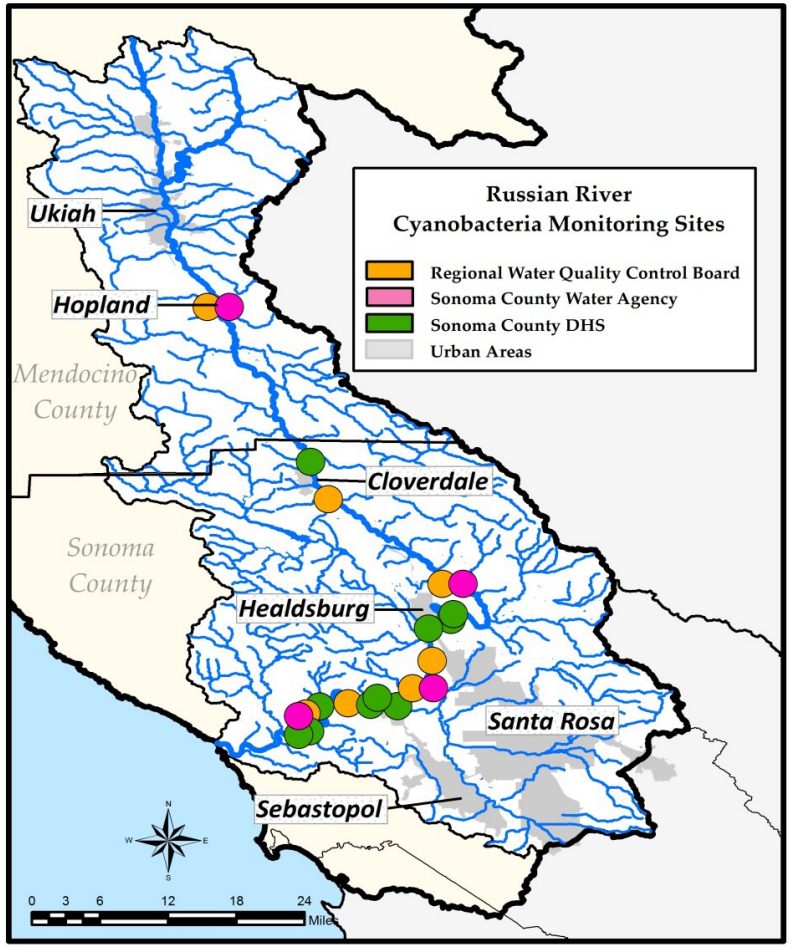
Cooperative Monitoring Partnership

- **Partner agencies**
  - North Coast Regional Water Quality Control Board
  - Sonoma Water
  - Sonoma County Health Services

- **Types of monitoring, 2016-present**
  - Ambient water quality monitoring for cyanobacteria and their toxins
  - Toxin monitoring at recreational beaches
  - Visual monitoring for cyanobacterial/algal mats



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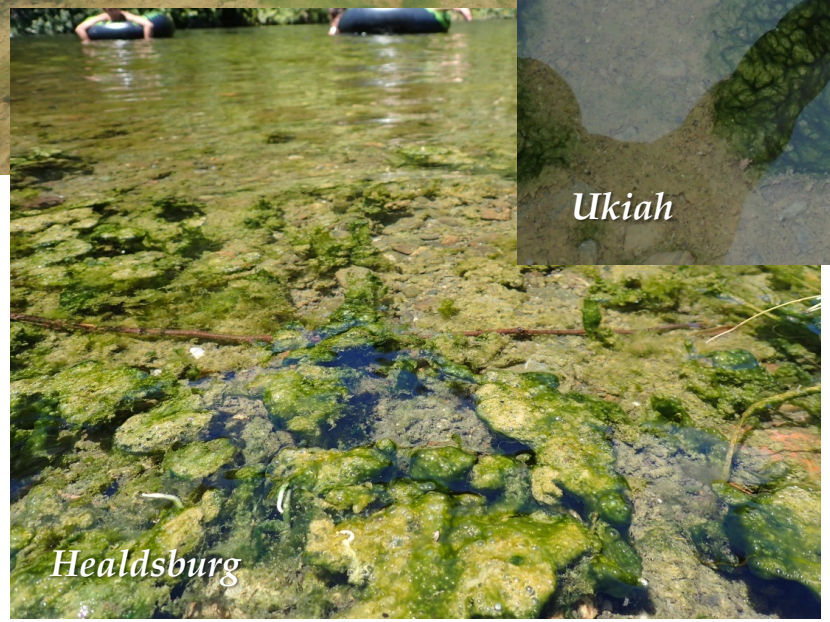
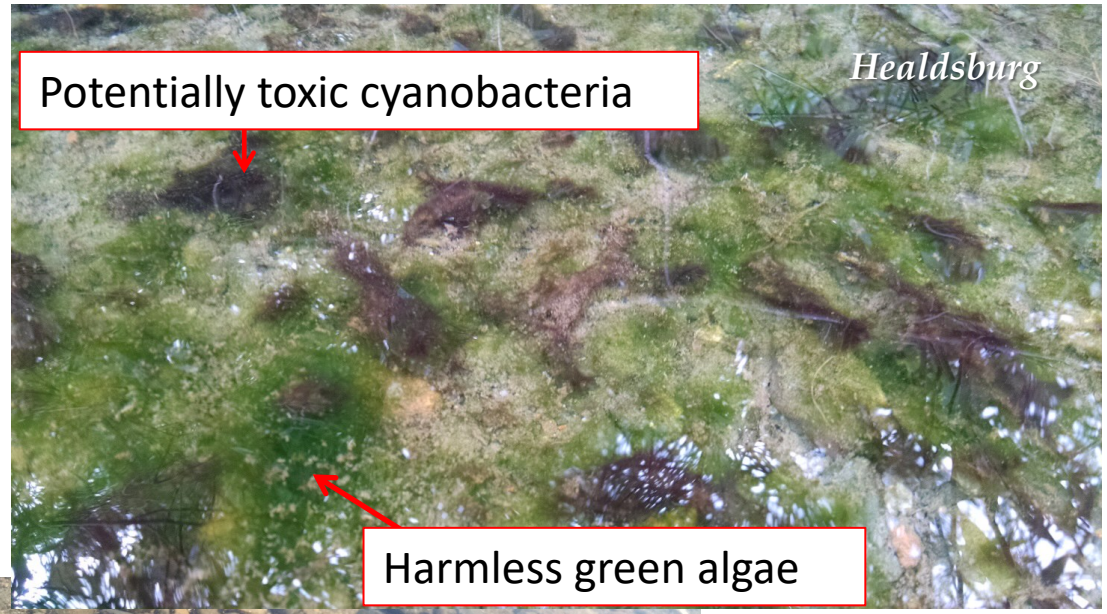
Benthic Algae and Cyanobacteria in the Russian River





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- Drought | California State Water Resources Control Board:
  www.waterboards.ca.gov/drought/north_coast
- California HABs Portal
  https://mywaterquality.ca.gov/habs/

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