

# Oregon DEQ Water Quality Program

## The 2023 Oregon DEQ CyanoHABs strategy

Oregon Harmful Algae Meeting  
[#oregon\\_lakes](#)  
March 17, 2023

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*Oregon Department of Environmental Quality*



# Cyanobacteria Harmful Algal Blooms (CyanoHABs) in Oregon

- Increasing public and ecosystem health concerns
- Impacts drinking water, recreational opportunities, agricultural production, fisheries, local economies, and aquatic habitats
- Need for greater coordination and collaborations across the state

# 2011 Harmful Algal Bloom Strategy

- Provided broad overview how DEQ worked within the agency and with partners on HABs
- Provided extensive background information on the science and management of freshwater HABs
- Made recommendations on how to improve monitoring, detection and management of HABs
  - 65% of recommendations have been incorporated



# Updated DEQ CyanoHABs Strategy Goals

- Outlines how DEQ detects, monitors, assesses, and manages CyanoHABs with partners
- Identify achievements and gaps in the current DEQ approach to CyanoHABs
- Make recommendations for improvements and expansion of the DEQ CyanoHABs strategy

# Strategy Components

- Drinking Water: Monitoring and Public Response
- Recreational Use: Public Health Response
- Clean Water Act: Assessment and Actions
- **Full strategy will be available Spring 2023!**

# Drinking Water: Monitoring and Public Response

Organization(s)	Main responsibilities
OHA Drinking Water Program	<ul style="list-style-type: none"><li>• Evaluate susceptibility of drinking water sources</li><li>• Evaluate cyanotoxin data</li><li>• Order/lift Do Not Drink orders</li></ul>
Public Drinking Water Facilities	<ul style="list-style-type: none"><li>• Collect biweekly cyanotoxin samples May – Oct.</li><li>• Conduct additional sampling when warranted</li><li>• Provide public notices of Do Not Drink Orders</li></ul>
DEQ Laboratory	<ul style="list-style-type: none"><li>• Coordinate sample processing</li><li>• Conduct cyanotoxin laboratory analysis</li></ul>
DEQ Water Quality Program	<ul style="list-style-type: none"><li>• Provide technical assistance for examining cyanotoxin and cyanobacteria data (satellite/statistical)</li></ul>

# Recreational Use: Public Health Response

Organization(s)	Main responsibilities
OHA Recreational HABs Program	<ul style="list-style-type: none"><li>• Receive information on potential CyanoHABs</li><li>• Coordinate cyanotoxin sampling</li><li>• Issue/lift Recreational Use Advisories</li></ul>
DEQ Laboratory	<ul style="list-style-type: none"><li>• Conduct field sampling for cyanotoxins</li><li>• Conduct laboratory analysis of cyanotoxins</li></ul>
DEQ Regions	<ul style="list-style-type: none"><li>• Provide information to OHA about potential blooms</li><li>• Conduct field sampling when needed</li></ul>
DEQ Water Quality Program	<ul style="list-style-type: none"><li>• Provide technical support to OHA and partners</li><li>• Examine remote sensing data on cyanobacteria</li></ul>
External partners	<ul style="list-style-type: none"><li>• Provide local information and samples as needed</li><li>• Coordinate sampling with external laboratories</li></ul>

# Clean Water Act: Assessment and Actions

Organization(s)	Main responsibilities
DEQ Water Quality Assessment Program	<ul style="list-style-type: none"><li>• Evaluate data describing CyanoHABs in waterbodies</li><li>• List waterbodies as impaired by CyanoHABs</li></ul>
DEQ Water Quality TMDL Program	<ul style="list-style-type: none"><li>• Evaluate data for development of management</li><li>• Develop Total Maximum Daily Loads or other plans</li></ul>
DEQ Laboratory	<ul style="list-style-type: none"><li>• Develop monitoring plan and collect additional data</li><li>• Conduct effectiveness monitoring of approved plan</li></ul>
DEQ Regions	<ul style="list-style-type: none"><li>• Development and aid implementation of WQMP or Alternative Plan</li></ul>
DEQ Permits	<ul style="list-style-type: none"><li>• Evaluate permits related to CyanoHABs</li><li>• Set effluent limits for permits</li></ul>
External Partners	<ul style="list-style-type: none"><li>• Implement WQMP/Alternative Plans</li><li>• Conduct effectiveness monitoring</li></ul>

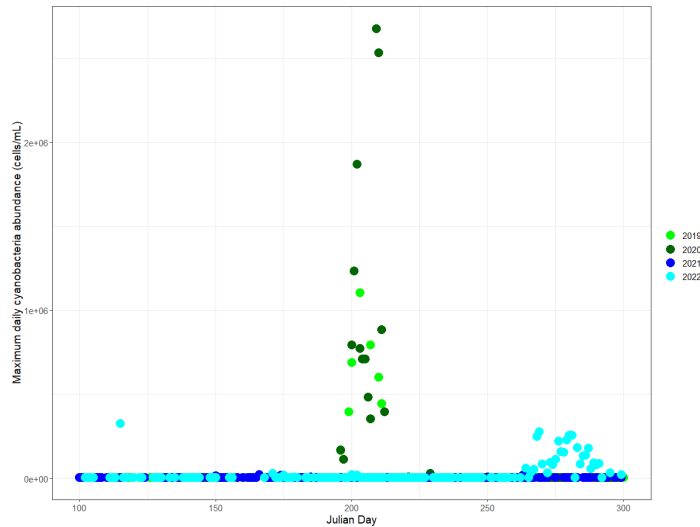


# Recommendations

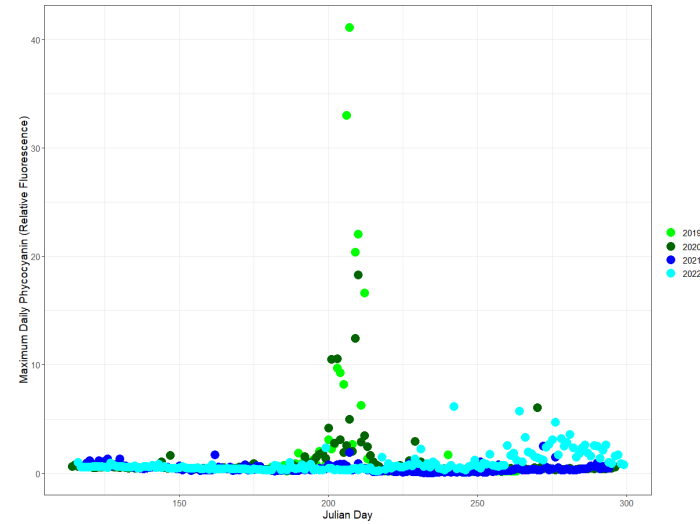
- Address climate change effects more directly
- Incorporate environmental justice principles
- Continue and explore additional funding for:
  - Monitoring
  - Laboratory analysis
  - Technical analysis
  - Remote sensing

# Pilot satellite data project: Odell Lake 2019 - 2022

Satellite data



Field measurements



World Health Organization cyanobacteria cell count	Low/non-detect (<20K cells/mL)	Medium (>20K - <100K cells/mL)	High (>100K cells/mL)
Percent similarity between field and satellite measurements (based on relative ranks)	96%	16%	67%

# Web-Based Weekly Reports

<https://rstudioconnect.deq.state.or.us/Oregon-cyanobacteria-satellite-report/>



## Satellite Estimates of Cyanobacteria in Oregon Lakes and Reservoirs

Reporting Period: Feb. 6, 2023 - Feb. 12, 2023

### Introduction

This report provides an update to estimates of cyanobacteria abundance derived from satellite imagery for 49 large Oregon waterbodies. Updates are scheduled to occur weekly from March to October each year. Estimates derive from the [Cyanobacteria Assessment Network \(CyAN\)](#) project. Three levels illustrate cyanobacteria abundance (cells/mL): Low: <20,000, Moderate: 20,000-100,000, and High: >100,000. The levels correspond to the World Health Organization (WHO) exposure guideline values ([WHO, 2003](#)). For more information on Harmful Algal Blooms in Oregon, please visit websites from the [Oregon DEQ](#) and the [Oregon Health Authority](#).

All data presented in this report are provisional and subject to change. Estimates of cyanobacteria from satellite imagery do not imply the presence of cyanotoxins or other water quality impairments and do not have regulatory implications. **Visit the [Oregon Health Authority](#) to learn about recreational use and drinking water advisories related to cyanobacteria blooms.** Additional assessments with imagery from the [Sentinel 2](#) Satellites, local visual assessment, and/or water quality sampling are needed to provide additional information on potential human health and environmental effects of cyanobacteria. Please note that estimates of cyanobacteria abundance presented in this report may be skewed by cloud cover, ice cover, sun glint, water surface roughness, dry lake beds, algal mats, and shoreline effects.

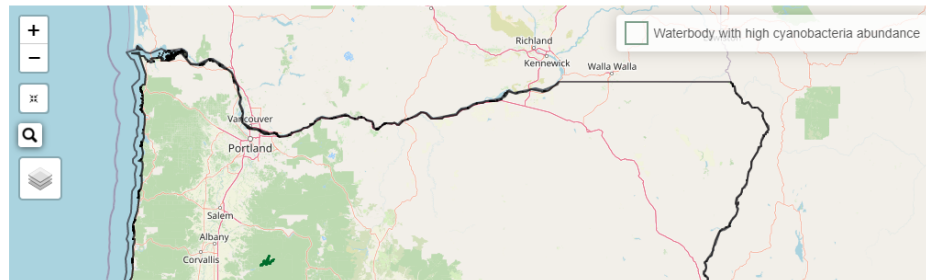
### Highlighted Waterbodies

Waterbodies with high cyanobacteria abundance (>100,000 cells/mL) based on the average of daily maximum estimates during the 7-day reporting period (7DADM).

Reporting Period: Feb. 6, 2023 - Feb. 12, 2023

Search:

Waterbody_GNISID*	Basin	7DADM (cells/mL)	Days of Data
Green Peter Lake_01158878	South Santiam	656,271	4
Lost Creek Lake_01158890	Southern Oregon Coastal	187,599	5
Siltcoos Lake_01158483	Northern Oregon Coastal	181,026	4
Upper Klamath Lake_01151685	Klamath	119,702	7



# Questions?

Thanks to Rebecca Hillwig, Curtis Cude, and Gregg Baird from OHA for reviews!

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email [deqinfo@deq.state.or.us](mailto:deqinfo@deq.state.or.us).