

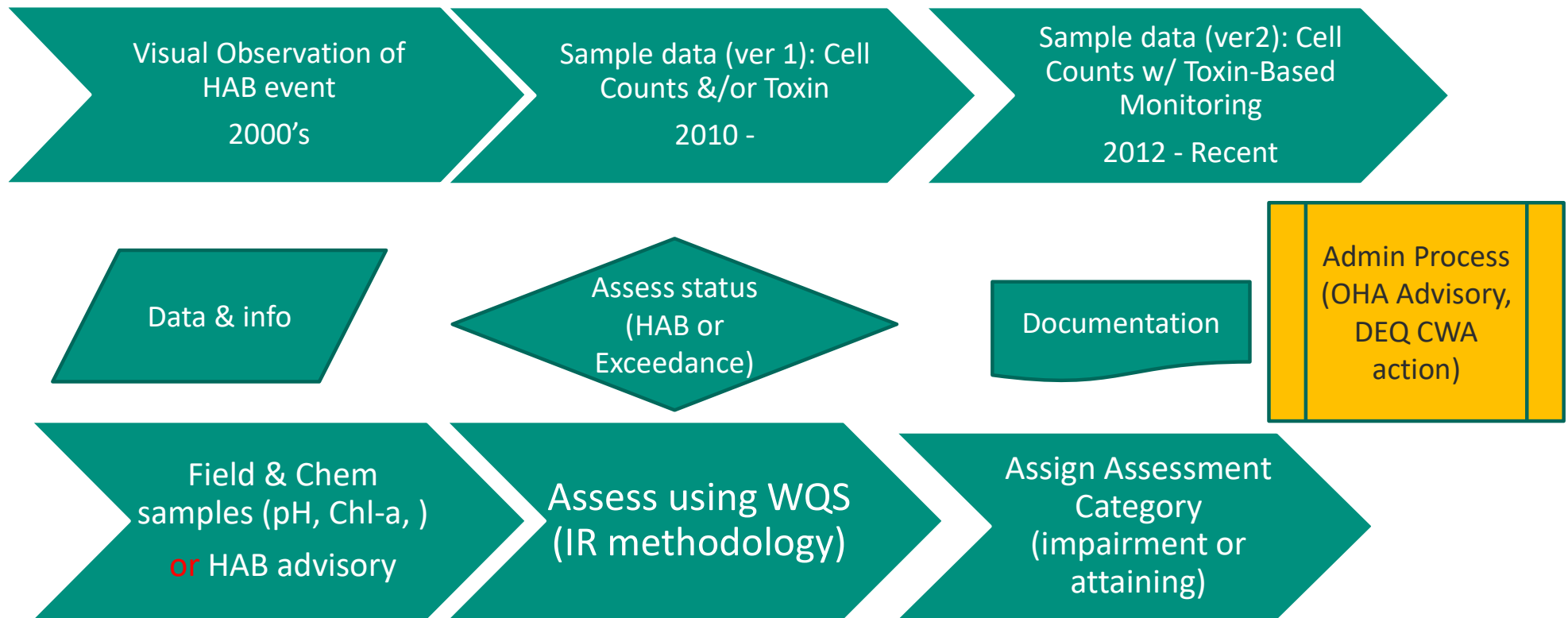
Identifying HABs-related Water Quality impairments using Oregon's Integrated Report and 303d list (with examples)

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Oregon DEQ
Water Quality Program

March 17, 2023
OLA, Corvallis (Virtual)



Public Health & Clean Water Act processes



Draft Methodology for Oregon's 2022 Water Quality Report and List of Water Quality Limited Waters

Pursuant to Clean Water Act Sections 303(d) and 305(b) and OAR 340-041-0046

By: Water Quality Assessment Program

Date: June 2021

HABs-related Water Quality impairments

- Harmful Algal Blooms : Any public health advisory issued by the Oregon Health Authority, in conjunction with other federal, state, county, city or local agencies...
- pH
- Chlorophyll-a
- Dissolved Oxygen – maybe...good indicator
- Aquatic weeds: co-conspirator
- Excess Algae: Documented evidence that algae, including periphyton (attached algae) or phytoplankton (floating algae), are causing other standards to be exceeded (e.g. pH, chlorophyll a, or dissolved oxygen) or impairing a beneficial use

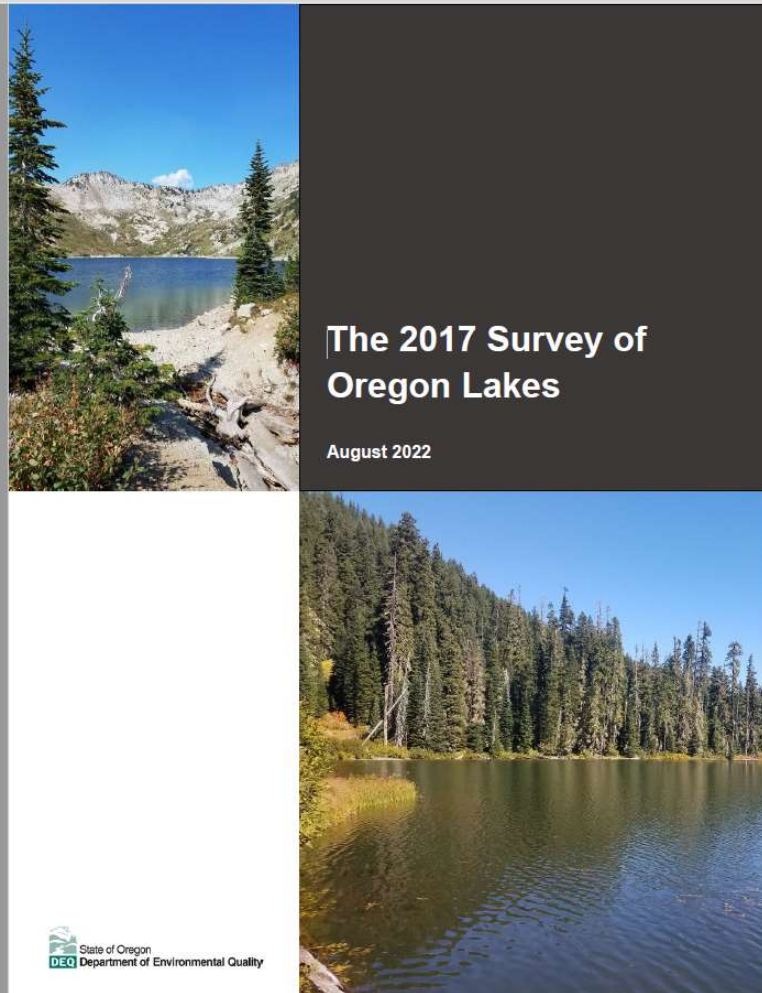
Status: 2022 Integrated Report - HABs-related Water Quality impairments (Categories 5 & 4A)

Waterbody type/ Impairment	HABs	Chl-a	pH	Excess Algal Growth	Aquatic Weeds	Total_All	Comments	Cat-4A TMDL-issued
							DO not included	
Estuary	0	1	2	0	1	4		
Lake	42	20	21	0	12	95	39 listed in 2010 35 for HABs	
Stream/River	8	21	50	15	0	94		
Total	50	42	73	15	13	193		87

For your consideration:

- Should DEQ consider identifying WQ impairment for a HAB event based on TBM result $<$ Health Advisory RUVs for cyanotoxins?
 - (i.e., Toxin(s) detected, but a Health Advisory is not issued)
 - See examples

Another source of information



Find

Previous Next

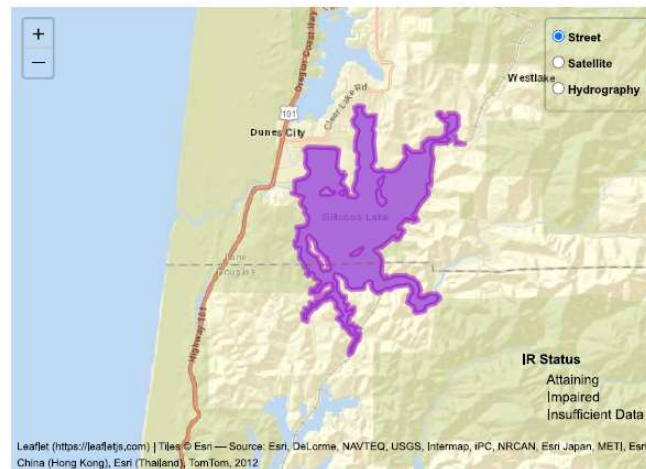
OHA 2007 Recreational HABs health advisories (not TBM)

Waterbody	County	Start Date	End Date
Hill Creek Lake	Lane	5/11/2007	6/6/2007
Detroit Lake	Marion	5/30/2007	6/13/2007
Lost Creek Lake	Jackson	6/12/2007	7/10/2007
Willow Creek Lake	Morrow	6/22/2007	8/3/2007
Lemolo Lake	Douglas	6/26/2007	8/20/2007
Odell Lake	Klamath	7/25/2007	8/13/2007
Willow Creek Lake	Morrow	8/17/2007	10/31/2007
Siltcoos Lake	Lane	9/18/2007	11/9/2007

Siltcoos Lake – late bloomer; dam, watershed - rural residential development; Ag and silviculture. Popular fishing and boating

2022 Integrated Report Assessment Summary

OR_LK_1710020701_02_100176



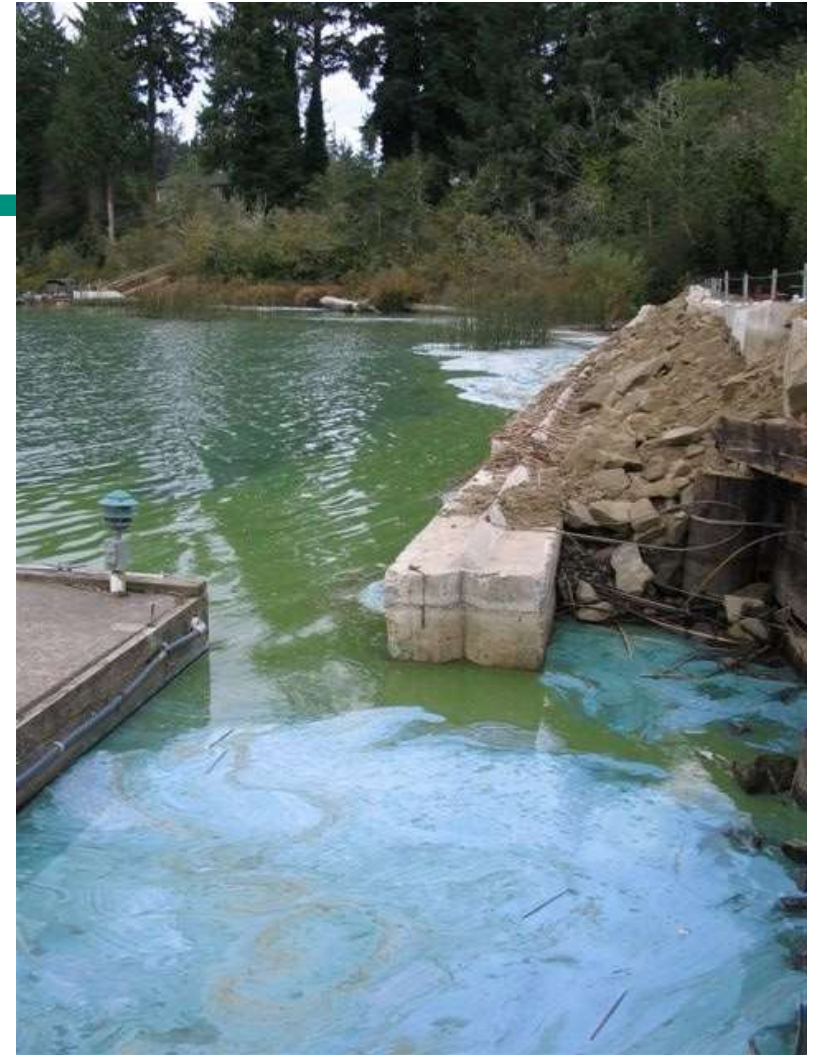
Assessment Unit overall status

Assessment Unit Overall Status

- **AU Name:** Siltcoos Lake
- **AU Description:** Lake/Reservoir Unit
- **AU Type:** Lake / Reservoir Unit
- **Overall Status:** Impaired
- **Year first listed:** 2010
- **Year last assessed:** 2010

Assessment Unit Overview

OR_LK_1710020701_02_100176 is a Lake / Reservoir Unit type assessment unit. Data from all monitoring locations within this assessment unit are pooled together and assessed as a whole.



Siltcoos Lake Oct 2008



Siltcoos Lake Oct 2013

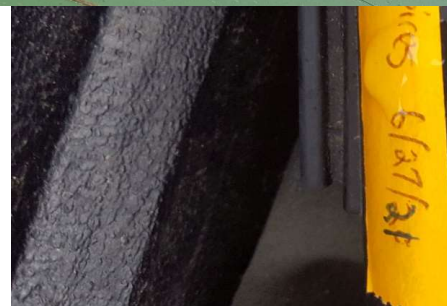


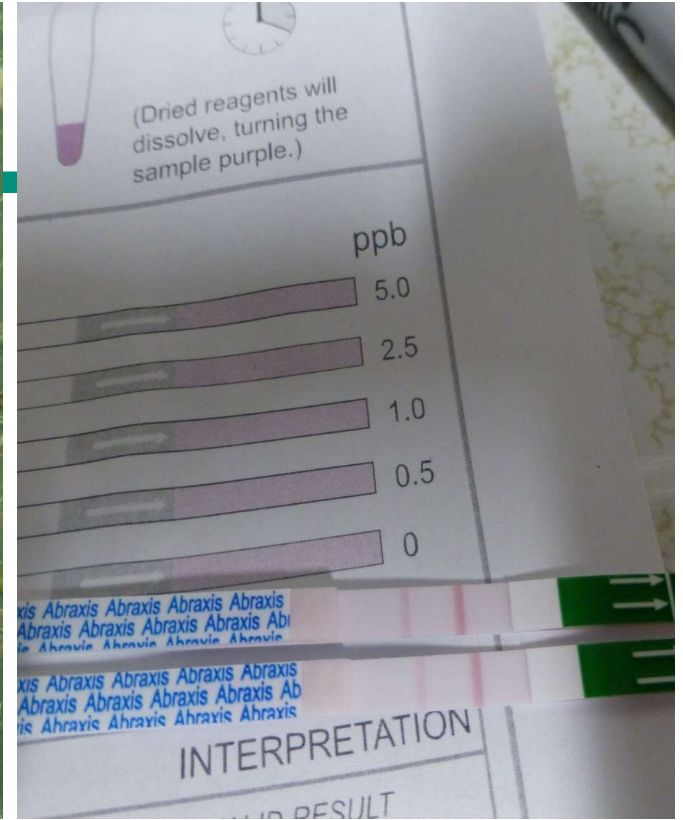
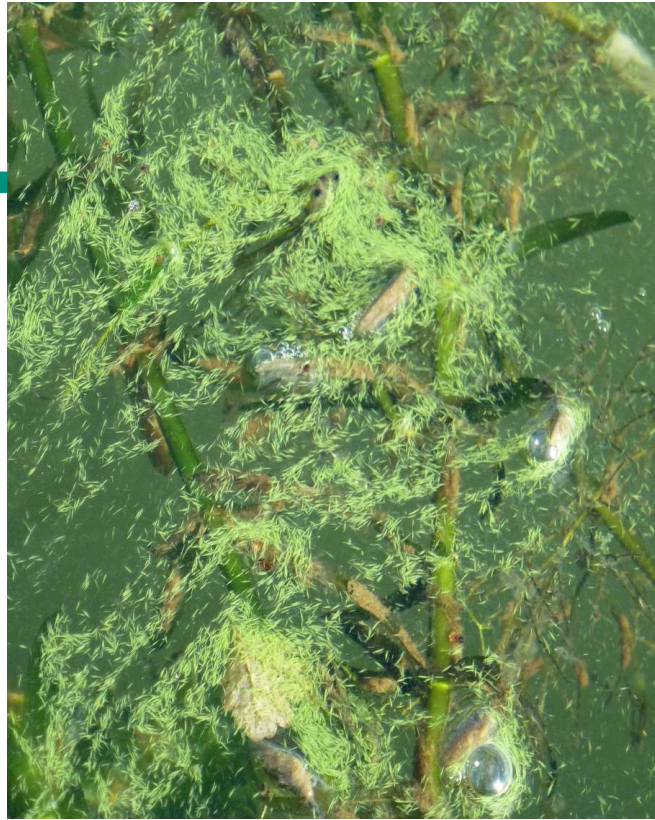
Siltcoos Lake Nov 2016



Microcystin detected < RUV
But field Parameters are good!

Siltcoos Lake Dec 2020



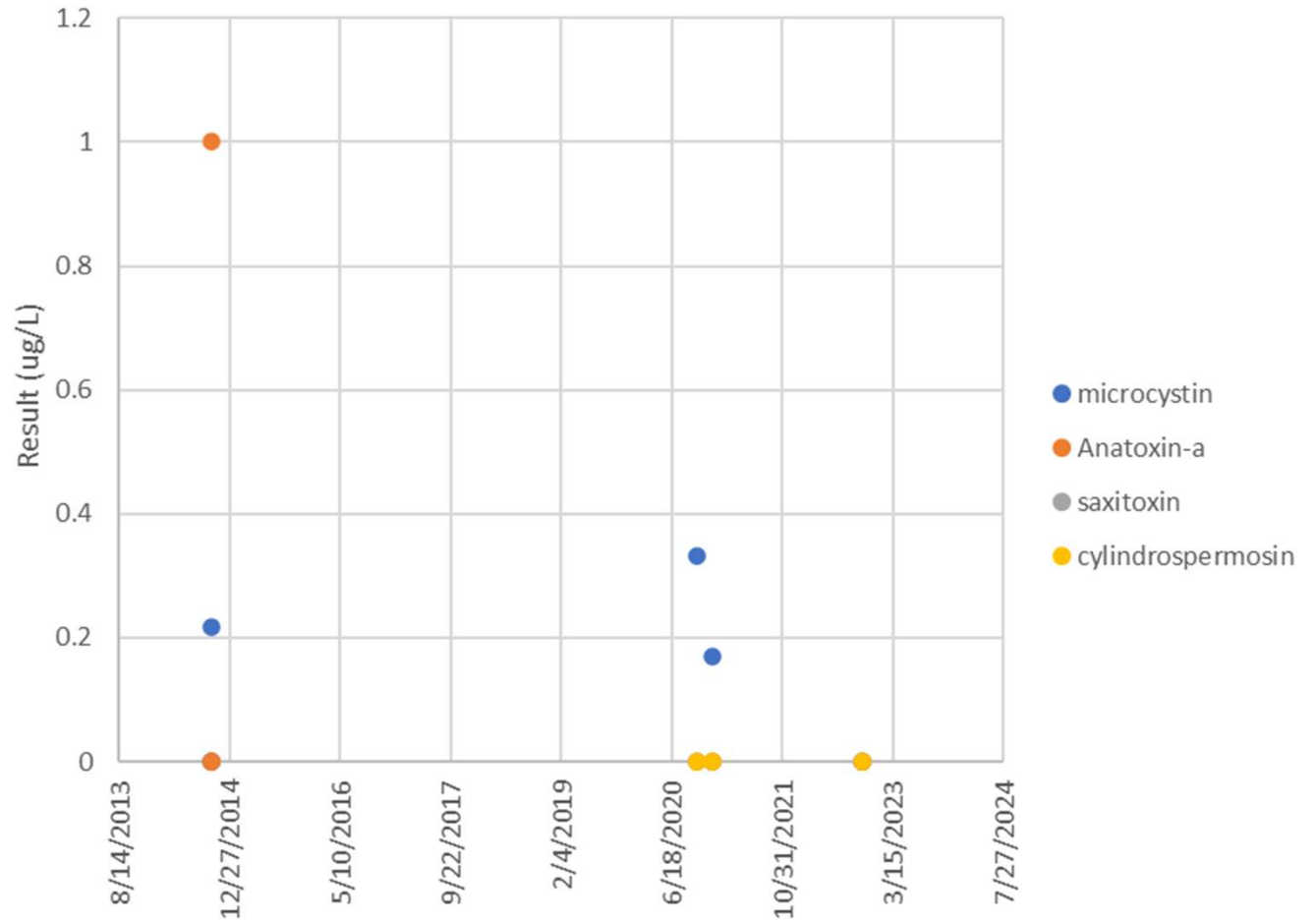


Siltcoos Lake Nov 2021 – strip test results < 5 ppb



Siltcoos Lake Dec 2021 – bloom persists

Siltcoos lake - cyanotoxin results

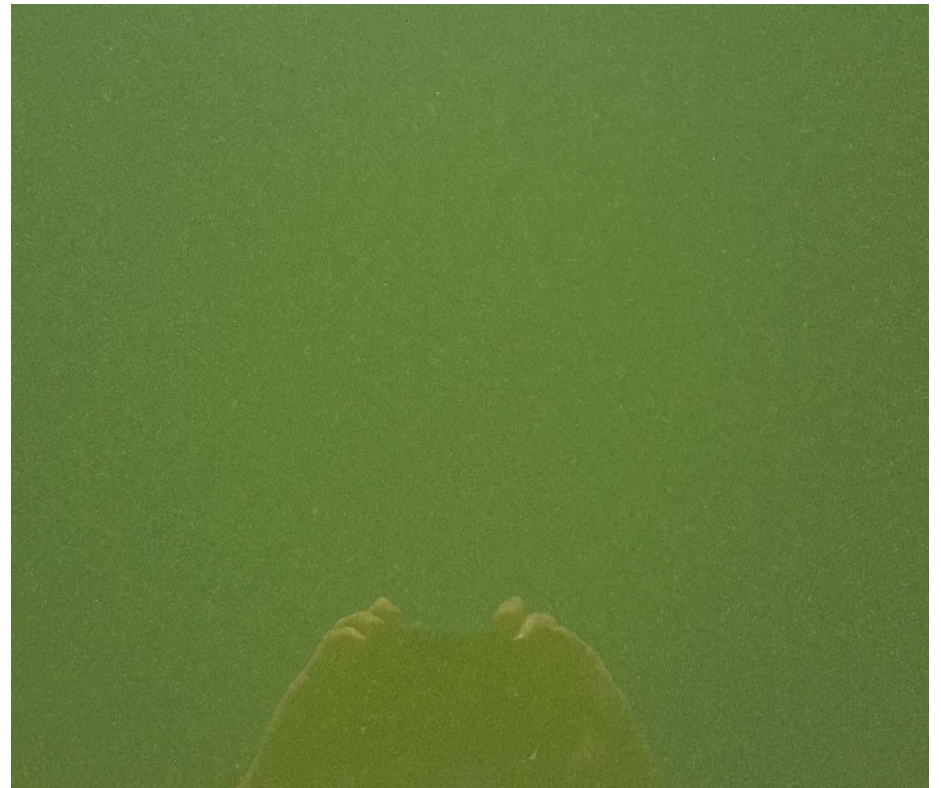
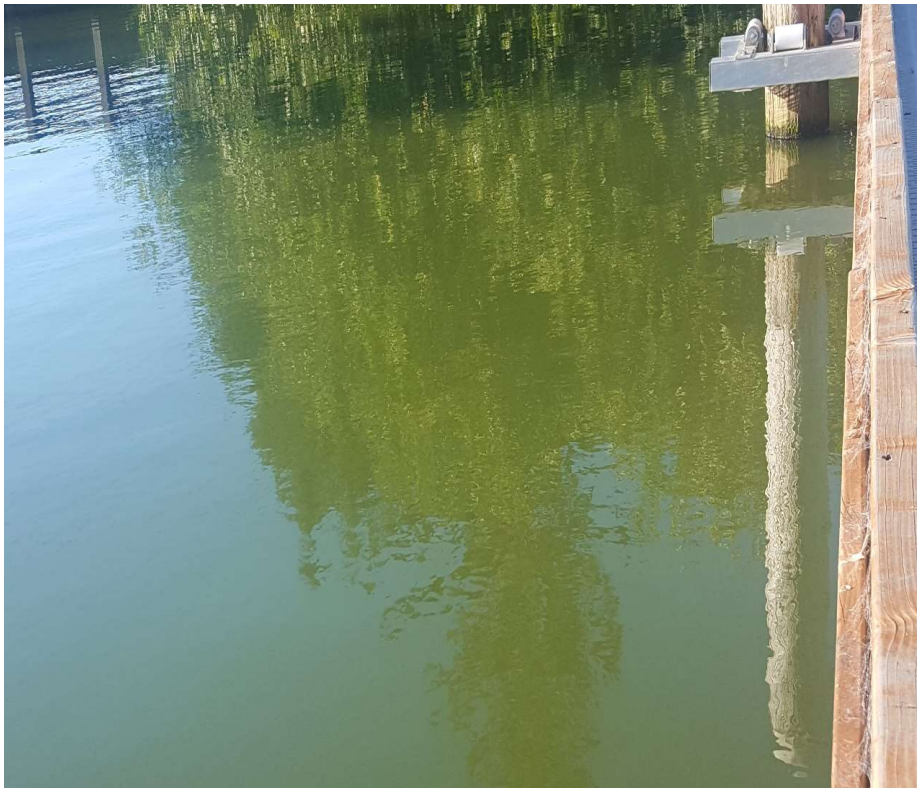


2013-2022: Only 4 toxin sample events.

Two cyanotoxins were detected, total of 4 detections

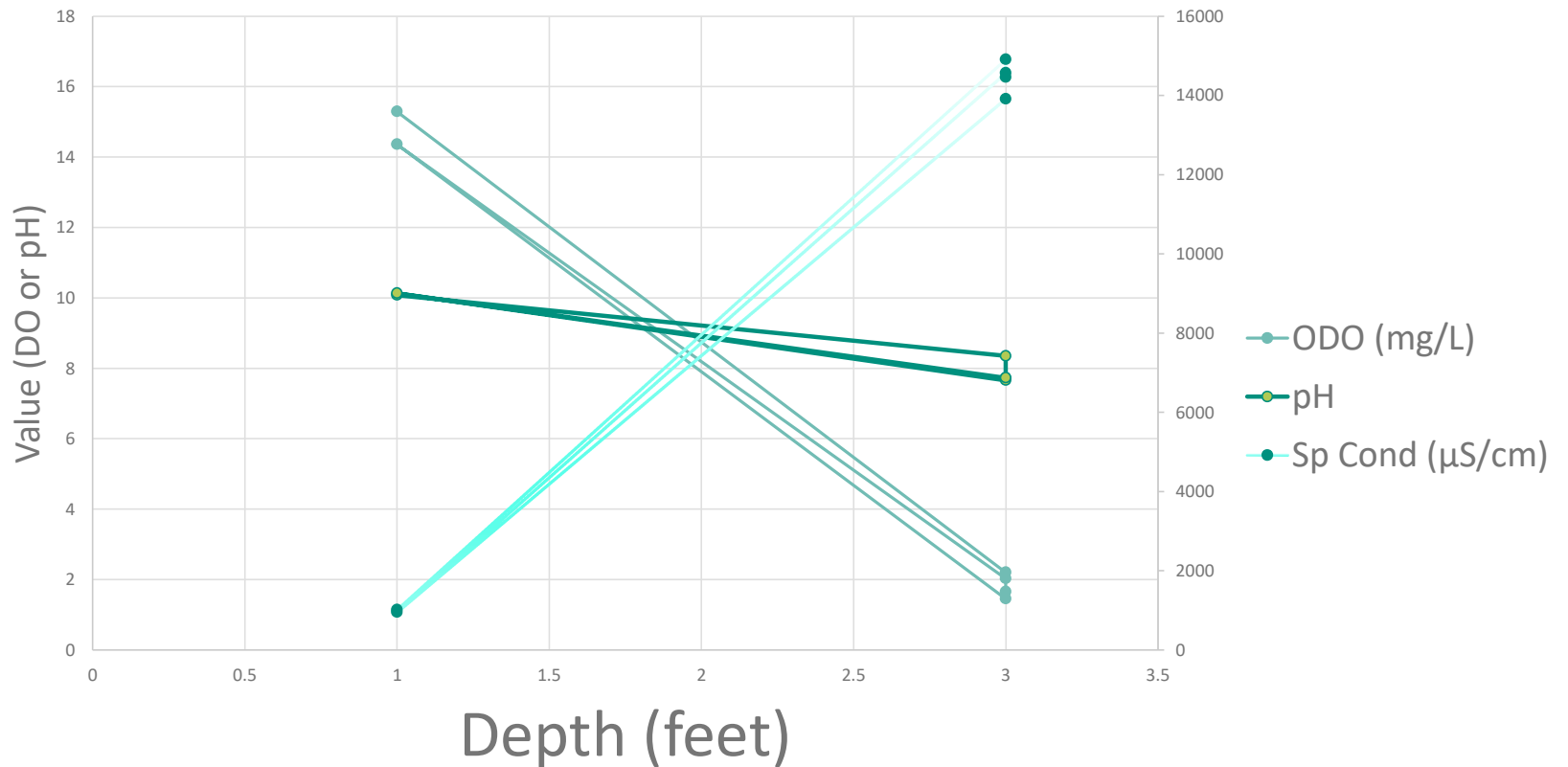
All well below RUV criteria

Eckman Lake – July 2018; DEQ notified of possible cyanoHABs event; coordinated with OHA to collect recreational HABs sample



Eckman Lake July 18, 2018 water column field parameters

Field parameter variation with depth confirms estuarine intrusion and resulting impact on Diss Oxygen, pH



Eckman Lake – July 18, 2018

Oregon DEQ 07.18.2018.pdf - Adobe Acrobat Reader (32-bit)

File Edit View Sign Window Help

Home Tools L61242-Siltcoos tox... L61432-6_Siltcoos... DEQ-Siltcoos HABs... Oregon DEQ 07.18... x

To: Aaron Borisenko
Oregon DEQ
7202 NE Evergreen Parkway, Ste. 150
Hillsboro, Oregon 97124

From: Mr. Benjamin Southwell, Environmental Laboratory Manager and Chemist, LSSU

Subject: Data Report for Cyanotoxin Samples Supplied 7/20/2018

Summary: Listed below are the results for the analysis of the supplied samples. An enzyme linked immunosorbent assay (ELISA) was utilized for the analysis of Anatoxin-a, Cylindrospermopsin, Microcystin and Saxitoxin.

Sample Identification:	Collection Date	Anatoxin-a (µg/L)	Cylindrospermopsin (µg/L)	Microcystin (µg/L)	Saxitoxin (µg/L)
Eckman Lake	7/18/2018	<0.2	0.24	<0.3	<0.02
Assay Limit of Detection		0.2	0.05	0.3	0.02

6:58 PM 3/16/2023

Eckman Lake Sentinel-3 image (July 18, 2018)

Select a Date:

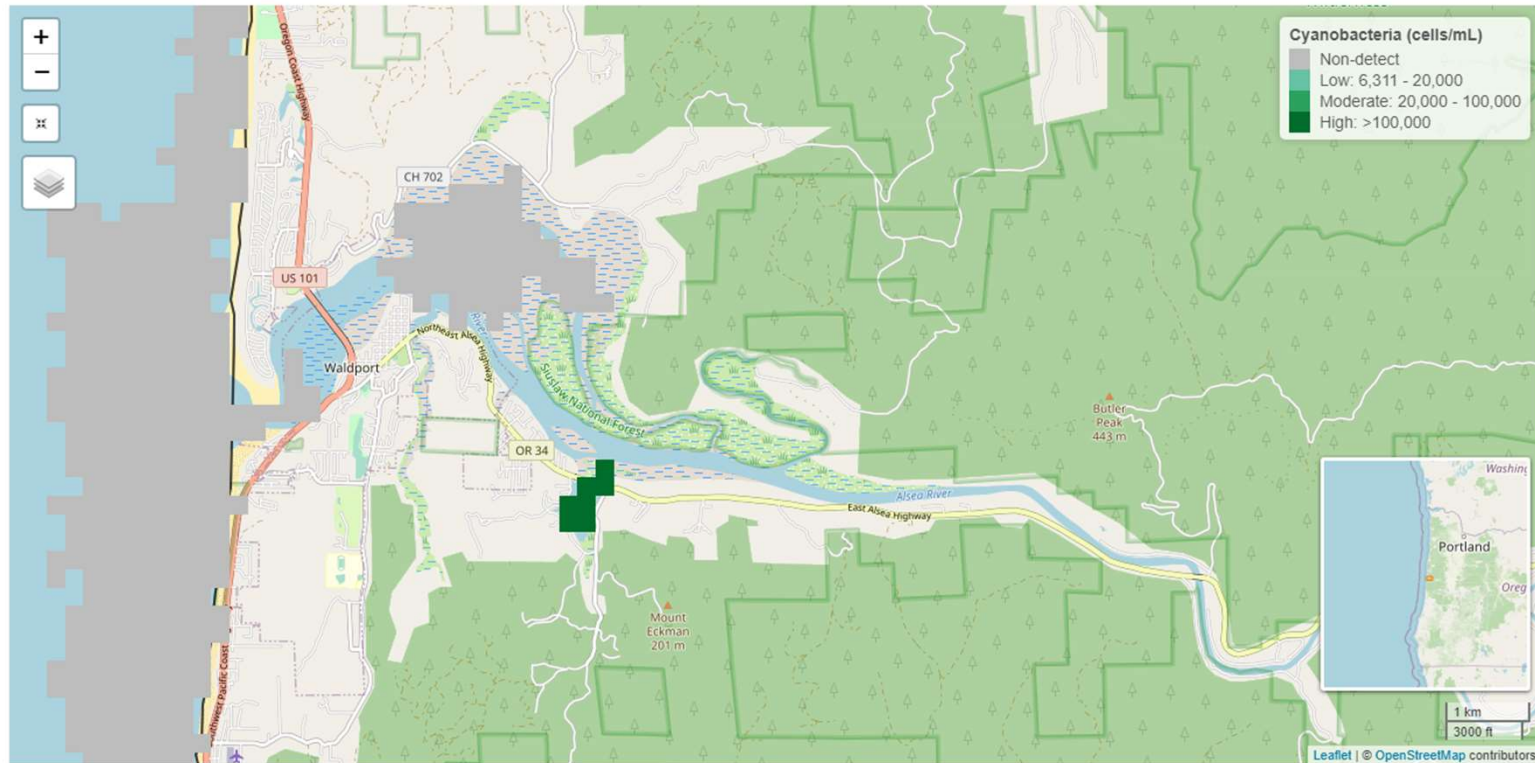
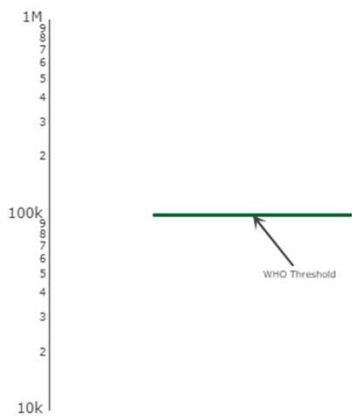
2018-07-18

Table of Waterbodies Ranked by 7DADM

Select a Waterbody:

Oregon

Boxplot of cyanobacteria estimates (cells/mL) in waterbody on selected date:



Preachin' to the choir:

- Need to better align Public Health surveillance and CWA assessment to understand status, patterns, and causal factors of HABs and develop response plans/actions
- Remote tools help track bloom formation, cell density but not a substitute for water column data
- Need adequately resourced and coordinated surveillance effort for non-managed waterbodies (e.g., Siltcoos, Eckman, etc, etc, etc)

Title VI and alternative formats

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