



Multi-Agency Coordination and Response of Harmful Algal Blooms in Utah

EPA R10 HABs Workshop

October 18, 2019

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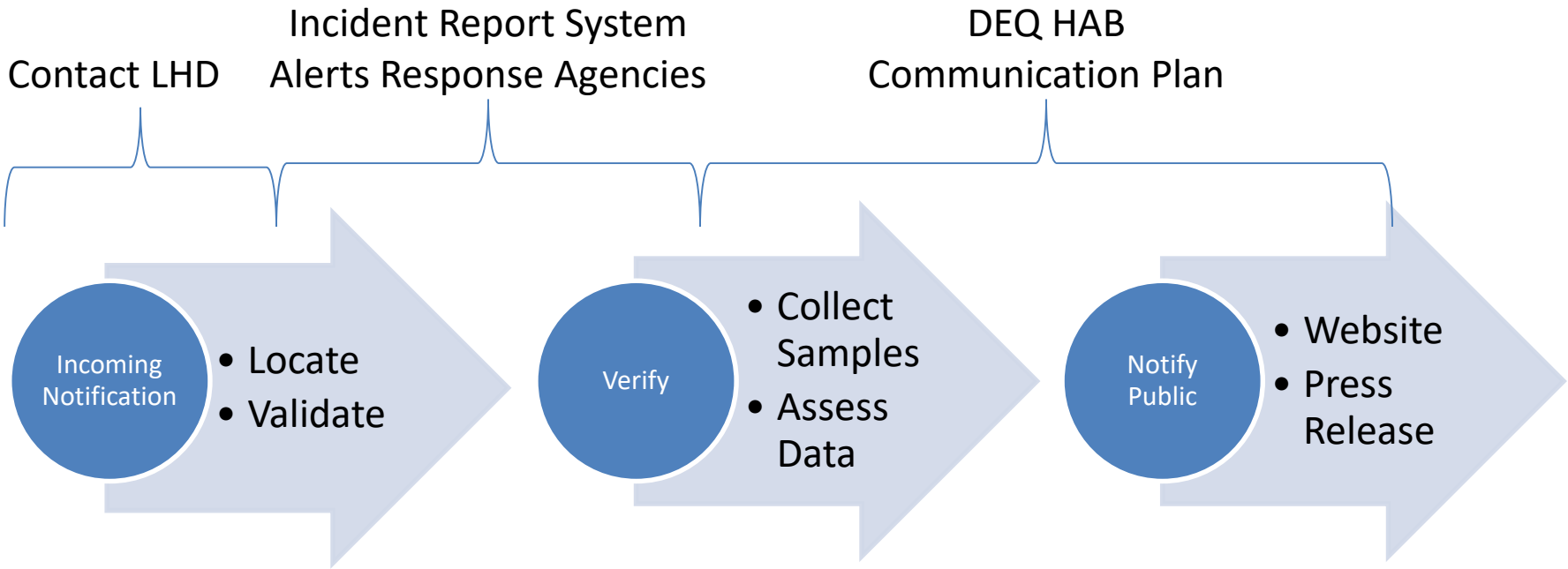
Division of Water Quality
Utah Department of Environmental Quality

3 Pillars of UDWQ HAB Program

- GUIDANCE
- MONITORING
- COMMUNICATION

PARTNERSHIPS

Cyanobacteria Exposure Risk Response Process



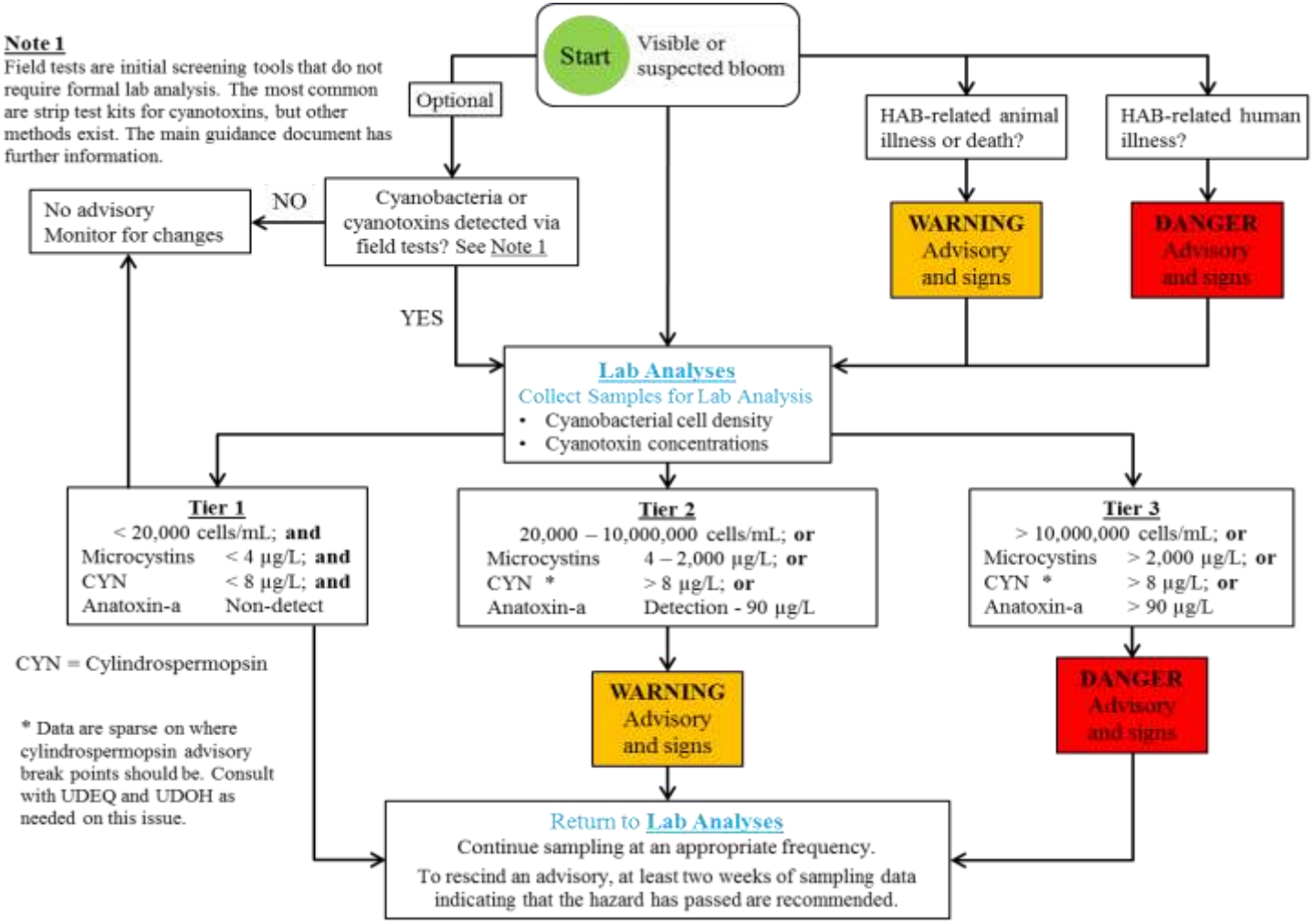
HAB Program Pillars

1. Guidance

2019 UDEQ/UDOH Recreational Health HAB Guidance

	Tier 1: None	Tier 2: Warning	Tier 3: Danger
Relative Probability of Acute Health Risk [1]	Low	Moderate	High
Cyanobacterial Cell Density (cells/mL) [1]	< 20,000	20,000 - 10,000,000	>10,000,000
Microcystins (µg/L) [1,2]	< 4	4 – 2,000	> 2,000
Cylindrospermopsin (µg/L) [2]	< 8	> 8 *	> 8 *
Anatoxin-a (µg/L) [3]	Non-detect	Detection - 90	> 90
Additional Factors	None	Reports of animal illness or death	Reports of human illness
Health Risks [1]	Negligible	Potential for long-term illness Short-term effects (e.g., skin and eye irritation, nausea, vomiting, diarrhea)	Potential for acute poisoning Potential for long-term illness Short-term effects (e.g., skin and eye irritation, nausea, vomiting, diarrhea)
Recommended Actions	None	Issue **WARNING** advisory Post **WARNING** signs No Primary Contact Recreation Sampling recommended at least weekly	Issue **DANGER** advisory Post **DANGER** signs Consider **CLOSURE** No Recreation Sampling recommended at least weekly

HAB Decision-making algorithm



Additional HAB Guidance Resources

Utah Division of Drinking Water

Draft guidance and response plan that educates drinking water facilities how to prepare, respond, and act when source and treated waters become impacted

Utah Department of Agriculture and Food

Developed a HAB response plan that provides guidance for livestock and agricultural producers

HAB Program Pillars

2. Monitoring

Monitoring: Prioritize Utah's At-risk Waters

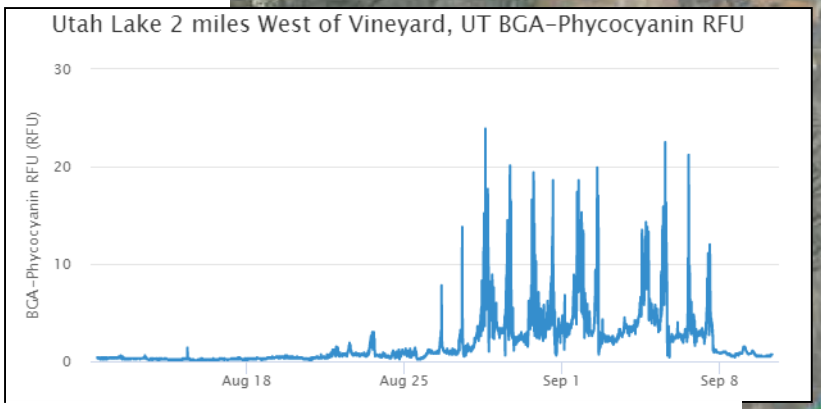
Increase monitoring of most vulnerable waters

- Develop HAB collection SOP that targets a 'reasonable maximum' of cyanobacteria exposure to the public at culinary source water and high recreational use waters

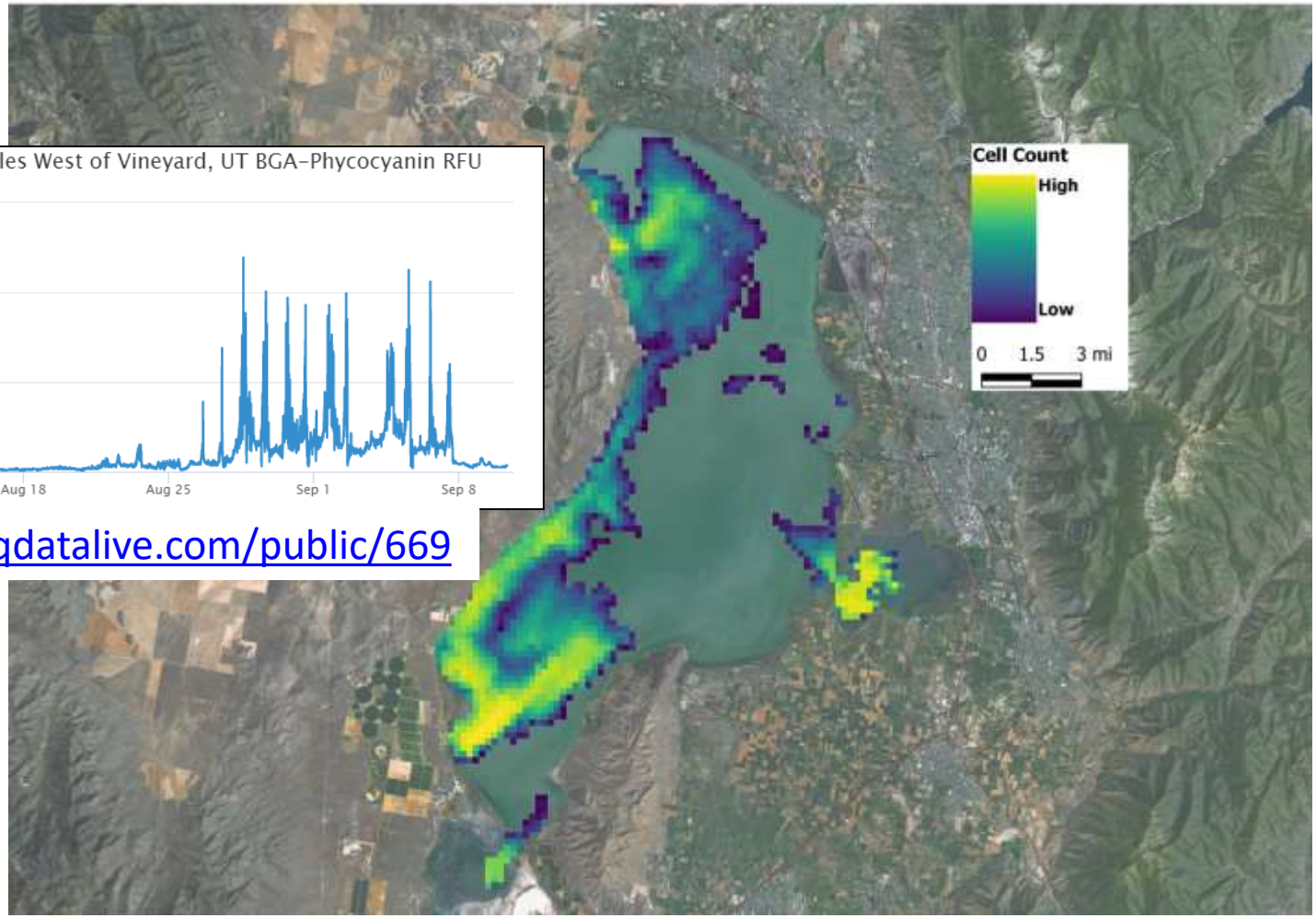
- Coordination with Division of Drinking Water, State Parks, Drinking Water Providers, District Engineers, Dept. Agriculture, and Local Health Departments.

- DWQ and USU: Utah Water Watch (citizen monitoring) have scopes, test strips and trained staff to provide initial screen at select locations (via NOAA program).

HAB monitoring remote screens



https://wqdatalive.com/public/669



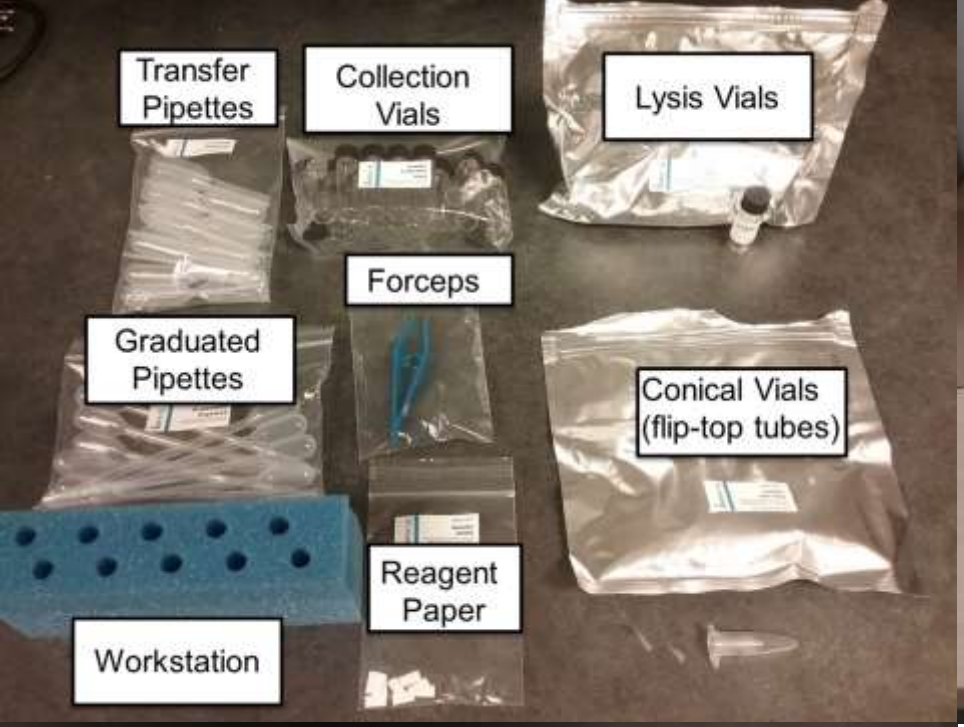
Data collected at each site:

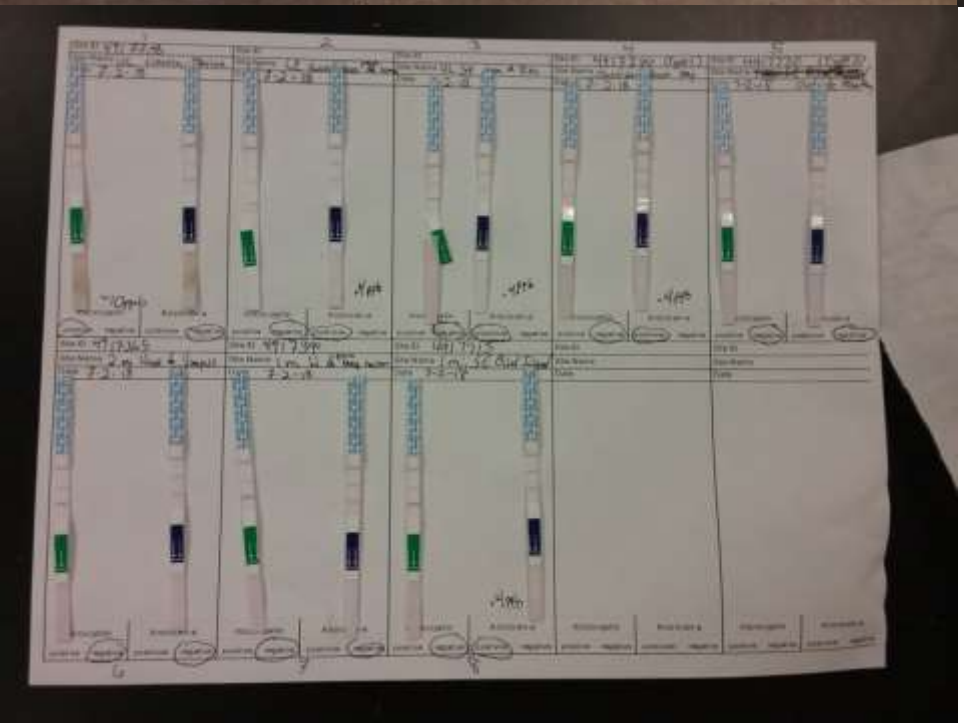
- Site visit form (qualitative observations and photos) => critical for e-mail/website updates
- WQ sonde measurements
- Phycocyanin measurements
- Water samples (if HAB is suspected)

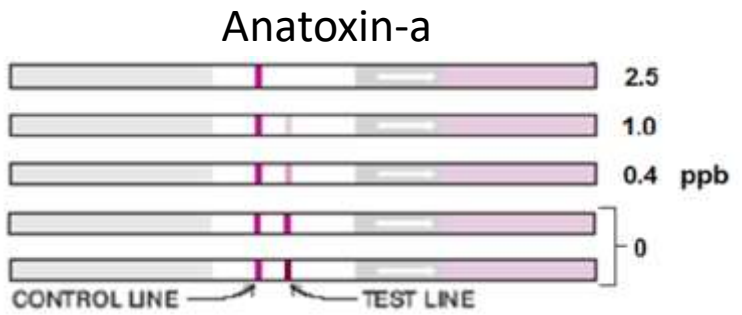
Measurement Equipment

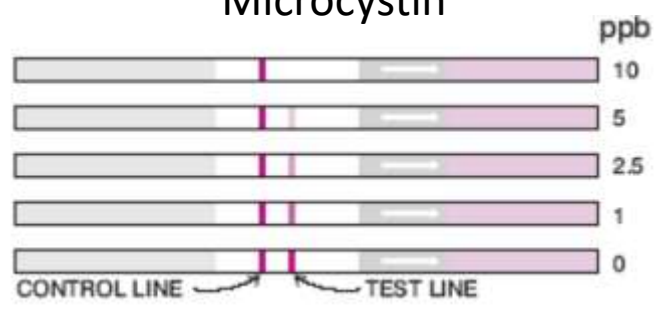
Phycocyanin Probe: Turner Designs Cyclops-7

Sonde: In-Situ SmarTROLL MP


Transfer Pipettes
Collection Vials
Lysis Vials
Forceps
Graduated Pipettes
Conical Vials (flip-top tubes)
Reagent Paper
Workstation




Anatoxin-a
2.5
1.0
0.4
ppb
0
CONTROL LINE
TEST LINE


Microcystin
ppb
10
5
2.5
1
0
CONTROL LINE
TEST LINE

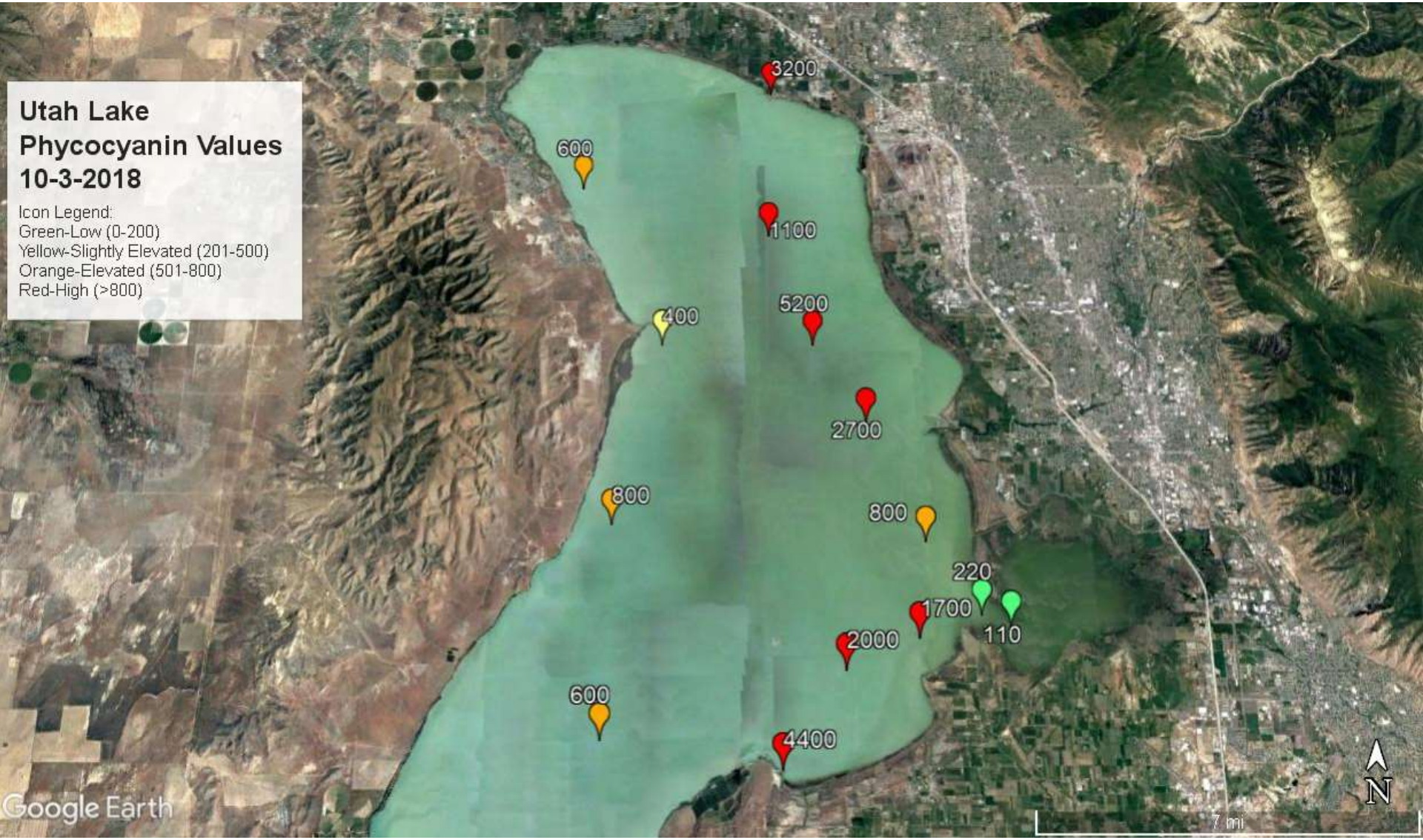
Sampling

Photo: Utah Lake Lincoln South Beach 8-16-2018

Sample Types:

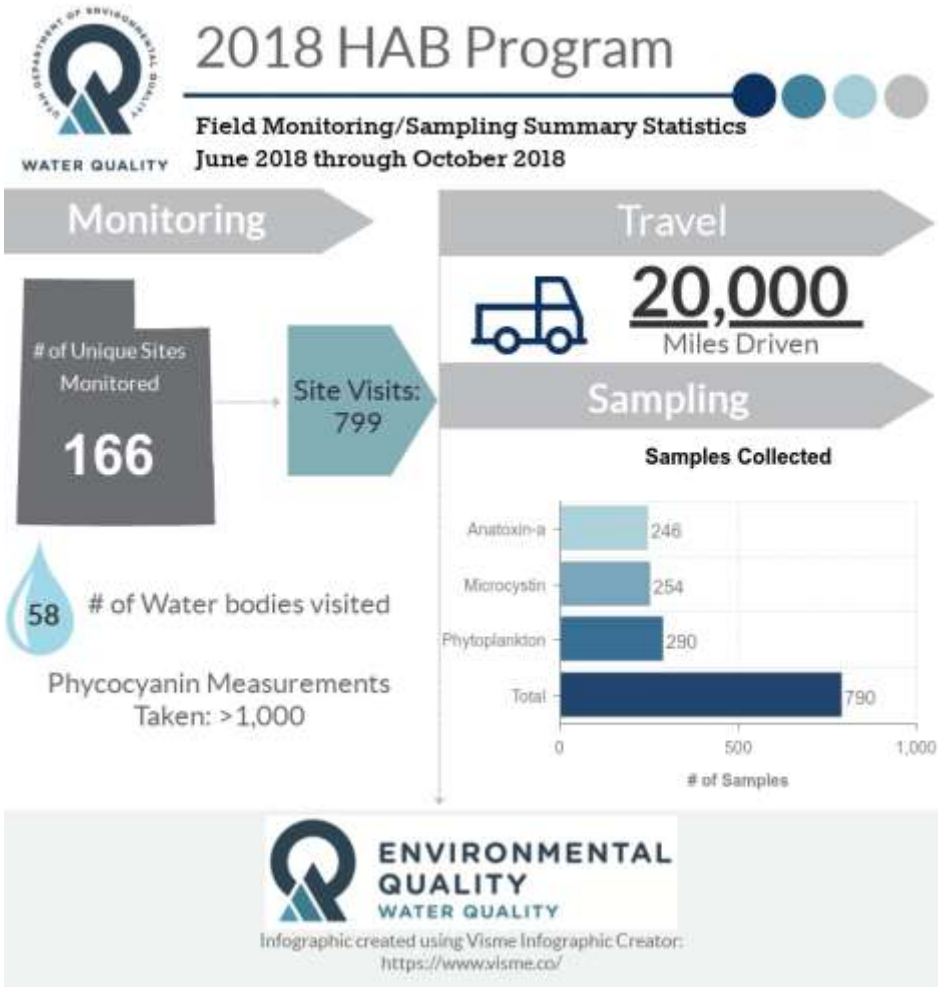
- Type 1-Surface grab sample (i.e., top 2 inches of water column)
  -used for sampling of surface blooms

Photo: Scofield Reservoir near dam 10-25-2018


Utah Lake
Phycocyanin Values
10-3-2018
Icon Legend:
Green-Low (0-200)
Yellow-Slightly Elevated (201-500)
Orange-Elevated (501-800)
Red-High (>800)
3200
600
1100
400
5200
2700
800
800
220
1700
110
2000
600
4400
Google Earth
7 mi
N

Real-time HAB Partner Lab Results

Waterbody	Routine vs. Response	Date Delivered to UPHL	24 vs 72 hr	Date Final Data Delivered from Lab	Sample Type (Type 1 vs 2)	Sample Location	DWQSite ID	LAT_DD	LONG_DD	Sample Date	Sample Time	UPHL Anatoxin-a (µg/L)	UPHL Microcystin (µg/L)	CyanoSum_cells/ml	LHD
Scofield Reservoir	Routine				Type 2	Scofield Res SW Beach	N/A	39.75618	-111.14821	5/27/2019	11:45	<0.10	<0.10		Southwest
Utah Lake	Routine				Type 2	Lindon Marina Beach	4917335	40.32854	-111.76654	5/30/2019	12:00	<0.10	0.13	0	Utah
Utah Lake	Routine				Type 1	Saratoga Springs Picnic Area	4917418	40.29086	-111.87094	5/30/2019	13:45	<0.10	1500	1,194,701	Utah
Utah Lake	Routine				Type 2	Saratoga Springs Picnic Area	4917418	40.29086	-111.87094	5/30/2019	14:00	<0.10	14	2,973	Utah
Utah Lake	Routine				Type 2	Saratoga Springs North	4917418	40.29086	-111.87094	6/5/2019	13:10	Not Requested	0.12	123	Utah
Utah Lake	Routine				Type 2	Lindon Marina	4917335	40.32854	-111.76654	6/5/2019	11:40	Not Requested	<0.10	229	Utah
Calder Reservoir	Routine				Type 2	Boat Ramp	5937804	40.72878	-109.20461	6/11/2019	9:30	<0.10	<0.10	103,720	Tri-County
Utah Lake	Routine				Type 2	Provo Bay	4917446	40.18143	-111.71920	6/12/2019	12:48	<0.10	0.123	14,427	Utah
Utah Lake	Routine				Type 2	Saratoga Springs Picnic Area	4917418	40.29105	-111.87071	6/13/2019	10:20	<0.10	0.12	184	Utah
Utah Lake	Routine				Type 1	Open Water Middle of Provo Bay	N/A	40.18021	-111.71125	6/18/2019	11:15	<0.10	0.42	370,112	Utah
McClellan Lake	Routine				Type 2	Access	5917880	39.93946	-111.64247	6/24/2019	14:50	0.12	<0.10	54,343	Utah
Utah Lake	Response				Type 2	Open Water Middle of Provo Bay	N/A	40.18021	-111.71125	6/27/2019	11:30	<0.10	0.122	3,949	Utah
Calder Reservoir	Response				Type 2	Boat Ramp	5937804	40.72878	-109.20461	7/2/2019	9:55	<0.10	<0.10	1,288	Tri-County
Matt Warner	Response				Type 1	Boat Ramp	5937855	40.76447	-109.29964	7/2/2019	8:55	<0.10	0.63	1,788,578	Tri-County
Matt Warner	Response				Type 2	Boat Ramp	5937855	40.76447	-109.29964	7/2/2019	9:00	<0.10	0.14	211,883	Tri-County
Utah Lake	Response				Type 2	Open Water Middle of Provo Bay	N/A	40.18021	-111.71125	7/3/2019	10:20	<0.10	0.26	4,445	Utah
Bear Lake	Response				Type 1	North of Below Rest Stop	N/A	41.85840	-111.36425	7/6/2019	14:30	<0.10	<0.10	0	Bear River
Bear Lake	Response				Type 1	Rendezvous Beach	N/A	41.84719	-111.34618	7/6/2019	16:24	<0.10	<0.10	6	Bear River
McClellan Lake	Response				Type 1	Access	5917880	39.93946	-111.64247	7/9/2019		<0.10	0.14	98,393	Utah
McClellan Lake	Response				Type 2	Access	5917880	39.93946	-111.64247	7/9/2019		<0.10	0.18	18,777	Utah
McClellan Lake	Response				Type 1	Access	5917880	39.93946	-111.64247	7/9/2019		<0.10	0.12	3,497	Utah
Utah Lake	Response				Type 1	Utah Lake Open Water	N/A			7/10/2019	12:30	<0.10	1.07	449,874	Utah
Utah Lake	Response				Type 2	Utah Lake open water	N/A			7/11/2019	12:40	<0.10	0.185	27,455	Utah
Matt Warner	Response				Type 1	North Shore	N/A	40.77590	-109.29964	7/11/2019	9:20	<0.10	2.79	9,413,646	Tri-County
Matt Warner	Response				Type 2	North Shore	N/A	40.77590	-109.29964	7/11/2019	9:30	<0.10	0.41	1,278,185	Tri-County
Calder Reservoir	Response				Type 2	Boat Ramp	5937804	40.72878	-109.20461	7/11/2019	10:20	<0.10	<0.10	4,002	Tri-County
Strawberry Reservoir	Routine				Type 1	Indian Creek Inlet	N/A	40.11865	-111.17360	7/11/2019	15:40	<0.10	<0.10	1,122	Wasatch



Results:

- Recreational advisories issued across 25 waterbodies issued by 10 of 13 Local Health Departments
- 2 UDAF-issued livestock/irrigation advisories
- First advisory issued June 12, 2018 for Provo Bay, Utah Lake and advisories remained late on Deer Creek Reservoir shoreline and 3 Utah Lake marinas.

HAB Program Pillars

3. Communication

Communication: Incoming/Outgoing

DEQ 24-hour Spill Line => Statewide Incident Reports

Utah Poison Control Center: 1.800.222.1222

DEQ website: HABS.UTAH.GOV => linked by partner websites

Response Coordination

Partners:

- UDEQ: DWQ/DDW, UDNR, Local Health Departments, Poison Control, UDAF, UDEM, drinking water utilities, municipalities, US EPA and NOAA, USFWS, labs, universities, volunteers and more to come…

Steer monthly communication team*

Develop inter-agency response coordination process

- Local Health Departments decide advisory actions
- All relevant agencies should be notified– weekly/instantaneous conference calls
- Public notification process (SOCOs, press releases)

Continuous Improvement

- On-going task list, end of year survey, annual workshop,

Communication Consistency

State of Utah
GARY R. HERBERT
Governor
SPENCER J. COX
Lieutenant Governor

Department of Environmental Quality
Alan Matheson
Executive Director
Brad T Johnson
Deputy Director

Utah County Health Department

NEWS RELEASE
July15, 2016

CONTACT
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Communications Director
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Cell: 801-554-4944
dspangler@utah.gov

Potential Health Risks Force Closure of Utah Lake from Harmful Algal Bloom
Lab tests confirms a high probability of health risks

SALT LAKE CITY - Public health officials have decided to close Utah Lake, effective immediately, due to a large, harmful algal bloom that may pose a serious health risk to the public and animals. The Utah Department of Health (UDOH) and Utah County Health Department (UCHD) say lab results for samples collected by the Utah Department of Environmental Quality (DEQ) show the concentration of algal cells in the water are three times the threshold for closing a body of water.

WARNING

Harmful Algae Present

- **Do not swim or water ski in this area.**
  No nade o haga esquí acuático en esta área.
- **Avoid areas of algae scum when boating.**
  Evite las áreas de escoria de algas cuando navegue en bote.
- **Keep animals away.**
  Mantenga alejados a los animales.
- **Do not ingest the water.**
  No ingiera el agua.
- **Clean fish well and discard guts.**
  Limpie bien el pescado y descarte las tripas.

Not OK
OK, but use caution
OK

*Algae may move or disperse depending on temperature, wind, and weather.

Date Posted:

Contact the Utah Poison Control Center if you or your animals have unexplained sickness or signs of poisoning. **(800) 222-1222**

Visit **habs.utah.gov** for more info.
Report an algae bloom: (801) 536-4123

UTAH DEPARTMENT OF HEALTH
UTAH ASSOCIATION

Date Posted:

Call your doctor or veterinarian if you or your animals have sudden or unexplained sickness or signs of poisoning. Learn more: habs.utah.gov

Utah Poison Control Center
(800) 222-1222

Report new algae blooms to the Department of Environmental Quality:
(801) 536-4123

Call your local health department:

UTAH ASSOCIATION
UTAH DEPARTMENT OF HEALTH

HAB Response Ongoing Funds

Beginning FY20, ongoing funds:

- Response staff to investigate the bloom including sample collection for phycology and cyanotoxin analysis
- Resources for LHDs to provide on-shore sampling, post advisories and alert the public
- Quicker response time to make advisory decisions and communicate the results
- Follow up sampling to monitor bloom activity to inform advisory decisions including de-posting when favorable conditions return
- Enhanced protection of the public from the risks of HABs
- Programmatic monitoring for at-risk waters prior to response needs

QUESTIONS

Contact:
bholcomb@utah.gov