

Cyanobacteria Monitoring Program 2018 Report
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Rhode Island Department of Environmental Management
Office of Water Resources
235 Promenade Street
Providence, Rhode Island 02908



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Introduction

Cyanobacteria (blue-green algae) are microscopic, photosynthetic bacteria naturally found in waterbodies either attached to the substrate or floating in the water column as individual cells or within colonies. Under certain conditions, cyanobacteria can experience rapid growth (blooms) and may produce toxins, which when released into waters can potentially cause health risks for wildlife, pets, livestock, as well as humans. The Rhode Island Department of Health (HEALTH) and the Rhode Island Department of Environmental Management (RIDEM) work cooperatively to detect/respond to the presence of cyanobacteria blooms, evaluate the potential risks to the public, and, when necessary, issue health advisories notifying the public of health concerns. The agencies jointly issue health/recreational advisories when any of the following three guidelines are met:

- Evidence of a visible cyanobacteria scum or mat or lake/pond-wide cyanobacteria bloom.
- Cyanobacteria cell count exceeding 70,000 cells/mL.
- Toxin (Microcystin-LR) level of lysed cells meeting or exceeding 4 ppb ($\mu\text{g/L}$).

Health advisories recommend that individuals avoid all contact with the affected waterbody, including recreational activities such as swimming, boating, or fishing. People are also advised to not eat fish from the affected waterbody or to allow pets to wade or swim in, or drink untreated water from the affected waters. Health advisories remain in effect for the remainder of what is considered to be the recreation season (until November 1st), unless follow-up sampling by a city, town, third party or RIDEM indicate that the advisory can be lifted. Health advisories may be lifted after two successive and representative sampling rounds, two weeks apart, demonstrate no evidence of a cyanobacterial scum or mat and demonstrate cyanobacteria cell counts and toxin levels below threshold concentrations.

RIDEM's Office of Water Resources (OWR) receives reports annually about nuisance algal conditions and cyanobacteria blooms from municipal staff, lake and watershed associations, as well as the broader public. From 2011 to 2018, thirty-eight (38) waterbodies have had recreational/health advisories issued with an average of fifteen (15) waterbodies per year. Twelve (12) of the 38 waterbodies are public drinking water supplies and nearly all the remaining waterbodies have a public boat/canoe launch, are routinely used for recreational activities, or have a well-known public access point.

In 2017 RIDEM OWR received an EPA Multi-Purpose Grant allowing for biweekly cyanobacteria monitoring of thirty-two (32) waterbodies throughout the state during the 2017 and 2018 field seasons. This report provides a summary of the results of the 2018 cyanobacteria monitoring program.

Methods

RIDEM's Quality Assurance Project Plan (QAPP) describes in detail the field and analytical methods and quality assurance/quality control procedures related to this sampling program. The QAPP, titled "Rhode Island Freshwater Harmful Algal Bloom Monitoring" is available at DEM's Providence office.

In 2018, RIDEM OWR conducted routine biweekly cyanobacteria monitoring of 32 waterbodies from early June to mid September (Table 1). These 32 waterbodies were selected for monitoring at the start of the 2017 field season due to having a history of frequent cyanobacteria blooms in previous years. Additional monitoring was done in response to calls from the public, municipal staff, watershed associations or other RIDEM staff about potential cyanobacteria blooms.

During each visit a fieldsheet was filled out and photographs were taken, regardless of whether or not a bloom was observed. The fieldsheet documented information about location, extent of coverage and physical appearance of the bloom, as well as weather conditions and any active recreation occurring on the water.

If a bloom was observed during a visit, one or more samples were collected following the procedure outlined in the QAPP. Samples were collected from the shoreline with the aid of a sampling stick from the densest portion of the bloom. Preferably, monitoring and sample collection occurred at public access points on each pond. If no public access was available, monitoring and sample collection were done from a secondary access location or through permission of a private property owner. Monitoring/sampling locations for each waterbody are listed in Table 1.

Samples were sent to the Rhode Island State Health Laboratory for cyanotoxin analysis and identification/enumeration by colony count of cyanobacteria genera. The cyanotoxins and cyanobacteria genera identified by the lab as well as the thresholds for issuing an advisory are listed in Tables 2 and 3. RIDEM OWR staff estimated cyanobacteria cell counts from colony counts using conversion factors provided in Hartman and Graffius (1960). Cyanotoxin concentration, colony count, cell count estimation and visual appearance were evaluated by RIDEM OWR and HEALTH and an advisory was issued if any of the previously mentioned thresholds were met. If an advisory was issued for a waterbody as a result of a response visit, the waterbody was subsequently added to the routine biweekly monitoring schedule. Follow-up sampling to lift advisories was conducted when possible.

Table 1. List of Waterbodies Evaluated for Cyanobacteria Blooms.

Sampling Program	Name	Town	Waterbody ID	Primary Access
Screening Level	Almy Pond	Newport	RI0010047L-01	Access off Coggeshell Ave on South side
	Blackamore Pond	Cranston	RI0006018L-06	Access off Winter Ave
	Cunliff Lake-RWP	Providence	RI0006017L-05	Access at Trailhead parking area
	Deep Spring Lake-RWP	Providence	RI0006017L-05	Access across road from parking area at Cunliff
	Easton Pond-North	Newport	RI0007035L-03	Access road off Bliss Mine Rd
	Easton Pond-South	Newport	RI0007035L-04	Access road off Bliss Mine Rd.
	Edgewood lake-RWP	Providence	RI0006017L-05	Access on east side of FC Greene Memorial Blvd
	Elm Lake- RWP	Providence	RI0006017L-05	Access on South side of FC Greene Memorial Blvd
	Gardiner Pond	Middletown	RI0007035L-01	Access from pull off on Hanging Rock Rd.
	Japanese Gardens-RWP	Providence	RI0006017L-05	Access near Carousel and Roosevelt Lake
	J.L. Curran Reservoir	Cranston	RI0006016L-02	Access area off Seven Mile Rd (boat Launch area)
	Lawton Valley Reservoir	Portsmouth	RI0007035L-06	Access road off Flanagan Rd
	Mashapaug Pond	Providence	RI0006017L-06	Access from boat launch near baseball field at end of Access Rd or Providence Boating Center
	Melville Ponds	Portsmouth	RI0007029R-04	Access near elementary school at fishing dock
	Nonquit Pond	Tiverton	RI0007035L -08	Access off Neck Rd
	Omega Pond	East Providence	RI0004009L-03	Access from private home off of Roger Williams Ave
	Paradise Pond	Middletown	RI0007035L-02	Access at 600 Paradise Ave
Pleasure Lake-RWP	Providence	RI0006017L-05	Access off Natural History Ave	

	Polo Lake-RWP	Providence	RI0006017L-05	Access from North side of FC Greene Memorial Blvd
	Roosevelt Lake-RWP	Providence	RI0006017L-05	Access off FC Greene Memorial Blvd
	Scott Pond	Lincoln	RI0001003L-01	Access from Saylesville Fire Department
	Sisson Pond	Portsmouth	RI0007035L-10	Access road off Union St.
	Slack Reservoir	Smithfield-Johnston	RI0002007L-03	Access at public beach off Green Lake Drive or Terrace Drive
	Slater Memorial Park Pond	Pawtucket	RI0004009R-01A	Access near paddleboat rentals or near benches on east side of pond.
	Spectacle Pond	Cranston	RI0006017L-07	Access at end of Midwood St. on south end of pond
	St. Mary's Pond	Portsmouth	RI0007035L-05	Access road off Union St.
	Stafford Pond	Tiverton	RI0007037L-01	Access at DEM Boat Ramp or Pelletier Ln
	Ten Mile River	East Providence	RI0004009R-01B	Access at Turner Reservoir Loop Trailhead parking lot
	Turner Reservoir	Rumford	RI0004009L-01B	Access off of Newman Ave (route 152) bridge or along Bridgham Farm walking area off of Bridgham Farm Rd
	Warwick Pond	Warwick	RI0007024L-02	Access at boat launch or park off of Edgehill Rd on east side of pond
	Watson Reservoir	Little Compton	RI0007035L-07	Access road off Old Main Rd
	Willow Lake-RWP	Providence	RI0006017L-05	Access near bridge or paddle boat rentals
Response Level	Tiogue Lake	Coventry	RI0006014L-02	Access at Briar Point Beach or right-of-way at the end of Middle Rd
	Central Pond	East Providence	RI0004009L-01A	Access at Newman Crossing boat launch off of Newman Ave (Route 152)
	Stump Pond	Smithfield	RI0006013L-03	Access at DEM access off of Farnum Rd.

	Cranston Print Works Pond	Cranston	RI0006018L-05	Access from St. Ann's Cemetery
	Georgiaville Pond	Smithfield	RI0002007L-02	Access from public beach off of Stillwater Rd
	Wilson Reservoir	Burrillville	RI0001002L-01	Access from boat launch at White Mill Park on E Wallum Lake Rd
	Sucker Pond	Burrillville	RI0001002L-05	Access from Crystal Lake Golf Club parking lot off of route 102
	Barber Pond	South Kingstown	RI0008039L-14	Access from boat ramp off of Barbers Pond Rd
	Tarkiln Pond	Smithfield-Burrillville	RI0001002L-08	Access off of Mowry rd in Burrillville
	Little Pond	Warwick	RI0007024L-01	Access behind Warwick Veterans Junior High School, off of Albert Rd

Table 2: List of cyanotoxins analyzed and advisory threshold level.

Toxin	Threshold for Issuance of Advisory
Total Microcystins*	4.0 µg/L
Cylindrospermopsin	None Defined
Anatoxin	
Nodularin	

*: Most common toxin found in samples.

Table 3: List of cyanobacteria genera identified by the State Health Laboratory.

Genera	Threshold for Issuance of Advisory
<i>Anabaena</i> *	70,000 cells/mL (total cyanobacteria)
<i>Aphanizomenon</i>	
<i>Chlorella</i>	
<i>Cylindrospermopsis</i>	
<i>Microcystis</i> *	
<i>Nodularia</i>	
<i>Planktothrix</i> *	
<i>Woronichina</i>	

*: Most common genera found in samples.

Results

Routine cyanobacteria monitoring occurred biweekly from June to Mid-September, resulting in 7 or 8 visits to most waterbodies. Additional visits were conducted on 17 occasions in response to calls from citizens, town managers, environmental organizations, or other RIDEM field staff about potential blooms (Table 4).

The field visits led to the issuance of 19 recreational advisories for cyanobacteria blooms, 11 of which were a result of routine monitoring (Table 5). Response visits resulted in the issuance of 8 advisories. The majority of the advisories were issued based on visual appearance and exceedance of the cell count threshold.

A total of 37 cyanobacteria samples were collected from 22 waterbodies throughout the state. Of the 37 samples, 22 were collected to support initial issuance of an advisory while 15 were collected as follow-up samples in an effort to lift advisories. Requirements to lift an advisory were met on one occasion for Georgiaville Pond, in which 2 samples collected 2 weeks apart exhibited toxin levels and cell counts below the advisory thresholds.

Cyanobacteria colony counts in samples ranged from less than 1 (non-detect) to 100,000 colonies/mL at Slack Reservoir and Tarkiln Pond. The cell count threshold was exceeded in 17 samples from 15 waterbodies (Table 6).

Most samples had a total microcystin concentration less than the reporting limit of 1.0 ug/L (Table 6). Four samples had total microcystin concentrations that exceeded the total microcystin threshold for issuing an advisory. These four samples were collected from Almy Pond (4.3 ug/L), Georgiaville Pond (9.2 and 10 ug/L) and Slack Reservoir (53 ug/L), all of which resulted in recreational advisories.

One sample collected from the “Little beach” at Slack Reservoir on July 27th had both the highest total microcystin concentration (53 ug/L) and the highest cell count estimation (10,151,000 cells/mL).

Potentially toxigenic species, *Anabaena*, *Aphanizomenon*, *Microcystis*, *Planktothrix*, and *Woronichina* were identified in 33 of the 37 samples collected. The genera *Anabaena*, *Microcystis* and *Planktothrix* were the most frequently observed genera.

Table 4: 2018 Response Visits

Waterbody	Date	Source of call	# of Samples collected	Advisory Issued
Slack Reservoir	7/2/2018	Resident	0	No
Tiogue Lake	7/12/2018	RIDEM OWR intern	1	No
Turner Reservoir	7/13/2018	Dog walker	1	Yes: 7/13/2018
Central Pond	7/16/2018	URI Watershed Watch volunteer	1	Yes: 7/16/2018
Ten Mile River	7/16/2018	N/A*	0	Yes: 7/16/2018
Omega Pond	7/16/2018	N/A*	0	Yes: 7/16/2018
Mashapaug Pond	7/18/2018	EPA staff	0	No
Slack Reservoir	7/27/2018	Resident	2	Yes: 7/31/2018
Stump Pond	8/9/2018	RIDEM OWR intern	0	No
Cranston Print Works Pond	8/14/2018	RIDEM OWR intern	0	No
Georgiaville Pond	8/17/2018	Municipal staff	2	Yes: 8/17/2018
Wilsons Reservoir	8/22/2018	Resident	0	No
Sucker Pond	8/22/2018	RIDEM OWR intern	0	No
Barber Pond	8/23/2018	URI Watershed Watch volunteer	1	No
Warwick Pond	8/29/2018	Resident	0	No
Tarkiln Pond	8/30/2018	RIDEM OWR intern	1	Yes: 8/31/2018
Little Pond	9/18/2018	URI Watershed Watch volunteer	1	

*Visits to Ten Mile River and Omega pond were conducted after receiving calls about Central Pond and Turner Reservoir since they are hydraulically connected.

Table 5: List of confirmed cyanobacteria blooms throughout the 2018 monitoring season.

Waterbody	Town	Date Advisory Posted	Date Advisory Lifted	Basis for advisory	Routine visit or response visit
Sisson Pond	Portsmouth	6/8/2018		Visual, cell count later confirmed	Routine
Melville Ponds	Portsmouth	6/27/2018		Cell count	Routine
Almy Pond	Newport	6/27/2018		Toxin level, cell count	Routine
Turner Reservoir	East Providence	7/13/2018		Visual	Response
Central Pond	East Providence	7/16/2018		Visual	Response
Omega Pond	East Providence	7/16/2018		Visual	Response
Ten Mile River	East Providence	7/16/2018		Visual	Response
Roosevelt Lake	Providence	7/25/2018		Cell count	Routine
Mashapaug Pond	Providence	7/25/2018		Cell count	Routine

Slack Reservoir	Smithfield-Johnston	7/31/2018		Toxin level, cell count	Response
Willow Lake	Providence	8/10/2018		Visual, cell count later confirmed	Routine
Edgewood Lake	Providence	8/10/2018		Visual, cell count later confirmed	Routine
Japanese Gardens	Providence	8/10/2018		Visual	Routine
Blackamore Pond	Cranston	8/10/2018		Visual, cell count later confirmed	Routine
Georgiaville Pond	Smithfield	8/17/2018	9/21/2018	Visual, toxin level and cell count later confirmed	Response
Pleasure Lake	Providence	8/21/2018		Visual, cell count later confirmed	Routine
Tarkiln Pond	North Smithfield-Burrillville	8/31/2018		Cell count	Response
Spectacle Pond	Cranston	9/10/2018		Cell count	Routine
Little Pond	Warwick	9/21/2018		Cell count	Response

Table 6. Distribution of Total microcystin concentration in samples

	Total Microcystin concentration (ug/L)		
	Non-detect (< 1.0)	1.0 > 4.0	> 4
# of samples	27	6	4*

*Almy Pond, Georgiaville Pond (2 samples) and Slack Reservoir

Table 7. Cell count distribution in samples

	Cell Count Estimation (cells/mL)		
	Non-detect (< 1.0)	1.0 > 70,000	> 70,000
# of samples	2	18	17*

*Almy Pond, Blackamore Pond, Edgewood Lake, Georgiaville Pond (2 samples), Little Pond, Mashapaug Pond, Melville Ponds, Pleasure Lake, Roosevelt Lake, Sisson Pond, Slack Reservoir (2 samples) Spectacle Pond, Tarkiln Pond, Ten Mile River, and Willow Lake

Conclusions

The results of the 2018 cyanobacteria monitoring season demonstrate the value of conducting routine cyanobacteria monitoring on a regular basis throughout the field season. More than half of the recreational advisories in 2018 were issued as a result of routine monitoring. The 2017 field season achieved similar results, with 13 out of 20 advisories resulting from routine monitoring. Prior to 2017, RIDEM only conducted cyanobacteria field visits in response to calls from the public. Relying on the public to report blooms in the 2017 and 2018 field seasons would have resulted in several blooms going undetected and an increased potential for human exposure to cyanotoxins and their related health implications.

Follow-up sampling for the purpose of lifting advisories was challenging. On some ponds, cyanobacteria blooms subsided then reemerged over periods of days or weeks. On some occasions cell counts remained elevated after the visual appearance of the bloom had subsided. Consequently, only one set of follow up samples from Georgiaville Pond resulted in the lifting of an advisory in 2018.

Estimating cell counts from colony counts using conversion factors from Hartmann and Graffius (1960) was useful for issuing advisories in 2018. Six advisories were issued based solely on cell count estimations exceeding the threshold. Since there is no criteria for issuing an advisory based on colony counts, estimating cell counts from colony counts allows for more thorough identification of potentially harmful blooms.

There are several differences in the cyanobacteria monitoring results from 2017 and 2018. In 2017, 33% (21 out of 64) of samples exceeded the total microcystin threshold, compared to 11% (4 out of 37) in 2018 (Figure 1). The majority of advisories in 2017 were issued due to exceedance of the toxin threshold while in 2018 most advisories were based on visual appearance and/or cell count estimations. In both years there was a predominance of *Anabaena* and *Microcystis* genera in samples, however *Planktothrix* was found in 35% of samples in 2018 compared to only 13% of samples in 2017. In both years, Slack Reservoir had the highest total microcystin concentration of all samples however it was substantially higher in 2017 at 600 ug/L compared to 53 ug/L in 2018. These results demonstrate the degree of variation in cyanobacteria blooms from year to year and the difficulties associated with predicting blooms.

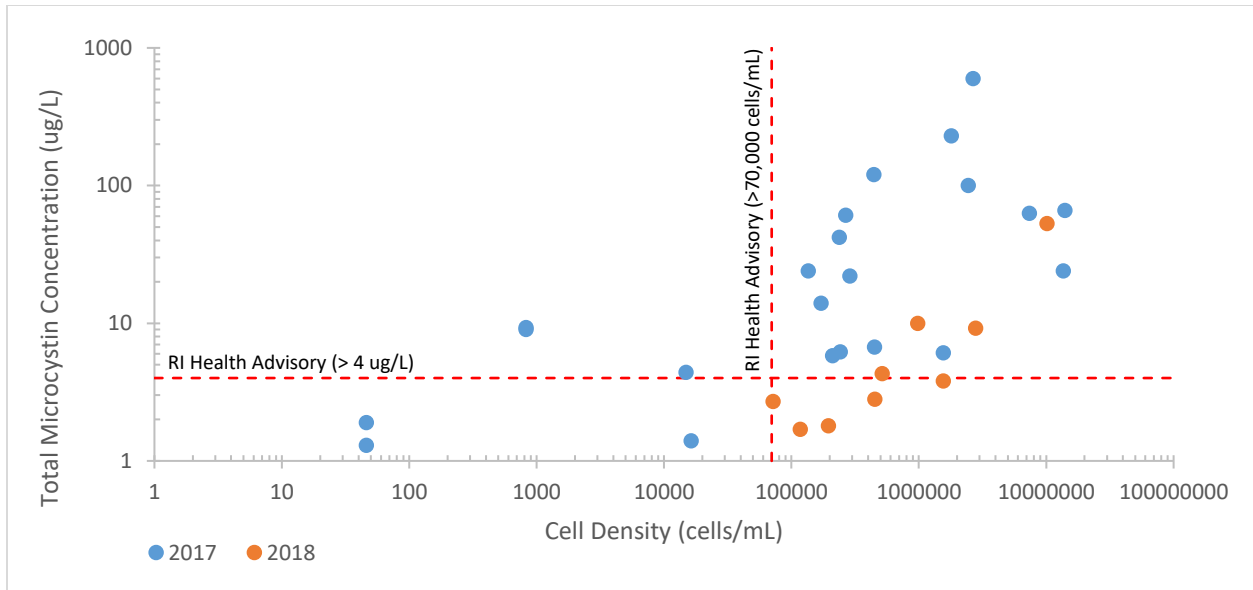



Figure 1: Total microcystin concentration vs. cell density estimations in 2017 and 2018. Non-detect data not included.

References

Hartman RT, Graffius JH (1960) Quantitative seasonal changes in the phytoplankton communities of Pymatuning Reservoir. Ecology 41(2): 334-340

Appendix A

Table 1: Results for cyanobacteria monitoring of Almy Pond in 2018.

Almy Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: June 25th, 2018
06/08/18	No bloom. Brown/turbid water.	Not Sampled	Not Sampled	Not Sampled	
06/25/18*	Pea soup, appearance in corner of pond near access dock.	Total Microcystin: 4.3	Anabaena: 270 Microcystin: 3,650	Anabaena: 6,210 Microcystis: 511,000 Total: 517,210	
07/12/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18	Streaking and bubbling scum.	Not Sampled	Not Sampled	Not Sampled	
08/07/18	Bloom is still	Not Sampled	Not Sampled	Not Sampled	
09/05/18	very apparent.	Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 2: Results for cyanobacteria monitoring of Barber Pond in 2018.




Barber Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 23rd, 2018
08/23/18	Response visit. Water is almost entirely clear. Very occasional bright green algae, particularly at boat ramp.	All < 1	Planktothrix: 140	Planktothrix: 3,920	

Table 3: Results for cyanobacteria monitoring of Blackamore Pond in 2018.

Blackamore Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 9th, 2018
06/26/18	No bloom. Water is fairly clear.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18		Not Sampled	Not Sampled	Not Sampled	
08/09/18*	Water is cloudy with greenish hue and some clumps of cyanobacteria on the surface.	All < 1	Anabaena: 40,000 Microcystis: 120	Anabaena: 920,000 Microcystis: 16,800 Total: 936,800	
08/21/18	Cloudy, pea soup appearance in pond.	Not Sampled	Not Sampled	Not Sampled	
09/05/18	Cloudy, green water. Small dots of cyanobacteria on surface.	Not Sampled	Not Sampled	Not Sampled	
09/18/18	Water is fairly clear. No bloom.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 4: Results for cyanobacteria monitoring of Central Pond in 2018.

Central Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 16 th , 2018
07/16/18 *	Response visit. Bloom present along shore, extending into center of pond. Strong odor.	All < 1	Anabaena: 2,410 Microcystis: 10	Anabaena: 55,430 Microcystis: 1,400 Total: 56,830	
07/25/18	No bloom. Water is cloudy.	All < 1	Anabaena: 120 Aphanizomenon: 110 Planktothrix: 500	Anabaena: 2,760 Aphanizomenon: 30,800 Planktothrix: 14,000 Total: 47,560	
08/08/18	Water is fairly clear. No bloom.	All < 1	Anabaena: 20 Planktothrix: 820	Anabaena: 460 Planktothrix: 22,960 Total: 23,420	
08/22/18	Water is cloudy, gray color. No bloom.	Not Sampled	Not Sampled	Not Sampled	
09/19/18	Water is clear. No bloom.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued

Table 5: Results for cyanobacteria monitoring of Cranston Print Works Pond in 2018.


Cranston Print Works Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 14 th , 2018
08/14/18	Response visit. A lot of duckweed but no cyanobacteria.	Not Sampled	Not Sampled	Not Sampled	

Table 6: Results for cyanobacteria monitoring of Cunliff Lake in 2018.


Cunliff Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: June 26th 2018
06/26/18	No blooms observed.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18	Frequently noted cloudy, low clarity water during visits.	Not Sampled	Not Sampled	Not Sampled	
08/09/18		Not Sampled	Not Sampled	Not Sampled	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18		Not Sampled	Not Sampled	Not Sampled	
09/18/18		Water is cloudy but no bloom.	Not Sampled	Not Sampled	

Table 7: Results for cyanobacteria monitoring of Deep Spring Lake in 2018.


Deep Spring Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: June 26th, 2018
06/26/18	No blooms observed.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18	Frequently noted cloudy water with low visibility or discoloration during visits.	Not Sampled	Not Sampled	Not Sampled	
08/09/18		Not Sampled	Not Sampled	Not Sampled	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18		Not Sampled	Not Sampled	Not Sampled	
09/18/18		Not Sampled	Not Sampled	Not Sampled	

Table 8: Results for cyanobacteria monitoring of North Easton Pond in 2018.


North Easton Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 7 th , 2018
06/08/18	No blooms observed. Frequently noted cloudy water with low clarity and brownish color.	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 9: Results for cyanobacteria monitoring of South Easton Pond in 2018.



South Easton Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 10 th , 2018
06/08/18	No blooms observed. Frequently noted cloudy water with low clarity.	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 10: Results for cyanobacteria monitoring of Edgewood Lake in 2018.

Edgewood Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 9 th , 2018
07/11/18	No bloom. Water is cloudy with low clarity.	Not Sampled	Not Sampled	Not Sampled	
07/24/18		Not Sampled	Not Sampled	Not Sampled	
08/09/18 *	Bloom along eastern shoreline. Bright green scum, streaking, spilled paint appearance.	Total Microcystins: 3.8	Anabaena: 8,500 Microcystis: 5,600 Woronichinia: 2,300	Anabaena: 195,500 Microcystis: 784,000 Woronichinia: 575,000 Total: 1,554,500	
08/21/18	Better than previous visit. Still some light streaking on the surface and cloudy water.	Not Sampled	Not Sampled	Not Sampled	
09/05/18	Water is green and cloudy with dots in the water column and light streaking on surface. Improvement since last visit.	Not Sampled	Not Sampled	Not Sampled	
09/18/18	No bloom. Water is dark and cloudy.	Not Sampled	Not Sampled	Not Sampled	

*Health Advisory Issued; **Exceedance of Threshold.**

Table 11: Results for cyanobacteria monitoring of Elm Lake in 2018.


Elm Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 21 st , 2018
06/26/18	No blooms observed. Frequently noted cloudy water with low clarity.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18		Not Sampled	Not Sampled	Not Sampled	
08/09/18		Not Sampled	Not Sampled	Not Sampled	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18		Not Sampled	Not Sampled	Not Sampled	
09/18/18		Not Sampled	Not Sampled	Not Sampled	

Table 12: Results for cyanobacteria monitoring of Gardiner Pond in 2018.




Gardiner Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 7 th , 2018
06/08/18	No blooms observed. Occasionally noted cloudy water.	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not sampled	Not sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 13: Results for cyanobacteria monitoring of Georgiaville Pond in 2018.

Georgiaville Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 17 th , 2018
08/17/18*	Bright green large globs that break apart if poked. Some smaller bright green dots that don't break apart as easily.	Large clumps: Total Microcystins: 9.2 Small dots: Total Microcystins: 10	Large clumps: Planktothrix: 100,000 Small dots: Anabaena: 70 Microcystis: 190 Planktothrix: 35,000	Large clumps: Planktothrix: 2,800,000 Small dots: Anabaena: 1,610 Microcystis: 26,600 Planktothrix: 980,000 Total: 1,008,210	
09/06/18	Water is very clear. No green globs. Several small bright green dots in water at dam and boat ramp.	Beach: All < 1.0 Boat Ramp: All < 1.0	Beach: Microcystis: 90 Boat Ramp: Chlorella: 40 Microcystis: 40 Planktothrix: 240	Beach: Microcystis: 12,600 Boat Ramp: Chlorella: N/A Microcystis: 5,600 Planktothrix: 6,720 Total: 12,320	
09/19/18	Water is clear at beach and boat ramp. No bloom.	Beach: All < 1.0	Beach: Microcystis: 10	Beach: Microcystis: 1400	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 14: Results for cyanobacteria monitoring of Japanese Gardens in 2018.

Japanese Gardens					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 21st, 2018
07/11/18	Green soup appearance.	All < 1	Anabaena: 10	Anabaena: 230	
07/24/18	Some streaking on surface.	Not Sampled	Not Sampled	Not Sampled	
08/09/18 *	Bloom present. Pea soup appearance and streaking around shoreline and bridge to Willow Lake.	Not Sampled	Not Sampled	Not Sampled	
08/21/18	Bloom has worsened and expanded to entire pond.	Not Sampled	Not Sampled	Not Sampled	
09/05/18	Water resembles pea soup. Very cloudy and green with some dots of cyanobacteria on the surface.	Not Sampled	Not Sampled	Not Sampled	
09/18/18	No bloom. Water is very cloudy and brown.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued

Table 15: Results for cyanobacteria monitoring of J.L. Curran Reservoir in 2018.


J.L. Curran Reservoir					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 8th, 2018
06/27/18	No blooms observed. Water was clear early in the season, growing cloudy in the late summer.	Not Sampled	Not Sampled	Not Sampled	
07/12/18		Not Sampled	Not Sampled	Not Sampled	
07/25/18		Not Sampled	Not Sampled	Not Sampled	
08/08/18		Not Sampled	Not Sampled	Not Sampled	
08/22/18		Not Sampled	Not Sampled	Not Sampled	
09/06/18		Not Sampled	Not Sampled	Not Sampled	
09/19/18		Not Sampled	Not Sampled	Not Sampled	

Table 16: Results for cyanobacteria monitoring of Lawton Valley Reservoir in 2018.




Lawton Valley Reservoir					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph:
06/08/18	No blooms observed. Frequently noted brownish, cloudy water.	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 17: Results for cyanobacteria monitoring of Little Pond in 2018.

J.L. Curran Reservoir					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: September 18 th , 2018
09/18/18	Water is mostly clear with no obvious scum or bloom. There is a narrow swampy area with pea soup colored green water coming out into pond in a plume.	All < 1	Aphanizomenon: 5520 Microcystis: 10	Aphanizomenon: 1,545,600 Microcystis: 1400 Total: 1,547,000	


*: Health Advisory Issued; **Exceedance of Threshold.**

Table 18: Results for cyanobacteria monitoring of Mashapaug Pond in 2018.

Mashapaug Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 24 th , 2018
06/26/18	No bloom-water is fairly clear.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18 *	Bloom congregating around boating dock. Green streaking on surface. Pea soup appearance throughout	All < 1	Anabaena: 410 Aphanizomenon: 160 Microcystis: 290 Woronichinia: 210	Anabaena: 9,430 Aphanizomenon: 44,800 Microcystis: 40,600 Woronichinia: 52,500 Total: 147,330	
08/09/18		Not Sampled	Not Sampled	Not Sampled	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18		Not Sampled	Not Sampled	Not Sampled	
09/18/18		Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 19: Results for cyanobacteria monitoring of Melville Ponds in 2018.

Melville Ponds					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: June 25 th , 2018
06/08/18	Possible bloom in NW corner of pond. Green streaking particulate.	Not Sampled	Not Sampled	Not Sampled	
06/25/18*	Pea soup appearance throughout pond, mat/scum congregating at the edges of the pond.	Total Microcystins: 1.7	Anabaena: 2850 Aphanizomenon: 120 Microcystis: 130	Anabaena: 65,550 Aphanizomenon: 33,600 Microcystis: 18,200 Total: 117,350	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 20: Results for cyanobacteria monitoring of Nonquit Pond in 2018.



Nonquit Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 10 th , 2018
06/08/18	No blooms observed. Frequently noted cloudy, tannic water.	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 21: Results for cyanobacteria monitoring of Omega Pond in 2018.

Omega Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 16 th , 2018
06/27/18	No bloom. Water is clear.	Not Sampled	Not Sampled	Not Sampled	
07/12/18	No bloom. Water is cloudy/brownish color.	Not Sampled	Not Sampled	Not Sampled	
07/16/18 *	Green streaking/clumps of cyanobacteria present.	Not Sampled	Not Sampled	Not Sampled	
07/25/18	No bloom-pond has cleared up since last visit.	All < 1	Anabaena: 30 Aphanizomenon: 10 Microcystis: 10 Planktothrix: 460	Anabaena: 690 Aphanizomenon: 2,800 Microcystis: 1,400 Planktothrix: 12,880 Total: 17,770	
08/08/18	No bloom. Duckweed	All < 1	Planktothrix: 100	Planktothrix: 2,800	
08/22/18	and other algae along	Not Sampled	Not Sampled	Not Sampled	
09/06/18	shore.	Not Sampled	Not Sampled	Not Sampled	
09/19/18		Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued

Table 22: Results for cyanobacteria monitoring of Paradise Pond in 2018.



Paradise Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 20 th , 2018
06/08/18	No blooms observed. Frequently noted cloudy water is a brown or greenish hue.	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 23: Results for cyanobacteria monitoring of Pleasure Lake in 2018.

Pleasure Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 21 st , 2018
06/26/18	No bloom.	Not Sampled	Not Sampled	Not Sampled	
07/11/18	Water is cloudy with low clarity.	Not Sampled	Not Sampled	Not Sampled	
07/24/18	Bloom may be forming- some minor streaking along shoreline. Cloudy water with low clarity.	Not Sampled	Not Sampled	Not Sampled	
08/09/18	No bloom. Water is dark and cloudy.	Not Sampled	Not Sampled	Not Sampled	
08/21/18*	Streaking/scum along western shoreline in patches. Dark, cloudy water throughout.	Total Microcystins: 2.7	Anabaena: 1840 Microcystis: 210	Anabaena: 42,320 Microcystis: 29,400 Total: 71,720	
09/05/18	Streaking/spilled paint appearance along shoreline. Pea soup appearance throughout water column.	Not Sampled	Not Sampled	Not Sampled	
09/18/18	Water is cloudy but no bloom.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 24: Results for cyanobacteria monitoring of Polo Lake in 2018.



Polo lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 24 th , 2018
06/26/18	No blooms observed. Frequently noted cloudy, low clarity water.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18		Not Sampled	Not Sampled	Not Sampled	
08/09/18		Not Sampled	Not Sampled	Not Sampled	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18		Not Sampled	Not Sampled	Not Sampled	
09/18/18		Not Sampled	Not Sampled	Not Sampled	

Table 25: Results for cyanobacteria monitoring of Roosevelt lake in 2018.

Roosevelt Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 24 th , 2018
06/26/18	No bloom. Water is cloudy and murky.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18*	Scum/spilled paint appearance accumulating at weir, pea soup/streaking pond-wide.	Total Microcystins: 2.1	Anabaena: 1,180 Aphanizomenon: 150 Microcystis: 850 Woronichinia: 2,260	Anabaena: 27,140 Aphanizomenon: 42,000 Microcystis: 119,000 Woronichinia: 565,000 Total: 753,140	
08/09/18		Not Sampled	Not Sampled	Not Sampled	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18		Not Sampled	Not Sampled	Not Sampled	
09/18/18	Water is cloudy but no bloom.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 26: Results for cyanobacteria monitoring of Saint Mary's Pond in 2018.


Saint Mary's Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 7th, 2018
06/08/18	No blooms observed. Frequently noted cloudy water with low clarity.	Not Sampled	Not Sampled	Not Sampled	
07/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 27: Results for cyanobacteria monitoring of Scott Pond in 2018.



Scott Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 12th, 2018
06/27/18	No blooms observed. Water was very clear early in the season, becoming cloudier in the late summer.	Not Sampled	Not Sampled	Not Sampled	
07/12/18		Not Sampled	Not Sampled	Not Sampled	
07/25/18		Not Sampled	Not Sampled	Not Sampled	
08/08/18		Not Sampled	Not Sampled	Not Sampled	
08/22/18		Not Sampled	Not Sampled	Not Sampled	
09/06/18		Not Sampled	Not Sampled	Not Sampled	
09/19/18		Not Sampled	Not Sampled	Not Sampled	

Table 28: Results for cyanobacteria monitoring of Sisson Pond in 2018.

Sisson Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: June 8 th , 2018
06/08/18 *	Bloom present pond-wide, accumulating in NE corner of pond. Various shades of green mats on surface.	All < 1	Anabaena: 3,160	Anabaena: 72,680	
06/26/18	No bloom.	Not Sampled	Not Sampled	Not Sampled	
07/10/18	Cloudy,	Not Sampled	Not Sampled	Not Sampled	
07/23/18	brownish,	Not Sampled	Not Sampled	Not Sampled	
08/07/18	turbid water.	Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18	Looks worse than some of the previous weeks. Small string-like dots throughout water column. Green, cloudy appearance.	Not Sampled	Not Sampled	Not Sampled	
09/17/18	Pea soup appearance throughout. Scum accumulating in NE corner of pond.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; Exceedance of Threshold

Table 29: Results for cyanobacteria monitoring of Slack Reservoir in 2018.

Slack Reservoir					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: Little Beach, July 27 th , 2018
06/27/18	No bloom. Water is fairly clear.	Not Sampled	Not Sampled	Not Sampled	
07/02/18	Response visit. No bloom. Water is cloudy, greenish at Little Beach. Water is clear at Greenlake beach.	Not Sampled	Not Sampled	Not Sampled	
07/12/18	No bloom.	Not Sampled	Not Sampled	Not Sampled	
07/25/18	Water is clear.	Not Sampled	Not Sampled	Not Sampled	
07/27/18 *	Response visit. Little Beach: spilled paint appearance and streaking along shoreline. Greenlake Beach: Very few dots/clumps on surface of water and green line of scum washed up on shoreline.	Little Beach: Total Microcystins: 53 Greenlake Beach: Total Microcystins: 2.8	Little Beach: Anabaena: 27,000 Microcystis: 27,000 Woronichinia: 23,000 Greenlake Beach: Anabaena: 170 Microcystis: 550 Woronichinia: 1,480	Little Beach: Anabaena: 621,000 Microcystis: 3,780,000 Woronichinia: 5,750,000 Total: 10,151,000 Greenlake Beach: Anabaena: 3,910 Microcystis: 77,000 Woronichinia: 370,000 Total: 450,910	
08/08/18	No bloom at Little Beach or Greenlake Beach. Water is clear.	Little Beach: All < 1 Greenlake Beach: All < 1	Little Beach: Microcystis: 90 Greenlake Beach: Microcystis: 20	Little Beach: Microcystis: 12,600 Greenlake Beach: Microcystis: 2,800	
08/22/18		Little Beach: All < 1 Greenlake Beach: All < 1	Little Beach: All < 1 Greenlake Beach: All < 1	Little Beach: All < 1 Greenlake Beach: All < 1	
09/06/18		Not Sampled	Not Sampled	Not Sampled	
09/19/18		Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 30: Results for cyanobacteria monitoring of Slater Memorial Park Pond in 2018.



Slater Memorial Park Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 25 th , 2018
06/27/18	No blooms observed. Frequently noted dark, cloudy water with low clarity and greenish hue.	Not Sampled	Not Sampled	Not Sampled	
07/12/18		Not Sampled	Not Sampled	Not Sampled	
07/25/18		Not Sampled	Not Sampled	Not Sampled	
08/08/18		Not Sampled	Not Sampled	Not Sampled	
08/22/18		Not Sampled	Not Sampled	Not Sampled	
09/06/18		Not Sampled	Not Sampled	Not Sampled	
09/19/18		Not Sampled	Not Sampled	Not Sampled	

Table 31: Results for cyanobacteria monitoring of Spectacle Pond in 2018.

Spectacle Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: September 5 th , 2018
06/26/18	No bloom.	Not Sampled	Not Sampled	Not Sampled	
07/11/18	Water is clear.	Not Sampled	Not Sampled	Not Sampled	
07/24/18	No bloom.	Not Sampled	Not Sampled	Not Sampled	
08/09/18	Water is cloudy with low clarity.	Not Sampled	Not Sampled	Not Sampled	
08/21/18	Water is cloudy with low clarity.	Not Sampled	Not Sampled	Not Sampled	
09/05/18*	Bloom is starting- light streaking/dots on surface and water is cloudy green color.	All < 1	Anabaena: 1,370 Microcystis: 80 Woronichinia: 860	Anabaena: 31,510 Microcystis: 11,200 Woronichinia: 215,000 Total: 257,710	
09/18/18	Water is cloudy with green hue but no bloom.	Not sampled	Not sampled	Not sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 32: Results for cyanobacteria monitoring of Stafford Pond in 2018.


Stafford Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 23 rd , 2018
06/08/18	No blooms observed. Water appeared clear all summer.	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18		Not Sampled	Not Sampled	Not Sampled	
09/17/18		Not Sampled	Not Sampled	Not Sampled	

Table 33: Results for cyanobacteria monitoring of Stump Pond in 2018.


Stump Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 8 th , 2018
08/08/18	Response visit. No bloom. Water is clear.	Not Sampled	Not Sampled	Not Sampled	

Table 34: Results for cyanobacteria monitoring of Sucker Pond in 2018.


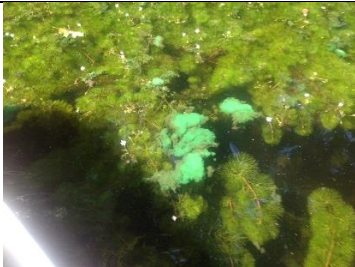

Sucker Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 22 nd , 2018
08/22/18	Response visit. No bloom. Water is very clear.	Not Sampled	Not Sampled	Not Sampled	

Table 35: Results for cyanobacteria monitoring of Tarkiln Pond in 2018.

Tarkiln Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 30 th , 2018
08/30/18 *	AIS interns noted large clumps of cyanobacteria on western shore near boat ramp.	All < 1	Planktothrix: 100,000	Planktothrix: 2,800,000	
09/06/18	No bloom. Water is clear with a lot of plant growth.	Not Sampled	Not Sampled	Not Sampled	
09/19/18		Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 36: Results for cyanobacteria monitoring of Ten Mile River in 2018.

Ten Mile River					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 17 th , 2018
07/17/18 *	Bloom present throughout the river. Pea soup appearance throughout.	Not Sampled	Not Sampled	Not Sampled	
07/25/18	Looks like bloom has dissipated. Water is cloudy/brown but no bloom.	All < 1	Anabaena: 10 Aphanizomenon: 240 Planktothrix: 650	Anabaena: 230 Aphanizomenon: 67,200 Planktothrix: 18,200 Total: 85,630	
08/08/18	Water is clear at shore but cloudy	All < 1	Planktothrix: 1,840	Planktothrix: 1,840	
08/22/18	brown/green in center of river.	Not Sampled	Not Sampled	Not Sampled	
09/06/18		Not Sampled	Not Sampled	Not Sampled	
09/19/18	No bloom. Water is tannic.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; **Exceedance of Threshold.**

Table 37: Results for cyanobacteria monitoring of Tiogue lake in 2018.



Tiogue Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 12th, 2018
07/12/18	Response visit. Water is cloudy brown color. Dots/clumps of cyanobacteria on the surface and in the water column. Some streaking on surface.	All < 1	Microcystis: 30	Microcystis: 4,200	

Table 38: Results for cyanobacteria monitoring of Turner Reservoir in 2018.

Turner Reservoir					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 16th, 2018
06/27/18	No bloom. Water is fairly clear.	Not Sampled	Not Sampled	Not Sampled	
07/12/18		Not Sampled	Not Sampled	Not Sampled	
07/13/18 *	Green pea soup, spilled paint appearance all along Western shoreline	Not Sampled	Not Sampled	Not Sampled	
07/16/18	Bloom present all along western shoreline down to spillway. Strong odor. Spilled paint, streaks, bubbling on surface.	All < 1	Anabaena: 1,650 Aphanizomenon: 10	Anabaena: 37,950 Aphanizomenon: 2,800 Total: 40,750	
07/25/18	No bloom. Water is clear, slightly tannic.	All < 1	Anabaena: 60 Aphanizomenon: 50 Planktothrix: 680	Anabaena: 1380 Aphanizomenon: 14,000 Planktothrix: 19,040 Total: 34,420	
08/09/18		All < 1	Anabaena: 470 Planktothrix: 2,070	Anabaena: 10,810 Planktothrix: 57,960 Total: 68,770	
08/22/18		Not Sampled	Not Sampled	Not Sampled	
09/06/18		Not Sampled	Not Sampled	Not Sampled	
09/19/18		Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued

Table 39: Results for cyanobacteria monitoring of Warwick Pond in 2018.


Warwick Pond					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: July 24 th , 2018
06/26/18	No blooms observed. Water has been clear most of the summer.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18		Not Sampled	Not Sampled	Not Sampled	
08/09/18		Not Sampled	Not Sampled	Not Sampled	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
08/29/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18		Not Sampled	Not Sampled	Not Sampled	
09/18/18		Not Sampled	Not Sampled	Not Sampled	

Table 40: Results for cyanobacteria monitoring of Watson Reservoir in 2018.




Watson Reservoir					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: September 17 th , 2018
06/08/18	No blooms observed. Water has been slightly cloudy for most of the summer	Not Sampled	Not Sampled	Not Sampled	
06/25/18		Not Sampled	Not Sampled	Not Sampled	
07/10/18		Not Sampled	Not Sampled	Not Sampled	
07/23/18		Not Sampled	Not Sampled	Not Sampled	
08/07/18		Not Sampled	Not Sampled	Not Sampled	
08/20/18		Not Sampled	Not Sampled	Not Sampled	
09/04/18	Start of a bloom. Some small patches of dots on the surface on northern shore.	Not Sampled	Not Sampled	Not Sampled	
09/17/18	Bloom accumulating around intake. Light green streaking on surface and staining on rocks.	All < 1	Anabaena: 2040	Anabaena: 46,920	

Table 41: Results for cyanobacteria monitoring of Willow Lake in 2018.

Willow Lake					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph: August 9 th , 2018
06/26/18	No bloom. Water is cloudy with low clarity.	Not Sampled	Not Sampled	Not Sampled	
07/11/18		Not Sampled	Not Sampled	Not Sampled	
07/24/18	Water is pea soup green color.	Not Sampled	Not Sampled	Not Sampled	
08/09/18 *	Green pea soup color and light streaking on surface throughout pond. Heavy streaking on SW corner near Japanese Gardens and swan boats.	Total Microcystins: 1.8	Anabaena: 3,970 Microcystis: 61 Woronichinia: 380	Anabaena: 91,310 Microcystis: 8,540 Woronichinia: 95,000 Total: 194,850	
08/21/18		Not Sampled	Not Sampled	Not Sampled	
09/05/18	Improved since previous visit. Pea soup color and some small dots throughout water column.	Not Sampled	Not Sampled	Not Sampled	
09/18/18	No bloom. Water is cloudy.	Not Sampled	Not Sampled	Not Sampled	

*: Health Advisory Issued; Exceedance of Threshold.

Table 42: Results for cyanobacteria monitoring of Wilson Reservoir in 2018.

Wilson Reservoir					
Date	Observations	Toxin Levels (ug/L)	Colony Count (colonies/mL)	Cell Count Conversion (cells/mL)	Photograph:
08/22/18	Response visit. No bloom. Water is clear, very tannic.	Not Sampled	Not Sampled	Not Sampled	

Appendix B.

Links to waterbody access points on Google Maps.

Northern RI ponds: <https://goo.gl/maps/Fn2LbwQLLZT2>

Newport ponds: <https://goo.gl/maps/M6fS7V47eNH2>

Cranston area ponds: <https://goo.gl/maps/1Y8njpdWCHG2>