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RE: Triennial Review of Florida's Water Quality Standards

Dear Ms. Sutton,

Thank you for the opportunity to provide comments on the Department of Environmental Protection's (DEP) triennial review of water quality standards. We submit these comments on behalf of the **Center for Biological Diversity, Calusa Waterkeeper, Sanibel-Captiva Conservation Foundation, Friends of the Everglades, Sierra Club, Natural Resources Defense Council, Surfrider Foundation, Waterkeeper Alliance, and Bullsugar.org.** Together we represent thousands of Floridians who swim, boat, paddle, recreate, and fish in the state's lakes, bays, rivers, estuaries, and springs.

Many of these waters are facing ecological collapse due to harmful algae blooms (HABs) that kill wildlife, harm people and their pets, and threaten inland and coastal communities' way of life across the state. As researchers from Stanford University and NASA recently documented, harmful algae blooms have intensified over the last three decades.[1] Excessive nutrient loads,[2]

[1] Ho, J.C., A.M. Michalak, and N. Pahlevan, 2019. Widespread global increase in intense lake phytoplankton blooms since the 1980s. Nature. Advance online publication. doi.org/10.1038/s41586-019-1648-7.
[2] EPA. 2016. Memorandum from Joel Beauvais, Deputy Assistant Administrator to State Environmental Commissioners, State Water Directors, "Renewed Call to Action to Reduce Nutrient Pollution and Support for Incremental Actions to Protect Water Quality and Public Health," (Sept. 22, 2016).

climate change-induced rising temperatures,[3] and changes in precipitation and drought patterns[4] are contributing to the increased intensity, frequency, and magnitude of HABs and the production of cyanotoxins.[5]

We urge DEP to get out front of this mounting human health and ecological crisis by adopting water quality criteria for cyanotoxins that would protect recreational users and restore Florida's imperiled waters.

I. Background

On May 23, 2019 the Center for Biological Diversity, Sanibel Captiva Conservation Foundation, and Calusa Waterkeeper (Petitioners) submitted a petition for rulemaking to DEP to establish water quality criteria for cyanotoxins based on the Environmental Protection Agency's (EPA) 2016 draft recommended values of 4 micrograms per liter for microcystins and 8 micrograms per liter for cylindrospermopsin.[6] Petitioners requested that in no case should the water quality criteria be established higher than EPA's 2019 final recommended values of 8 micrograms per liter for microcystins and 15 micrograms per liter for cylindrospermopsin.[7]

On June 24, 2019 DEP issued an order on the petition,[8] stating in relevant part:

> Based on the considerations herein, the petition to initiate rulemaking is granted to the extent that it seeks the initiation of triennial review rule development process, which the Department has already commenced, and consideration during this process of adopting

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[3] Moore, Stephanie K, Vera L Trainer, Nathan J. Mantua, Micaela S. Parker, Edward A. Laws, Lorraine C. Backer, and Lora E. Fleming. "Impacts of Climate Variability and Future Climate Change on Harmful Algal Blooms and Human Health." *Environmental Health* 7, no. Suppl 2 (2008): S4. https://doi.org/10.1186/1476-069X-7-S2-S4.

[4] EPA. 2013. Impacts of Climate Change on the Occurrence of Harmful Algal Blooms; Havens, K. 2015. Climate Change and the Occurrence of Harmful Microorganisms in Florida's Ocean and Coastal Waters. IFAS Extension; Havens, K. et al. 2015. Climate Change at a Crossroad for Control of Harmful Algal Blooms. Environmental Science & Technology 2015, 49, 12605-12606; Havens, K. 2018. The Future of Harmful Algal Blooms in Florida Inland and Coastal Waters. IFAS Extension; Moss, B. et al. 2011. Allied attack: climate change and eutrophication. Inland Waters, 1:2, 101-105; Paerl, H. and J. Huisman. 2008. Blooms Like It Hot. Science. Vol. 320, 4 April 2008; Paerl, H. and J. Huisman. 2009. Climate change: a catalyst for global expansion of harmful cyanobacterial blooms. Environmental Microbiology Reports (2009) 1(1), 27-37. *See also* Congressional Research Service, *Freshwater Harmful Algal Blooms: Causes, Challenges, and Policy Considerations* (Aug. 20, 2018).

[5] Paerl, H.W., Havens, K.E., Hall, N.S., Otten, T.G., Zhu, M., Xu, H., Zhu, G. and Qin, B. 2019. Mitigating a global expansion of toxic cyanobacterial blooms: confounding effects and challenges posed by climate change. Marine and Freshwater Research. https://doi.org/10.1071/MF18392; Rastogi, R.P., D. Madamwar, and A. Incharoensakdi. 2015. Bloom dynamics of cyanobacteria and their toxins: environmental health impacts and mitigation strategies. Front. Microbiol. 17 https://doi.org/10.3389/fmicb.2015.01254.

[6] *See In Re: Petition to Initiate Rulemaking to Establish Water Quality Criteria for Cyanotoxins*, Petition to Initiate Rulemaking to Establish Water Quality Standards for Cyanotoxins in Florida Surface Waters, Center for Biological Diversity, Sanibel-Captiva Conservation Foundation, and Calusa Waterkeeper, OGC Case No. 19-0419 (May 23, 2019)("Petition"); EPA. 2016. Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin, Draft, at 52 (EPA 2016).

[7] *See* Petition at FN 619.

[8] *See In Re: Petition to Initiate Rulemaking to Establish Water Quality Criteria for Cyanotoxins*, Order, State of Florida Department of Environmental Protection, OGC Case No. 19-0419 (June 24, 2019). On June 25, 2019 DEP amended the order to include the signature of the agency clerk.

> criteria for microcystins and cylindrospermopsin.[9] The petition will be made a part of the triennial review rulemaking record and considered a public comment. Petitioners' continued participation is encouraged.

Earlier this year, Governor DeSantis established the Florida Blue-Green Algae Task Force "to aid the Department of Environmental Protection in fulfilling its mission to protect, conserve and manage the state's natural resources and enforce its environmental laws."[10] "The task force, through its discussion and deliberations, provides guidance and specific, science-based recommendations with the goal of expediting improvements and restoration of Florida's water bodies that have been adversely affected by blue-green algae blooms."[11] On October 11, the task force issued "Final Consensus Document #1," which includes the following recommendation:

> Defensible health advisories should be established by the Department of Health *and defensible water quality criteria should be established by the Department of Environmental Protection*. These actions should be supported by the best available science and monitoring, and updated as new information becomes available.[12]

Members of the task force further expressed a desire not to wait on additional research before establishing water quality criteria for cyanotoxins and amended the Draft Consensus Document to include "stronger" language to reflect the consensus of its members.[13]

II. The Clean Water Act and the Triennial Review Process

The Clean Water Act was enacted in 1972 to address a national water quality crisis. Drinking water contained chemicals exceeding recommended limits, pollution forced the closure of shellfish beds, the discharge of polluted water was causing massive fish kills, and bacteria levels made waters unsafe to swim in. Water pollution was costing the country billions of dollars every year.[14]

Water quality standards are central to the design and plan of the Clean Water Act and are at the heart of each strategy of pollution control under the Act.[15] To that end, Section 303 of the Act

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[9] DEP's Order contains the footnote: "Legislative amendments to Sections 403.804 and .805, Florida Statutes, have overturned *Miccosukee Tribe of Indians v. Dep't of Envtl. Prot*., 656 So. 2d 505 (Fla. 3d DCA 1995). Therefore, the Secretary of the Department has full authority to unilaterally act on petitions to Initiate Rulemaking."
[10] Blue-Green Algae Task Force Consensus Document #1 at 1.
[11] *Id*. at 1.
[12] *Id*. at 9 (emphasis added).
[13] *See* The Florida Channel, Video Library, 10/7/19 Department of Environmental Protection Blue-Green Algae Task Force, (2:21-2:25), at https://thefloridachannel.org/videos/10-7-19-department-of-environmental-protection-blue-green-algae-task-force/. Compare Blue-Green Algae Task Force Consensus Document #1 at 9, available at https://floridadep.gov/sites/default/files/Final%20Consensus%20%231_0.pdf with Blue-green Algae Task Force Consensus Document #1 Final Draft-Revised 3 October 2019 at 9, available at https://floridadep.gov/sites/default/files/FINAL%20DRAFT%20BGATF%20CONSENSUS%20DOC%20.pdf.
[14] *See* Adler, R. et al. 1993. *The Clean Water Act 20 Years Later*, pp. 5-6 (Island Press 1993).
[15] As EPA's Water Quality Handbook explains, these standards "play a central role in a State's water quality management program, which identifies the overall mechanism States use to integrate the various Clean Water Act quality control requirements into a coherent management framework." EPA, Water Quality Standards Handbook: Second Edition Int-13 (1994).

directs states, subject to EPA approval, to develop and enforce comprehensive water quality standards establishing water quality goals for all intrastate waters.[16] These standards must "protect the public health or welfare, enhance the quality of water and serve the purposes of the [Clean Water Act]."[17] A water quality standard "defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria that protect the designated uses."[18]

States are required to review their water quality standards at least once every three years and if appropriate, revise or adopt new standards.[19] This process is known as the "triennial review." Any new or revised water quality standards must be submitted to EPA for review and approval or disapproval.[20] EPA may determine, even in the absence of a state submission, that a new or revised standard is needed to meet the requirements of the Clean Water Act.[21]

EPA also publishes recommended values for pollutants under Section 304(a) of the Act. States consider these recommended values as the basis for swimming advisories for notification purposes in recreational waters to protect the public.[22] States may also consider using these values when adopting new or revised water quality standards.[23] Although a State is not required to adopt new or revised criteria for parameters for which EPA has published new or updated section 304(a) criteria recommendations, the State must explain why it chose not to adopt new or revised criteria when it submits the results of its triennial review to the Regional Administrator of the EPA.[24]

In 2016, EPA issued draft recommend values for microcystins and cylindrospermopsin. In May 2019, EPA issued final recommended values for these cyanotoxins pursuant to Section 304(a) of the Clean Water Act.[25]

DEP is currently conducting a triennial review of the state's water quality standards. DEP has announced that all surface water quality standards in Chapter 62-302, Chapter 62-304, and Chapter 62-4, Florida Administrative Code are open under the current review and may be revised as part of the Triennial Review.

III. DEP Should Adopt Water Quality Criteria for Cyanotoxins Based on EPA's 2016 Draft Guidelines.

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[16] 33 U.S.C. §§ 1311(b)(I)(C), 1313; *PUD No. 1 of Jefferson Cty v. Washington Dept. of Ecology*, 511 U.S. 700, 704 (1994).
[17] 40 C.F.R. § 131.2. *See also* 33 U.S.C. § 1313(c)(2)(A).
[18] 40 C.F.R. § 131.2.
[19] 33 U.S.C. § 1313(c)(1). The Act's implementing regulations provide that "[t]he State shall from time to time, but at least once every three years, hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards." 40 C.F.R. § 131.20(a).
[20] 33 U.S.C. § 1313(c)(2)(A).
[21] *Id.* § 1313(c)(4)(B).
[22] *Id.* at 4.
[23] *Id.*
[24] 40 C.F.R. §131.20(a).
[25] U.S. Environmental Protection Agency. 2019. Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin (EPA 2019).

EPA regulations require states to "adopt those water quality criteria that protect the designated use" and that such criteria "must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use."[26]

The petition for rulemaking requests DEP to adopt the EPA's draft recommendation, as opposed to its final recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin.[27] These draft criteria limit microcytins to 4 ug/L and cylindrospermopsin to 8 ug/L[28] and are more consistent with other state recreational water cyanotoxin action levels.[29] EPA's final recommended values, on the other hand, are 8 ug/L for microcystins and 15 ug/L for cylindrospermopsin, nearly doubling the draft recommended values.[30]

While the EPA contends that an updated ingestion rate based on a 2017 study was the primary factor for the change in the recommended values, the final recommended values were based only on potential ingestion exposure (based on estimated average pool water ingestion), and not on inhalation, dermal absorption, or from eating contaminating fish or shellfish. Therefore, it assumes that all cyanotoxin exposure is from ingestion.[31]

Exposure can occur through various recreational and non-recreational pathways. Exposure from recreational water sources can occur through incidental ingestion while recreating, contact with the skin during activities like swimming, wading, fishing, boating, kayaking, and surfing, and inhalation as waterborne cyanotoxins are aerosolized.[32] Researchers at Florida Gulf Coast University recently documented airborne particles of cyanobacteria at a size that can be potentially inhaled and reach deep into the lungs more than a mile inland from any retention ponds and three miles from the Caloosahatchee River.[33] These aerosolized cyanotoxins can continue to exist after a bloom has dissipated, causing chronic human health impacts.[34]

EPA's final recommended values do not account for the multiple ways in which a person could be exposed to cyanotoxins while recreating. Whereas the draft recommended criteria considered multiple exposure pathways and utilized an 80% relative source contribution (RSC), providing a

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[26] 33 C.F.R. § 131.11(a)(1).
[27] *See* Petition at 113-16.
[28] No more than 10 percent of days in a recreational season (up to one calendar year). EPA (2016) at 52.
[29] *See* EPA (2016), Appendix B State Recreational Water Guidelines for Cyanotoxins and Cyanobacteria at B-4 (California), B-5 (Colorado), B-9 (Ohio), B-10 (Vermont), B-17 (Virginia).
[30] Not to be exceeded in more than three 10-day assessment periods over the course of a recreational season. EPA (2019) at 76.
[31] EPA (2019) at 58.
[32] EPA (2016) at 29-30, 35; Hoagland, Di Jin, Andrew Beet, Barbara Kirkpatrick, Andrew Reich, Steve Ullmann, Lora E. Fleming, and Gary Kirkpatrick. "The Human Health Effects of Florida Red Tide (FRT) Blooms: An Expanded Analysis." *Environment International* 68 (July 2014): 144–53. https://doi.org/10.1016/j.envint.2014.03.016.
[33] Williams, A.B. 2019. Algae crisis: Airborne particles of toxic cyanobacteria can travel more than a mile inland, new FGCU study shows, Fort Myers News Press, Mar. 15, 2019 at https://www.news-press.com/story/tech/science/environment/2019/03/15/new-health-questions-raised-fgcu-research-toxic-algae-dust/3176195002/ (last visited Oct. 14, 2019).
[34] Svircev, Z., Lalic, D., Savic, G.B., Tokodi, N., Backovic, D.D., Chen, L., Meriluoto, J., and Codd, G.A. 2019. Global geographical and historical overview of cyanotoxin distribution and cyanobacterial poisonings. Archives of Toxicology. 93(9):2429-2481. https://doi.org/10,1007/s00204-019-02524-4.

"margin of safety" for individuals who may be exposed to cyanotoxins from different sources and through different routes,[35] the final recommended values eliminated the RSC and assume all cyanotoxin exposure is from ingestion.[36] EPA makes little mention of the RSC in the final document and provides little explanation for its decision to drop the RSC entirely, stating that it did so "in response to public comments."[37]

Yet, long-standing EPA guidance, which the EPA references in the final document, strongly recommends the use of an RSC to account for multiple exposure pathways to pollutants like cyanotoxins. In its *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)*, EPA states, "The policy of considering multiple sources of exposure when deriving health-based criteria has become common in EPA's program office risk characterizations and criteria and standard-setting actions."[38] As the EPA explained in the 2016 draft document:

> EPA's 2000 Human Health Methodology outlines EPA's process for deriving AWQC and guides the development of these recreational criteria. The 2000 Human Health Methodology recommends the application of a RSC in the AWQC derivation to ensure that an individual's total exposure from all routes of exposure to a contaminant does not exceed the RfD…The RSC component of the AWQC calculation allows a percentage of the RfDs exposure to be attributed to the consumption of ambient water and fish and shellfish from inland and nearshore waters when there are other potential exposure sources. The RSC describes the portion of the RfD available for AWQC-related sources; the remainder of the RfD is allocated to other sources of the pollutant. The rationale for this approach is that for pollutants exhibiting threshold effects, the objective of the AWQC is to ensure that an individual's total exposure from all sources does not exceed the threshold level. Exposures outside the RSC include, but are not limited to, exposure to a particular pollutant from fish and shellfish consumption, non-fish food consumption (e.g., fruits, vegetables, grains, meats, poultry, dietary supplements), dermal exposure, and respiratory exposure.[39]

Further, where there is uncertainty in the toxicological data, EPA has stated that it should not result in less stringent criteria by ignoring exposure sources.[40] Even in those cases where other sources and routes of exposure are not anticipated for the pollutant in question, less stringent

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[35] EPA (2016) at 44.
[36] EPA (2019) at 58.
[37] Environmental Protection Agency, Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin, Notice of Availability, 84 Fed. Reg. 26413, 26414 (June 6, 2019).
[38] United States Environmental Protection Agency (2000). Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. EPA/822/B-00/004, 4-4, at https://www.epa.gov/sites/production/files/2018-10/documents/methodology-wqc-protection-hh-2000.pdf
[39] U.S. EPA (2016) at 44 (citing United States Environmental Protection Agency (2000). Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. EPA/822/B-00/004, at http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/index.cfm)).
[40] United States Environmental Protection Agency (2000). Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. EPA/822/B-00/004, 4-5, at https://www.epa.gov/sites/production/files/2018-10/documents/methodology-wqc-protection-hh-2000.pdf

assumptions are allowed, but in these cases the 80 percent ceiling is still recommended under the EPA's methodology.[41]

By dropping the RSC, EPA abandons its own well-established methodology, ignores these other risks, and recommends criteria that are much less protective than the draft criteria developed in 2016.[42]

In developing water quality criteria, the state must adequately protect people from both the short-term and long-term effects of cyanotoxins.[43] Short term impacts include gastrointestinal, dermatologic, respiratory, neurologic and other symptoms.[44] Some exposures have resulted in severe respiratory impairment (such as pneumonia and adult respiratory distress syndrome), as well as liver and kidney damage from ingesting contaminated drinking water.[45]

There may also be significant long-term impacts from chronic, low-level exposure. The results of some epidemiological and experimental studies suggest that cyanobacterial blooms, associated with other risk factors, may cause a higher incidence of some cancers.[46]

In a 12-year study, researchers at Ohio State University identified significant clusters of deaths attributable to non-alcoholic liver disease in coastal areas impacted by cyanobacterial blooms.[47] The only one in Florida occurred in St. Lucie, Indian River and Okeechobee counties, where based on data calculated by the Centers for Disease Control and Prevention, included a death rate from non-alcoholic liver disease that was nearly twice as high as the national rate.

In a study published this year, researchers at the University of Toledo and Wayne State University found that people with pre-existing liver disease may be more susceptible to the ill effects of microcystin. The researchers found that microcystin can significantly amplify the disease at levels below what would harm a healthy liver.[48]

In addition, the non-protein amino acid BMAA is a cyanobacteria-derived toxin that has been linked to neurodegenerative diseases like Lou Gehrig's disease (amyotrophic lateral sclerosis, or

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[41] *See* United States Environmental Protection Agency (2000). Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health. EPA/822/B-00/004, 4-5, 4-15, at https://www.epa.gov/sites/production/files/2018-10/documents/methodology-wqc-protection-hh-2000.pdf.
[42] Compare EPA (2019) at 72 with EPA (2016) at 51.
[43] *See* 33 U.S.C. § 1313(c)(2)(A) (stating that water quality standards shall be such as to protect the public health or welfare, enhance the quality of the water, and serve the purposes of this chapter).
[44] EPA (2016) at 4.
[45] Hillborn, E.D. and V.R. Beasley. 2015. One health and cyanobacteria in freshwater systems: animal illnesses and deaths are sentinel events for human health risks, Toxins, 1374-1395.
[46] Svircev, Z., Lalic, D., Savic, G.B., Tokodi, N., Backovic, D.D., Chen, L., Meriluoto, J., and Codd, G.A. 2019. Global geographical and historical overview of cyanotoxin distribution and cyanobacterial poisonings. Archives of Toxicology. 93(9):2429-2481. https://doi.org/10,1007/s00204-019-02524-4.
[47] Zhang, F, J. Lee, S. Liang, and C.K. Shum. 2015. Cyanobacteria blooms and non-alcoholic liver disease: evidence from a county level ecological study in the United States, Environmental Health, 14:41.
[48] News Medical Life Sciences, Toxic algae may be more harmful for people with pre-existing liver disease, (Sep. 19, 2019), at https://www.news-medical.net/news/20190919/Toxic-algae-may-be-more-harmful-for-people-with-pre-existing-liver-disease.aspx; Lad, A. et al. 2019. Chronic low dose oral exposure to microcystin-LR exacerbates hepatic injury in a murine model of non-alcoholic fatty liver disease. Toxins. Doi.org/10.3390/toxins11090486.

"ALS"), Alzheimer's disease, and Parkinsonism Dementia Complex (ALS/PDC).[49] BMAA has been documented in recreational waters throughout the world,[50] and is bioaccumulating in different organisms up the food chain, presenting an increased human health risk.[51] BMAA has found to bio-concentrate in crustaceans, mollusks, and some fish in South Florida.[52] High levels of BMAA have been found in fish in the Caloosahatchee River and Florida Bay.[53]

There is concern that people exposed to waterborne BMAA may have an increased risk of neurodegenerative disease. Researchers used GIS software to map ALS cases and lakes with a history of HABs in New Hampshire.[54] They found that people living within a half-mile of lakes contaminated with cyanobacteria had a 2.32-times greater risk of developing ALS than the rest of the population. The researchers identified clusters of ALS cases in proximity to the HABs. As Banack et al. (2010) observed, latency period for disease development may be several decades and "[s]ince human exposure to BMAA appears to be widespread, it "has the potential to be a major environmental factor capable of causing ALS and other neurogenerative diseases throughout the world."[55]

Despite the serious threat posed by cyanotoxins, as evidenced by the forced shut down of the Olga Water Treatment Plant following a massive cyanobacteria bloom in the Caloosahatchee River, the State has done very little to address these threats. In fact, state officials responded to a recently published survey that they have not identified cyanobacterial blooms/cyanotoxins as an issue of concern in drinking water.[56]

DEP should act immediately upon the Task Force's recommendations, follow the precautionary principle, and expeditiously establish the most protective water quality criteria for microcystins and cylindrospermopsin. These criteria would establish clear numeric baselines and form the basis of water quality monitoring that would provide state environmental and health officials with critical information to notify the public of the health and safety risks of recreating in waters with high cyanotoxin levels.

Establishing these water quality criteria would further help optimize and prioritize watershed planning, protection, and restoration in watersheds like Lake Okeechobee and the

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[49] Banack, S.A. et al. 2010. The Cyanobacteria Derived Toxin Beta-N-Methylamino-L-Alanine and Amyotrophic Lateral Sclerosis, Toxins 2010, 2, 2837-2850; Bienfang P.K. et al. 2011. Prominent Implications. International Journal of Microbiology. Vol. 2011. Article ID 152815.
[50] Banack, S.A. et al. (2010).
[51] Brand, L. 2009. Human exposure to cyanobacteria and BMAA. Amyotrophic Lateral Sclerosis, 2009, (Supplement 2): 85-95.
[52] Brand, L. et. al. 2010. Cyanobacteria Blooms and the Occurrence of the neurotoxin beta-N-methylamino-L-alanine (BMAA) in South Florida Aquatic Food Webs. Harmful Algae. 2010 Sept. 1; 9(6): 620-635.
[53] *Id*.
[54] Caller, TA, et. al. 2009. A cluster of amyotrophic lateral sclerosis in New Hampshire: a possible role for toxic cyanobacterial blooms. Amyotroph Lateral Scler 10 (suppl 2): 101-108 (2009).
[55] Banack, et al. (2010).
[56] Yaeger, N. and Carpenter, A. 2019. State approaches to addressing cyanotoxins in drinking water. AWWA Wat Sci. 2019; e1121. https://doi.org/10.1002/aws2.1121. As Yaeger and Carpenter note, EPA estimates that 30-48 million residents drink water sourced from lakes and reservoirs that may be vulnerable to cyanotoxin contamination. *Id.* (citing Gilinsky, E. 2015. Protecting America's water from HABs. Bloomington, IN: North American Lake Management Society LakeLine, 35:2:12).

Caloosahatchee and St. Lucie estuaries by establishing a specific performance measure that is tied to protecting human health through primary contact recreational exposure, as well as fish and wildlife and the aquatic environment. To date, existing nutrient standards have not been enough to address HABs. Water quality criteria for cyanotoxins would necessitate greater regulatory focus, transparency, and accountability because these criteria would serve as a clearly defined level of human health and environmental protection that pollution control measures must meet. Further, by identifying cyanotoxins independently of nutrients, the DEP would be able to better address the connection between nutrients and HABs and tackle other contributors to HABs, including insufficient water velocities,[57] flows and levels,[58] and rising temperatures and changes in precipitation fueled by climate change. In sum, exacting water quality criteria specifically for cyanotoxins sets a clear path forward for monitoring, assessing, and reducing HABs.

By taking these steps, the State of Florida would serve as a national leader in protecting the environment, local economies, and present and future generations from the devastating effects of harmful algae blooms. We urge DEP to follow the Task Force's recommendations and expeditiously establish water quality criteria for these dangerous toxins.

Please find attached, additional studies for the triennial review rulemaking record.

Sincerely,

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[57] *See* California Department of Water Resources' Comments on EPA's Draft Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin-Docket ID No. EPA-HQ-OW-2016-0715 (citing several studies that point to insufficient water velocities as a factor contributing toward the formation of harmful algae blooms).

[58] *See* University of Florida Levin College of Law Conservation Clinic. 2018. Spring Water Velocity: Protecting Water Quality with Water Quantity Regulation, A Report for the Florida Springs Institute (citing several studies finding that water quantity indicators can be as relevant to macroalgal proliferation in Florida spring-fed rivers as water quality indicators).

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