

March 18, 2022

David Whitehurst
Virginia Department of Environmental Quality
1111 East Main Street, Suite 1400
Richmond, VA 232118
david.whitehurst@deq.virginia.gov

Re: Public Comments Responding to Triennial Review Proposed Rulemaking to Adopt New, Update or Cancel Existing Water Quality Standards

Dear Mr. Whitehurst:

The undersigned,¹ representing eight organizations and thousands of Virginians across the state, ask the State Water Control Board (Board) to amend the water quality standards ("WQS" or "standards") regulation to specify that all parts of the narrative (general) criteria must be fully implemented and enforced in all regulatory actions the state has authority to take. This change would ensure that protections promised in the standards, through provisions that have been in place for many decades, would be made effective in a range of cases where current procedures and policies have failed to do so.

Additionally, we urge the Board to instruct the Department of Environmental Quality (DEQ) to initiate and/or expedite regulatory processes, apart from this triennial review, to develop appropriate numeric criteria for turbidity and/or solids, nutrients, and PFAS. Finally, we urge the Board to instruct DEQ to develop guidance for the agency's use of qualitative water quality data and information, to empower members of the public to contribute necessary water quality information that the agency will use in regulatory actions and in other appropriate ways.

**Virginia Must Fully Implement and Enforce its Narrative
(General) Water Quality Criteria**

Proposed Regulatory Language

Based on the discussion below, we urge the Board to amend the regulation to ensure that narrative water quality criteria are fully implemented and enforced.

To that end, we recommend that the Board add subsection C. to [9 VAC 25-260-20](#), as follows:

¹ The primary contact for these comments is: David Sligh
Conservation Director, Wild Virginia
david@wildvirginia.org
434-964-7455
108 5th St SE, Charlottesville, VA 22902

C. The requirements defined in subsection A. shall be enforced in all instances where the state has authority to regulate activities to protect water quality, in accordance with the following.

1. For all permits or certificates issued under the authority of the State Water Control Law or the Clean Water Act, the Department or the Board shall make findings that all requirements defined in subsection A. will be met. Such findings shall be based on consideration of all existing and readily available evidence, including but not limited to:

a. data and information about visual appearance, odors, tastes, and physical conditions that interfere with human use and enjoyment of state waters or violate antidegradation provisions at [9VAC25-260-30](#);

b. data and information about the potential of pollutants to harm human, animal, plant, or aquatic life, regardless of whether the state has adopted numeric criteria for those pollutants.

Photographic evidence, reports and testimony by members of the public, and data and information provided by local, other state, or federal agencies shall be considered and, if scientifically valid, shall be relied upon.

2. In fulfilling the requirements of Virginia Code § [62.1-44.19:5](#)., all existing and readily available evidence, including but not limited to those types described in subsection C.1. shall be used in reporting water quality conditions and making impaired waterbody determinations. Photographic evidence, reports and testimony by members of the public, and data and information provided by local, other state, or federal agencies shall be considered and, if scientifically valid, shall be relied upon for these purposes.

3. For any enforcement action undertaken under the authority of the State Water Control Law, all existing and readily available evidence, including but not limited to those types described in subsection C.1. shall be used. Photographic evidence, reports and testimony by members of the public, and data and information provided by local, other state, or federal agencies shall be considered and, if scientifically valid, shall be relied upon for these purposes.

The Current Regulations

Federal regulations mandate that WQS, which are established for all state waters in Virginia, must "serve the purposes of the Clean Water Act"² ("CWA" or "Act"), including the objective Congress expressed in the Act: "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."³

² [40 C.F.R. 130.3](#).

³ [33 U.S.C. § 1251\(a\)](#) [CWA section 101(a)].

Virginia's water quality standards regulation contains a number of provisions that are pertinent to the application of narrative water quality criteria.⁴ Enforcement of these provisions is necessary to serve the purposes of the Act.

The regulation includes the following requirements:

- Uses designated for all streams in Virginia include: "recreational uses, e.g., swimming and boating; the propagation and growth of a balanced, indigenous population of aquatic life, including game fish, which might reasonably be expected to inhabit them; wildlife; and the production of edible and marketable natural resources, e.g., fish and shellfish." [9 VAC 25-260-10](#).
- "State waters . . . shall be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life." [9 VAC 25-260-20.A](#).
- "Specific substances to be controlled include, but are not limited to: floating debris, oil, scum, and other floating materials; toxic substances (including those which bioaccumulate); substances that produce color, tastes, turbidity, odors, or settle to form sludge deposits; and substances which nourish undesirable or nuisance aquatic plant life." [9 VAC 25-260-20.A](#).
- "All surface waters of the Commonwealth shall be provided" a level of protection which maintains and protects "existing instream water uses and the level of water quality necessary to protect the existing uses." [9 VAC 25-260-30.A.1](#).⁵

To make determinations as to whether state waters meet these required levels of quality, the following questions must be answered when Virginia takes regulatory actions to implement and enforce the WQS. As described below, these questions have often not even been asked, let alone answered, when DEQ and the Board have made decisions.

Will the agency action properly prevent or address:

- ◆ unnatural colors in state waters?
- ◆ turbidity in state waters?
- ◆ unnatural odors in state waters?
- ◆ unusual floating materials in state waters?
- ◆ forms of undesirable or nuisance plant growths in state waters?

⁴ The term "narrative criteria" is widely used, by the U.S. EPA and in federal regulations (*see e.g.* [40 C.F.R. § 131.11](#)). Virginia regulations titled "General Criteria" are equivalent to narrative criteria defined by EPA. We use the term narrative criteria in these comments to indicate Virginia's general criteria.

⁵ "Existing uses" are defined as "uses actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards." [9 VAC 25-260-5](#).

Additional questions that have been looked at by DEQ in inappropriately restrictive ways include:

◆ Will the quality of the waters interfere with the recreational uses, including aesthetic enjoyment? - DEQ has admitted that it has never designated a waterbody as "impaired" due to non-quantitative evidence of pollution that clearly interferes with human uses. Rather, the agency has narrowly and improperly focused only on pathogenic pollution in making recreational use designations.

◆ Will the quality of the waters interfere with the maintenance of balanced, healthy aquatic communities? - DEQ applies numeric criteria, as it must, and also bases determinations on agency biological monitoring. However, with just a few exceptions, DEQ has not developed permit limits or declared impairments based on chemical parameters that are known to be harmful but for which numeric criteria have not been adopted.

◆ Will the quality of the waters be inimical or harmful to human, animal, plant, or aquatic life? - As above, DEQ relies narrowly on numeric criteria and biological sampling but generally refuses to use other existing and readily available information, both qualitative and quantitative, in impairment listing decisions and permitting.

Virginia's Has a Legal Duty to Fully Enforce Narrative Criteria

As noted above, all "state waters"⁶ in Virginia are designated for specified uses, including recreation and the support of aquatic communities and wildlife. The Board and DEQ are legally obligated to apply all parts of the water quality standards regulation to ensure full support of these and other waterbody-specific designated uses. Further, the antidegradation policy applies "whenever any activity is proposed that has the potential to affect existing surface water quality"⁷ and requires that existing uses be maintained without exception.

Before issuing discharge permits, the agency must determine that there is no "reasonable potential" that the permitted activities will cause or contribute to any water quality standard violation.⁸ Similarly, when issuing water quality certifications under CWA section 401, the state must find a "reasonable assurance" that all water quality standards will be upheld.⁹ In decisions under both of these regulatory schemes, DEQ has refused in some cases to base these findings on parts of the narrative criteria that clearly applied. There is no rational basis for applying the narrative criteria in some instances and refusing to do so in others, as DEQ has done. While the analyses may yield different conclusions under different circumstances, those analyses must be conducted in all cases.

⁶ Defined as "all water, on the surface and under the ground, wholly or partially within or bordering the Commonwealth or within its jurisdiction, including wetlands." [Va. Code § 62.1-44.3](#).

⁷ [9 VAC 25-260-30.A](#).

⁸ [40 CFR §122.44\(d\)\(1\)\(i\)](#).

⁹ [33 U.S.C. § 1341](#) [CWA section 401].

We stress that the proposed amendment is simply intended to ensure that legal obligations that already exist under the WQS regulation are met. It does not create new responsibilities for the state.

Guidance and Policy Have Proven Insufficient

DEQ officials have responded to the contention, made by Wild Virginia and others in response to the Notice of Intended Regulatory Action (NOIRA) for this triennial review, that it is necessary for the Board to incorporate implementation procedures to apply the narrative criteria into the regulations. The agency's response was, in part:

Currently, DEQ water quality programs maintain these guidelines in program-specific implementation guidance manuals, which are revised periodically through the public participation procedures stipulated by §2.2-4002.1 of the Administrative Process Act. DEQ staff believe that there are more benefits to keeping implementation policies outside of the water quality standards regulation than there are downsides.¹⁰

The record demonstrates that agency guidance has not resulted in application or enforcement of narrative criteria on a consistent basis, as shown by examples described below. We strongly disagree with DEQ's stated belief, that "there are more benefits to" the current approach "than there are downsides."¹¹ The "downside," which we believe the Board should find unacceptable, is that state waters and the interests of Virginians who use and rely upon them have been severely damaged in some cases where the Board and DEQ had the duty to prevent those results.

Conditions that violate one or more parts of the narrative criteria may take many forms. In each case where current conditions are being assessed or when authorization of an activity is being sought, DEQ or the Board will be required to make reasoned and supported judgements based on the available information. That is true regardless of the nature of the evidence assessed, whether quantitative or qualitative. The examples below represent two categories of pollution problems and threats that should trigger action or controls under the narrative criteria.

First, there are characteristics that affect human uses of waters and where decisions as to acceptable levels of impact depend on the qualitative perceptions and judgements of those humans who may use the waterbodies. These include colors, odors, physical effects such as the presence of floating or sinking materials, cloudiness or turbidity in the water column, and others. These are the kinds of conditions which our proposed amendment would address in part C.1.a.

There will, of course, be differences in opinion among water users or potential users and, because of the more subjective nature of these judgements, there will be some difficult decisions.

¹⁰ Virginia Regulatory Town Hall, Action:Triennial Review Rulemaking to Adopt New, Update or Cancel Existing Water Quality Standards (2020), *Agency Background Document*, page 17, available at https://townhall.virginia.gov/L/GetFile.cfm?File=103\5637\9438\AgencyStatement_DEQ_9438_v3.pdf (last accessed March 17, 2022).

¹¹ *Id.*

As with all agency decisions, officials' judgements will be defensible if the bases are explained, pertinent factors and evidence is assessed, and the outcome can be rationally explained.

On the other hand, there are examples of unnatural and even offensive conditions that clearly "interfere with" recreational uses and are, therefore, prohibited by the narrative criteria. The fact that there will be "close calls" must not be used as an excuse to allow clearly unacceptable and even harmful conditions in our waters, such as those demonstrated below.

Second, there are pollutants whose presence and the risks they pose may be quantitatively assessed and controlled but for which Virginia has not yet established numeric criteria. A prime example of such pollutants is the class of toxic, human-created chemicals known as PFAS. The state has undertaken a process to investigate the presence of PFAS in our waters and its sources and we assert, as discussed below, that development of numeric criteria for these substances should begin as soon as possible. However, it is neither necessary nor acceptable to wait for that regulatory adoption process to be completed to protect Virginians from PFAS or any other pollutant we know to be present and harmful. Part C.1.b. of the proposed amendment we present above is designed to ensure that the state uses information about PFAS and other harmful pollutants, including proof of their presence in discharges and the environment, and limit them accordingly in making permitting decisions.

By broadly prohibiting conditions that are "inimical or harmful to human, animal, plant, or aquatic life" and those that interfere with any designated and existing uses, the regulations give the DEQ and the Board an important tool which must be used effectively and consistently, to "serve the purposes of the Act." Without these provisions, the state could be prevented from taking action even when very serious health or safety threats are presented by a pollutant.

While we could highlight more types of pollution impacts that should have been prevented under the current regulations, we have chosen just three that are especially striking: color, odor, and PFAS.

Color

The impacts of unnatural colors in the water of our streams and other waterbodies is a perfect illustration of the value of the narrative criteria and the need to enforce its provisions. Color may be caused by a range of pollution types, including industrial wastes, excessive amounts of nutrients, sediments and other runoff pollution, and other substances. The presence of these impacts will interfere with peoples' use and enjoyment of Virginia's waters, based purely on aesthetic values, but also because of the well-founded concern that they could indicate health and safety risks. Color from toxic blue-green algae, for example, will likely degrade uses due to appearance alone but should also be heeded as a warning of serious human health threats.

DEQ and the Board have a large body of evidence about situations where pollution discharges have resulted in aesthetically-offensive color, because water users have submitted masses of photographs and testimonies of these impairments over the course of several decades. DEQ has generally refused to acknowledge that this aspect of waterbody quality is of concern for water users or that it must be regulated.

DEQ officials have previously stated in a news article that there is no “environmental harm” from discolored waters.¹² Yet, danger to human health is only one metric for finding a violation of water quality standards based on Virginia’s narrative criteria. Another overarching metric for determining whether there is a violation of water quality standards is interference—direct or indirect—with the designated uses of a water body. Interference alone is sufficient for a violation. And in the case reported, the very strongest evidence of interference with a designated and existing use was proven. A river outfitter stated that it had lost customers who intended to use the affected stream but “were concerned with the water’s quality”¹³

Moreover, DEQ need not verify the condition of the relevant water body, nor assess the color of the water body to determine whether persons would willingly swim, fish, boat, or enjoy the water. The mere fact that the water’s appearance impacted someone’s willingness to use the waterbody is an interference with the waterbody’s designated uses, and consequently, a violation of water quality standards. For this reason, DEQ must enforce Virginia’s narrative criteria by finding a water quality violation is present whenever a waterbody’s discolored appearance directly or indirectly interferes with a person’s use or enjoyment of that water body.

This case and the additional examples of shocking stream pollution should suffice to demonstrate that guidance and policy have so far failed in some cases.

First, the image below, of highly-colored excessive algae growth in the South Fork Shenandoah River was submitted to DEQ in 2014, along with many similar proofs, in support of petitions to have streams in the Shenandoah basin designated as “impaired.” DEQ has done laudable work to study attached algae in Shenandoah streams and now proposes criteria to address those conditions. However, that work and the agency’s proposed regulatory additions do not account for this kind of nutrient-caused condition. The narrative criteria already provide all of the authority needed to address this kind of situation; to declare it the impairment that it clearly is, and then take the necessary steps to solve the problem.

¹² Graham, Alison, [Virginia DEQ says no environmental hazards caused from discoloration in James River](#), Roanoke Times, July 16, 2018.

¹³ Id.

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Second, Wild Virginia has submitted the photograph below to DEQ and the Board in previous comments and we assert it is beyond debate that this condition does "interfere directly or indirectly with" the designated use of this stream for recreation.



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This image is a satellite photo of a discharge from a paper mill into the James River. These plumes of highly colored water can be detected in Google Earth images as far back as 2002 and DEQ records indicate that similar discharges level have existed much longer. The Virginia Pollutant Discharge Elimination System (VPDES) permit for this facility has been reissued over and over again, each five years for decades.

It must be obvious to the Board members, as it is to us, that many water users would be deterred from swimming, or paddling, or fishing in this segment of stream due to its appearance; that enjoyment of the river's beauty is marred by it; that it cannot help but raise concerns about unknown risks and thereby keep users away. Agency guidance or procedures haven't solved this problem. It seems clear that Board action to strengthen the regulation is needed, where DEQ actions have failed to provide the protection Virginians deserve and have been promised under the law.

Finally, the photograph below shows an additional instance where color-producing pollutants impaired a waterbody but DEQ has refused to acknowledge that violation of WQS or take regulatory action to prevent like occurrences. This photo shows a segment of Teels Creek in Franklin County, where erosion, releases of accumulated stormwater, and physical damage to stream banks was caused by construction on the Mountain Valley Pipeline (MVP). Of course, this discharge and the stream impacts implicate both the color provisions of the narrative criteria and those for turbidity and prohibition on negative impacts to aquatic life.

This is just one of many examples, and not the most drastic one, where the MVP caused this type of water quality degradation. Wild Virginia previously submitted a photo to the Board showing a landowner's pond that had been filled with muddy water due to polluted discharges from MVP sites. However, DEQ officials have explicitly expressed to the Board, when the original certification was issued for MVP in 2017, that they were unable to apply the narrative criteria for this situation. This failure by DEQ has allowed streams in sections of six counties in southwest Virginia to be subjected to unacceptable pollution that the state refused to prevent. The obvious solution is to place specific provisions in the regulation to make clear to officials that they may not shirk the duty to address these insults to our waters.



Odor

Evidence in DEQ's files for just one two-year period include records of complaints by at least sixty members of the public who reported that repellent odors were caused on numerous occasions and in many stream segments in the Shenandoah River watershed due to nuisance algae growths that then rotted and festered in the stream.¹⁴

Maybe even more compelling, the same conditions were documented by one of DEQ's own water quality experts. In response to a citizen who reported the possible dumping of cow manure in the North Fork Shenandoah River, Don Kain, Water Monitoring and Assessment Manager in DEQ's Valley Regional Office investigated and responded to the complainant, in part, as follows:

I just returned from the river. The material in your photo was indeed still there. . . . based on the appearance and odor (both definitely nasty), I think what we are seeing is decaying blue-green algae mats. I took a trip down the river 2 weeks ago from Deer Rapids to Strasburg with Jeff Kelble specifically to evaluate nuisance algae problems. The material at Black Bear crossing looks the same as the mats

¹⁴ Information about these citizen complaints was submitted to DEQ on several occasions in comments on Integrated Reports of water quality conditions and was submitted to this Board on September 23, 2020, through a document entitled *Technical Review of Evidence to Determine the Presence, Extent, and Consequences of Excessive Algal Growths in the Shenandoah River and its Tributaries*, January 30, 2015.

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we observed on that section of the river. . . . By the way, these bluegreen algae mats are quite often mistaken for sewage, due to both appearance and odor.”¹⁵

Can the Board possibly conclude that the kinds of condition reported here do not violate the narrative criteria? When faced with the same evidence from dozens of citizens and from their own expert witness, DEQ refused to admit as much.

PFAS

We include as an attachment to this letter a document submitted by four organizations to DEQ in response to the NOIRA for this triennial review. That letter includes detailed information about the nature and threats posed to Virginia waters and residents from these toxic chemicals. It is unnecessary to repeat that information here, but the Board must find that any discharge of PFAS is prohibited under the WQS, even though numeric criteria are yet to be adopted. Without question, these substances are "inimical or harmful to human, animal, plant, or aquatic life" and interfere with designated uses.

The Board must instruct DEQ to begin incorporating controls for PFAS into regulatory actions now, without delay but must also recognize this as another example of agency resistance that compels a regulatory change - that policies and guidance have not met the needs of public safety.

Numeric Turbidity and/or Solids Criteria Must be Adopted and Enforced

To adequately control pollution and maintain all designated and existing uses, both narrative and numeric criteria are appropriate and, in many cases, required. As we advocate above, regulators can and should use narrative criteria to address and eliminate pollution problems that are documented thru biological monitoring, visual effects, or other measures. However, the Board must not stop there.

Numeric criteria are an important tool to prevent water quality impairments. Setting appropriate water quality-based limitations in permits or designating waters as "impaired" is greatly facilitated by the use of numeric regulatory benchmarks.

The Board ordered DEQ to develop numeric turbidity criteria nearly three years ago and the Department has taken some steps in that process. However, DEQ's actions hardly live up to the Board's order in this regard.

The motion offered by Mr. Lofton and passed by the Board at its April 15, 2019 meeting was to "direct the DEQ staff to develop numeric turbidity standards for use across the Commonwealth and to **move this into a top priority [unclear] on an accelerated schedule.**"¹⁶ Mr. Hayes

¹⁵ Kain, Donald, Virginia DEQ, email to Leslie Mitchell *RE: Cow poop dumping*, July 9, 2012.

¹⁶ Transcribed from a recording available at the following link (last accessed on March 17, 2022). Discussion of this issue begins at about minute 48, <https://www.facebook.com/vasierraclub/videos/2310315712360416/>, (emphasis added).

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seconded the motion "with the understanding that it would be done in the process of water quality standard review [uncertain whether additional words included] development."¹⁷

But the development of numeric criteria to address turbidity-causing substances is not just years behind the schedule the Board ordered. It is, in fact, decades overdue. The widespread nature and detrimental consequences are universally understood and acknowledged by water quality experts and agencies.

One author's description of regulators' attitudes on addressing stream pollution related to turbidity or solids is, unfortunately, applicable to DEQ's approach, both before and since the Board ordered it to act. That writer stated that regulators had displayed "reluctance, if not outright refusal . . . to come to grips with" the problems related to turbidity or solids in streams. As you can see from the footnote citation, this quote comes from a conference in 1956.¹⁸

There is no excuse for continued delay in adopting numeric criteria for turbidity and/or solids. As described above, the damage done to dozens of Virginia streams by MVP is more than enough evidence that this measure is needed.

Numeric Nutrient Criteria Must be Adopted and Enforced

As discussed above, the need for both narrative and numeric criteria is clearly demonstrated in the approach to excessive nutrient pollution in state waters, particularly in so-called "free-flowing streams. Failure to proceed with these criteria, for phosphorus and nitrogen, is particularly inexcusable here because of the resource available from an expert panel convened by DEQ.

For nutrients, important work has been done by experts in Virginia that forms a strong base from which to develop numeric criteria. But those analyses and recommendations have sat unused for years. More than a decade ago the DEQ convened an Academic Advisory Committee to consult on scientifically valid ways to set nutrient criteria numbers. That panel has produced several useful documents, including one in 2016¹⁹ that uses a large body of data from state streams to estimate levels of nutrients that would not adversely affect aquatic organisms.

The important fact now is that Virginia already has many streams that have been damaged by excess nutrients and resulting algae blooms. The state has a duty to develop criteria where pollutants cause significant negative impacts and that threshold has been met for these pollutants long ago. It is past time for DEQ to move forward and develop protective criteria. Nearly 50 years after the 1972 Clean Water Act's passage, it is unacceptable for Virginia to delay further in addressing these pollutants in a serious and effective manner.

¹⁷ Id., Mr. Hayes referred to this triennial review process as the appropriate forum in which to develop and adopt these criteria.

¹⁸ Neil, John H., *Investigations and Problems in Ontario*, In: Biological Problems in Water Pollution - Transactions of a Seminar on Biological Problems in Water Pollution held at the Robert A. Taft Sanitary Engineering Center Cincinnati, Ohio April 23 - 27, 1956, ed. Clarence M. Tarzwell, 1957.

¹⁹ Zipper, Carl E., [*A "SCREENING APPROACH" FOR NUTRIENT CRITERIA IN VIRGINIA*](#), 2016 Report of the Academic Advisory Committee for Virginia Department of Environmental Quality, June 2016.

Numeric Criteria for PFAS Must to Adopted and Enforced

As discussed above and in the attachment to these comments, PFAS is already degrading state waters and presents a serious risk of harm to humans and aquatic life. The Board must instruct DEQ to start the official process to adopt numeric criteria immediately and to return to the Board with recommendations as soon as possible within the constraints of the Administrative Process Act (APA).²⁰

Clear, Specific, and Reasonable Data Quality Requirements for Qualitative Citizen Water Quality Data Must be Developed

Virginia lacks specific data quality guidance for evaluating qualitative citizen data.²¹ In fact, EPA has repeatedly highlighted Virginia's failure to develop a "formalized methodology for handling particular kinds of [qualitative] data."²² For example, EPA comments to Virginia's 2010 and 2012 Integrated Reports noted that DEQ had not developed "formal quality assurance/quality control protocols for evaluating photographs and testimonials submitted by the public."²³ Additionally, EPA emphasized that:

the lack of a formalized methodology for handling particular kinds of data is not a basis for a state to avoid evaluating data or information when developing its 303(d) list and that a citizen-group's failure to maintain a state-approved quality assurance plan [as a result] is not a sufficient basis for categorically excluding that group's data.²⁴

As discussed in detail in *Quality Control: Potomac Riverkeeper V. Wheeler & Standards for Qualitative Citizen Water Quality Data in Virginia*²⁵, the absence of useable agency guidance for qualitative data means it is difficult for members of the public to ensure that data submitted in the form of photographs, videos, public comments, expert reports, and more will actually be considered acceptable qualitative water quality data.

DEQ has failed to clearly articulate to the public the data quality standards it requires for qualitative water quality-related data and information in order to use such data for agency

²⁰ [Va. Code § 2.2-4000 et seq.](#)

²¹ See VA. DEP'T OF ENVTL. QUALITY, WATER QUALITY ASSESSMENTS, <https://www.deq.virginia.gov/water/water-quality/assessments> (last visited Mar. 16, 2022) (lacking any mention of non-water quality monitoring types of data: "During the Water Quality Assessment process, monitoring results are analyzed to determine if the water quality meets set standards and is clean enough for swimming, fishing and other uses."). See also DEQ 2022 WQA Guidance Manual (p 63 Non-Agency Data - lacking reference to non-monitoring types of data).

²² *Potomac Riverkeeper v. Wheeler*, 381 F. Supp.3d 1, 8 (D.D.C. 2019).

²³ *Id.*

²⁴ *Id.* at 9-10 (internal quotations omitted).

²⁵ Jacqueline Goodrum, *Quality Control: Potomac Riverkeeper v. Wheeler & Standards for Qualitative Citizen Water Quality Data in Virginia*, WINTERS, 46 WM & MARY ENVTL. L. & POL.'Y REV. # (2022) (forthcoming) (available at <https://scholarship.law.wm.edu/wmelpr/>).

decision-making and enforcement. Moreover, DEQ has devalued the qualitative data submitted by citizens, referring to it as “anecdotal” and assuming such data could not be reliable evidence of interference the public’s use of a water body.²⁶

But qualitative data—not just quantitative water quality monitoring data—can provide sufficient information for a state environmental agency to assess whether a waterbody is impaired or not.²⁷ While DEQ prefers to rely on quantitative data for impairment listings, in certain situations, qualitative data can provide credible, useful, and sufficient information about water quality.²⁸ This data is particularly relevant in situations where pollutants interfere with citizens’ recreational use of a water body.

Given DEQ’s lack of resources to monitor state waters or to always respond to reports of water quality problems in time to document those conditions, it is imperative that the state make the best and most complete use of data collected by the public. DEQ has developed clear guidance and standards for the use of quantitative chemical and physical data, as well as biological data, submitted by citizen monitors. Members of the public are both willing and competent to collect, prepare, record, and submit qualitative data in a way that satisfies reasonable data quality standards for use in state decision-making and enforcement processes, provided data quality expectations are clear.

This is particularly relevant for water quality assessment of a waterbody’s designated recreational uses because qualitative data can illuminate whether or not citizens will swim, fish, boat, or enjoy the aesthetics of the waterbody.²⁹ In fact, the observations of citizens and the most appropriate and necessary ones to make these assessments. Peoples’ personal risk tolerances or aesthetic preferences for using a water body for recreation may differ from the numeric pollutant values at which DEQ considers the water body to be impaired.

Waterbody users are the expert witnesses as to whether designated uses for human purposes are upheld or not since those judgements are based on human senses, perceptions, and values. If the qualitative citizen data, whether in the form of photos, videos, or public comments, shows clearly unuseable or undesirable conditions and indicates that citizens will not recreate in a water body

²⁶ *Id.*

²⁷ *Id.* (citing U.S. EPA, *Information Concerning 2014 Clean Water Act Sections 303(d), 305(b), and 314 Integrated Reporting and Listing Decisions* (2013), available at <https://www.epa.gov/tmdl> (explaining that “[a] number of States have listed waterbodies [as impaired] for nutrients and nutrient-related impacts based on a range of [assessment] methods [including] simple visual assessments . . .” and discussing examples of visual assessment methods from Oregon, Vermont, Montana, Delaware, Iowa and New Mexico) (hereafter EPA Memo); 9 Va. Admin. Code § 25-260-20 (plain language of narrative criteria states “interference” with recreational use constitutes impairment)).

²⁸ *Id.* (citing EPA Memo, *supra* note 8, at 7-11; *State Water Control Bd. v. Captain’s Cove Utility Co., Inc.*, # S.E.2d #, # (Va. Ct. App. 2008)).

²⁹ *Id.* (citing *Captain’s Cove Utility Co., Inc.*, # S.E.2d, at # (relying on qualitative evidence, including visual yellow condemnation signage at beach, as evidence that public would likely not recreate in water body regardless of whether water quality standards attained)).

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due to the condition of the water, whether actual or perceived, then this data provides a valuable indicator of poor water quality and possibly even interference with designated uses.³⁰

Accordingly, Virginia must develop clear, reasonable, and specific data quality guidance for qualitative water quality data and information.

Conclusion

The State Water Control Board has an important opportunity through this triennial review process to change practices that have left the promises of the Clean Water Act, the State Water Control Law, and the water quality standards regulation itself unfulfilled in numerous instances. Please look at the photographs and the evidence contained herein and take action to ensure that our standards truly serve "the purposes of" the Act.

Thank you for considering our comments and for your service.

Sincerely,

/s/ David Sligh
David Sligh
Conservation Director
Wild Virginia

/s/ Lewis Freeman
Lewis Freeman
Executive Director
Alleghany-Blue Ridge Alliance

/s/ Donna Pitt
Donna Pitt
Coordinator
Preserve Giles

/s/ Natalie Pien
Natalie Pien
President
Loudon Climate Project

/s/ Robin Broder
Robin Broder
Deputy Director
Waterkeepers Chesapeake

/s/ Russell Chisholm
Russell Chisholm
Co-chair
Protect Our Water, Heritage, Rights

/s/ Karen Campblin
Karen Campblin
Codirector
Green New Deal Virginia

/s/ Lee Williams
Lee Williams
Founding member
RVA Interfaith Climate Justice League

³⁰ *Id* (citing *Captain's Cove Utility Co., Inc.*, # S.E.2d, at # (explaining that Virginia water quality regulation "clearly contemplates that some substances may not violate water quality standards, while still interfering with designated uses of state waters" (citing 9 Va. Admin. Code § 25- 260-20))).

Attachment



March 31, 2021

David C. Whitehurst
Virginia Department of Environmental Quality
P.O. Box 1105
Richmond, VA 23218
David.Whitehurst@deq.virginia.gov

Re: Triennial Review Rulemaking to Adopt New, Update or Cancel Existing Water Quality Standards

Dear Mr. Whitehurst:

The Southern Environmental Law Center, James River Association, Potomac Riverkeeper Network, and Virginia Conservation Network submit the following comments on the Notice of Intended Regulatory Action (NOIRA) published by the State Water Control Board (Board) for the triennial review of Virginia’s water quality standards. The intent of the federally required triennial review process is “to protect designated and beneficial uses of state waters by adopting regulations that are technically correct, necessary and reasonable.”¹ The entire Water Quality Standards Regulation (9 VAC 25-260) is open for comment during this review, but the Virginia Department of Environmental Quality (DEQ) has prioritized the modification, addition, or deletion of water quality standards “to conform to EPA guidance, clarify state intent, implement state programs (e.g., permitting, monitoring, and assessments), and improve water quality or protect beneficial uses.”²

The triennial review process is a critical part of ensuring Virginia’s water quality standards reflect the latest science and respond to new and emerging threats to water quality, human health, and aquatic life in the Commonwealth. One such threat is the occurrence of per- and polyfluoroalkyl substances (PFAS) in state waters. PFAS are a family of thousands of toxic chemicals that have significant human health and environmental impacts. We urge the Board and DEQ to explicitly interpret existing narrative water quality standards to cover PFAS and to assess the development of numeric water quality standards for PFAS as part of the triennial review.

¹ Va. Regul. Town Hall, *Notice of Intended Regulatory Action (NOIRA) Agency Background Document: Triennial Review Rulemaking to adopt new, update or cancel existing water quality standards* 1 (Oct. 15, 2020), https://townhall.virginia.gov/L/GetFile.cfm?File=103\5637\9117\AgencyStatement_DEQ_9117_v2.pdf.

² *Id.* at 3.

I. PFAS are toxic chemicals that are harmful to human health and the environment.

PFAS are a toxic class of man-made chemicals that have been used in manufacturing since the 1940s.³ They are used in the production of coatings for non-stick cookware, stain-resistant carpeting and upholstery, grease-resistant pizza boxes, and waterproof outdoor gear.⁴ PFAS are found in numerous other consumer and industrial products, as well as in firefighting foam used at airports and military installations.⁵

It is well established that PFAS are a threat to the health and safety of the public. Two of the most commonly studied PFAS, perfluorooctanoic acid (PFOA) and perfluorooctyl sulfonate (PFOS), have been found to cause developmental effects to fetuses and infants, kidney and testicular cancer, liver malfunction, hypothyroidism, high cholesterol, ulcerative colitis, lower birth weight and size, obesity, decreased immune response to vaccines, reduced hormone levels and delayed puberty.⁶ Additionally, based upon a review of the existing literature, it is thought that PFAS exposure—because of its effect on the immune system—can exacerbate the effects of Covid-19.⁷ Epidemiological studies show that many of these same health outcomes result from exposure to other types of PFAS,⁸ including:

- Ammonium salt of hexafluoropropylene oxide dimer acid, or GenX (HFPO-DA) (CAS # 13252-13-6);⁹
- Perfluorobutyric acid (PFBA) (CAS # 375-22-4);¹⁰
- Perfluorobutanesulfonic acid (PFBS) (CAS # 375-73-5);¹¹
- Perfluorohexanoic acid (PFHxA) (CAS # 307-24-4);
- Perfluoroheptanoic acid (PFHpA) (CAS # 375-85-9);
- Perfluorononanoic acid (PFNA) (CAS # 375-95-1);
- Perfluorodecanoic acid (PFDA) (CAS # 335-16-2);
- Perfluoroundecanoic acid (PFUA) (CAS # 2058-94-8);¹²
- Perfluorobutane sulfonic acid (PFBS) (CAS # 375-73-5);¹³

³ EPA, *Basic Information on PFAS*, <https://www.epa.gov/pfas/basic-information-pfas> (last visited Feb. 25, 2021).

⁴ *See id.*; AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY (ATSDR), *PFAS: AN OVERVIEW OF THE SCIENCE AND GUIDANCE FOR CLINICIANS ON PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)* 3 (2019), https://www.atsdr.cdc.gov/pfas/docs/ATSDR_PFAS_ClinicalGuidance_12202019.pdf.

⁵ EPA, *supra* note 3.

⁶ Blum et al., *The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)*, 123 ENVTL. HEALTH PERSP. 5, A 107 (May 2015); EPA, *FACT SHEET ON PFOA & PFOS DRINKING WATER HEALTH ADVISORIES* 2 (Nov. 2016), <https://bit.ly/37o3eWp>.

⁷ *See* Lauren Brown, *Insight: PFAS, Covid-19, and Immune Response—Connecting the Dots*, BLOOMBERG LAW (July 13, 2020, 4:00 AM), <https://news.bloomberglaw.com/environment-and-energy/insight-pfas-covid-19-and-immune-response-connecting-the-dots>.

⁸ ATSDR, *TOXICOLOGICAL PROFILE FOR PERFLUOROALKYLS, DRAFT FOR PUBLIC COMMENT 5–6, 25–26* (June 2018), <https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf>.

⁹ *See generally* EPA, *DRAFT HUMAN HEALTH TOXICITY VALUES FOR GENX* (Nov. 2018), <https://bit.ly/3cXOAWU>.

¹⁰ ATSDR, *supra* note 8, at 1.

¹¹ *See generally* MINN. DEP'T OF HEALTH, *TOXICOLOGICAL SUMMARY FOR: PERFLUOROBUTANE SULFONATE* (Dec. 2017), <https://bit.ly/3dVXcyB>.

¹² ATSDR, *supra* note 8, at 1.

¹³ *See generally* EPA, *DRAFT HUMAN HEALTH TOXICITY VALUES FOR PFBS* (Nov. 2018), <https://bit.ly/2XVq58D>.

- Perfluorohexane sulfonic acid (PFHxS) (CAS # 355-46-4);
- Perfluorododecanoic acid (PFDoA) (CAS # 307-55-1);
- Perfluorooctane sulfonamide (PFOSA) (CAS # 754-91-6);
- 2-(N-Methyl-perfluorooctane sulfonamide) acetic acid (Me-PFOSA-AcOH) (CAS # 2355-31-9); and
- 2-(N-Ethyl-perfluorooctane sulfonamide) acetic acid (Et-PFOSA-AcOH) (CAS # 2991-50-6).¹⁴

The U.S. Environmental Protection Agency (EPA) established a lifetime health advisory of 70 parts per trillion (ppt) for the combined concentrations of PFOA and PFOS in drinking water in 2016.¹⁵ The Agency for Toxic Substances and Disease Registry (ATSDR) has since released an updated *Draft Toxicological Profile* for PFOA, PFOS, and other PFAS.¹⁶ The report suggests that many of the chemicals are much more harmful than previously thought. For instance, the minimum risk level—the amount of a chemical a person can eat, drink, or breathe each day without a detectable risk to health—was determined to be only 11 ppt for PFOA and 7 ppt for PFOS.¹⁷ States like Michigan, New York, New Hampshire, New Jersey, and Vermont have acknowledged the dangers of these compounds and have either proposed or finalized drinking water standards for various PFAS that are 20 ppt or lower.¹⁸

PFAS are also harmful to the environment. They have been shown to cause harmful effects in fish,¹⁹ amphibians,²⁰ mollusks,²¹ and other aquatic invertebrates²²—resulting in

¹⁴ ATSDR, *supra* note 8, at 1.

¹⁵ EPA, *supra* note 6, at 2.

¹⁶ ATSDR, *supra* note 8.

¹⁷ CAPE FEAR PUB. UTIL. AUTH. (CFPUA), *CFPUA Statement on Recently Released DHHS Report* (June 21, 2018), <https://bit.ly/2B6pOXi>; *see also* ATSDR, *supra* note 8.

¹⁸ Press Release, Mich. Dep't of Env't, Great Lakes, and Energy, *Michigan Moves Forward on PFAS in Drinking Water Rules* (Jun. 27, 2019), https://www.michigan.gov/egle/0,9429,7-135-3308_3323-500772--,00.html; *New York to Set Limits for Industrial Chemicals in Water*, AP (July 8, 2019), <https://bit.ly/2zvrv4m>; Annie Ropeik, *N.H. Approves Unprecedented Limits for PFAS Chemicals in Drinking Water*, NHPR (July 18, 2019), <https://bit.ly/3dXqYTF>; VT. AGENCY OF NAT. RES., *Agency of Natural Resources Initiates Rulemaking Process to Adopt Maximum Contaminant Level for PFAS Compounds*, <https://bit.ly/2XUv6y6> (last visited Mar. 23, 2021); Kyle Bagenstose, *New Jersey Approves Drinking Water Standards for Toxic PFAS Chemicals. Will Legal Battles Follow?*, USA TODAY (Apr. 7, 2020), <https://bit.ly/2AxAqPh>.

¹⁹Chen et al., *Perfluorobutanesulfonate Exposure Causes Durable and Transgenerational Dysbiosis of Gut Microbiota in Marine Medaka*, 5 ENVTL. SCI. & TECH. LETTERS 731–38 (2018); Chen et al., *Accumulation of Perfluorobutane Sulfonate (PFBS) and Impairment of Visual Function in the Eyes of Marine Medaka After a Life-Cycle Exposure*, 201 AQUATIC TOXICOLOGY 1–10 (2018); Du et al., *Chronic Effects of Water-Borne PFOS Exposure on Growth, Survival and Hepatotoxicity in Zebrafish: A Partial Life-Cycle Test*, 74 CHEMOSPHERE 723–29 (2009); Hagenaars et al., *Structure–Activity Relationship Assessment of Four Perfluorinated Chemicals Using a Prolonged Zebrafish Early Life Stage Test*, 82 CHEMOSPHERE 764–72 (2011); Huang et al., *Toxicity, Uptake Kinetics and Behavior Assessment in Zebrafish Embryos Following Exposure to Perfluorooctanesulphonic acid (PFOS)*, 98 AQUATIC TOXICOLOGY 139–47 (2010); Jantzen et al., *PFOS, PFNA, and PFOA Sub-Lethal Exposure to Embryonic Zebrafish Have Different Toxicity Profiles in terms of Morphometrics, Behavior and Gene Expression*, 175 AQUATIC TOXICOLOGY 160–70 (2016); Liu et al., *The Thyroid-Disrupting Effects of Long-Term Perfluoronanoate Exposure on Zebrafish (Danio rerio)*, 20 ECOTOXICOLOGY 47–55 (2011); Chen et al., *Multigenerational Disruption of the Thyroid Endocrine System in Marine Medaka after a Life-Cycle Exposure to Perfluorobutanesulfonate*, 52 ENVTL. SCI. & TECH. 4432–39 (2018); Rotondo et al., *Environmental Doses of Perfluorooctanoic Acid Change the Expression of Genes in Target Tissues of Common Carp*, 37 ENVTL. TOXICOLOGY & CHEM. 942–48 (2018).

developmental and reproductive impacts, behavioral changes, adverse effects to livers, disruption to endocrine systems, and weakened immune systems.²³ Moreover, PFAS are extremely resistant to breaking down in the environment, can travel long distances, and bioaccumulate.²⁴

II. Water quality standards must protect public health and the designated uses of state waters.

The objective of the Clean Water Act is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters,”²⁵ and this means, in part, ensuring that waters are swimmable and fishable “wherever attainable.”²⁶ A key part of implementing the Clean Water Act’s objectives is the development of water quality standards, which must “protect the public health or welfare, enhance the quality of water, and serve the purposes of” the Clean Water Act.²⁷ Water quality standards establish criteria—numeric and narrative—to protect (or not interfere with) the designated uses of waters.²⁸

In turn, Virginia’s State Water Control Law makes it the policy of the Commonwealth to protect and restore water quality to “permit all reasonable public uses and . . . support the propagation and growth of all aquatic life, including game fish, which might reasonably be expected to inhabit them,” “safeguard the clean waters of the Commonwealth from pollution,” “prevent any increases in pollution,” and “reduce existing pollution.”²⁹ All state waters in Virginia, including wetlands, are designated for recreational uses, the propagation and growth of balanced, indigenous populations of aquatic life, wildlife, and the production of edible and

²⁰ Ankley et al., *Partial Life-Cycle Toxicity and Bioconcentration Modeling of Perfluorooctanesulfonate in the Northern Leopard Frog (Rana Pipiens)*, 23 ENVTL. TOXICOLOGY & CHEM. 2745 (2004); Cheng et al., *Thyroid Disruption Effects of Environmental Level Perfluorooctane Sulfonates (PFOS) in Xenopus Laevis*, 20 ECOTOXICOLOGY 2069–78 (2011); Lou et al., *Effects of Perfluorooctanesulfonate and Perfluorobutanesulfonate on the Growth and Sexual Development of Xenopus Laevis*, 22 ECOTOXICOLOGY 1133–44 (2013).

²¹ Liu et al., *Oxidative Toxicity of Perfluorinated Chemicals in Green Mussel and Bioaccumulation Factor Dependent Quantitative Structure-Activity Relationship*, 33 ENVTL. TOXICOLOGY & CHEM. 2323–32 (2014); Liu et al., *Immunotoxicity in Green Mussels under Perfluoroalkyl Substance (PFAS) Exposure: Reversible Response and Response Model Development*, 37 ENVTL. TOXICOLOGY & CHEM. 1138–45 (2018).

²² Houde et al., *Endocrine-Disruption Potential of Perfluoroethylcyclohexane Sulfonate (PFECES) in Chronically Exposed Daphnia Magna*, 218 ENVTL. POLLUTION 950–56 (2016); Liang et al., *Effects of Perfluorooctane Sulfonate on Immobilization, Heartbeat, Reproductive and Biochemical Performance of Daphnia Magna*, 168 CHEMOSPHERE 1613–18 (2017); Ji et al., *Oxicity of Perfluorooctane Sulfonic Acid and Perfluorooctanoic Acid on Freshwater Macroinvertebrates (Daphnia Magna and Moina Macrocopa) and Fish (Oryzias Latipes)*, 27 ENVTL. TOXICOLOGY & CHEM. 2159 (2008); MacDonald et al., *Toxicity of Perfluorooctane Sulfonic Acid and Perfluorooctanoic Acid to Chironomus Tentans*, 23 ENVTL. TOXICOLOGY & CHEM. 2116 (2004).

²³ See supra notes 19–22.

²⁴ ATSDR, supra note 8.

²⁵ 33 U.S.C. § 1251(a).

²⁶ *Id.* § 1251(a)(2) (“[I]t is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water . . .”).

²⁷ *Id.* § 1313(c)(2)(A).

²⁸ See *id.*; 9 VAC 25-260-5.

²⁹ Va. Code § 62.1-44.2. “Pollution” includes the alteration of state waters that will, or is likely to, render them “(a) harmful or detrimental or injurious to the public health, safety, or welfare or to the health of animals, fish, or aquatic life; (b) unsuitable with reasonable treatment for use as present or possible future sources of public water supply; or (c) unsuitable for recreational, commercial, industrial, agricultural, or other reasonable uses . . .” *Id.* § 62.1-44.3.

marketable natural resources.³⁰

It is evident that, even in small concentrations, PFAS are detrimental to human, animal, and aquatic life and PFAS contamination in state waters may endanger the designated uses and public health.

III. The Board and DEQ should commit to explicitly interpreting existing narrative water quality standards to cover PFAS.

Virginia’s narrative water quality criteria require state waters to “be free from substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which contravene established standards or interfere directly or indirectly with designated uses of such water or which are inimical or harmful to human, animal, plant, or aquatic life.”³¹ As such, the presence of PFAS—a family of toxic chemicals with significant human health and environmental impacts—in state waters should already be controlled by Virginia’s narrative standards. In practice, however, DEQ has not applied the narrative water quality criteria to control these substances. The Board and DEQ should therefore explicitly interpret the existing narrative water quality standard as covering PFAS contamination. This could be done in several ways, including through the release of guidance, the application of the standard in Virginia Pollutant Discharge Elimination System (VPDES) permits, or the use of translation levels. For example, Colorado derived translation levels for PFAS concentrations from “federally-derived consensus findings regarding the toxicity of” various PFAS in order to apply the state’s narrative water quality standard to these compounds.³²

IV. The Board and DEQ should assess the development of numeric water quality standards for PFAS.

The Board and DEQ should assess the development of numeric water quality criteria for PFAS during the triennial review process. While establishing new water quality standards may be a time- and resource-intensive process, the threats posed by PFAS to water quality, public health, and wildlife populations in Virginia mean the Board and DEQ must take action. Although EPA has not yet developed numeric water quality standards for any PFAS, other states have developed—or are in the process of developing—numeric standards for various PFAS. For example, Michigan developed statewide numeric standards for PFOS and PFOA in surface waters by 2014.³³ Minnesota has site-specific numeric water quality standards for PFOS in state

³⁰ 9 VAC 25-260-10(A).

³¹ 9 VAC 25-260-20(A).

³² Colo. Water Control Comm’n, *Policy 20-1 Policy for Interpreting the Narrative Water Quality Standards for Per- and Polyfluoroalkyl Substances (PFAS)* 9 (July 14, 2020), https://drive.google.com/file/d/119FjO4GZVaJtw7YFvFqs9pmlwDhDO_eG/view?usp=sharing. Colorado “translated the narrative standards for a subset of” PFAS (PFOA, PFOS, PFNA, PFHxS, and PFBA). *Id.*

³³ MI ADC R 323.105, Rule 57 Surface Water Quality Values (Feb. 1, 2020), https://www.michigan.gov/documents/egle/egle-wrd-swas-rule57_662210_7.xlsx.

waters particularly affected by PFAS contamination,³⁴ and intends to evaluate and develop a statewide water quality standard for PFOS as part of its water quality standard work plan.³⁵ Wisconsin is currently developing surface water criteria for PFAS (including, at a minimum, criteria for PFOS and PFOA).³⁶ Additionally, many other states have established maximum contaminant levels for a variety of PFAS (beyond PFOS and PFOA) in drinking water.³⁷ We also urge the Board and DEQ to strongly consider developing numeric water quality standards for PFAS as a class, since many chemicals in this family have similar human health and environmental impacts.³⁸

To the extent that deficiencies in data or funding stand in the way of implementing numeric water quality standards for PFAS, the Board and DEQ should establish a plan to assess and develop such standards. Other states have examined interim strategies to help develop the data necessary to establish surface water criteria for PFAS. For example, environmental agencies in Vermont and New Hampshire have considered fish tissue contaminant monitoring to evaluate the impacts of PFAS on aquatic resources and to provide data that could support a fish consumption advisory and future numeric standards.³⁹ The plan generated by the Board and DEQ should identify specific and concrete funding and research needs, priorities, and action steps for developing and implementing PFAS water quality standards in Virginia.

V. Conclusion

Virginia's water quality standards must protect public health and the designated uses of state waters. Because PFAS—a family of thousands of toxic chemicals—present an emerging threat to Virginia's water quality, we urge Virginia to address this important issue during the triennial review process. In order to protect Virginia's waters, residents, and wildlife—and to comply with the Clean Water Act—the Board and DEQ should explicitly interpret the state's

³⁴ See Minn. Pollution Control Agency, *Water Quality Standards Technical Support Document: Human Health Protective Water Quality Criteria for Perfluorooctane Sulfonate (PFOS)*, wq-s6-61a (Dec. 2020), <https://www.pca.state.mn.us/sites/default/files/wq-s6-61a.pdf>. The PFOS water quality criteria applies in Lake Elmo and connected water bodies, Bde Maka Ska, and Pool 2 of the Mississippi River. *Id.* The state also established water quality criteria for PFOA, but those values are currently being revised. See, Minn. Pollution Control Agency, *Site-Specific Water Quality Criteria*, <https://www.pca.state.mn.us/water/site-specific-water-quality-criteria> (last visited Mar. 23, 2020). Minnesota has also established PFOS values for fish tissue in some waters, finding that “concentrations of PFOS can be more than 7000 times higher in fish tissue than surrounding water.” *Id.*

³⁵ Minn. Pollution Control Agency, *Proposed Water Quality Standards Work Plan for 2021-2023*, <https://www.pca.state.mn.us/water/proposed-water-quality-standards-work-plan-2021-2023> (last visited Mar. 23, 2021).

³⁶ Wis. Dep't of Nat. Res., Rule No. WY-23-19, Statement of Scope (Aug. 21, 2019), <https://dnr.wi.gov/news/input/documents/rules/WY2319ScopeStatement.pdf>.

³⁷ See supra note 18 and accompanying text. The Virginia Department of Health has compiled a workgroup (pursuant to HB 586, passed during the 2020 General Assembly) to study the occurrence of various PFAS in drinking water in Virginia and to develop recommendations for maximum contaminant levels for these chemicals. See Va. Dep't of Health, *Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water* (last visited Mar. 29, 2021), <https://www.vdh.virginia.gov/drinking-water/pfas/>.

³⁸ See supra notes 8–14 and accompanying text.

³⁹ See Vt. Agency of Nat. Res., *Statement of Vermont Plan Deriving Ambient Water Quality Standards for the Emerging Chemicals of Concern: Per- and Polyfluoroalkyl Substances (PFAS)* (Feb. 2020), <https://dec.vermont.gov/sites/dec/files/wsm/docs/VWQS-PFAS-Plan-Report-Final-20200204.pdf>; N.H. Dep't of Env'tl. Res., *State of New Hampshire: Plan to Generate PFAS Surface Water Quality Standards* (Dec. 30, 2019), <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/r-wd-19-30.pdf>.

narrative water quality standards as applying to PFAS and should assess and develop numeric water quality criteria for these chemicals.

Sincerely,

A handwritten signature in cursive script that reads "Carroll Courtenay".

Carroll Courtenay
Southern Environmental Law Center
201 West Main Street, Suite 14
Charlottesville, VA 22902

Anna Killius
James River Association
211 Rocketts Way, Suite 200
Richmond, VA 23231

Phillip Musegass
Potomac Riverkeeper Network
3070 M Street, NW
Washington, DC 20007

Pat Calvert
Virginia Conservation Network
103 East Main Street, Suite #1
Richmond, VA 23219