



VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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MINUTES REGULATORY ADVISORY PANEL MEETING Triennial Review Water Quality Standards (WQS) June 16, 2021

Welcome and Introductions

Advisory Panel Members and/or Alternates Present:

- Joe Wood, Ph.D./Patrick Fanning, *Chesapeake Bay Foundation*
- Grace LeRose, *City of Richmond*
- Kevin Whalen, *Friends of NF Shenandoah*
- Evan Branosky, *Home Builders Association of Virginia*
- Jamie Brunkow/Anna Killius, *James River Association*
- Phillip Musegaas, *Potomac Riverkeeper Network*
- Jamie S. Heisig-Mitchell/Richard Sedgley, *VA Association of Municipal Wastewater Agencies (VAMWA)*
- Martha Moore, *VA Farm Bureau Federation*
- Andrew Parker/James Taylor, *VA Manufacturers Association (VMA)*
- Leigh Mitchell, *Upper Mattaponi Indian Tribe/Regional Tribal Operations Committee*
- David Sligh, *Wild Virginia*
- Juan Vicenty-Gonzalez/Denise Hakowski, *EPA Region 3*
- Rene Hypes, *Dept. of Conservation & Recreation (DCR)*
- Todd Egerton/Aaron Moses, *Virginia Dept. of Health (VDH)*
- Ernie Aschenbach, *Dept. of Wildlife Resources (DWR)*

DEQ Staff Present:

Jutta Schneider (Facilitator), Jeff Steers, Bryant Thomas, Dr. Tish Robertson, David Whitehurst, Sandra Mueller, Tara Wyrick

Overview and Discussion of Triennial Review Potential Amendments

Ms. Schneider, Water Planning Division Director, opened the meeting with a brief review of Executive Order Number 51 pertaining to electronic meetings, introductions, purpose and expectations of the Regulatory Advisory Panel (RAP, or Panel), and that group is a public body subject to the Freedom of Information Act. A recording of the meeting is available at:

<https://attendee.gotowebinar.com/recording/1067092943136217346>

Jeff Steers, DEQ Director of Central Operations, gave a presentation regarding past and current agency strategies to address per- and polyfluoroalkyl substances (PFAS). He presented information on the general chemical properties of PFAS, where they are typically found in the environment, and some examples of sites that have experienced drinking water impacts. He explained that PFAS contamination is a nationwide issue and Virginia continues to support federal efforts at sites with known impacts to groundwater and to identify potential sources of PFAS to surface and ground waters with the priority near public water intakes. He stated that DEQ supports the Virginia Department of Health (VDH) in their development of a Virginia Maximum Contaminant Level (MCL) for drinking water, participates in the formation of an inter-agency response team, and have worked with EPA, Department of Defense, and VDH to develop a statewide risk communication plan. He stated that, unfortunately, DEQ currently has no dedicated budget to support these efforts.

Mr. Steers stated one of the strategy goals is to identify potential sources of PFAS releases through the review of known direct and indirect dischargers that are linked to PFAS usage in their manufacturing processes. There is also review of unlined landfills, airports, fire training facilities, Superfund and RCRA corrective action sites. These types of potential sites are inventoried and high potential discharges near public water intakes are mapped. DEQ is also convening sessions with the Virginia Association of Municipal Wastewater Agencies (VAMWA) and the Virginia Manufacturers Association (VMA) to develop strategies for understanding potential discharges, and potentially develop criteria for future self-monitoring requirements (effluent & bio-solids). He stated that Virginia is taking a measured approach looking at areas where we have concern, and then establish a monitoring program to address where there are most likely impacts to the environment. He also informed the Panel of two 2020 General Assembly House bills (HB586 and HB1257) that direct the establishment of workgroups, occurrence studies, and develop MCLs for PFOA, PFOS and other PFAS compounds, and 1,4-dioxane and chromium (VI).

Joe Wood asked if DEQ expects that the types of upgrades that are being pursued for other programs will have a positive impact on PFAS compounds. Mr. Steers replied that treatment technologies for finished drinking water require either reverse osmosis, carbon exchange, or other high level filtration but current treatment technologies at facilities receiving PFAS do not treat these compounds.

Jamie Brunkow asked Mr. Steers if he could provide a timeline for implementation of the PFAS strategy activities. Mr. Steers replied that they are almost a year behind where he hoped they would be but a priority is to begin discussions with VAMWA and VMA as well as VDH by the end of this year to discuss the best use of facility survey data.

David Sligh commented that it is possible that permit limits can be developed and applied where we don't have numeric criteria as was done with some metals prior to the existence of metals criteria. Mr. Sligh stated that he thinks PFAS should be a part of water quality assessments and be assessed under the narrative criteria.

Kevin Whalen commented that the highest exposure/risk to residents is drinking water and that carbon filtration works well to treat/remove. He also stated that VDH may want to consider recommending home filters for Virginia residents to help address the highest current risk, especially in areas of high risk. Mr. Whalen said the monitoring by DEQ and/or self-monitoring of PFAS is important and asked if the monitoring could be done earlier rather than waiting for each permit renewal. Mr. Steers believes we could open up any permit to include or require monitoring. He reminded the Panel that DEQ does not

have PFAS-dedicated resources and would need to divert resources from our current budget if to address problem areas.

Jutta Schneider then reviewed goals, guidelines, and expectations related to discussion of the Shenandoah River filamentous algae criteria development and would hear from panel members and have an open discussion with the goal of reaching consensus.

Joe Wood then gave a presentation regarding observations after reviewing Shenandoah algae monitoring data in the context other relevant Water Quality Standards. His examination of the algae data provided by DEQ led to questions regarding the relationship between algal biomass and percent algal cover and “How green is too green?” He stated his belief that chlorophyll ‘a’ as an index of biomass has benefits because it is objective and quantifiable but percent cover has the benefit of being easier for people to visualize. Dr. Wood stated that the proposed chlorophyll ‘a’ values of 150 mg/m² (2 month median) and 100 mg/m²-(seasonal median) appear reasonable. Dr. Wood posed the following questions to DEQ staff:

- How are monitoring data being used to determine the 150 and 100 values, rather than relying on literature/other states.
- Why are the proposed criteria being limited to just the monitored segments? It should apply at least across the Shenandoah, if not state-wide. Lack of DEQ resources should not be a reason for limiting the applicability of the criteria.
- Have we considered a combination approach where percent cover and chlorophyll values are both evaluated? Not necessarily advocating but wants to know our thoughts/plans.
- How will DEQ deal with assessment periods in which monitoring data is unavailable.

Andrew Parker asked if it practicably makes sense of the relationship between chlorophyll ‘a’ and percent cover. Logic would suggest it would seem the relationship between the two may be more linear. How did Dr. Wood arrive at the linear regression?

Dr. Robertson clarified by stating that filamentous algae exists in three dimensions while percent cover is two-dimensional. So, width vs aerial extent will level off. There is an explanation for an exponential regression. Percent cover is a top-down view of the surface cover. DEQ’s proposal includes two criteria, both with median values. We don’t yet have a good statistical distribution of chlorophyll ‘a’ data and DEQ would not want to use a parametric distribution because staff do not have enough data. Instead, DEQ is using a non-parametric assumption and approach. If Dr. Wood had presented the median vs the average of chlorophyll ‘a’ data, his results may have looked different.

Dr. Wood asked why the values of 100/150 are protective. He understood it to be based on Montana user survey/study and how/why are the monitoring data related to derivation of the criteria endpoint. Sandra Mueller responded saying DEQ is on the right track. The plateau of the regression curve indicates stabilization of the data and our proposed endpoint is at the point where the leveling of the data occurs which indicates DEQ staff are on the right track with the proposal. The data are informative of the proposed endpoints. The point regarding percent cover is important and is useful as both a line of evidence and also in communicating with the public.

Dr. Wood noted that DEQ has done a good job and while he thinks the criteria may be lower, he asked why is it limited it to only four sites/locations.

Phil Musegaas from Potomac Riverkeeper Network (PRKN) presented information that showed their involvement on the issue of nuisance algae growth which included reports, photos, and citizen reports. His presentation noted the following:

- A significant increase in recreational use of the river during the pandemic. Not sure it will continue into the future.
- They are also sending algal bloom reports to VDH through HAB hotline, especially where near PWS intakes.
- Primary concern is the limited applicability of the proposed standard, agreeing with CBF.
 - He understands the current proposed regulation is limited to only five segments on the river.
 - There are approx. 250 miles of river in the Shenandoah. The proposed segments are very limited.
- Concern with relying on a complaint-based monitoring regime.
- Wasn't clear on how the Shenandoah dataset was used in setting the proposed criteria as opposed to relying on Montana data.
- Algal blooms occur in deeper sections of the river. Limiting criteria only to wadeable areas misses sections of the river where blooms occur.
- The criteria identify five sites, but it appears DEQ will be monitoring six locations this year. Do the locations capture the areas of concern? It excludes portions of the South Fork Shenandoah and mainstem that are important.
- Limiting criteria to certain locations will limit availability of outside groups to monitor and submit data to DEQ, especially if data are collected using DEQ procedures
- Concern that limiting criteria to certain locations will not achieve the goal of assessing the degree of algal impairment in the Shenandoah River basin.
- Questions posed:
 - Interested in use of DEQ data to develop the criteria.
 - Did DEQ consider the correlation between areal coverage and chlorophyll values?
 - Will we be adding monitoring locations if resources allow?
 - How does the proposed 3-year process play into the assessment process?
- Closed noting the extensive work done by DEQ. Not able to comment on the exact numeric value, but cannot support a proposal that only includes limited sections of the river.

Clifton Bell of Brown & Caldwell consultants and representing VAMWA, gave a presentation regarding suggested recommendations for Shenandoah algae assessment methods. The presentation provided the following concepts, themes, and recommendations:

- An appropriate standard is very important to VAMWA to ensure investments are done appropriately.
- Major themes:
 - Unambiguous and persistent impairments should be identified
 - Avoid subjective determinations
 - Avoid short-lived, unavoidable, uncommon events
- Chlorophyll 'a' integrates other effects: coverage, density, filament length, total biomass
- Sampling method tends to target the highest of the high areas per a 2018 DEQ webinar describing where DEQ samples.
 - This biases higher results
 - Emphasizes need for a viable duration and frequency components
 - Feels that 100 mg/m² value is too strict with biases
- In addition to magnitude, the frequency and duration components are very important and should reflect normal variability.

- Factors that increase the duration and frequency include: light availability, seasonal temp, hard substrate, elevated nutrients, extended periods without scouring events
- 'Days of accrual' emphasizes the need for nutrient/frequency components
- Feels the two-month median is more reasonable than the seasonal average. Does not support the 100 mg/m² threshold.
- Overall he feels the DEQ proposal is appropriate, and supports a twice-in-6-year exceedance rate.
- Mr. Musegaas questioned to understand the statement of 'pristine' in one of the photographs referenced. Response: there were limited anthropogenic inputs into this segment.
- Kevin Whalen asked "Are aesthetics referring to the recreational use?" Response: Yes, aesthetics are a big part of that.
- Dr. Wood made a remark regarding the subjective issue raised. He pointed out that degradation is a subjective determination that is made using objective data and information. There is a subjective nature, but we have objective information about that. Second, the 100 mg/m² is a seasonal median which allows higher/lower values over the season. This tracks well with the Montana survey on user preferences. Last, achievability: regarding the issue of whether we can achieve these targets and is an important question but one best addressed in a TMDL, if that becomes necessary.
 - Response. Agree about the subjective comment. That's why VAMWA likes chlorophyll 'a' as an objectively measured value.
 - The MT and UT surveys support the 150 mg/m² based on majorities when looking a percentages.
 - On attainability --- he agrees with the point that it is an implementation question.
- David Sligh (WildVA). Regarding the magnitude, we are aiming for a target that maintains unimpaired conditions, and not something bringing us to the brink of a problem. Regarding the issue of non-acute conditions, the algal events can be more short term but still impact the beneficial use.

DEQ Presentation from Ms. Mueller regarding proposed criteria for filamentous algae in the Shenandoah River to protect the recreational use: Rationale behind criteria development.

Ms. Mueller covered many lines of evidence supporting the proposed magnitude of 100 mg/m² and 150 mg/m².

- Most primary sources of endpoints do not point to areal coverage, rather chlorophyll 'a' is the preferred endpoint.
- Literature supports the values DEQ has proposed.
- The numeric endpoints are defensible and scientifically valid
- Using existing surveys --- getting user inputs is important but it takes a lot of time and resources so DEQ staff used what was available. She noted a recent EPA publication about development of user perception surveys.
- Field experience and validation
 - Average nuisance condition complaints are generally above the proposed DEQ magnitude thresholds.
- Monitoring program may initiate based on complaints. Once we respond, any new sites are considered for routine monitoring in subsequent years.
- Duration
 - Dual criteria are proposed: a short term and a long term seasonal median.
 - Because the degree of FA and persistence determines whether the use is being met.
 - Two-month to protect against short-term effects or shorter windows of heavy algae growth
 - Seasonal during to protect against longer term effects over the recreation season.

- Frequency
 - How often the proposed criteria can be exceeded
 - DEQ is proposing a once-in-3 year exceedance. One exceedance of either criteria is allowed in a three year period.
 - Basis: statement from EPA that most systems can recover in about three years.
 - 1 in 3 is the basis of aquatic life toxics and what DEQ uses in lakes assessment
 - DEQ's proposal is not to be any more stringent than what is applied to aquatic life toxics.

Discussion notes:

- Mr. Musegaas: The Montana and Utah studies show a drop in desirability going from 110 mg/m² to 150 mg/m², especially in the UT survey. It appears the drop in UT is from ~92 to ~60%. Are we trying to set a threshold to be more protective, or to identify where a clear impairment exists? Ms. Mueller responded that this helps inform the basis for the dual endpoints
- Mr. Sligh (WildVA): doesn't the use of a median or average rely more on the number of samples? Wouldn't it make more sense to set an instantaneous number? Monthly sampling may or may not accurately capture conditions, which is why it is important to conduct a follow-up sampling. Ms. Mueller (DEQ) stated that it needs to be persistent vs a short term ephemeral condition. DEQ does not want to list impairments where they don't exist or the opposite. Our field experiences reveal a great deal of variability in conditions throughout the season. Our goal is to identify persistent nuisance conditions.
- Mr. Sligh argues that a short term episode does clearly impair the use. An acute event can cause impairment.
- Mr. Whelan: Is it known how MT gathered the data for the user perception survey? DEQ Response: MT started studying extensively in 2000. DEQ monitoring, both the frequency and number of locations, may not accurately capture conditions. Five locations at 250 miles of river seems insufficient to cover the entire basin. Ms. Mueller replied that DEQ monthly monitoring is good; did not mean to suggest it was insufficient. Rather, it does accurately reflect conditions, and the repeated sampling the following month gives DEQ staff confidence when excessive algal growth is persistent. DEQ feels the monitoring is at a fine enough resolution to identify nuisance algal growth.
- DEQ monitoring locations are used to represent a stream reach. Locations are selected at critical areas with appropriate conditions (wadeable, accessible). The location is representative of the stream reach and may be applied/extended for about a five-mile length.
- Dr. Wood: He stated concerns with the limitation of where the standard is applied. The vast majority of the evidence for the 150/100 mg/m² suggests it is appropriate to apply more extensively. The standards should not be a function of the resources DEQ has to conduct monitoring.
 - DEQ focused on the five identified reaches because this is where data is available and have sufficient justification to support the proposal. DEQ does not feel that the agency is at the point where the criteria can be more broadly applied because staff don't have the information or confidence that these are more broadly applicable.
 - DEQ staff believe the data support the criteria for these five segments. The segments extend for a reach, and any impairments would result in a TMDL that addresses the entire upstream watershed.
 - DEQ staff wish to be deliberate and measured, and feel this is the agency's current position.

- Dr. Wood did not understand how the data are being used to limit the applicability of the criteria considering DEQ arrived at the 150 mg/m² from literature and other surveys.
- The DEQ level of comfort with new segments or stretches of the river is not yet established. DEQ staff are comfortable with their field observations, measurements and data for the proposed segments.
- Mr. Bell noted that DEQ intentionally sites a station at a highest of the high (e.g. worst case, most conservative) location. Therefore, the persistence issue is very important and an instantaneous value is not supported by VAMWA.
- Andrew Clark and Martha Moore agreed with Mr. Bell.
- Mr. Musegaas: Regarding the rationale of tying the standard to the monitoring, it is conflating the designated use and the appropriate standard and the data used to assess the standard. Why the reluctance to take a different approach. Why not set the standards for the Shenandoah River basin and then start data collection at locations selected by DEQ? Locations can be changed over time by DEQ as needed. This seems more reasonable than setting geographically limited standards and any future complaints would require another rulemaking to address the problem and get to a use impairment which doesn't make sense. From a conservation organization perspective, a more broad monitoring initiative is not expected if the standard were expanded to the basin. The currently identified segments only represent a very small portion of the watershed. This seems ineffective and time-consuming.
 - Ms. Schneider expressed her appreciation for these arguments and explained that DEQ is viewing these criteria as very site-specific due to their difference from other standards development that DEQ has done. This focused, site-specific approach is DEQ's preference and experience and datasets are limited.
 - If we want to expand the coverage of the criteria, then we may want to consider pushing back the project to allow additional data collection.
- Dr. Wood suggested it would be helpful to specifically present how DEQ data connects to the proposed standards and it doesn't seem that our argument/concerns tie into the broad user surveys.

Ms. Schneider asked the Panel if the current proposal with limited applicability was a deal breaker for the RAP?

Mr. Musegaas said PRKN cannot support the proposed standards with the limited scope/applicability. He then asked that, if the standard goes forward as proposed and PRKN conducts full DEQ approved monitoring in an area outside of the delineated segments, what will DEQ do with the data we submit? Ms. Schneider explained that it may result in an observed effect determination for the river segment from which the data was collected but would need further discussion.

- VAMWA supports the 150 mg/m² but not the 100 mg/m². VAMWA is not comfortable with the 100 mg/m² and would not like it expanded.
- Mr. Sligh stated that WildVA could not support the proposal for the same reason Mr. Musegaas explained.
- Mr. Whalen stated that Friends of the North Fork Shenandoah River does not support for similar reasons.
- Dr. Wood (CBF) supports the DEQ proposal in the areas identified but not rejecting application to other areas in the river basin. There does not appear to be any reason or logic why the same standards would not apply more broadly.

- Jamie Brunkow (JRA) stated that JRA is not particularly focused on the area (Shenandoah River basin) but shares the concerns raised by others regarding limited applicability of the criteria as proposed.
- VAMWA will check with members for additional responses.
- Ms. Moore (VA Farm Bureau) is agreeable with the proposal as it currently stands.
- Mr. Parker (VMA) will report back at the next meeting.
- David Sligh (WildVA) stated both the spatial coverage and temporal components are of concern and he would oppose on both counts.
- Agencies: all will need to confer with management and get back to us at the next meeting.

Dr. Wood indicated that a description and process for adding standards/assessment for additional segments would be helpful.

Jamie Mitchell (HRSD) then gave a presentation on freshwater copper criteria on behalf of VAMWA.

- VAMWA supports maintaining the current hardness-based copper criteria which allows for two site-specific criteria development options; the Water Effects Ratio (WER) and Biotic Ligand Model (BLM).
- EPA has stated their preference for the BLM though States are authorized to adopt standards that make the most sense for the state and provided the criteria are scientifically defensible and protect the designated uses of State waters.
- She then cited the benefits of the WER which is an empirical study of the receiving water's effect on copper toxicity.
- It was asked if DEQ intends to require additional monitoring from point sources, or to conduct that monitoring in the WQM program.
 - The response was that will likely fall to permittees.

David Sligh (WildVA) gave a presentation for the Need for Implementation Procedures for Narrative Criteria in WQS. He stated that:

- Narrative criteria have existed in the VA WQS for decades.
- Virginia has not used some parts of the narrative criteria though they serve a purpose and should be used where there aren't numeric criteria.
- He intends to propose specific recommendations for how DEQ can implement the narrative criteria.
 - Regarding turbidity criteria, he stated there is another rulemaking considering this topic and that narrative criteria support numeric criteria and do not need to be mutually exclusive.
 - The subjective nature of the issue makes it difficult to apply. He asked how one draws the line to say it is an acute vs long term problem and what a violation of WQS is. He feels there are clear violations that should be addressed.

Presentation on Numeric Nutrient Criteria in WQS Regulations from David Sligh

- He stated that DEQ's current approach only address the symptoms of nutrient over-enrichment after problems have been identified.
- The most recent DEQ integrated report estimates that only 50% of VA stream miles were optimal for phosphorus concentrations.
- The programs that has in place to address nutrient issues are valid and are admirable but they're not fixing the problem.

- The Academic Advisory Committee (AAC) contracted by DEQ has conducted sophisticated analyses and generated some ideas on how to actually adopt and implement numeric criteria for nutrients.
- DEQ should use this information to promulgate and implement numeric nutrient criteria.
David: Why haven't we moved forward on this?
- He asked why DEQ has not done anything with the recommendations from the AAC.

Ms. Schneider responded that at the next meeting staff will report back to the Panel regarding the various activities that have been going on regarding nutrient criteria development/implementation and where the agency stands with the academic advisory recommendations. She also stated that DEQ has incorporated elements of AAC recommendations into a nutrient strategy.

Dr. Wood stated he appreciates the frustration with the adoption of water quality criteria but also notes the challenges to DEQ. As an example, the James River chlorophyll 'a' work resulted in nutrient limits going into permits that are protective. He asked if DEQ can share strategic nutrient plans for WQS.
Response: Yes, of course.

Ms. Schneider state that there can be more discussion on these topics at the June 30 meeting. She also cited resource constraints and implementation as ongoing issues and that nutrient issues have been focused on Chesapeake Bay nutrient TMDL implementation. Much progress has been made and VA is a leader in implementation of nutrient controls. We are aware of our limitations on ability to tackle a broad range of issues.

Jamie Brunkow of JRA then presented ongoing concerns his organization has had for many years regarding excessive temperatures in portions of the James River near a Dominion Power generating facility in Chesterfield County. His concerns were:

- Concern about the temperature of the water being discharged by the facility.
- VDH has set 104° F as a max temperature for hot tubs and spas.
- Ambient waters exceed this temperature in July and August.
- DEQ previously stated in a VPDES permit response that WQS should be revised to address issues of human health for primary contact recreation.
- This issue was raised in 2016 TR and was told it was too late to address.
- He submitted as a comment with the NOIRA and is raising it again. It is very hot water, and prevents the beneficial recreational use.
- Was this issue considered/looked at? Would DEQ consider establishing a criterion for human health?

Ms. Schneider stated that the issue will be added to the list of topics for the June 30th meeting.

Next Meeting(s):

- Attempt to finalize many of the topics from today.
- Follow-up on topics from today:
 - Shenandoah algae
 - Provide updated draft WQS language for review before next meeting
 - BLM/WER
- Next meeting includes: mixing zones, dinitrophenol, WER/BLM, and three new items raised today.
- It will likely be a full day meeting as well.

- DEQ anticipates moving to an in person meeting unless the majority of the RAP members felt it impracticable or unsafe. Ms. Schneider polled the RAP regarding format preferences. The majority of the remaining RAP members preferred a virtual meeting.

The floor was opened for Public Forum comments. There were no comments from the general public. Ms. Schneider thanked all for their participation. The meeting was adjourned at approximately 4:30 p.m.