



Virginia  
Regulatory  
Town Hall

## Proposed Regulation Agency Background Document

<b>Agency Name:</b>	Department of Environmental Quality
<b>VAC Chapter Number:</b>	9 VAC 25-260-5 et seq.
<b>Regulation Title:</b>	Water Quality Standards
<b>Action Title:</b>	Amendment to the Water Quality Standards to update numerical criteria and/or narrative criteria for dissolved oxygen.
<b>Date:</b>	7/5/00

This information is required pursuant to the Administrative Process Act (§ 9-6.14:9.1 *et seq.* of the *Code of Virginia*), Executive Order Twenty-Five (98), Executive Order Fifty-Eight (99), and the *Virginia Register Form, Style and Procedure Manual*. Please refer to these sources for more information and other materials required to be submitted in the regulatory review package.

### Summary\*

*Please provide a brief summary of the proposed new regulation, proposed amendments to an existing regulation, or the regulation proposed to be repealed. There is no need to state each provision or amendment or restate the purpose and intent of the regulation; instead give a summary of the regulatory action and alert the reader to all substantive matters or changes. If applicable, generally describe the existing regulation.*

Water Quality Standards consist of designated uses of the water body and narrative and numeric criteria that protect those uses by describing water quality in general terms and specifically as numerical limits for physical, chemical and biological characteristics of water.

The State Water Control Board is proposing amendments to the State's Water Quality Standards Regulation at 9 VAC 25-260-50, 55, 310, 380, 390,410, 420, 440, 470, 480, 520 and 530. The amendments will change the State's approach to assessment of dissolved oxygen water quality criteria in certain waters that are naturally low in dissolved oxygen concentration. These waters are the deep stratified tidal waters including the Chesapeake Bay and its tidal tributaries, the deep stratified waters in lakes and reservoirs and areas of stagnant waters with minimal flow velocity

and large amounts of decomposing vegetation. These conditions are considered “natural” and should not be considered water quality standards violations. This will enable water quality assessments staff to make better decisions when doing assessments for Clean Water Act 305(b) reports and 303(d) listings. Currently, even waters that are naturally low in dissolved oxygen must be listed as impaired with a schedule for development of a total maximum daily load. This new section would be used during assessments as a basis for determining whether or not to list such waters as “impaired”.

### Basis\*

*Please identify the state and/or federal source of legal authority to promulgate the regulation. The discussion of this statutory authority should: 1) describe its scope and the extent to which it is mandatory or discretionary; and 2) include a brief statement relating the content of the statutory authority to the specific regulation. In addition, where applicable, please describe the extent to which proposed changes exceed federal minimum requirements. Full citations of legal authority and, if available, web site addresses for locating the text of the cited authority must be provided. Please state that the Office of the Attorney General has certified that the agency has the statutory authority to promulgate the proposed regulation and that it comports with applicable state and/or federal law.*

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§ 62.1-44.15(3a) of the Code of Virginia, as amended, mandates and authorizes the Board to establish water quality standards and policies for any State waters consistent with the purpose and general policy of the State Water Control Law, and to modify, amend or cancel any such standards or policies established. The federal Clean Water Act at 303(c) mandates the State Water Control Board to review and, as appropriate, modify and adopt water quality standards. The corresponding federal water quality standards regulation at 40 CFR 131.6 describes the minimum requirements for water quality standards. The minimum requirements are use designations, water quality criteria to protect the designated uses and an antidegradation policy. All of the citations mentioned describe mandates for water quality standards.

Web Address sites where citations can be found:

Federal Regulation web site

<http://www.epa.gov/epahome/cfr40.htm>

Clean Water Act web site

<http://www4.law.cornell.edu/uscode/33/1313.html>

State Water Control Law (Code of Virginia) web site

<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.2>

<http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+62.1-44.15>

The content of the statutory authority is related to the specific regulation in that the amendments are modifications of existing narrative criteria that will protect designated uses and criteria and designated uses are requirements of the water quality standards.

The proposed amendments are consistent with federal requirements.

The Office of the Attorney General has certified that the agency has the statutory authority to promulgate the proposed regulation and it comports with applicable state and/or federal law.

### Purpose\*

*Please provide a statement explaining the need for the new or amended regulation. This statement must include the rationale or justification of the proposed regulatory action and detail the specific reasons it is essential to protect the health, safety or welfare of citizens. A statement of a general nature is not acceptable, particular rationales must be explicitly discussed. Please include a discussion of the goals of the proposal and the problems the proposal is intended to solve.*

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Water Quality Standards establish the requirements for the protection of water quality and of beneficial uses of these waters. The purpose of this rulemaking is to update the State's dissolved oxygen water quality criteria to recognize that naturally low dissolved oxygen conditions may occur in some waters. The regulation currently does not do this to a level that allows water quality assessments and other regulatory actions to make decisions based on natural conditions. Rather, they are required to make decisions on the existing numerical criteria for dissolved oxygen, which do not take into account natural conditions. Waters that may have naturally occurring low dissolved oxygen include the deepest stratified tidal waters of the Chesapeake Bay and its tidal tributaries, the deepest waters in stratified lakes and areas of stagnant waters with minimal flow velocity and decomposing vegetation. These conditions typically occur during the summer months.

The amendments are needed because if they are not adopted, the existing regulation may impose unreasonable and unnecessary treatment technologies on all point and non-point users of the water bodies. These treatment technologies will be imposed via the development of total maximum daily loads for water bodies not meeting water quality standards. Currently, many waters are or will be listed as impaired for dissolved oxygen even though the low dissolved oxygen levels may be partially or fully due to naturally occurring conditions.

This provision of the regulation is justified from the standpoint of the public's health, safety or welfare in that it allows for the protection of designated uses of the water bodies without imposing unreasonable requirements on the Commonwealth and its citizens. Proper criteria protect water quality and living resources of Virginia's waters for consumption of fish and shellfish, recreational uses and conservation in general.

### Substance\*

*Please identify and explain the new substantive provisions, the substantive changes to existing sections, or both where appropriate. Please note that a more detailed discussion is required under the statement providing detail of the regulatory action's changes.*

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A new section (9 VAC 25-260-55) is proposed to recognize that dissolved oxygen concentrations may fall below established criteria in Class II tidal waters and lakes and reservoirs in Classes III, IV, V and VI due to naturally occurring stratification which prevents reaeration of deep waters. This new section also provides the procedures describing how the Board will identify these waters. Identification of waters would be an iterative process; therefore, the proposal was drafted to allow for periodic review of these types of waters. This new section is footnoted in the existing table of numerical criteria for dissolved oxygen by four asterisks \*\*\*\*. The new language states that when the Board determines these natural conditions are causing the decrease in dissolved oxygen, then the dissolved oxygen concentrations do not constitute a violation of the water quality standards. The intent of this new language is to allow staff to make better decisions when doing assessments for Clean Water Act 305(b) reports and 303(d) listings. Currently, even waters that are naturally low in dissolved oxygen must be listed as impaired with a schedule for development of a total maximum daily load. This new section would be used during assessments as a basis for determining whether or not to list such waters as “impaired”. The public would be allowed to comment on this assessment determination and public participation requirements mentioned in 9 VAC 25-250-55 are expected to be included with the 303(d) list notifications.

We are also proposing to add a new special standard “y” in 9 VAC 25-260-310 that would apply to waters naturally low in dissolved oxygen because of decomposition of vegetation combined with minimal flow velocities (that is, areas of stagnant water). Unlike the proposed section 9 VAC 25-260-55, specific waters are listed in this section based on existing monitoring data that indicate naturally low dissolved oxygen concentrations because of decomposition of vegetation combined with minimal flow velocities. The result of this special standard “y” is that it allows staff to make better decisions when doing assessments for Clean Water Act 305(b) reports and 303(d) listings. Currently, most of the waters proposed for inclusion under special standard “y” appear on the Clean Water Act 303(d) list (list of impaired waters). To address these waters, EPA has acknowledged that Virginia may modify its water quality standards to account for natural conditions. Once these amendments are effective, the agency would then have the regulatory basis to work with EPA to remove these waters from the 303(d) list.

In the future, if new waters are found that exhibit these naturally low dissolved oxygen concentrations due to decomposition and minimal flow velocities, then these waters must be added via a separate rulemaking.

Finally, the special standard “y” has been added to the appropriate column in the River Basin Section Tables (sections 9 VAC 25-260-390, 410, 420, 440, 470, 480, 520 and 530). Also, explanatory language has been added to 9 VAC 25-260-380 to instruct the reader of the River Basin Tables that whenever they see a “y” next to a basin description that they must refer to the specific water listed in 9 VAC 25-260-310.y(2)

## Issues\*

*Please provide a statement identifying the issues associated with the proposed regulatory action. The term “issues” means: 1) the primary advantages and disadvantages to the public, such as individual*

*private citizens or businesses, of implementing the new or amended provisions; 2) the primary advantages and disadvantages to the agency or the Commonwealth; and 3) other pertinent matters of interest to the regulated community, government officials, and the public. If there are no disadvantages to the public or the Commonwealth, please include a sentence to that effect.*

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The primary advantage to the public is that the standard more accurately portrays actual stream conditions and will result in more reasonable and accurate water quality assessments. The disadvantage is that the public may see this as an attempt to “lower the bar” on water quality or that DEQ is trying to change standards just to remove waters from the 303(d) list to avoid Total Maximum Daily Loads. These concerns ignore the fact that Total Maximum Daily Loads should be developed where there are manmade impacts and not where natural quality may be lower, but still ecologically acceptable. It also ignores the importance of setting realistic, yet protective goals in water quality management. In response to the Virginia General Assembly Water Quality Monitoring, Information and Restoration Act of 1997, the Virginia Water Quality Academic Advisory Committee 1998 report stated that DEQ should provide specific criteria by which natural impairment can be determined and that the identification of naturally impaired waters is appropriate. This rulemaking is the first step in making that identification.

The primary advantage to the agency is that this recognition of waters as “naturally low in dissolved oxygen” is written to allow assessments staff to make better decisions about which waters should be included on 303(d) lists based on existing data. This should result in a positive impact to the agency as existing resources can concentrate on waters exceeding water quality standards due to manmade impacts rather than naturally occurring conditions. There are no disadvantages to the agency or the Commonwealth.

Another issue is how the Board is going to make the determination that low dissolved oxygen concentrations are due to natural conditions. The proposal states that the Board will make the determination of natural water quality based upon an evaluation of aquatic life uses, habitat, available monitoring data, available computer modeling results or other accepted scientific principles. The Board is requesting comments from the public on how the Board should use these parameters to make the determination of natural water quality

### Locality Particularly Affected\*

*Please identify any locality particularly affected by the proposed regulation. Locality particularly affected means any locality which bears any identified disproportionate material impact which would not be experienced by other localities.*

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The majority of these amendments are statewide in nature and will not affect any one locality more than another. The determination that a water body has naturally low dissolved oxygen could occur anywhere in any locality. In addition, if a water body is determined to have a water body with naturally occurring low dissolved oxygen, the recognition of this will not incur any financial impact on the locality.

## Public Participation\*

*Please include a statement that in addition to any other comments on the proposal, the agency is seeking comments on the costs and benefits of the proposal.*

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In addition to any other comments, the Board is seeking comments on the costs and benefits of the proposal. Also, the proposed regulation states that a determination of natural water quality should be based upon an evaluation of aquatic life uses, habitat, available monitoring data, available computer modeling results or other accepted scientific principles. The Board requests comments on how the Board should use these parameters to make the determination of natural water quality.

Anyone wishing to submit written comments for the public comment file may do so at the public hearing or by mail. Written comments should be signed by the commenter and include the name and address of the commenter. In order to be considered the comments must be received by the close of the comment period. Oral comments may be submitted at the public hearing.

Opportunity for formal hearing: The Board will hold a formal hearing at a time and place to be established, if a petition for such a hearing is received and granted. Affected persons may petition for a formal hearing concerning any issue of fact directly relevant to the legal validity of the proposed action. Petitions must meet the requirements of the Board's Procedural Rule No. 1 (9 VAC 25-230-130 B) and must be received by the contact person no later than 30 days after publication of the Notice of Public Comment Period in the Virginia Register of Regulations.

## Fiscal Impact

*Please identify the anticipated fiscal impacts and at a minimum include: (a) the projected cost to the state to implement and enforce the proposed regulation, including (i) fund source / fund detail, (ii) budget activity with a cross-reference to program and subprogram, and (iii) a delineation of one-time versus on-going expenditures; (b) the projected cost of the regulation on localities; (c) a description of the individuals, businesses or other entities that are likely to be affected by the regulation; (d) the agency's best estimate of the number of such entities that will be affected; (e) the projected cost of the regulation for affected individuals, businesses, or other entities; and (f) an estimate of the impact of the proposed regulation upon small businesses as defined in § 9-199 of the Code of Virginia or organizations in Virginia.*

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There are no negative fiscal impacts to the state to implement and enforce the proposed regulations. However, the recognition of waters as “naturally low in dissolved oxygen” is written to allow assessments staff to make better decisions about which waters should be included on 303(d) lists based on existing data. Although some staff time may be needed to make the determination that the low dissolved oxygen concentrations are caused by natural conditions, the overall impact of these amendments may result in a positive fiscal impact to the agency. This positive impact may occur because additional monies will not be spent to develop unnecessary total maximum daily loads in waters where the water quality standards cannot be

achieved due to naturally occurring conditions. Existing resources can concentrate on waters exceeding water quality standards due to manmade impacts rather than natural conditions.

The majority of these amendments are statewide in nature and will not affect any one locality more than another. The determination that a water body has naturally low dissolved oxygen could occur anywhere in any locality. In addition, if a water body is determined to have a water body with naturally occurring low dissolved oxygen, the recognition of this will not incur any financial impact on the locality.

These regulations are not expected to impact Virginia Discharge Elimination System permitted facilities that discharge to these waters nor intended to be a lessening of restrictions of permit limits for dissolved oxygen.

There are no impacts on small businesses.

## Detail of Changes

*Please detail any changes, other than strictly editorial changes, that are being proposed. Please detail new substantive provisions, all substantive changes to existing sections, or both where appropriate. This statement should provide a section-by-section description - or cross-walk - of changes implemented by the proposed regulatory action. Where applicable, include citations to the specific sections of an existing regulation being amended and explain the consequences of the proposed changes.*

In existing section 9 VAC 25-260-50 a footnote (indicated by four asterisks \*\*\*\*\*) is added in the existing table of numerical criteria for dissolved oxygen. The footnote instructs the reader to see section 9 VAC 25-260-55 (described below) for special provisions for waters naturally low in dissolved oxygen.

A new section (9 VAC 25-260-55) is proposed to recognize that dissolved oxygen concentrations may fall below established criteria in Class II tidal waters and lakes and reservoirs in Classes III, IV, V and VI due to naturally occurring stratification which prevents reaeration of deep waters. It also states that these dissolved oxygen concentrations do not constitute a violation of the numerical water quality criteria as long as the board determines that these concentrations do not fall below the natural water quality resulting from stratification and depth. It also states that the Board may periodically make the determination of natural water quality.

Section 9 VAC 25-260-55-A.1. describes how the Board will make the determination of natural water quality. The Board must base the determination on an evaluation of aquatic life uses, habitat, available monitoring data, available computer modeling results or other accepted scientific principles.

Section 9 VAC 25-260-55A.2 provides for publication of a notice for public comment whenever the Board makes the determination of natural water quality.

Section 9 VAC 25-260-55.B states that the Board will maintain a list of waters where determinations of natural water quality have been made.

In existing section 9 VAC 25-260-310, a new special standard “y” is added. This special standard applies to waters naturally low in dissolved oxygen because of decomposition of vegetation combined with minimal flow velocities (that is, areas of stagnant water). Special standard y at (1) states that these waters have naturally low dissolved oxygen concentrations and that these concentrations do not constitute a violation of the numerical water quality criteria if the concentrations do not fall below the natural water quality resulting from minimal flow velocity and decomposition of vegetation. It also states that these designations under this special standard are determined by the Board based upon an evaluation of the aquatic life uses, habitat, available monitoring data, available computer modeling or other accepted scientific principles.

Section 9 VAC 25-26-0-310-y (2) lists the specific waters where the special exemption described above applies. The waters are listed by river basin.

Explanatory language has been added to 9 VAC 25-260-380 to instruct the reader of the River Basin Tables that whenever they see a “y” next to a basin description that they must refer to the specific water listed in 9 VAC 25-260-310-y (2).

Special standard “y” has been added to the appropriate column in the River Basin Section Tables in sections 9 VAC 25-260-390, 410, 420, 440, 470, 480, 520 and 530.

## Alternatives

*Please describe the specific alternatives to the proposal considered and the rationale used by the agency to select the least burdensome or intrusive alternative that meets the essential purpose of the action.*

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The agency considered whether we should adopt numerical criteria for these waters or a narrative criterion to describe the natural condition. In doing that the agency sought the advice of an ad hoc advisory committee and reviewed the Chesapeake Bay Living Resources Goals and Environmental Protection Agency criteria. It was decided that a narrative criterion, which specifically recognized the natural conditions that were causing the low dissolved oxygen conditions, would suit the needs of the agency and the public at this time.

The agency believes that the proposed regulation is the least burdensome alternative to the regulated community that fully meets the stated purpose of the proposed regulation. It is expected to have no impact on the regulated community (discharge permits will continue to be issued under current numerical criteria) but water quality assessments staff will be able to make better decisions about which waters should be included on 303(d) impaired waters lists. This



may result in a positive fiscal impact to the agency as existing resources and additional monies will not be spent to develop unnecessary total maximum daily loads in waters where the water quality standards cannot be achieved due to naturally occurring conditions. Existing resources can concentrate on waters exceeding water quality standards due to manmade impacts rather than natural conditions.

### Public Comment

*Please summarize all public comment received during the NOIRA comment period and provide the agency response.*

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**Nancy Alexander** - requested the agency implement the participatory approach and convene a technical advisory committee since the change may impact numerous other water quality improvement programs for the Bay.

**Lester Bleri, Jr.** - requested the agency implement the participatory approach and convene a technical advisory committee since the change may impact numerous other water quality improvement programs for the Bay.

**Chesapeake Bay Foundation (Jeff Corbin, Staff Scientist)** – recommended the agency implement the participatory approach and convene a technical advisory committee with equal representation of environmental organizations and regulated community on the committee. The adoption of Chesapeake Bay Living Resource Goals is inappropriate since water quality standards follow an accepted scientific process based on a statistical evaluation of analytical results from laboratory, field or clinical studies. This scientific process should not be substituted with the adoption of negotiated “goals”. Water quality standards should meet the objectives of scientific rigor and water quality improvement. Most natural conditions in impaired waters are exacerbated by nutrient enrichment and nutrient reduction programs will improve these conditions. Therefore, DEQ must assure that only the natural dissolved oxygen fluctuations should be addressed. A scientific approach to modifying this standard is one which limits the geographic, spatial (lateral and vertical) and temporal regions of applicability. This is a technically challenging modification due to the lack of sufficient data or scientific understanding. Therefore, a modification of the dissolved oxygen standard may not be appropriate at this time and that alternative should have been included in the notice.

**Friends of the North Fork of the Shenandoah River (William M. Galdos, President)** - requested the agency implement the participatory approach and convene a technical advisory committee since the change may impact numerous other water quality improvement programs for the Bay.

**Elizabeth Alexander Gibbs** - requested the agency implement the participatory approach and convene a technical advisory committee since the change may impact numerous other water quality improvement programs for the Bay.

**James River Association (Patricia Jackson, Executive Director)** – Suggested the use of a technical advisory committee and requested equal representation of the scientific, regulated and

environmental communities on the committee. This rulemaking is a response to the Chesapeake Bay and its tidal tributaries as “impaired waters” under the 303(d) list. Rather than make an effort to improve water quality, this proposal is working towards reducing the standard, which is unacceptable. The Chesapeake Bay agreement is a commitment to improve water quality, and this proposal is changing the definition of acceptable water quality. Many of the living resources of the Bay system are reduced. Their recovery demands a commitment to improve water quality, not to reduce our efforts. The impairments of the Bay system are due to a combination of natural conditions and nutrient enrichment and it is difficult to assess the impacts of each component enough to justify the reduction of only one. A modification of the dissolved oxygen standard may not be appropriate at this time and that alternative should have been included in the notice.

**David Sarr** – requested the agency implement the participatory approach and convene a technical advisory committee since the change may impact numerous other water quality improvement programs for the Bay.

**Southern Environmental Law Center (Katherine Slaughter)** – requested the agency convene a technical advisory committee to study the issues of water quality standards to address issues relating to dissolved oxygen in the Chesapeake Bay. The impact will effect many regulatory activities and will affect tributary strategies and living resources endpoints. The committee should include a wide range of technical expertise from the academic, environmental and regulated communities.

**Virginia Association of Municipal Wastewater Agencies (Norman E. LeBlanc, Chair VAMWA Technical Committee)** - Water Quality Standards should be technically correct and reasonable. The existing D.O. criteria were benchmarks that were published with cautions for their use in salt waters and stratified lakes. Virginia did not recognize these limitations of the D.O. criteria in regulations and as a result, waters may be inappropriately listed on the 303(d) list. The current D.O. criteria only address the impact on individual organisms and do not account for population dynamics. The current criteria do not address acute exposures of biota to D.O. concentrations that can be experienced over finite durations without impact to biota. The current criteria do not address exposure to D.O. over time and assumes continuous exposure. This is not reasonable because planktonic larvae and juveniles are transported horizontally and vertically in surface waters due to physical and behavioral processes. The standards should take into account the D.O. concentrations that have an impact at the population level and the life stage and species present in the water in question. Hydrodynamic characteristics of a water body that are permanently modified by man must be considered to address the “reasonable and attainable” goals and emphasizes that standards must account for site-specific conditions. Zones of application of the criteria should be adopted including areas that cannot meet D.O. concentrations due to the combination of reduced reoxygenation and sediment oxygen demand. The best approach to setting criteria is the values using ambient data or EPA’s marine methodology in combination with exposure data specific to actual species and life stages present. Virginia may have to incorporate site-specific and time-specific benchmarks throughout the State. This may require completely new criteria rather than just a modification of the current ones. There are technical concerns with the Chesapeake Bay Goals and the EPA draft saltwater D.O. criteria. However, VAMWA supports EPA’s general approach to developing and implementing D.O. criteria that predict the impacts of variable exposures. VAMWA supports the use of zones in

determining whether aquatic life uses are supported; however, these zones should not be generalized. The pycnocline, for example, should be evaluated at the time of data collection. The existing narrative exclusion in the Virginia Water Quality Standards should be refined similarly to the regulations set forth in Maryland and West Virginia. The clarification should provide that natural conditions do not constitute a violation of water quality standards and that the naturally occurring values automatically serve as the applicable standard. DEQ should also ensure that these clarifications address the specific aspects of the existing provisions that led to a misinterpretation of the narrative by EPA. First, DEQ should use the word “automatic” in the provision or make it clear the provision operates automatically. Second, DEQ should eliminate the phrases “from time to time” and “established limits” in the new provision. Thirdly, DEQ should clarify the relationship between the natural condition provision and the special (site specific) standards provisions. A large amount of data and resources will be required to develop implementation guidance for D.O. standards to determine support of aquatic life uses. VAMWA supports the participatory approach for the development of the new D.O. criteria and implementation guidance and offers their resources.

**Virginia Department of Conservation and Recreation (David Brickley, Director)** – recommended the participatory approach to ensure that all interested parties are involved. The changes could effect ongoing permitting, monitoring, modeling and water uses restrictions.

**Virginia Forest Watch (Dave Muhly)** - requested the agency implement the participatory approach and convene a technical advisory committee since the change may impact numerous other water quality improvement programs for the Bay.

**Virginia Institute of Marine Science (Eugene Burreson, Director for Research and Advisory Services)** – There is a lack of monitoring data of sufficient scale to provide accurate information on D.O. dynamics in the water column. Data is available on D.O. dynamics over short temporal and spatial scales. These data demonstrate the short-term variability of dissolved oxygen in estuarine environments and were used to guide their recommendations but are not sufficient to support specific recommendations for all of Virginia’s tidal waters. Direct impacts from anoxia/hypoxia include changes in sediment geochemistry, in the metabolic and behavioral patterns of living resources, physiologic stress, and death. Secondary impacts occur from the removal of suitable habitat. This can alter predator-prey interactions and make certain species more vulnerable to exploitation by man. Anoxia is probably not naturally occurring within the Virginia portion of the Bay. Hypoxia could occur absent human influence due to seasonal and physical factors. A “pristine Bay” may not be achievable given the existing condition, current and projected land-use and limits of technology. There are data providing justification for having different dissolved oxygen standards above and below the pycnocline. A minimum D.O. level of 3 mg/l and a daily average of 4 mg/L must be maintained to satisfy the requirements of living resources. A standard based on percent saturation should be considered to take into account temperature and salinity effects on the capacity of water to support oxygen. The EPA’s draft saltwater D.O. criteria are reasonable measure of faunal tolerance that includes temporal constraints. Temporal and spatial factors should be considered when setting these water quality standards and it is critical to incorporate the necessary monitoring structure to support this type of water quality standard and other management programs.

**Virginia Manufacturers Association (Carol Wampler, Vice President)** – Supported the Virginia Association of Municipal Wastewater Agency comments. Believes there are technical concerns with the existing D.O. Criteria, with the Chesapeake Bay Living Resource Goals, and with the recently proposed EPA Ambient Water Quality Criteria for dissolved oxygen. Recommends that DEQ establish a technical advisory committee to help with the development of D.O. criteria and revisions to the existing narrative criterion recognizing natural background difference for all waters. A narrative criterion should be combined with a translator mechanism to be used to convert the narrative criterion to a numerical one. Water quality management programs should couple sound water quality standards with reasonable, but protective, implementation policies.

**Zicht Engineering, Limited (Eric E. Zicht)** – Provided a list of stream segments and areas that naturally fall below the existing standards for dissolved oxygen. These areas are below Hog Island on the James (waterfowl waste foul the water), the trench in York River below Colman Bridge (too deep, below the thermocline), the stream bottom below the falls of the James (benthic deposits adsorb oxygen), marshes and swamps (benthic reactions), and lower layers of stratified lakes.

**AGENCY RESPONSE:** The agency response to the public comments is that we implemented the participatory approach and convened a technical advisory committee to advise staff on these amendments. The staff also drafted the amendments so that it was clear that the only naturally occurring factors considered in this rulemaking were related to stratification, depth, minimal flow and decomposition of vegetation. No references to nutrient effects on low dissolved oxygen were included. This should alleviate any concerns about DEQ's commitment for the continued need for nutrient controls and the concern about the difficulty of differentiating between natural vs. anthropogenic nutrient inputs into the water column. We also did not propose any of EPA's numerical criteria, which was a concern with the regulated community. DEQ is working with EPA to develop numerical criteria in deep-water habitats as a future water quality standards issue.

### Clarity of the Regulation

*Please provide a statement indicating that the agency, through examination of the regulation and relevant public comments, has determined that the regulation is clearly written and easily understandable by the individuals and entities affected.*

Through examination of the regulation and relevant public comments, the agency has determined that the regulation is clearly written and easily understandable by the individuals and entities affected. The office at this agency responsible for writing these amendments (Water Quality Standards unit in the Office of Water Quality Programs) also asked staff outside of the office to review the amendments for clarity and consistency with other programs.

### Periodic Review

*Please supply a schedule setting forth when the agency will initiate a review and re-evaluation to determine if the regulation should be continued, amended, or terminated. The specific and measurable regulatory goals should be outlined with this schedule. The review shall take place no later than three years after the proposed regulation is expected to be effective.*

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The State Water Control law at § 62.1-44.15(3a) states that the Board shall, at least once every three years hold hearings for the purpose of reviewing the existing standards of quality, and, as appropriate adopt new standards or modify, or cancel existing standards. The regulatory goals associated with this regulation would be an EPA approved impaired 303(d) waters list that does not include waters naturally low in dissolved oxygen. Other measurable goals for all water quality standards are measured and assessed via the Clean Water Act 305(b) report.

### Family Impact Statement

*Please provide an analysis of the proposed regulatory action that assesses the potential impact on the institution of the family and family stability including the extent to which the regulatory action will: 1) strengthen or erode the authority and rights of parents in the education, nurturing, and supervision of their children; 2) encourage or discourage economic self-sufficiency, self-pride, and the assumption of responsibility for oneself, one's spouse, and one's children and/or elderly parents; 3) strengthen or erode the marital commitment; and 4) increase or decrease disposable family income.*

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The development of water quality standards is for the protection of public health and safety, which has only an indirect impact on families.