



Nondegradation Rulemaking

Issue Paper 4. What triggers a nondegradation review of potential impacts to high-quality waters?

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Federal regulations¹ require that states maintain and protect those waters where the water quality is better than the applicable standard. The state may, however, allow the lowering of water quality when a finding is made that an activity is necessary to accommodate important economic or social development. If a decision is made to lower water quality, both designated and existing uses must be protected.

The process of determining if the value of a given activity outweighs the maintenance of high water quality is called a “nondegradation review.” This review process must include intergovernmental cooperation and public participation, as well as the assurance of statutory and regulatory controls for point sources and cost-effective and reasonable best management practices for nonpoint source controls.

Beyond these requirements, states are given considerable flexibility in how nondegradation reviews are conducted, including conditions or activities that require or trigger a review. Considering the potentially large number and types of activities to which nondegradation review could apply, a pragmatic approach may include thresholds below which reviews are exempt. Alternatively, multiple levels of review may also be used to allow for minimal review of activities with low probabilities of lowering water quality, and more thorough reviews for activities that have high potential to lower water quality.

Should nondegradation review be triggered by a demonstrated projected lowering of water quality? Or, can projected lowering of water quality be inferred by types of specific activities?

Issue Paper 2 discussed the applicability of and regulatory authority for nondegradation as it applies to the three levels (tiers) of protection specified in federal regulations¹. The third Issue Paper defined high quality waters as those waters where the quality is better than the applicable standard.

In situations where an activity has the potential to lower water quality in high quality waters (tier 2 protection) and there is clear regulatory authority with implementation mechanisms in place, a nondegradation review may be conducted to determine if the activity is justified by social or economic need. With the potentially large number and types of activities that could require a nondegradation review it is important to establish how a decision regarding the need for review is made.

Ideally, a comprehensive understanding of the ambient water quality based on monitoring data, as well as accurate projections of the impacts to the receiving water would be used to determine if a review is required. In reality monitoring data for ambient conditions is often nonexistent or incomplete when an activity is proposed.

Projections of impacts to receiving waters is difficult enough for point source wastewater discharges where some ambient data may be available, but becomes very difficult when modeling the effects of multiple stormwater discharges into multiple receiving waters. Relative to the number of activities that could require review, there are few situations where there is sufficient ambient water quality data at the time a project or activity is proposed to make confident judgments about impacts of proposed activities to receiving waters. Although an analysis of the impact of the activity to the receiving water would be required as part of the review process itself, thorough analysis as a trigger for review may not be practical or prudent use of time and resources.

Another approach to how nondegradation reviews for high quality waters are triggered is to identify specific activities that would automatically trigger the review process. When using this approach there must be some justifiable presumption that the proposed activity will lower water quality. Considerations in the decision of which activities would trigger nondegradation review include:

- Type of activity – i.e., wastewater treatment discharges, various types of NPDES-permitted stormwater discharges, etc.
- Risk or likelihood that an activity would lower water quality
- Nature, persistence and potential effects of the pollutants of concern
- Potential change in ambient concentrations predicted at the appropriate critical condition(s)
- Potential change in loadings
- Potential reduction in available assimilative capacity (defined below)
- Potential for cumulative effects

Some **specific examples** of activities that **would trigger** review may include:

- New NPDES individual permits
- Modified or reissued individual NPDES permits with an expanded discharge beyond that presently allowed in an existing permit
- General NPDES permit at time of issuance
- § 401 Water Quality Certifications
- § 404 permits (dredge and fill permits)

It may also be beneficial to identify activities or conditions that should be exempt from nondegradation review. For these activities or conditions, it must be

demonstrated that there would be no resulting lowering of water quality.

Some **specific examples** of activities that **would not trigger** review may include:

- Ground water clean-up actions
- Projects designed to improve the quality of surface waters
- Reissued individual NPDES permits with no change in discharge
- Modified individual NPDES permits with permitted discharges at or below that presently allowed in an existing permit
- Projects that do not otherwise lower the quality of a receiving water

Should there be a *de minimis* or minimal threshold below which a nondegradation review is not required?

As mentioned above, the “level” of degradation from a proposed activity could be a consideration in the determination of what triggers a review. If it is determined that the proposed activity would fall below a predetermined level or significant threshold, that activity would be termed *de minimis* and a nondegradation review would not be required. The potential advantage of using a significant threshold is that it may allow states to focus limited resources where they may result in the greatest environmental protection^{2, 3, 4, 5}.

As with the determination of what triggers a review, a similar question may be asked regarding a test for significance: Is it more prudent to base the significance test on a demonstrated projected lowering of water quality in the receiving water or should it be based on the type, size and potential for degradation?

A guidance memorandum⁴ from Ephraim King (Director of EPA’s Office of Science and Technology) recommended that “significant” lowering of water quality be defined in terms of a demonstrated projected lowering of water quality, specifically the available assimilative capacity of a water body. Available assimilative capacity was defined as “...the difference between the applicable water quality criterion for a pollutant parameter and the ambient water quality for that pollutant parameter where it is better than the criterion...” The memorandum supports the use of significant threshold set at ten percent of available assimilative capacity, above which an activity would be required to receive “a full tier 2 antidegradation review”. Water Quality Guidance for the Great Lakes System⁶

also recommends using a *de minimis* of less than ten percent of available assimilative capacity for specific non-bioaccumulative pollutants of concern. Many states have adopted similar *de minimis* thresholds based on available assimilative capacity. Ohio, New Mexico, Washington, Missouri, and West Virginia have set the threshold at ten percent of the available assimilative capacity, while Wisconsin set the threshold at 33 percent. The U.S. District Court in West Virginia issued a ruling⁷ in 2003 that supported EPA's approval of West Virginia's *de minimis* that allows for a 10 percent reduction in the available assimilative capacity of individual pollutant parameters from an individual discharge before an antidegradation review is required.

The use of assimilative capacity alone may not be protective in some situations and multiple water quality-based test criteria should be considered. For example the use of assimilative capacity by itself when considering discharges to large waterbodies with large assimilative capacities may allow relatively large amounts of pollutants to enter the waterbody without review. In this case it may be prudent to use a combination of assimilative capacity with pollutant loading. Other examples of water quality-based criteria for significance tests may include the nature and persistence of the pollutants, potential changes in ambient conditions and/or loading rates, etc.

If the level of significance is related to the quality of the receiving water, it would seem logical that some type of cumulative limit be employed below which water quality may not be lowered. Without a cumulative limit or cap there is the risk that multiple discharges that do not trigger nondegradation review individually may result in undetected deterioration of water quality. The memo from Ephraim King⁴ recommended a cumulative cap based on total assimilative capacity which was defined as "...the baseline assimilative capacity of a waterbody established at a specific point in time." When using a cumulative cap a nondegradation review would be conducted for any activity using any amount of available assimilative capacity after a certain percentage of the total assimilative capacity has been used. If using a cumulative cap, one of the questions that will need to be addressed is: How is the percentage of water quality (i.e., total assimilative capacity) allocated? Is it 'first-come-first-serve'? Or, is it based on other criteria? Interestingly, the court decision⁷ mentioned above did not uphold EPA's approval of West Virginia's allowance for a 20% cumulative reduction in assimilative capacity from all discharges before tier 2

review is required, saying that it was not supported by any evidence in the record.

The level of significance could also be based on some "level" of the proposed activity itself. Examples of "activity-based" thresholds include using percent increases in population, increases in impervious surfaces or intensification of land use to trigger review of NPDES-permitted stormwater discharges. These may be attractive options where there is little or no information on ambient conditions, or where there is little confidence in modeled impacts to the receiving water. An important consideration when using this type of approach is that the "level" of activity used in the determination for review requirement somehow needs to be tied to the impact on the receiving water.

Yet another option concerning the use of significant thresholds is simply not to have them. Arguably, time and effort spent determining the significance of an activity may be better placed in other review requirements such as alternatives analysis. The potential problem with this option is that the number of reviews required may be overly burdensome to both the state and regulated community.

Should there be different levels of nondegradation review that take into account the type of activity, type of pollutant, potential for degradation and/or type of receiving water?

Considering the potentially large number of nondegradation reviews that may be required and limited resources to facilitate those reviews, having an approach with different levels of review should also be considered. In other words, a "scaled" system could be developed that would couple review requirements to the relative potential of an activity to lower water quality. Those activities with little potential or risk of degradation would receive a less rigorous review, while those with high potential or risk would receive a more thorough review. Considerations in developing a "scaled" approach for nondegradation reviews include those listed as important in determining which activities would trigger nondegradation review in general (page 2). All reviews must consider the protection of designated and existing uses. It may be possible to meet the review requirements specified federal regulations¹ using an approach that utilizes more thorough reviews for activities with greater risk of degradation. Finally, in the effort of creating a more efficient process, a simple decision model could be developed to determine which level of review should apply to any given activity.

Discussion Points

Review Triggers

- 1) In the absence of adequate, readily-available ambient water quality data, and the inability to calculate assimilative capacity, should antidegradation review of high quality waters be triggered by specific activities (inferring that those activities will lower water quality)?
- 2) If so, in addition to those listed on page 2, what specific activities should trigger a nondegradation review?
- 3) Should any of the specific activities listed on page 2 not be included as those that would trigger nondegradation review?

Review Exemptions

- 4) Should there be specific activities that are exempt from antidegradation review (such as those listed on page 2)?
- 5) If so, in addition to those listed on page 2, what specific activities should be exempt from nondegradation review?
- 6) Should any of the specific activities listed on page 2 not be included as those that should be exempt from nondegradation review?

Minimum Thresholds

- 7) Should there be a minimum threshold or *de minimis* below which nondegradation review should not be triggered? If not, why?
- 8) If so, should it be based on assimilative capacity, on the type of activity or other criteria?
- 9) At what level should the threshold(s) be set (whether based on assimilative capacity, activity or other criteria)?

Scaled Approach

- 10) Should there be different levels (scaled approach) of nondegradation review? (For example: Different types/levels of activity, the amount of assimilative capacity used, other changes in water quality or probability of degradation)
- 11) What would be the advantages and disadvantages of a scaled approach?

References and Links

¹40 CFR § 131.12, Antidegradation policy
http://edocket.access.gpo.gov/cfr_2007/julqtr/40cfr131.12.htm

²EPA's 1998 Advanced Notice of Proposed Rulemaking, Federal Register Vol. 63, No. 129, 1998
www.epa.gov/fedrgstr/EPA-WATER/1998/July/Day-07/w17513.pdf#page=39

³Water Quality Standards Handbook: Second Edition, USEPA, Office of Water, 1994
www.epa.gov/waterscience/standards/handbook/chapter04.html

⁴Memorandum from Ephraim King, EPA Office of Science and Technology, to Water Management Division Directors, Regions 1-10, entitled "Tier 2 Antidegradation Reviews and Significant Thresholds", 2005
www.dnr.mo.gov/env/wpp/cwforum/documents/8-05-epa-tier2-memo4.pdf

⁵EPA Region 8 Guidance: Antidegradation Implementation, 1993
www.epa.gov/region8/water/wqs/Region8_preface_execsumm.pdf

⁶Water Quality Guidance for the Great Lakes System: Supplementary Information Document (SID), United States Environmental Protection Agency, Office of Water, EPA-820-B-95-001, 1995
www.epa.gov/region5/water/wqs5/pdf/supp_inf_doc.pdf

⁷Ohio Valley Environmental Coalition, et. al. v. Marianne Lamont Horinko, Acting Administrator, United States Environmental Protection Agency; Civil Action No. 3:02-0058, 3003
www.ohvec.org/issues/mountaintop_removal/articles/antideg.pdf

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