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SAB Grapples With 'Gradient' For Determining Waters' 'Significant' Nexus

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An EPA science advisory panel is struggling to craft a recommendation for how the agency should structure a graded approach for determining whether smaller waters have a "significant" nexus to larger navigable waters, a key test for determining whether they are jurisdictional under the Clean Water Act (CWA).

During an April 28 teleconference, members of the Science Advisory Board (SAB) panel generally agreed that the agency should use a "gradient" for determining the significance of a nexus but debated what factors regulators should consider, including temporal, spatial and ecological disturbances -- and how to weight them -- in any jurisdictional determination.

While EPA agrees with the SAB panel that a gradient approach to connectivity is possible, EPA's Jeffrey Frithsen, senior scientist with the Office of Research & Development's National Center for Environmental Assessment, told the April 28 teleconference that the "concept may be in conflict" with other components of the panelists' draft advice but he urged them to continue working to provide advice on establishing connectivity in "quantitative or semi-quantitative terms."

The panel, which is slated to resume discussions May 2, is charged with reviewing EPA's draft study on waters' connectivity, which is slated to provide scientific support for the agency's and Army Corps of Engineers' proposed rule for clarifying the scope of the CWA.

The proposed rule is intended to clarify the reach of the water law in the wake of a 2009 high court ruling that created uncertainty about when smaller waters are subject to regulation. In *Rapanos v. United States*, Justice Antonin Scalia ruled in the court's plurality decision that only "relatively permanent waters" that hold a "continuous surface connection" to a traditionally navigable water of the United States can be considered jurisdictional.

By contrast, Justice Anthony Kennedy ruled in a concurring opinion that waters that share a "significant nexus" to navigable waters can be regulated under the water law.

The proposed rule, as well as the connectivity study, generally seeks to follow Kennedy's approach. The proposed rule, for example, says that all streams, as well as all waters and wetlands located in floodplains and riparian corridors share a connection or "nexus" to downstream, traditionally regulated waters -- and are therefore subject to default regulation.

The agency is proposing to define "significant nexus" as one that "significantly affects the chemical, physical or biological integrity of" a downstream river, territorial sea or other jurisdictional water.

But the SAB panel reviewing the draft study, along with other critics of the rulemaking effort, have raised concerns that EPA has not adequately defined when waters have a "significant" nexus, but merely evaluated the presence of connectivity.

Deputy EPA Administrator Bob Perciasepe has acknowledged the concern, saying recently that federal officials will have to come up with a way to determine whether smaller waters have a "significant" nexus to larger navigable waters. While "nexus is a scientific determination" on whether or not a connection is present, "The question really is, when does it become significant?" he told water utility officials April 7.

'Gradient Approach'

In its April 23 draft report, the panel writes that EPA's draft study "often treats connectivity as a binary property, either present or absent, rather than as a gradient." To address the issue the panel is recommending that the agency shift its approach from a "dichotomous, categorical distinction (connected versus not connected) to a gradient approach that recognizes variation in the strength, duration and magnitude, and consequences of those connections."

But the panel has appeared to struggle in how to craft its recommendations for developing such an approach.

For example, while the panel generally agreed that the approach should recognize degrees of strength, frequency and magnitude of connections, but during the call, several members suggested that recommendations also address the degree to which connections may be predictable.

"Some mechanisms of connectivity are highly predictable (e.g., migration of anadromous fish and waterfowl, spring flood pulses, seasonal peaks of aquatic insect emergence, etc.) whereas others are less so (flood events from storms, short-term movement of organisms, nutrient spiraling dynamics)," Mazeika Sullivan, of the Ohio State University, writes in April 23 comments from individual panel members.

Sullivan suggests that a predictability scale could be worked into a gradient framework, along with temporal and spatial components.

During the call, Jennifer Tank, of the University of Notre Dame, cautioned that the panel should avoid placing too much emphasis on predictability, however, saying that such an approach could lead to adding a "hole that could be punched" for critics to challenge connectivity determinations.

And while panel members have discussed at length the importance of the draft study addressing cumulative effects of streams and wetlands on downstream waters, particularly the spatial and temporal scales at which streams and wetlands are functionally aggregated, they have also debated how such temporal aspects of connectivity should be examined.

For example, David Allan of University of Michigan, writes in his April 23 comments that while it might be a good opportunity to clarify some key timeframes that influence connectivity, such as 100-year floods, "I am uncomfortable with an open-ended temporal scale that might appear to embrace very long time frames."

During the April 28 call, Kurt Fausch, of Colorado State University, suggested that long time

scales, which examine connectivity over a long period of time, are crucial, however, saying that "even intermittent connections over a long time scale may be important."

Amanda Rodewald, of Cornell University, chair of the SAB panel, noting that "EPA wants more information on temporal scale and how it relates to downstream water quality," urged the panel to work toward recommendations for such a framework, saying the draft report needs "more examples or a better scale for hydrological connectivity versus chemical or biological connectivity -- is there a way to do that?"

The panel also deliberated on how to advise EPA to incorporate information on the "legacy effects of human disturbances" and their effect on degrees of connectivity, which some members said on the call is well covered in available literature but not discussed in detail in EPA's draft study.

The SAB panel is scheduled to meet again May 2 to further discuss its draft recommendations prior to submitting a final report to the chartered SAB for a quality review.

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