

**United States Environmental Protection Agency (U.S. EPA) Science Advisory Board (SAB)  
Teleconference Meeting  
September 26, 2014  
Meeting Minutes**

**Date and Time:** September 26, 2014, 1:30 p.m. to 4:30 p.m.

**Location:** By teleconference only

**Purpose:** To conduct a quality review of the SAB draft report entitled *SAB Review (August 11, 2014, Draft) of the Draft EPA Report Connectivity of Streams and Wetlands to Downstream Waters*.

**Meeting Participants:**

**SAB Members** (see Roster<sup>1</sup>)

Dr. David T Allen, Chair	Dr. Madhu Khanna
Dr. George Alexeeff	Dr. Nancy K. Kim
Dr. Thomas Burbacher	Dr. Francine Laden
Dr. Edward Carney	Dr. Lois Lehman-McKeeman
Dr. George Daston	Dr. Elizabeth Matsui
Dr. Costel Denson	Dr. Kristina Mena
Dr. Otto C. Doering, III	Dr. James R. Mihelcic
Dr. Michael Dourson	Dr. Christine Moe
Dr. Joel Ducoste	Dr. Eileen Murphy
Dr. David Dzombak	Dr. James Opaluch
Dr. Elaine Faustman	Dr. Duncan Patten
Dr. William Field	Mr. Richard Poirot
Dr. H. Christopher Frey	Dr. Amanda Rodewald
Dr. Steven Hamburg	Dr. James Sanders
Dr. Cynthia M. Harris	Dr. William Schlesinger
Dr. Robert Johnston	Dr. Jeanne VanBriesen
Dr. Kimberly L. Jones	Dr. Peter Wilcoxon

**SAB Staff:**

Dr. Angela Nugent, Designated Federal Officer (DFO)  
Dr. Thomas Armitage, DFO for the SAB Panel for the Review of the EPA Water Body  
Connectivity Report  
Mr. Christopher Zarba, SAB Staff Office Director

**Other Attendees:** Names of those who requested the teleconference call-in number are provided in Attachment A.

### **Meeting Materials:**

All materials for the meeting are available on the SAB webpage at:  
<http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/e4f5dce2e72191b85257d27004dbb39!OpenDocument&Date=2014-09-26>

### **Meeting Summary:**

#### **Convene the meeting**

Dr. Nugent, Designated Federal Officer (DFO) for the chartered SAB, formally opened the meeting and noted that this federal advisory committee teleconference of the SAB had been announced in the Federal Register<sup>2</sup> (published August 8, 2014, 79 FR 51154-51155). The SAB is an independent, expert federal advisory committee chartered under the authority of the Federal Advisory Committee Act (FACA). The SAB is empowered by law, the Environmental Research, Development, and Demonstration Authorization Act (ERDDAA), to provide advice to the EPA Administrator on scientific and technical issues that support the EPA's decisions. The DFO noted that the Federal Register notice announcing the meeting had provided the public with an opportunity to provide written and oral comment. There was no request for oral comment. One written public comment<sup>3</sup> had been received on the draft SAB panel report. This comment had been provided to SAB members and posted on the SAB web page for the meeting.

The DFO stated that the SAB consists entirely of special government employees (SGEs) appointed by EPA to their positions. As SGEs, chartered SAB members are subject to all applicable ethics laws and implementing regulations. EPA has determined that advisors participating in this meeting have no financial conflicts of interest or appearance of a loss of impartiality under ethic regulations specified in 5 CFR 2635 relating to the topic of this meeting.

#### **Purpose of the teleconference and review of the agenda**

The SAB Chair, Dr. David Allen, stated that the teleconference had one purpose: to conduct a quality review of a draft panel report. He reminded members that the purpose of the quality review is to determine if the report is ready to transmit to the Administrator as an SAB report and under what conditions. In reaching that determination he asked them to focus on the SAB's four quality review questions:

- Were the charge questions adequately addressed?
- Are there any technical errors or omissions in the report or issues that are not adequately dealt with in the draft report?
- Is the draft report clear and logical?
- Are the conclusions drawn or recommendations provided supported by the body of the draft report?

## **Quality review of the draft report, *Draft (8-11-14) SAB Review of the Draft EPA Report Connectivity of Streams and Wetlands to Downstream Waters* <sup>4</sup>**

### Presentation from the Panel Chair

Dr. David Allen introduced Dr. Amanda Rodewald, Chair of the SAB Panel for the Review of the EPA Water Body Connectivity Report. He asked her to provide background on the draft report as an introduction to the quality review discussion. Dr. Rodewald began by expressing thanks to SAB members for their insightful comments.<sup>5</sup> She emphasized that the purpose of ORD's draft connectivity report was to provide a review of scientific literature. The ORD draft report was intended as a scientific and not a legal document. She summarized the charge questions, which addressed the document overall and three different categories of water bodies. The SAB panel found that ORD had conducted a thorough review of existing literature, although the panel identified some needed revisions. The draft panel report also provides other recommendations for strengthening ORD's report including recommendations regarding more consistent terminology, a revised conceptual framework for hydrological components and connecting links, and greater emphasis on a gradient approach, as compared to a binary approach to characterizing water bodies as either connected or not connected. She noted that the panel found that ORD's draft report provided strong scientific support for concluding that tributary streams are connected to downstream waters. She noted that the synthesis of literature related to floodplains and waters and wetlands in floodplain settings should be expanded, but that the literature review supports the conclusion that those water bodies affect the physical, chemical and biological integrity of downstream waters. The panel disagreed with the ORD document's conclusion that the literature reviewed did not provide sufficient information to generalize about the degree of connectivity or the downstream effects of wetlands. The panel found that available literature supported a more definitive statement about the functions of wetlands that support the physical, chemical and biological integrity of downstream waters.

### Chartered SAB Discussion and Disposition of the Report

After Dr. Rodewald completed her remarks, Dr. Allen asked the lead reviewers to briefly summarize their written comments. The DFO noted that three lead reviewers, Drs. Joseph Arvai, Ingrid Burke, and Peter Chapman, had been unable to join the call.

Dr. Steven Hamburg, the first lead reviewer on the call, found the panel review thorough and an effective consideration of the literature. He found their comments critically important. He noted that not only the scientific literature but also his own experience witnessing impacts of Hurricane Irene in northern hardwood forest underscore the importance of waterbody connections in complex systems that are not easily characterized. Nontraditional path flows show connectivity that can have a major impact and contribute to damage to a downstream system. In his view, the panel's review of ORD's draft report effectively captures what is known about connectivity, which is a probabilistic concept. He stated that the panel report was thorough, well organized, clearly articulated, and will help the EPA.

Dr. Rodewald expressed appreciation for his comments and supportive remarks. She noted that Hurricane Irene might be an appropriate case study for ORD to include in a revised synthesis report.

Dr. James Sanders, the second lead reviewer on the call, also found the report to be comprehensive, readable, and effective in addressing the charge questions in a clear and logical way. He noted that he had only a few minor comments to strengthen the report. He suggested that the report find terminology to distinguish more effectively between the SAB's report and the ORD draft report. It might be appropriate to call the SAB report the "SAB review." He also suggested that figure 3 page 55 be moved up in the document where there is an earlier reference to the figure.

Dr. William Schlesinger, the third lead reviewer on the call, agreed that the panel's report was excellent and thorough, although in some places repetitious. He provided some additional references based on his work in the desert southwest, where connections between stream and riparian areas become clear during or after flash thunderstorms. He referenced the work of Dr. John Cole at the Cary Institute, which focused on analysis of connectivity based on isotopes using biomass of fish.

Dr. Rodewald responded to comments from Drs. Sanders and Schlesinger. She committed to considering how best to distinguish between the SAB report and ORD's draft report in revising the SAB panel draft text. She also noted that the panel had extensive discussions regarding Figure 3 and where it should be placed in the draft text. The panel decided that Figure 3 was developed for one kind of waterbody and would be misleading if moved earlier. She acknowledged that the panel report was repetitious in its effort to be thorough. She thanked reviewers for the additional references, which she would consider in revising the report.

Dr. Jeanne VanBriesen, the fourth lead reviewer on the call, commended the panel for a well written report, which used detail and language carefully. She suggested that section 3.1.4. of the panel report be strengthened to convey important points about certain geographical contexts more clearly. That section of the report is quite repetitive and editing could enhance communication of the major points. She also asked that if the EPA were to "be more quantitative in looking at effects," would they look at uncertainties? She and Dr. Rodewald agreed that such an approach would be similar to a weight-of evidence approach. The EPA should explain how such an approach was conducted, the selection of studies, uncertainties associated with selection, and approach to quantification.

Finally, Dr. VanBriesen noted that it will be challenging for the EPA to combine geographical classifications of waterbodies within a conceptual framework of a gradient approach. Geographical classifications militate against such a gradient approach to connectivity and may be confusing. Dr. Rodewald responded that she will try to sharpen the language to assist the EPA on this point.

Dr. Allen thanked the lead reviewers for their thorough comments. He then began the Board's general discussion with his own remarks. He noted that SAB members' comments agreed that the panel report was among the strongest they had seen. He commended Dr. Rodewald and her

panel for a remarkable job. He then asked her about comments from several members who asked for the report to provide more clarity on what was meant by a gradient approach. Dr. Rodewald responded that the Connectivity Panel had agreed unanimously that there was a gradient or continuum of connectivity. Any scientific approach to connectivity must recognize many different levels of connectivity. ORD, however, took a categorical approach and the SAB Connectivity Panel “left it to ORD” to reconcile those categories with the concept of a continuum. The panel hesitated to be too prescriptive in how that should be done. She noted that she would look at the report to see how it could be more consistent regarding the language identifying the most important points associated with connectivity.

An SAB member referenced the written public comment and asked whether the EPA’s emphasis on categorical distinctions was an approach developed to support future regulations or whether ORD “missed the science.” Dr. Rodewald responded that the EPA was not naïve regarding the science; ORD scientists did not believe there was a simple “yes or no” answer to whether water bodies are connected. The SAB member asked whether the panel provided the practical guidance the EPA needs. Dr. Rodewald responded that the panel considered it to be the EPA’s role to define the “significant nexus.” She noted that science can tell us the likely outcome if a certain policy option or action is taken, but it is not the SAB’s role to identify the consequences that are important enough for the agency to take action. She viewed the question of where our society wants to draw the line as appropriate for the policy realm. She noted that the chartered SAB would be discussing the science as it relates to the EPA’s proposed regulatory determinations at a public teleconference on September 29, 2014.

Another SAB member asked a question about the discussion of contaminants in Section 4 of the report. She asked whether the contaminants discussed were the appropriate ones to identify and whether the panel considered up- and down-stream models. Dr. Rodewald responded that the panel did seek out examples of the role of biota in certain systems. However, the panel draft report did not address that question in detail. It emphasized biotic connectivity, and contamination in fish, especially salmonids. The panel encouraged ORD to use a variety of examples.

After discussion had concluded, Dr. Allen asked for a motion to dispose of the report. Dr. Steven Hamburg moved that Dr. Rodewald revise the report based on Board members’ comments and provide it to the chartered SAB Chair to review before transmittal to the Administrator. Dr. James Sanders seconded the motion. The motion was approved unanimously.

The DFO adjourned the meeting at 2:48 p.m.

Respectfully Submitted

Certified as Accurate

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Dr. Angela Nugent  
SAB DFO

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Dr. David T. Allen  
SAB Chair

**NOTE AND DISCLAIMER:** The minutes of this public meeting reflect diverse ideas and suggestions offered by committee members during the course of deliberations within the meeting. Such ideas, suggestions, and deliberations do not necessarily reflect definitive consensus advice from the panel members. The reader is cautioned to not rely on the minutes to represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final advisories, commentaries, letters, or reports prepared and transmitted to the EPA Administrator following the public meetings.

**Attachment A: Names of those who requested the teleconference call-in number**

Deedra Allen, The Mosaic Company  
Laurie Alexander, EPA  
Saiyid Amena, Bloomberg BNA  
Heidi Berg, City of Portland  
David Y. Chung, Crowell & Moring LLP  
Claudia Copeland, Congressional Research Service  
Bridget DiCosmo, Inside EPA  
Claudia Copeland, Library of Congress  
Acacia Croy, Chesapeake Energy Corporation  
Jill Csekitz, TCEQ Water Quality Standards Group Leader  
Brian Dailey, California State Water Resources Control Board  
Jill Davidson, ADM  
Jon Devine, Natural Resources Defense Council  
Donna Downing, EPA  
Bridget DiCosmo, Inside EPA  
W. Blaine Early, III, Stites & Harbison PLLC  
David Dunlap, David Dunlap, Koch Industries Public Sector, LLP  
W. Blaine Early, Stites & Harbison PLLC  
Jeff Frithson, EPA  
Royal Gardner, Stetson University College of Law  
David Gaskin, Nevada Division of Environmental Protection  
Susan Gilson, NAFSMA  
Vincent Gin, OC Public Works, Regulatory & Policy Division  
David Goodrich, no affiliation  
Annette Habetz, U.S. SASOL  
Jimmy Hague, Theodore Roosevelt Conservation Partnership  
Cherie Harris, M.J. Bradley & Associates LLC  
Ronnie P. Hawks, Jennings, Haug & Cunningham L.L.P.  
Staci Heaton, Rural County Representatives of California  
Fredrik J. Jacobsen, San Diego Gas & Electric Company  
Diana M Jagiella, The Mosaic Company  
Bethany R. Johns, Crop Science Society of America  
Karen A. Keene, California State Association of Counties  
Jeff R. Keohane, Forman & Associates  
Rose Kwok, EPA  
Laurie Machung, NYC Environmental Protection  
T.J. Mascia, Troutman Sanders LLP  
Jesse Maxwell, SWANA  
Melissa W. McCoy, Association of Clean Water Administrators  
Owen McDonough, National Association of Home Builders  
Kerry McGrath, Hunton & Williams LLP  
Doug R. Myers, Chesapeake Bay Foundation  
Katherine Nelson, Texas Commission on Environmental Quality  
James Payne, ARI-SLC

Jim Pendergast, EPA  
Vic Ramirez, LCRA  
Shelly Ross, Kelly Hart  
Tara Rothschild, House of Representatives Committee on Energy and Commerce  
Lynda A. Saul, Montana Department of Environmental Quality  
Amena H. Saiyid, Bloomberg BNA  
Erik B. Schilling, National Council for Air and Stream Improvement, Inc.  
Annie Snider, Energy and Environment News  
Eric Somerville, EPA  
Bill Stephens, ERM  
Sandy Stephens, Louisiana Department of Environmental Quality  
Kim Teweleit, BP  
Stephanie Weir | Foster Pepper PLLC  
Karyn Wendelowski, EPA  
Brenda Winn, Virginia Department of Environmental Quality

### Materials Cited

The following meeting materials are available on the SAB website,  
<http://www.epa.gov/sab>, at the page for the [September 26, 2014](#) teleconference:  
<http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/e4f5dcce2e72191b85257d27004dbb39!OpenDocument&Date=2014-09-26>

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<sup>1</sup> Roster of SAB members

<sup>2</sup> Federal Register published August 8, 2014, 79 FR 51154-51155

<sup>3</sup> Comment from Vincent Gin, 09/22/14

<sup>4</sup> *Draft (8-11-14) SAB Review of the Draft EPA Report Connectivity of Streams and Wetlands to Downstream Waters*

<sup>5</sup> Preliminary SAB member comments submitted as of 09/22/14 and Comments from Dr. Elaine Faustman, received 09/26/14