

**Summary Minutes of the  
U.S. Environmental Protection Agency Science Advisory Board  
Panel for the Review of the EPA Water Body Connectivity Report  
Public Teleconference  
August 20, 2014**

**Date and Time:** Wednesday, August 20, 2014, 1:00 p.m. – 5:00 p.m.

**Location:** By teleconference

**Purpose:** To develop comments to the chartered Science Advisory Board (SAB) on the adequacy of the scientific and technical basis of the proposed rule titled *Definition of Waters of the United States Under the Clean Water Act* (79FR 22188-22274)

**Participants:**

*Members of the EPA Science Advisory Board (SAB) Panel for the Review of the EPA Waterbody Connectivity Report* (Panel roster is provided in attachment A):

Dr. Amanda Rodewald  
Dr. Allison Aldous  
Dr. Genevieve Ali  
Dr. J. David Allan  
Dr. Lee Benda  
Dr. Emily Bernhardt  
Dr. Robert Brooks  
Dr. Kurt Fausch  
Dr. Siobhan Fennessy  
Dr. Michael Gooseff  
Dr. Judson Harvey  
Dr. Lucinda Johnson  
Dr. Michael Josselyn  
Dr. Kenneth Kolm  
Dr. Mark Murphy  
Dr. Duncan Patten  
Dr. Mark Rains  
Dr. Emma Rosi-Marshall  
Dr. Jack Stanford  
Dr. Mazeika Sullivan  
Dr. Jennifer Tank  
Dr. Maurice Valett

*Members of the EPA Science Advisory Board*

Dr. David Allen  
Dr. Ingrid Burke  
Dr. Peter Chapman  
Dr. James Mihelcic

Dr. James Sanders  
Dr. Jeanne VanBriesen

*SAB Staff:*

Dr. Thomas Armitage, Designated Federal Officer  
Mr. Christopher S. Zarba, Director, EPA SAB Staff Office  
Mr. Thomas Brennan, Deputy Director, EPA SAB Staff Office

*EPA Representatives:*

Mr. David Evans, EPA Office of Water

*Other Attendees:*

A list of others who requested access to the teleconference or audio webcast is provided in attachment B.

**Teleconference Summary:**

**Convene the Teleconference**

Dr. Thomas Armitage, Designated Federal Officer (DFO) for the Panel, convened the teleconference at 1:00 p.m. Eastern Time. He identified Panel members who were on the call. He noted that the Panel operated as part of the EPA Science Advisory Board, which is a chartered Federal Advisory Committee under the Federal Advisory Committee Act (FACA) and is empowered to by law to provide advice to the EPA Administrator. He stated that summary minutes of the teleconference would be prepared and certified by the Chair. He noted the Panel's compliance with ethics requirements. Dr. Armitage indicated that meeting materials were available on the SAB web site. These meeting materials included: the Federal Register Notice announcing the meeting,<sup>1</sup> meeting agenda,<sup>2</sup> Panel roster,<sup>3</sup> proposed rule titled *Definition of "Waters of the United States" Under the Clean Water Act*,<sup>4</sup> Chair's Instructions to Panel members,<sup>5</sup> memorandum from the Chair of the chartered SAB to the Panel Chair requesting comments on the adequacy of the scientific and technical basis of the proposed rule,<sup>6</sup> preliminary written comments from Panel members,<sup>7</sup> and EPA presentation to the Panel,<sup>8</sup> He noted that no requests had been received to provide oral public comments but written public comments had been received and were available on the EPA docket website.<sup>9</sup>

**Review of Agenda and Purpose of the Teleconference**

Dr. Amanda Rodewald, Chair of the SAB Panel, reviewed the teleconference objectives and agenda. She indicated that the Panel was holding teleconferences on August 20 and 21, 2014 to develop comments to the chartered SAB on the adequacy of the scientific and technical basis of the proposed rule titled *Definition of "Waters of the United States" Under the Clean Water Act*. Dr. Rodewald noted that the Panel had conducted a peer review the EPA draft document *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence* and that the Panel's report had been transmitted to the chartered SAB for final approval. She indicated that the chartered Board had asked the Panel to also provide comments on the adequacy of the scientific and technical basis of the proposed rule. Dr. Rodewald further noted that the Panel's comments would be considered by the

chartered SAB when it provided advice to the EPA Administrator on science supporting the proposed rule.

Dr. Rodewald indicated that on the call the Panel would first hear introductory remarks from Dr. David Allen, Chair of the chartered SAB and then hear a presentation from Mr. David Evans, Acting Deputy Director of the EPA's Office of Wetlands, Oceans, and Watersheds. She noted that Mr. Evans would provide background information on the proposed rule.

Dr. Rodewald indicated that no requests had been received from members of the public to present oral comments. Therefore, following Mr. Evans' presentation the Panel would begin its discussion of the science supporting the proposed rule. Dr. Rodewald indicated that Panel members could comment on any aspect of the science supporting the proposed rule. However, to focus the Panel's discussion, Dr. Rodewald asked members to specifically comment on adequacy of the scientific and technical basis of the following parts of the definition of Waters of the U.S. in the proposed rule: (1) inclusion of tributaries in the Waters of the United States; (2) inclusion of adjacent waters and wetlands in the Waters of the United States; (3) inclusion of "other waters" on a case-by-case basis in the Waters of the United States; and (4) other definitions and exclusions. Dr. Rodewald noted that in addressing each of these issues, lead discussants on the Panel would first provide their comments and she would then ask all other members of the panel to offer their comments. Dr. Rodewald also noted that members of the Panel had provided preliminary written comments that had been distributed to all Panel members and posted on the SAB website.

Dr. Rodewald indicated that the Panel would continue its discussion on a call scheduled to be held the following day, and that before adjourning on the following day there would be an opportunity to hear brief clarifying remarks from EPA staff or members of the public and any concluding remarks from Panel members.

### **Process of Transmitting the Panel's Comments to the Chartered SAB**

Dr. Rodewald reviewed the process that would be followed for transmitting the Panel's comments to the chartered SAB. Dr. Rodewald indicated that after the Panel's two conference calls she would prepare a memorandum to the Chair of the chartered SAB summarizing the main points discussed by the Panel. The memorandum would highlight any particular areas of agreement or disagreement. Dr. Rodewald also indicated that after the panel call members would have an opportunity to revise their written comments and a compilation of the individual comments from members would be sent to the chartered SAB with her memorandum. She asked members whether they had questions about the process. There were no questions so she called upon the Chair of the Chartered SAB to provide introductory remarks.

### **Remarks from the SAB Chair**

Dr. David Allen, Chair of the chartered EPA Science Advisory Board provided introductory remarks. He indicated that part of the mission of the chartered SAB was to provide advice to the EPA on the adequacy of the scientific and technical basis of proposed regulations. Dr. Allen indicated that in fulfilling this mission, the chartered SAB would provide advice to the EPA on the scientific and technical basis of the proposed rule titled *Definition of "Waters of the United States" under the Clean Water Act*. He indicated that the chartered SAB had asked the Panel to provide input for the Board's consideration as it developed advice to EPA on this topic. He explained the process that would be followed to provide advice to EPA. He noted that a workgroup of the Board would consider the Panel's comments as it developed a draft letter to the EPA Administrator. The letter would then be discussed

and approved by the chartered SAB on public conference call and transmitted to the Administrator. He also noted that there was a very tight schedule for receiving comments from the Panel because the EPA had requested advice on the proposed rule by the end of September. Dr. Allen then thanked the Panel for its work and asked whether members had questions about the process. There were no questions from the Panel so Dr. Rodewald thanked Dr. Allen and indicated that the Panel would next hear remarks from the EPA.

## **EPA Remarks**

Dr. Rodewald introduced Mr. David Evans, Acting Deputy Director of the Office of Wetlands, Oceans, and Watersheds in the EPA's Office of Water, to provide remarks to the Panel. Mr. Evans presented an overview of the proposed rule: *Definition of "Waters of the United States" Under the Clean Water Act*.

Mr. Evans indicated that the provisions of the Clean Water Act applied to Waters of the U.S. including the territorial seas, but the Act itself did not specifically define the Waters of the U.S. He noted that the current regulatory definition of Waters of the U.S. had been unchanged since the late 1970s, and there was now a need for a definition that was consistent with Supreme Court decisions. Mr. Evans noted that the proposed rule, published on April 21, 2014, was a high priority for the EPA and the U.S. Army Corps of Engineers. He indicated that, based on science and law, the proposed rule established bright line categories for waters that are Waters of the U.S. covered by the Clean Water Act, and those waters that are not Waters of the U.S. He also summarized how the EPA Office of Research and Development's draft connectivity report supported the rulemaking effort. Mr. Evans described the definition of Waters of the U.S. in the proposed rule and highlighted several key points from the proposal:

- Waters of the U.S. include traditional navigable waters, interstate waters, the territorial seas, and impoundments of Waters of the U.S.
- Tributaries of the above waters are defined as waters of the U.S. The proposal includes a definition of tributary that identifies physical characteristics. The proposal also indicates that wetlands, lakes, and ponds may be classified as tributaries.
- Wetlands and waters adjacent to the above waters are defined as Waters of the U.S. The proposed rule, as well as current regulations, define adjacent as "bordering, contiguous or neighboring." "Neighboring" is specifically defined for the first time, using riparian and floodplains. The proposed rule defines both riparian area and floodplain but does not specifically define the extent of either.
- The agencies are looking specifically for comment on the proposed definitions.
- There is a broad connectivity gradient for "other waters" (i.e., those that do not fall into the categories above). Therefore, case specific analysis must be conducted to determine whether these "other waters," either alone or in combination with similarly situated waters located in the same region, have a significant nexus with downstream waters (i.e., traditional navigable waters, interstate waters, or the territorial seas) and are also Waters of the U.S.
- Aggregate effects are important in determining significant nexus for tributaries, adjacent waters, and "other waters" that are similarly situated.

Mr. Evans indicated that the EPA and the Corps were accepting public comments on the proposed rule and noted that comments had been requested on several specific policy options that could be considered. These options included determining that: (1) "other waters" are similarly situated only in certain areas of the country (e.g., in certain ecoregions); (2) certain subcategories of "other waters" as a class have a significant nexus; (3) no "other waters" are similarly situated and all "other waters" must be evaluated individually; and (4) all "other waters" in the watershed are similarly situated. Mr. Evans also described

some of the other “features” that were not considered to be Waters of the U.S. under the proposed rule (i.e., exclusions).

### *Questions from Panel Members*

Dr. Rodewald thanked Mr. Evans for his remarks and asked members whether they had questions. Mr. Evans answered questions from Panel members.

- A member noted that the proposed rule indicated that groundwater was not a Water of the U.S. He questioned how groundwater connections to wetlands would be considered under the proposal. Mr. Evans responded that a wetland might be included in the “other waters” category if there was not a shallow subsurface groundwater connection to waters identified as Waters of the U.S. It could be in the “adjacent” waters category if there was a shallow subsurface connection.
- A member questioned why non-wetland swales were excluded from jurisdiction under the proposed rule. He noted that at the upper ends of a tributaries there were swales that could become saturated and have shallow subsurface water. Mr. Evans responded that currently and under the proposed rule if the swale possessed all three characteristics needed to be defined as a wetland it would be regulated. If the swale did not possess all three characteristics it would not be a Water of the U.S.
- A member asked how ditch networks were regulated under the Clean Water Act. Mr. Evans responded that ditches have been regulated historically under the Clean Water Act. He noted that there was existing guidance indicating that upland ditches that had more than ephemeral flows should be evaluated to determine whether they were Waters of the U.S. He indicated that under the proposed rule, upland ditches must have perennial flow and a connection to a hydrological network to be considered Waters of the U.S.
- A member asked how return flow from agricultural land would be regulated. Mr. Evans responded that under the statute, return flows from agricultural land were not subject to permit requirements.
- A member asked whether comments on the ORD connectivity document would be considered when EPA decided whether to revise Appendix A in the preamble of the proposed rule. Mr. Evans responded that the EPA would take into consideration advice from the SAB as well as public comments in deciding whether changes should be incorporated into Appendix A.
- A member noted that large areas of the U.S. were affected by groundwater connections and that these seemed to be ignored under the proposed rule. He asked how groundwater would be regulated under the proposed rule. Mr. Evans responded that the Clean Water Act was a surface water statute so the rule did not address deep groundwater connectivity.
- A member asked for clarification of how shallow subsurface connection would be taken into consideration under the proposed rule. Mr. Evans responded that shallow subsurface connections were relevant to the determination of whether waters are neighboring or “other waters.”
- A member asked a general question about whether additional technical guidance would be developed to interpret aspects of the proposed rule. Mr. Evans responded that the EPA and the Corps have asked for comments on specific policy options and that the agencies wanted to provide clarity in the final rule. He indicated that the stakeholder community was seeking clarity.

- A member asked why ditches needed perennial flow to be jurisdictional under the proposed rule but tributaries with perennial or ephemeral flow were jurisdictional. Mr. Evans responded that ditches include a wide range of different features and therefore the proposed rule excludes: (1) ditches that were excavated wholly in uplands, drained only uplands, and have less than perennial flow and (2) ditches that are not tributaries as defined in the proposed rule. He further indicated that the agencies would welcome comments regarding ditches.
- A member asked for clarification of whether ditches that contributed non-perennial flow to downstream waters were potentially jurisdictional under the proposed rule and whether ditches excavated in streams and wetlands could be jurisdictional. Mr. Evans responded that ditches with non-perennial flow feeding into navigable waters could be jurisdictional, but they would not be jurisdictional if they were excavated wholly in uplands and drained only uplands.
- A member asked whether ditches that were excavated to drain wetlands could be jurisdictional under the proposed rule. Mr. Evans responded that under the proposed rule a ditch that drains a wetland or another water body would be jurisdictional if the ditch meets the definition of a tributary.
- A member asked how information about biological connectivity would be considered in evaluating the connectivity of other waters. Mr. Evans responded that when biological connections were present they could be considered in the evaluation of significant nexus.
- A member noted that “significant” was a scientific term and asked whether scientific criteria had been applied to determine significant nexus. Mr. Evans responded that significant nexus was legal term requiring a policy determination that was informed by science and law. He noted that in this context the term “significant” did not refer to statistical significance.

## **Panel Discussion**

Dr. Rodewald again thanked Mr. Evans for his presentation and indicated that because there were no registered public speakers, she would move directly to the Panel’s discussion of the scientific and technical basis of the proposed rule. She noted that members of the Panel had been asked to consider four questions that focused on definition of Waters of the U.S. in the proposed rule. She then called for discussion of the first question which focused on the adequacy of the scientific and technical basis for defining Waters of the United States to include all tributaries of a traditional navigable water, interstate water, the territorial seas, or impoundment.

### *Scientific and Technical Basis for Including Tributaries in the Waters of the U.S.*

The Panel discussed the scientific and technical basis for including tributaries in the Waters of the U.S. A member commented that she agreed with the EPA’s finding that ample research had been conducted to document a significant nexus between tributaries and downstream waters. Other members agreed with this comment.

Several members raised issues to be discussed. A member commented that the Panel should discuss the proposed exclusion of ditches. Members also commented that the Panel should discuss the definition of “tributary” in the proposed rule. Members questioned whether a water body needed an ordinary high water mark and bed and bank to be defined as a tributary.

The Panel continued to discuss the connectivity of tributaries to downstream waters. A member agreed that in most cases tributaries were connected to downstream waters but he commented that there were exceptions. He noted that the issue of spatial and temporal flow in tributaries was not addressed in the proposed rule and that by including all tributaries in the Waters of the U.S., EPA did not take this into consideration. Another member commented that many of the studies included in the EPA draft science synthesis document that supported the proposed rule were studies of 3<sup>rd</sup> or 4<sup>th</sup> order tributaries. He noted that few studies of lower order tributaries were included in the science synthesis document but these studies showed a connectivity gradient. He indicated that making all tributaries Waters of the U.S. by rule ignored the science showing the gradient of connectivity. Another member commented that, in his view, tributaries did affect downstream waters. He questioned whether there were any studies which showed that headwater streams were not connected to or did not affect downstream waters. A member responded that the physical characteristics of systems should be taken into consideration in order to avoid unwarranted assumptions. Another member commented that headwater streams were connected to downstream waters but EPA should not assume that they all had an effect on downstream waters. Another member commented that many studies of 1<sup>st</sup> and 2<sup>nd</sup> order streams showed effects on downstream waters. He noted that the aggregate effects of 1<sup>st</sup> order streams on downstream waters actually exceeded the effects of 2<sup>nd</sup> order streams on downstream waters. Another member agreed that there were many studies supporting the finding of significant nexus between 1<sup>st</sup> and 2<sup>nd</sup> order streams and downstream waters.

Following a break, the Chair called for the discussion of the EPA's proposed definition of tributaries. Members commented that in the proposed rule lentic systems were included in the definition of tributaries. They indicated that it would be more appropriate to include lentic systems in the category of adjacent waters. Several members noted that a problem with the definition of tributaries in the proposed rule was that they were defined as having ordinary high water marks. Members commented that ephemeral streams in arid environments often did not have ordinary high water marks but were tributaries. Members also commented that vegetated swales may not have enough flow to produce bank and bed features but variable source areas should not be excluded from the tributary network. A member commented that the definition of tributary should account for geographic variation. Other members commented that the definition of tributaries in the proposed rule did not make allowance for considering, in aggregate, those headwater streams that did not have ordinary high water marks. Another member commented that fish in small streams often used channels that did not have ordinary high water marks and these streams should not be excluded from the tributary network.

A Panel member commented that the Santa Cruz River was an example of a water body with interrupted flow that contained an area without a bed and bank. He noted that under the proposed rule, this area would not be a tributary although it was connected. He indicated that the connection was not obvious and noted that this should be a judgment call made by EPA and the Corps of Engineers. Members discussed the importance of groundwater mediated connectivity. A member commented that in arid areas there may be no surface flow but subsurface flow was critical. A member commented that it was important to consider the temporal component of groundwater connectivity. Another member commented that both shallow and deep groundwater connections were important and both should be considered. Other members agreed that considering only shallow subsurface connections was a problem. Several members commented that the definition of tributaries in the proposed rule should be more flexible. The Panel discussed whether the definition should be revised to refer to "other evidence of high water flow." The Panel also further discussed whether the definition of tributaries should include lentic systems. A member commented that lentic systems were sometimes adjacent waters and were sometimes in the middle of a flowpath. Other members commented that lentic systems could be functionally different from tributaries and should be considered adjacent waters.

*Scientific and Technical Basis for Including Adjacent Waters and Wetlands in Waters of the U.S.*

The Panel next discussed the scientific and technical basis for defining Waters of the U.S. to include adjacent waters and wetlands. Panel members commented that the science supported including adjacent waters and wetlands in waters of the U.S. but members discussed several important issues concerning the definition of “adjacent.” These issues included: how geographic proximity should be considered in determining adjacency, the importance of chemical and biological connectivity, consideration of shallow subsurface connections, the importance of determining adjacency on the basis of functional relationships, and whether a particular flood interval should be used in determining adjacency.

A member commented that the definition of adjacent waters and wetlands should be broadened in the proposed rule. Members noted that the definition of adjacent waters in the proposed rule emphasized the importance of hydrologic connectivity. Members commented that biologic flux should also be taken into consideration in the determination of whether waters and wetlands were adjacent. A member noted that the importance of rills and gullies was discussed in the preamble of the proposed rule and it was not clear why these features were on the list of excluded waters. Members commented that it was not clear how shallow subsurface connections to adjacent waters and wetlands were defined. Members commented that excluding groundwater from jurisdiction was problematic because the science showed that groundwater connections, particularly through shallow flowpaths in unconfined aquifers, were critical in supporting the hydrology and biochemical processes of wetlands. Members commented that using distance to define adjacency was ambiguous and that it was important to consider the functionality of adjacent waters and wetlands. A member noted that distance between adjacent waters and other waters of the U.S. would be immaterial if there were a barrier to flow. The Panel discussed how adjacency might be defined in a functional way. A member suggested that one approach could be to consider connectivity in terms of a budget (e.g., carbon, water, nutrients, propagules) along a connectivity gradient. Members discussed whether it was appropriate for EPA to use best professional judgment in determining whether waters were located within a floodplain and were therefore adjacent. A member suggested that EPA use flood frequency interval data to make this determination. Other members disagreed and commented that best professional judgment should be used. A member commented that adequate flood frequency data may not be available to define the floodplain. Members commented that the definition of riparian area in the proposed rule was problematic because it was based on hydrologic flows and not the other functions that riparian areas provided.

*Scientific and Technical Basis for Case-by-Case Inclusion of Other Waters in the Waters of the U.S.*

The Panel began discussing case-by-case evaluation of the connectivity of “other waters.” Some members commented that a case-by-case evaluation of “other waters” was appropriate but they noted that in aggregate, other waters could have strong effects on downstream waters. Members discussed the importance of groundwater mediated connectivity of “other waters.” Members commented on the identification of similarly situated waters in a region. A member commented that the use of hydrologic landscape regions or ecoregions would be a good approach for identifying similarly situated waters. Other members commented that it would not be appropriate to use ecoregions because they were developed on the basis of terrestrial vegetation communities and did not reflect hydrologic regions. Dr. Rodewald then indicated that it was time to adjourn the teleconference for the day and that the discussion would continue on the teleconference to be held the following day

## Summary

Dr. Rodewald thanked the Panel members for their comments and indicated that the Panel would continue the discussion of the adequacy of the scientific and technical basis of the proposed rule on a teleconference to be held the following day (August 21<sup>st</sup>). The DFO then stated that the teleconference was adjourned and that the Panel would meet by teleconference on August 21st at 1:00 p.m. Eastern Time to continue the discussion.

Respectfully Submitted:

Certified as Accurate:

*/signed/*

*/signed/*

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Dr. Thomas Armitage  
Designated Federal Officer

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Dr. Amanda D. Rodewald, Chair  
SAB Panel for the Review of the EPA Water Body  
Connectivity Report

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by Panel members during the course of deliberations within the meeting. Such ideas, suggestions and deliberations do not necessarily reflect consensus advice from 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: PANEL ROSTER

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### U.S. Environmental Protection Agency Science Advisory Board Panel for the Review of the EPA Water Body Connectivity Report

#### CHAIR

**Dr. Amanda D. Rodewald**, Director of Conservation Science, Cornell Lab of Ornithology and Associate Professor, Department of Natural Resources, Cornell University, Ithaca, NY

#### PANEL MEMBERS

**Dr. Allison Aldous**, Freshwater Scientist, The Nature Conservancy, Portland, OR

**Dr. Genevieve Ali**, Junior Chair, Manitoba's Watershed Systems Research Program, Department of Geological Sciences, University of Manitoba, Winnipeg, MB, Canada

**Dr. J. David Allan**, Professor, School of Natural Resources & Environment, University of Michigan, Ann Arbor, MI

**Dr. Lee Benda**, Research Geomorphologist, Earth Systems Institute, Mt. Shasta, CA

**Dr. Emily S. Bernhardt**, Associate Professor of Biogeochemistry, Department of Biology, Duke University, Durham, NC

**Dr. Robert P. Brooks**, Professor of Geography and Ecology, Department of Geography, Pennsylvania State University, University Park, PA

**Dr. Kurt Fausch**, Professor, Department of Fish and Wildlife and Conservation Biology, Colorado State University, Fort Collins, CO

**Dr. Siobhan Fennessy**, Jordan Professor of Environmental Science, Biology Department, Kenyon College, Gambier, OH

**Dr. Michael Gooseff**, Associate Professor, Department of Civil and Environmental Engineering, Colorado State University, Fort Collins, CO

**Dr. Judson Harvey**, Research Hydrologist, National Research Program, U.S. Geological Survey, Reston, VA

**Dr. Charles Hawkins\***, Professor, Department of Watershed Sciences, and Director, Western Center for Monitoring and Assessment of Freshwater Ecosystems, Quinney College of Natural Resources, Utah State University, Logan, UT

**Dr. Lucinda B. Johnson**, Center Director, Center for Water and the Environment, Natural Resources Research Institute, University of Minnesota Duluth, Duluth, MN

**Dr. Michael Josselyn**, Principal and Senior Scientist, Wetlands Research Associates, Inc., San Rafael, CA

**Dr. Latif Kalin**, Associate Professor, School of Forestry and Wildlife Sciences, Auburn University, Auburn, AL

**Dr. Kenneth Kolm**, President and Senior Hydrogeologist, Hydrologic Systems Analysis, LLC, Golden, CO

**Dr. Judith L. Meyer**, Professor Emeritus, Odum School of Ecology, University of Georgia, Lopez Island, WA

**Dr. Mark Murphy**, Principal Scientist, Hassayampa Associates, Tucson, AZ

**Dr. Duncan Patten**, Professor Emeritus, School of Life Sciences, Arizona State University, Bozeman, MT

**Dr. Mark Rains**, Associate Professor of Ecohydrology, School of Geosciences, University of South Florida, Tampa, FL

**Dr. Ramesh Reddy**, Graduate Research Professor & Chair, Soil and Water Science Department, University of Florida, Gainesville, FL

**Dr. Emma Rosi-Marshall**, Associate Scientist, Cary Institute of Ecosystem Studies, Millbrook, NY

**Dr. Jack Stanford**, Jessie M. Bierman Professor of Ecology, Flathead Lake Biological Station, University of Montana, Polson, MT

**Dr. Mazeika Sullivan**, Associate Professor, School of Environment & Natural Resources, The Ohio State University, Columbus, OH

**Dr. Jennifer Tank**, Galla Professor, Department of Biological Sciences, University of Notre Dame, Notre Dame, IN

**Dr. Maurice Valett**, Professor of Systems Ecology, Division of Biological Sciences, University of Montana, Missoula, MT

**Dr. Ellen Wohl**, Professor of Geology, Department of Geosciences, Warner College of Natural Resources, Colorado State University, Fort Collins, CO

#### **SCIENCE ADVISORY BOARD STAFF**

**Dr. Thomas Armitage**, Designated Federal Officer, U.S. Environmental Protection Agency, Washington, DC

**Ms. Iris Goodman**, Designated Federal Officer, U.S. Environmental Protection Agency, Washington, DC

## ATTACHMENT B: OTHER ATTENDEES

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List of others who requested access to the teleconference or audio webcast.

| <b>NAME</b>      | <b>AFFILIATION</b>                |
|------------------|-----------------------------------|
| Amanda Aspatore  | National Mining Association       |
| Henri Bartholmot | Edison Electric Institute         |
| Lindsay Bass     | XTO Energy, Inc.                  |
| Susan Bodine     | Barnes and Thornburg              |
| Meghan Bolan     |                                   |
| Kristin Brodeur  |                                   |
| Brad J. Burke    |                                   |
| Sharon Campbell  | Hunton and Williams               |
| Colin Carroll    | American Iron and Steel Institute |
| Spencer Chase    |                                   |
| Roger Claff      |                                   |
| Claudia Copeland | Congressional Research Service    |
| Terry Cundy      |                                   |
| Kyle Dahl        |                                   |
| Bridget Dicosmo  |                                   |
| Diedre Duncan    |                                   |
| Susan Eastwood   |                                   |
| Jeff Everett     |                                   |
| Sara Everitt     |                                   |
| Ganesh Ghurye    | ExxonMobil                        |
| Karen Gude       |                                   |
| Elizabeth Gunter |                                   |
| Rosemary Hall    |                                   |
| Tom Hebert       |                                   |
| Jenny Hopkinson  |                                   |

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| Fred Jacobsen           |  |
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| Danny Johns             |  |
| Ilan Kaufer             |  |
| Nancy Keller            |  |
| Nathan Kuhnert          | Devon Energy Corporation               |
| Rose Kwok, U.S. EPA     |  |
| Mark Larue              |  |
| Kelly Laycock           |  |
| Ian Lyle                | National Water Resources Association   |
| Cameron Madsen          | Office of Representative Chris Stewart |
| Ethan Mathews           |  |
| Julia McCarthy          |  |
| Lisa McClain-Vanderpool |  |
| Mike Mathis             |  |
| Todd Neeley             |  |
| Adam Nielsen            |  |
| Don Parrish             | American Farm Bureau Federation        |
| Lou Pattan              |  |
| Terry Paulo             |  |
| Craig Pearson           |  |
| Jennifer Peters         |  |
| Tim Powell              |  |
| Patrick Rohen           |  |
| Shelley Ross            | Kelly Hart                             |
| Katherine Rubin         |  |
| Amena Saiyid            | Bloomberg BNA                          |
| Andrew Sayers-Fay       |  |

| <b>NAME</b>      | <b>AFFILIATION</b>                                 |
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| Greg Schrab      |  |
| Eric Somerville  | U.S. EPA   |
| Jennifer Stenger | Duke Energy  |
| Jill C. Teraoka  | Metropolitan Water District of Southern California |
| Ben White        |  |
| Andy Whittington |  |
| Josh Winegarner  |  |
| Sally Yost       |  |

## Materials Cited

The following meeting materials are available on the SAB website, <http://www.epa.gov/sab>, on the April 28<sup>th</sup> meeting page of the Panel for the Review of the EPA Water Body Connectivity Report:

<http://yosemite.epa.gov/sab/sabproduct.nsf/MeetingCal/0AFCAA147379B79385257D03006DE528?OpenDocument>

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<sup>1</sup> Federal Register Notice

<sup>2</sup> Agenda

<sup>3</sup> Panel Roster

<sup>4</sup> Proposed rule titled *Definition of “Waters of the United States” Under the Clean Water Act*

<sup>5</sup> Chair’s Instructions to Panel Members for Providing Comments on the Adequacy of the Science Supporting the Proposed Rule Titled *Definition of “Waters of the United States” Under the Clean Water Act*

<sup>6</sup> Memorandum from Dr. David Allen, Chartered SAB Chair, to Dr. Amanda Rodewald Requesting Comments from the SAB Connectivity Panel on the Scientific and Technical Basis of the Proposal *Definition of “Waters of the United States” Under the Clean Water Act*

<sup>7</sup> Panel Members’ Comments

- Preliminary Comments from Individual Panel Members (as of 8/14/14)
- Comments from Dr. Emily Bernhardt – Outline to guide Discussion of the Definition of Other Waters on a Case-by-Case Basis as Waters of the U.S.
- Preliminary Individual Comments from Dr. Judy Meyer, August 19, 2014
- Preliminary Individual Comments from Dr. Lee Benda, August 18, 2014
- Preliminary Individual Comments from Dr. Lucinda Johnson and Dr. Maurice Valett
- Preliminary Individual Comments from Dr. Siobhan Fennessy, August 19, 2014
- Revised Preliminary Comments from Dr. Allison Aldous, August 18, 2014

<sup>8</sup> Presentation by David Evans, Proposed ‘Rule: Definition of “Waters of the U.S.” Under the Clean Water Act

<sup>9</sup>Public Comments received

- Table of Public Comments Received by the EPA Docket as of August 15, 2015
- Comments from Daniel Johns