

**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 21, 2014**

**Date and Time:** Thursday, August 21, 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. Latif Kalin  
Dr. Kenneth Kolm  
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 indicated that the teleconference was being held to continue the Panel's discussion of the adequacy of the science supporting the proposed rule titled *Definition of the "Waters of the United States" under the Clean Water Act*. 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. 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 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> EPA presentation to the Panel,<sup>8</sup> and written public comments received for the Panel's consideration and posted 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 noted that the Panel had met by teleconference on August 20, 2014 to develop comments to the chartered SAB on the scientific and technical basis of the proposed rule titled *Definition of "Waters of the United States" Under the Clean Water Act*. She stated that the Panel was meeting by teleconference to continue the discussion. She noted that the Panel had previously discussed the scientific and technical basis for including streams and adjacent waters and wetlands in Waters of the U.S. She indicated that the following specific topics were on the agenda for discussion on the call: (1) the scientific and technical basis for including "other waters" in the waters of the U.S. on a case-by-case basis, and (2) the proposed definitions and exclusions of specified waters from Waters of the U.S. She noted that Panel members

could comment on any aspect of the scientific and technical basis of the proposed rule. Dr. Rodewald also noted that time would be provided on the call to hear brief clarifying comments from EPA Staff or members of the public. She noted that one member of the public had requested time for a clarifying comments.

## **Panel Discussion**

### *Case-by-Case Inclusion of “Other Waters” in the Waters of the U.S.*

The Panel continued its discussion of the adequacy of the scientific and technical basis for case-by case inclusion of “other waters” in the Waters of the U.S. Several members commented on the importance of considering the chemical and biological connections of “other waters.” A member commented that hydrological connections should receive greater attention. Other members indicated that equal weight should be given to hydrological, chemical, and biological connections in order to provide a balanced perspective.

The Panel discussed the use of flood return intervals to help define the edge of adjacency for determining Waters of the U.S. Members commented that some wetlands which were not within defined boundaries of floodplains should be considered adjacent waters. Other members commented that it was important to allow flexibility in determining the edge of adjacency. Panel members discussed the EPA’s use of the words “bordering” and “neighboring” to define adjacency. A member commented that the proposed rule provided some flexibility in determining adjacency. The Chair indicated that the Panel had discussed the inclusion of adjacent waters and wetlands to some extent but needed to discuss determination of significant nexus for “other waters.”

Panel members discussed the definition of significant nexus. Members commented that the proposed rule should provide a better explanation of what was meant by significant. The Chair pointed out that the EPA had indicated that: (1) significant was a legal term, and (2) while science informed the determination of significant nexus, it was not the sole determinant. Members commented that more information was needed in the proposed rule to interpret and clarify the meaning of significant nexus.

The Panel discussed whether there was a need to include additional information in the proposed rule to describe the connectivity of “other waters” to downstream waters. A member commented that the preamble described the connection of tributaries to downstream waters. He noted that that this part of the preamble was well-written and focused on evidence. He commented that additional evidence of the connectivity of “other waters” to downstream waters should also be included in the preamble. Members suggested that EPA should include information on the functional significance of “other waters” to the physical, chemical, and biological integrity of downstream waters. Members also noted that in EPA’s discussion of “other waters,” groundwater connections received less attention than surface water connections. Members commented on the importance of groundwater connections. Some members indicated that in EPA’s proposed rule there should be more emphasis on hydrogeology and biological connectivity. Members noted that deep groundwater connections were not addressed in the proposed rule and that it was important to include information on groundwater mediated connectivity.

Panel members discussed EPA’s proposed case-by-case determination of whether “other waters” in combination with other similarly situated waters, including wetlands located in the same region, had a significant nexus to a traditional navigable water, interstate water, or the territorial seas. Members commented that aggregating similarly situated waters was scientifically justified. Members also expressed support for using the concept of similarly situated waters to guide aggregation. A member

commented that in this context the term “region” was too narrow because it did not account for differences between surface and groundwater flowpaths. He further noted that in this context the term “hydrologic watershed unit” would be more appropriate. Another member agreed that the term “region” was an artificial description of the area that should be considered in identifying similarly situated waters. He noted that a more natural definition of the watershed was required. Other members commented on the challenges associated with the task of aggregating “other waters.” Members discussed the temporal dimension of aggregation. They noted, for example, that during dry periods there could be separation of wetlands in particular regions. A member suggested that EPA consider using a modeling framework, and running different models under different scenarios, to identify and aggregate similarly situated waters. Another member commented that in the process of aggregation it was important to identify wetlands that shared landscape position and functional characteristics even if they were not connected directly. Other members commented that it was difficult to develop applicable language on how to identify and aggregate similarly situated waters. Members suggested that it would be useful to consider structuring questions that could be used to conduct these kinds of analyses rather than developing specific methods that should be used. Members commented that the rule should not be too prescriptive in this regard. A member commented that up-to-date methods should be used. Other members stressed the importance of considering groundwater connections. Members commented that the use of a flowpath approach was the most scientifically rigorous way to identify “other waters” and the extent to which they were similarly situated.

Panel members discussed the four options that EPA had identified for determining whether “other waters” were jurisdictional under the Clean Water Act. These were: (1) “other waters” would be similarly situated only in certain areas of the U.S. (e.g., in certain ecoregions); (2) certain subcategories of “other waters” as a class would have a significant nexus; (3) no “other waters” would be similarly situated and all “other waters” would be evaluated individually; and (4) all “other waters” in the watershed would be similarly situated. Several members commented that because ecoregions were based on terrestrial vegetation they should not be used as a basis for determining whether waters were similarly situated. Members indicated that for certain subcategories of “other waters” in particular regions of the U.S. there was sufficient scientific evidence to conclude that these waters were similarly situated. Some members indicated that prairie potholes and western vernal pools were examples of these subcategories of “other waters.” A member noted that within an ecoregion there could be several different classes of waters that were similarly situated. Some members expressed a preference for combining EPA’s options 1 and 2. Members commented that there was less scientific support for options 3 and 4 than for the other options. A member commented that wetlands were usually aggregated by watershed unit and therefore it would be appropriate to use watershed units to consider whether wetlands were similarly situated.

Several Panel members commented that the conceptual model described in the Panel’s review of the EPA’s science synthesis report, *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence*, would be a useful framework for considering the geographic boundaries of “other waters” and the extent to which they were similarly situated waters. The Panel discussed whether a listing methodology should be developed to identify similarly situated “other waters.” Some Panel members commented that “other waters” should not be identified by means of a listing process. Members indicated that it would be better to use a flowpath approach to identify “other waters” and the extent to which they were similarly situated

Before moving the next topic on the agenda Dr. Rodewald summarized some of the main points that had been discussed on the Panel’s calls on August 20-21. She noted that:

- Nearly all Panel members had agreed that even though connectivity occurs along a gradient, there is strong scientific evidence that tributaries as a group have strong influence on the physical, chemical, and biological integrity of downstream waters, and therefore the science supports making tributaries jurisdictional under the Clean Water Act. Two panel members had objected to any inclusion of tributaries in the Waters of the U.S. by rule and had commented that connectivity occurs along a gradient and that necessitates case-by-case examination.
- Members of the Panel had commented that, although connectivity occurs along a gradient, adjacent waters and wetlands have strong influence on the physical, chemical, and biological integrity of traditional navigable waters, interstate waters, and the territorial seas. Therefore nearly all members of the Panel had agreed that the science supports the categorical determination in the proposed rule that adjacent waters and wetlands are jurisdictional under the Clean Water Act. Two members of the Panel had not agreed that the science supports any categorical determination of jurisdiction by rule.
- Panel members had commented that “other waters” should not be categorically included in the Waters of the U.S. Panel members commented that in general, “other waters” could be considered (a) on an individual case-by-case basis, (b) in aggregate for similarly situated other waters, or (c) regionally jurisdictional for other groups of similarly situated waters. Many panel members had commented that distance should not be the primary metric used to evaluate significance of connection of “other waters” to jurisdictional waters.

#### *Definitions and Exclusions of Specified Waters*

Dr. Rodewald indicated that the Panel should next discuss EPA’s proposed definitions and exclusions of specified waters. She noted that the Panel had already discussed many of the definitions so she wanted to focus on the exclusions. Panel members discussed some of the proposed exclusions.

The Panel discussed the proposed exclusion of ditches that were excavated wholly in uplands, drained only uplands, and had less than perennial flow. A member commented that ditches were a diverse class of features. He indicated that the definition of upland in the proposed rule needed clarification. Members commented that the proposed exclusion of ditches could be problematic because many ditches drained areas that previously would have been identified as wetlands. Members commented that the exclusion should apply to ditches that had less than intermittent, rather than perennial, flow.

The panel discussed the exclusions of groundwater and prior converted cropland. A member noted that the Panel had previously discussed the importance of groundwater connectivity. A member questioned whether land that was not continually used for agriculture could be defined as prior converted cropland. She noted that many headwater streams would not be jurisdictional under the proposed rule because of the prior cropland exclusion.

A member noted that, to be excluded from Waters of the U.S., ditches had to be entirely in upland. He also noted that if ditches flowed through wetlands they would be Waters of the U.S. He commented that this could mean that no ditches in Florida would be excluded. Other members commented that the exclusion of upland ditches with less than perennial flow would mean that many ditches in the Midwest were excluded from jurisdiction. They noted that it was important to consider the drainage flowpaths of ditches. The Panel discussed the role of ditches in moving water to Lake Erie and in moving water from farm fields. A member commented that he was not convinced that the science supported the exclusion of ditches in the proposed rule. He commented that many ditches functioned as tributary networks and had effects on downstream waters.

The Panel discussed the proposed exclusion of gullies, rills, and non-wetland swales. Some Panel members commented that these features were important conduits for moving water between jurisdictional waters and were therefore important forms of hydrological and other types of connectivity. Members commented that it was not clear why gullies that linked jurisdictional waters should be excluded. A member commented that some gullies had been allowed to become permanent and minimally ephemeral (such as those caused by over grazing of livestock) and these should be included in Waters of the U.S. Members commented that until science was available to make an appropriate determination about gullies, rills, and non-wetland swales as a class, they should be assessed along a gradient of connectivity on a case-specific basis to determine whether they should be jurisdictional under the Clean Water Act. Members then asked EPA staff several clarifying questions about the proposed exemption for ditches and Mr. Evans responded to the questions.

Members commented on the proposed exclusion of artificial lakes and ponds. Some members indicated that these waters were sometimes connected to the Waters of the U.S. by shallow or deep groundwater and therefore a hydrologic system analysis was needed to determine whether they should be excluded from jurisdiction. Members also commented that it was not clear whether various engineered features with connections to downstream waters would be excluded under the proposed rule.

### **Clarifying Comments from Members of the Public and EPA Staff**

Dr. Rodewald next called for brief clarifying comments from members of the public and EPA staff. She asked the DFO whether any requests to provide clarifying comments had been received from members of the public. The DFO replied that a request had been received from Mr. Daniel Johns. The Chair called for comments from Mr. Johns but he was not present on the call. Dr. Rodewald then called upon Mr. David Evans of EPA to provide remarks. Mr. Evans thanked Panel members for their comments and indicated that he looked forward to receiving advice from the SAB on the adequacy of the scientific and technical basis of the proposed rule.

### **Concluding Comments and Next Steps**

Dr. Rodewald then asked Panel members whether they had additional comments. A member asked how the Panel's comments would be transmitted to the chartered SAB. Dr. Rodewald responded that she would prepare a memorandum to the Chartered SAB summarizing the main points that had been discussed by the Panel. The Chartered SAB would then take the memorandum into consideration and prepare a letter to the EPA Administrator. Dr. Rodewald noted that the Chair of the chartered SAB and some SAB members had been present on the call. There were no further comments from Panel members so Dr. Rodewald summarized some of the other main points that had been discussed.

With regard to the case-by-case inclusion of "other waters" in the Waters of the U.S. she noted that:

- Members had recommended using a flowpath approach to identify other waters and the extent to which they were similarly situated.
- Members had commented that it would be useful to use the conceptual framework provided in the Panel's review of the EPA Connectivity Report.
- Panel members had commented that aggregating similarly situated waters was scientifically justified.
- Panel members had indicated that some classes of "other waters" could be considered to be similarly situated.

- Members had concerns about the use of ecoregions to identify similarly situated waters because ecoregions were developed on the basis of terrestrial vegetation communities.

Dr. Rodewald noted that Panel members had called for clarifications in EPA’s proposed definitions of: tributary, shallow subsurface connections, adjacent waters, riparian area, and significant nexus. In addition, she noted that panel members had provided comments on the proposed exclusion of groundwater; ditches; gullies, rills, and non-wetland areas; and artificial lakes and ponds.

Dr. Rodewald then thanked the Panel members for their comments and indicated that she would prepare a memorandum summarizing the main points discussed on the August 20-21 teleconferences. The memorandum would be sent to the chartered SAB along with the individual comments from Panel members. She noted that if Panel members wished to revise their individual written comments they should send revisions to the DFO by Tuesday, August 26, 2014. There were no other items on the agenda so Dr. Rodewald asked the DFO to adjourn the teleconference. The DFO thanked Panel members for their participation and adjourned the teleconference.

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 Bartholomot	Edison Electric Institute
Lindsay Bass	XTO Energy, Inc.
Susan Bodine	Barnes & Thornburg
Meghan Bolan	
Brad J. Burke	
Ruth Calabrese	
Laura Campbell	
Sharon Campbell	Hunton and Williams
Colin Carroll	American Iron and Steel Institute
Roger Claff	
Claudia Copeland	Congressional Research Service
Constance Corry	
Terry Cundy	
Bridget DiCosmo	
Sandy Evalenko	
Sara Everitt	
Ganesh L. Ghurye	Exxonmobil
David Goodrich	
Karen Gude	
Rosemary Hall	
Fred Jacobsen	
Ilan Kaufer	
Mathew Klasen	U.S. EPA
Nathan Kuhnert	Devon Energy Corporation

<b>NAME</b>	<b>AFFILIATION</b>
Rose Kwok	U.S. EPA
Ian Lyle	National Water Resources Association
Cameron Madsen	Office of Representative Chris Stewart
M. Mathis	
Julia McCarthy	
Don Parrish	American Farm Bureau Federation
Jennifer Peters	
A. Pollard	
Patrick Rohen	
Shelley Ross	Kelly Hart
Amena Saiyid Bloomberg BNA	
Greg Schrab	
Erik Shilling	
Eric Sommerville	U.S. EPA
Jennifer Stenger	Duke Energy
Jill C. Teraoka	Metropolitan Water District of Southern California
Sally Yost	

## Materials Cited

The following meeting materials are available on the SAB website, <http://www.epa.gov/sab>, on the August 21st 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