

**Final Consultation Notes  
of the  
Homeland Security Advisory Committee (HSAC)  
on the  
WaterSentinel (WS) Program & Standard Analytical Methods (SAM)**

**January 30 - 31, 2006**

Dates and Times:           Monday, January 30, 2006; 8:30 am - 6:00 pm (partially closed)

  Tuesday, January 31, 2006; 8:00 am - 12:00 noon (entirely opened)

Location:                    SAB Conference Center, Woodies Building; 1025 F Street, NW, Washington, DC

Purpose:                      The purpose of the consultation was to seek early advice from the individual members of the SAB HSAC regarding the proposed approach, design, adequacy and the future implementation for the WS program and the scientific soundness and adequacy of SAM.

Attendees:                  (See Attachment A)

**Meeting Summary:**

The discussion followed the issues and general timing as presented in the Meeting Agenda (Attachment B).

**Day 1, Monday, January 30, 2006 – Review of the WaterSentinel Program**

Ms Vivian Turner, the Designated Federal Officer (DFO) for the HSAC, opened the meeting and welcomed the attendees. She described the purpose of the consultation, the sensitive nature of certain WaterSentinel information which necessitated a partially closed session, the FACA law under which HSAC is operated and the compliance of HSAC with federal ethics rules. She also noted there were no requests from the public for participation at the consultation. Dr. Vanessa Vu, Director for the SAB Staff Office, welcomed the panel members and attendees. The meeting was turned over to the Chair, Dr. Baruch Fischhoff, and then to panel members for self-introductions. The DFO noted that one expected panel member, Dr. Royal Nadeau, could not attend due to illness.

Ms Cynthia Dougherty, Director Office of Ground Water and Drinking Water, expressed thanks to the HSAC for their attention to the WaterSentinel Program and described EPA's responsibility under Homeland Security Directive 9 to promote the adoption of a

security program that addresses threats to the nation's water system. Following that discussion, the DFO announced that the meeting was then closed and Mr. Steve Allgeirer, a key technical expert for the Agency, directed the Panel's attention to the following charge questions:

1. System Architecture Document: What, if any, key additional elements to a contaminant warning system—beyond the five proposed components of (i) contaminant-specific monitoring, (ii) water quality monitoring, (iii) public health syndromic surveillance, (iv) consumer complaint tracking, and (v) physical security monitoring—should EPA consider incorporating into the WaterSentinel system architecture?
  - a. Please comment on EPA's general approach of integrating multiple monitoring and surveillance strategies to improve the reliability and coverage of the system, as opposed to a reliance on different (e.g., direct monitoring of high priority contaminants) or fewer information streams (e.g., solely water quality indices).
  - b. Please comment on the emphasis of sustainability, including dual-use application and cost-benefit, in the design of the contamination warning system?
  - c. Please comment on using contaminant selection as a reasonable and appropriate approach in developing the design basis? What issues and potential limitations should EPA consider with the reliance on initial detection of "contamination," rather than of specific contaminants, in the system design?
2. Online Water Quality Monitoring: Based on the current understanding of water quality sensor response to specific contaminants, and the state of the science for event detection systems, what additional considerations or potential limitations should EPA consider in the design and testing of this component of the pilot?
3. Timeline Analyses: What, if any, refinements to the incident timeline analysis would better support the proposed contaminant warning system concept of operations?
4. Contaminant Selection: What additional considerations could EPA review in the approach for identifying and prioritizing contaminants for inclusion in the WaterSentinel baseline list.
5. Consequence Management: Given the importance of consequence management to the contamination warning system, what additional issues and challenges should EPA consider in its strategy for developing a consequence management plan?
6. Event Detection Systems (EDS): What, if any, refinements could improve the process for evaluating, selecting, and field testing an EDS for the WaterSentinel program, and of what additional challenges should EPA be cognizant in its use of EDS in the program design?

Many members of the HSAC expressed their gratitude for the Agency's eagerness for input at a formative stage in their work, as well as for the commitment and professionalism.

These charge questions on the WS program generated a productive dialogue that sometimes involved sensitive information, not suitable for public release. As a result, these notes are restricted to general topics, whose content could be learned from publicly available documents. Because the meeting was a consultation, rather than a review, no consensus report was developed. The following are highlights of discussion points by HSAC members:

- It is difficult to consider the strategic priorities that underlie the program without access to the intelligence analyses that guide it. As a result, none of the committee members' comments should be construed as endorsing or criticizing the overall allocation of resources to the WS program or to its architecture. Members could only comment on the completeness and cost-effectiveness of the program designed to meet those objectives.
- Some aspects of the program were well specified and thoughtfully presented, such as the optimization model for a subset of the situations that the WS might face and a subset of the objectives that it must address. Others were not as fully addressed. As a result, it is difficult to assess the overall system integration and optimization. It was not, for example, possible to understand how the optimization model would scale up to consider a broader range of issues (although its precision allowed a lively discussion of possible approaches).
- The program pays no obvious scientific attention to organizational aspects of the program, including how information will be communicated among responsible parties, how common interpretations and response protocols will be assured, and how decisions will be made regarding the activation and deactivation of emergency procedures. It is quite possible that these will pose different challenges for large and small water systems.
- The program pays no obvious scientific attention to the needs of first responders (broadly defined), who need training, response protocols, usable equipment, etc., in order to extract the value of the system, in order to protect the public, while also protecting themselves.
- The program pays no obvious scientific attention to communication issues, especially regarding the public that will need to deal with actual emergencies, false alarms, and resumption of normal water use patterns, as well as the diagnosis and treatment of potential and actual health effects.
- The program pays no obvious scientific attention to the role of watershed protection and health in determining vulnerability to contamination and response.
- Specific aspects of the program where research was suggested included: prevention, crisis management, scenarios, timeline modeling, public health impact assessment (including potential losses of life, health, economic productivity, and well being).

- There is the risk that implementing the best currently available technology for a problem will foreclose future better options, because resources are consumed by servicing the installed base of an old technology. Answering this question will require the analysis of emerging technologies and the protection of research funds from being consumed by operations. This issue becomes more important to strategic planning, if one views our enemies as adaptive, capable of learning our protective measures and devising ways around them.
- Homeland security risk management can involve both law enforcement and public health personnel. Coordinating their activities requires advance planning, if the program is to realize its potential.
- It was not clear, from the evidence presented, how these activities are coordinated with those of other relevant agencies. Discussion of seemingly relevant planning activities does not allow saying anything about the associated plans.

The consultation on WS was adjourned by the HSAC DFO at approximately 6 pm.

### **Day 2, Tuesday, January 31, 2006 - Review of the SAM Document**

The DFO for the HSAC opened the meeting and turned the consultation over to the Chair for initial comments. A brief introduction from the Agency on the need for instituting standard analytical methods was provided by Jonathan Herrmann, the Acting Management Deputy for Homeland Security Research Center (HSRC) (who spoke on behalf of Andy Avel, the Acting Director for HSRC). He stated that the September 11, 2001 attack and the nation's anthrax alerts were the impetus and wake-up calls for acknowledging the need to have standard analytical methods (SAM) to address contaminant issues. He expressed the Agency's interest in obtaining initial thoughts of the HSAC members on potential improvements and refinements to the SAM document. Mr. Oba Vincent, the technical expert for developing the SAM document, directed the Panel's attention to the following charge questions:

1. Is the approach undertaken in developing the SAM document technically sound? Could it be improved for future SAM up-date?
2. Is the disclaimer language contained in the SAM document sufficient to address the limitations and uncertainties in the methods?
3. Are there any other comments or advice that the SAB HSAC Review Panel wishes to provide with regard to ways that the SAM document can be improved to help to facilitate its application?

The comments voiced by HSAC Panel Members include the following:

- There would be value in having the Agency develop a comparable document for "real time" SAM, which may require different technologies and tradeoffs. Because early sample collection is very important, criteria for sample collection

- should be part of the SAM process. That guidance should consider the conditions faced by the diverse groups of first responders who might bear these critical (and potentially dangerous) responsibilities. Their equipment (and training) may vary from rudimentary to sophisticated.
- The document should be clearer about its scope, in particular that it does not address real-time needs, in the event of a disaster. For example, it will not help to determine if an area is safe for access for first responders or if evacuation is required. Care must be taken that potential users do not rely on it for those purposes, in their planning or their actions.
  - The organizational context for SAM is not well articulated in the documents made available to the committee. The science and engineering in the guidelines will have little value unless they can be used under realistic circumstances. Some issues could be addressed by design. For example, it would be especially valuable to have a “road map” that states which method would be used in a given situation, how the output should be used, what detection limits must be considered when managing risks, etc. Other issues will require organizational and behavioral research (e.g., making decisions, communicating results, ensuring quality control of sample selection).
  - Because of the widespread interest already generated in the SAM document (as seen in web-site downloads), it merits an investment in usability. Several specific suggestions were improving: (a) the language regarding its use (including when it should not be used), (b) the accessibility of specific methods in the document (which is presented as an annotated bibliography of methods), (c) electronic access, and (d) the presentation of tables and use of acronyms.
  - Several topics arose regarding the science underlying the conclusions: (a) Polymerase chain reaction (PCR) methods are missing for some bacterial agents; (b) For radionuclides, total alpha and gamma are listed, but not total beta; (c) A discussion of efficiency is needed to complete the characterization of imprecise extraction methods; (d) The document should note where methods are in development and, to the extent possible, a forecast of when they might be available; (e) The criteria for selecting methods are not presented, making it hard to evaluate SAM’s appropriateness for different settings.
  - Even though the goal of SAM is to develop standardized methods, it addresses the flexibility that emergency situations might require. That effort might be relatively easy for an area like biologicals where the set of feasible methods is small, allowing it to provide guidance on the strengths and weaknesses of those methods, so that risk managers know what they can (and cannot do) with the resources at hand.

Dr. Baruch Fischhoff, the Chair of HSAC, commended the Agency for providing well-conceived background materials and thanked them for seeking early thoughts on these

difficult homeland security topics. The consultation was adjourned by Ms Turner at 12:00 noon.

Respectfully submitted,

/signed/  
Vivian A. Turner  
HSAC DFO

/signed/  
Baruch Fischhoff, Ph.D.  
HSAC Chair

Date: March 21, 2006

Attachment A

**U.S. Environmental Protection Agency  
Science Advisory Board  
Homeland Security Advisory Committee  
for the  
WaterSentinel Program and Standard Analytical Methods**

Attendees:

Panel Members Present:

Chair:

Dr. Baruch Fischhoff,

Dr. Mark Borchardt

Dr. Vicki Bier

Dr. Mary Durfee

Dr. David S. Ensor

Dr. Lynda Knobeloch

Dr. Paul Lioy

Dr. Lee D. McMullen

Dr. Christine Owen

Dr. Robert E. Pitt

Dr. Robert Snyder

Dr. Linda Stetzenbach

Mr. Richard Sustich

Dr. Michael Trehy

Dr. Daniel C. Walsh

Dr. James E. Watson

Dr. Rae Zimmerman

EPA SAB Staff:

Mr. Richard Albores, Deputy  
Director for Management

Dr. Holly Stallworth

Ms. Vivian Turner, Designated  
Federal Officer

Dr. Vanessa Vu, Director

Other Attendees:

Zaileen Alibhai, CSC

Steve Allgeier, OW

Allen Antely, OSWER

Eletha Brady-Roberts, HSRC

Kathy Clayton, HSRC

Kevin Connell, CSC

William Desing, CH2MHILL

Cynthia Dougherty, OW

Laura Flynn, OHS

John Hall, HSRC  
Yakir Hasit, CH2MHILL  
Kenneth Haymes, OPPTS  
Jonathan Herrmann, ORD/HSRC  
Sneed Hearn, Inside EPA  
Gary Jacobson, CH2MHILL  
Peter Jutro, ORD/HSRC  
Mary Kruger, OHS  
Eric Koglin, ORD/HSRC  
Kim Morgan, CSC  
John Martin, OHS  
Regan Murray, HSRC  
Cayce Parrish, OHS  
Jessica Pulz, CSC  
Jerry Scott, CSC  
Irwin Silverstein, AAAS/EPA  
Ashley Smith, OW  
Dan Schmelling, OW  
Doron Shalvi, CSC  
Sarah Tater, CSC  
David Travers, OW  
Oba Vincent, HSRC

**January 31, 2006**

Eletha Brady-Roberts, ORD/HSRC  
William Clark, AMWA  
Joan Cuddeback, CSC  
Laura Flynn, OHS  
Jonathan Herrmann, ORD/HSRC  
Peter Jutro, ORD/HSRC  
Trevor Knoblich, IWP  
Eric Koglin, ORD/HSRC  
Regan Murray, ORD/HSRC  
Jessica Pulz, CSC  
Oba Vincent, ORD/HSRC  
Pat Ware, BNA

Attachment B

**US Environmental Protection Agency  
EPA Science Advisory Board  
Homeland Security Advisory Committee (HSAC)**

**Consultation on EPA's WaterSentinel Program and  
Standard Analytical Methods**

**January 30, 2006**

**8:30 am - 6:00 pm Eastern Time**

**January 31, 2006**

**8:00 am - 12:00 pm Eastern Time**

**Woodies Building  
1025 F Street, NW, Suite 3700  
Washington, DC  
Phone: 202-343-9999 (SAB's main #)**

**AGENDA**

**Monday, January 30, 2006 - Partially Closed Public Meeting**

8:30 am	Convene the Consultation on WaterSentinel (WS) and Opening Remarks	Ms. Vivian Turner <i>Designated Federal Officer, SAB Staff Office</i>
	Welcome	Dr. Vanessa Vu, <i>Director, SAB Staff Office</i>
	Introduction of Advisory Members	Dr. Baruch Fischhoff, <i>Chair and Panel Members</i>
	Review of the Agenda for WS	Dr. Baruch Fischhoff, <i>Chair</i>
8:50 am	EPA's Introductory Remarks on the WS Program	Ms. Cynthia Dougherty, <i>Director, EPA OGWDW</i>
<b>*9:30 am to 5:30 pm</b>	<b>Closed Meeting - Not Opened to the Public</b>	

## Details of Closed Consultation

<b>9:30 am</b>	<b>Background on Charge Questions #1 (System Architecture) and #4 (Contaminant Selection)</b>	Mr. Steve Allgeier <i>OW/Water Security Division</i>
	<b>Panel Response</b>	Dr. Fischhoff and Panel
12 noon to 1:00 pm	<b>Lunch</b>	
1:00 pm	<b>Background on Charge Question # 3, (Timeline Analysis)</b>	Dr. Regan Murray, <i>ORD/HSRC</i>
	<b>Panel Response</b>	Dr. Fischhoff and Panel
3:00 pm	<b>Break</b>	
3:10 pm	<b>Background on Charge Question #2, (On-line Water Monitoring) &amp; Charge Question #6, (Event Detection)</b>	Mr. John Hall, <i>ORD/NHSRC</i> , Dr. Irwin Silverstein, <i>OW/WSD</i>
	<b>Panel Response</b>	Dr. Fischhoff and Panel
<b>4:40 pm</b>	<b>Background on Charge Question #5, (Consequence Management)</b>	Ms. Ashley Smith, <i>OW</i>
	<b>Panel Response</b>	Dr. Fischhoff and Panel
5:45 pm	<b>Consultation Re-Opens to the Public</b>	
5:45 pm	Summary of Comments on the WS Program and Next Steps	Dr. Fischhoff, <i>Chair</i>
6:00 pm	Adjourn for the Day	Ms. Turner, <i>DFO</i>

**\*Closed Meeting** – not open to the public as provided in Federal Register notice, <http://www.epa.gov/fedrgstr/EPA-MEETINGS/2005/December/Day-19/m7505.htm>

**Tuesday, January 31, 2006 - Open to the Public**

8:00 am	Convene the Consultation on Standard Analytical Methods (SAM)	Ms. Vivian Turner, <i>DFO</i>
8:05 am	Review of Agenda for SAM	Dr. Baruch Fischhoff, <i>Chair</i>
8:10 am	EPA's Introductory Remarks on SAM	Mr. Andy Avel, <i>Acting Center Director EPA ORD/NHSRC</i>
8:15 am	Overview of SAM & How it Fits into Environmental Laboratory Response Network (LRN)	Mr. Oba Vincent, <i>Technical Lead – ORD/NHSRC</i>
8:45 am	Background on Charge Question #1, (Approach to Document Development)	Mr. Oba Vincent
	Panel Response	Dr. Fischhoff and Panel
10:30 am	<b>Break</b>	
10:40 am	Background on Charge Question #2, (Disclaimer Language)	Mr. Oba Vincent
	Panel Response	Dr. Fischhoff and Panel
11:20 am	Response to Charge Question # 3, (Recommendations for Improvements to SAM Document)	Dr. Fischhoff and Panel
11:45 am	EPA's Remarks to the Panel	Dr. Peter Jutro, <i>NHSRC Deputy Director for Science and Policy</i>
11:50 am	Summary of Recommendations and Next Steps	Dr. Fischhoff, <i>Chair</i>
12:00 noon	Adjourn the Meeting	Ms. Turner, <i>DFO</i>