SAB Science Integration for Decision Making Fact-Finding Meeting
Office of Water, Office of Wetlands, Oceans and Watersheds (OWOW)
EPA West, Washington, DC
January 20 and 28, 2010

Five members of the SAB Committee on Science Integration for Decision Making conducted two interviews in EPA's Office of Wetlands, Oceans, and Watersheds (OWOW): Drs. James Johnson and Gary Sayler in person, and Drs. Terry Daniel, Wayne Landis, and Thomas Theis by telephone. Dr. Vanessa Vu, Director of the SAB Staff Office, provided a brief introduction to the purpose of the interview and the Designated Federal Officer, Dr. Angela Nugent, took notes to develop a summary of the conversation. All interviewees were provided a copy of the committee's Preliminary Study Plan in advance.

Dr. Vu noted in each interview that the purpose of the interview was to help SAB Committee members learn about OWOW's current and recent experience with science integration supporting EPA decision making so that the SAB can develop advice to support and/or strengthen Agency science integration efforts. Dr. Vu thanked participants for taking time for the interviews.

Meeting with the Office of Water, OWOW Deputy Office Director and Management Team (January 20, 2010, 3:45 p.m. - 5:00 p.m.) Participants:

Ms. Suzanne Schwartz, Deputy Director, OWOW
Mr. Darrell Brown, Associate Director, Oceans and Coastal Protection Division
Ms. Lynda Hall, Acting Associate Director, Wetlands Division
Mr. Robert Wood, Acting Associate Director, Assessment and Watershed Protection Division (AWPD)
Mr. Dov Weitman, Chief, Nonpoint Source Control Branch, AWPD
Mr. Susan Holdsworth, Chief, Monitoring Branch, AWPD

OWOW has a diverse array of responsibilities, including some regulatory activities, such as wetland permitting; semi-regulatory activities; technical monitoring; and non-regulatory activities supporting state, tribal, and local watershed group efforts. Ecological and social sciences, including science related to ecosystem services, are used in many different ways, but it is not always easy to integrate science into decisions and actions. There is often pressure to make a variety of decisions within tight timeframes and other obstacles to science integration.

In the nonpoint source program, OWOW principally uses science to guide voluntary decisions. The nonpoint source program receives little support from Office of Research and Development (ORD) but it does benefit from research and development conducted by the U.S. Department of Agriculture (USDA) and from research conducted by states and nongovernmental organizations funded by EPA grants. Demonstration grants for nonpoint source controls, such as nutrient management to reduce fertilizer applications to crop land, are very important for the growth of the program.

The oceans and coastal protection program relies on biological and ecological science different from the science developed for EPA's water quality and standards program, which focuses on science related to water quality in a water column. OWOW's science needs, in contrast, focus on ecosystems as a whole. ORD has undertaken only limited landscape-scale research projects, and it has been difficult to align OWOW's needs with ORD's research. Lacking support from ORD, OWOW has benefited from scientific collaboration with states that have pulled together landscape-level information relevant to nonpoint source programs and from states and communities that have providde science tools for understanding estuary problems. EPA is relying on science from the U.S. Coast Guard for issues related to endangered species in ballast water.

ORD's new research focus on ecosystem services has potential for OWOW. The ecosystem services research program has some activities focused on wetlands and nitrogen removal efficiency, but both ORD and OWOW need additional dialogue and time to understand how ORD's research could advance OWOW programs. There may be possible benefits in research on carbon sequestration and greenhouse gas emissions related to climate change. OWOW managers expressed appreciation for ORD's efforts to reach out to them as potential clients for ORD's ecosystem services research. One manager pointed out that, unlike the Office of Ground Water and Drinking Water, which has its own multi-year plan focused on drinking water research needs, OWOW must compete with the water quality standard program for the water multi-year research plan and with other agency programs for the ecosystem services research plan in identifying priorities for ORD's attention.

Currently, the wetlands program works with the U.S. Fish and Wildlife service database containing information on the national acreage of wetlands. This data set provides the best available information, but does not address the ecological condition of wetlands. The information is so limited that OWOW only describes the limitations qualitatively and has not developed a mathematical confidence assessment. Since a 2001 Supreme Court decision on isolated waters and the classification of wetlands, EPA scientists have worked with external scientific community through the American Water Resources Association to stimulate scientific discussion of the definition of wetlands. These external expert discussions may have an influence on future definitions of wetlands and their relationship to waters of the United States. The wetlands program has also consulted with the National Research Council (NRC) to provide a comprehensive review of science related to the wetlands program. The NRC report provided the foundation for changes to wetlands mitigation rules.

In general, NRC and SAB advice provide strong support for OWOW program plans. The SAB report, *Hypoxia in the Gulf of* Mexico, for example, provided language that was accepted by EPA's inter-agency partners and incorporated almost verbatim into the Inter-agency Hypoxia Task Force report. Taking decisive implementation action, however, is "tougher," and does not simply rely on scientific judgment, but on political will.

OWOW has mechanisms to seek advice from other outside scientists and factors their input into Agency science assessments. The National Aquatic Resource Surveys are implemented in partnership with states and OWOW has responded to survey results. The National Lakes Assessment is provided in draft for comment. The Total Maximum Daily Load

(TMDL) Program has a cooperative agreement with the Environmental Law Institute for holding listening sessions to improve integration of monitoring into TMDLs. OWOW has refined its science and methodology in response to feedback and has formed a "Linkages Group" in OW to discuss the relationship between TMDLs, Office of Wastewater Management programs, and water quality assessments conducted by the Office of Science and Technology; the purpose of the group is to discuss best practices for addressing non-point source pollution. Public involvement and response to public feedback are part of OWOW's culture, an "organic part of the process," because of the strong role played by voluntary programs.

Politics and changing policy are principal barriers to science integration for OWOW. For the most part, OWOW "struggles to get appropriate data and analyze that information to inform decisions," but politics also influences how science is used. Politics especially come into play when there are high costs, complex science issues, and "lots of public scrutiny." Decision-making tools like Region 3's "Logic Model," may be useful to inform decisions, but it is unclear whether the regulatory and non-regulatory system would have the tolerance for the level of detail and costs involved in working through such an elaborate system. Some OWOW managers acknowledged the possible utility of decision support science tools but expressed concern that such tools might lead to decision outcomes that EPA may be unwilling or unable to implement. One manager expressed the view that most disagreements over environmental issues reflect differences in values or perspectives, rather than different interpretations of science, although science is often used as a surrogate for policy differences.

Meeting with the Office of Water, OWOW Scientific Staff (January 28, 2010, 9:45 a.m. - 11:00 p.m.) Participants:

Brian Rappoli
Chris Faulkner
Donna Downing
Laura-S Johnson
Michael Scozzafava
Rachel Fertik
Robert Goo
Susan Holdsworth

Scientists began the discussion by providing their individual perspectives on science integration for decision making. One participant identified the lack of comprehensive monitoring of water bodies as the most significant impediment to science integration. Without that feedback mechanism, EPA cannot evaluate the effectiveness of its water pollution programs. It cannot understand dynamics across pollutants, interactions across media, or ecosystem effects or practice adaptive management. Even available monitoring data for the storm water program does not provide data designed to address real risk management questions. If water quality were more effectively monitored, EPA would be able to better choose between infrastructure and treatment systems and urban designs that would have a suite of potential benefits.

Other scientists observed that water quality monitoring is a "patchwork," with monitoring conducted by individual states with limited resources and inconsistent approaches. OWOW

scientists have the goal of promoting more consistent use of analytical methods and generation of more consistent field data, but few states collect ambient monitoring data and few states use data for the purpose of permits. The most effective strategies are to work with states to identify common goals, build technical capacity and encourage peer-to-peer information sharing. OWOW staff have seen successes with regional-scale work groups, where, for example, the Sate of Delaware has provided a model for other states to emulate. Stakeholders have shown interest in using state science, but OWOW staff have a concern about stakeholders "watering down" monitored data and analyses of those data.

OWOW has seen state monitoring programs affected by reduced state budgets as states lose key technical staff. state employees cannot attend peer networking events, and states struggle with information technology and ability to communicate with EPA. Interruptions in monitoring systems create "fundamental holes that affect what we can understand." In addition, given the way the TMDL program works, there may be a "perverse disincentive" to monitor. If states do not monitor, they will not have impaired waters to report under section 319 of the Clean Water Act, and they won't be required to develop resource-intensive and potentially controversial TMDLs for those impaired water bodies.

Monitoring is also a problem for EPA's beach program and ground water program. States can cut their entire beach monitoring program, and "once you stop the program, it is "hard to start it up again. The National Coastal Assessment has provided information on the ecological condition of U.S .coastal waters. Increased resources could be used to improve and enhance the assessment by adding additional monitoring stations and indicators, thereby painting a clearer picture of conditions at the state level, and better informing decision makers. As for ground water monitoring, although EPA is advocating a larger groundwater effort on a basin-wide scale, there are generally diminishing state budgets and reduced resources for new monitoring activities.

Another participant identified budget limitations and regulatory inflexibility the most significant impediment to science integration. EPA has very little flexibility to conduct new or innovative monitoring, once it prioritizes activities required by consent decrees and court orders. Given these constraints and the requirement in the Clean Water Act for states to set chemical-specific water quality standards, it will be difficult to implement an ecosystem services approach to protecting water quality.

Yet another participant described how the scientific work of the Wetlands Regulatory Division has been changed by the 2001 Supreme Court decision, which requires EPA to prove a relationship of a wetland to a navigable watercourse before the program can control polluters' activities through issuing a permit, cleaning up contaminated spills, or otherwise protecting a waterbody. The wetlands program is "data starved." It makes use of any available data, mostly generated outside EPA (e.g., U.S. Geological Survey data or aerial photography) to establish that a wetland is a water of the United States.

The wetlands program also participated in a symposium organized by Region 10's Tracie Nadeau, which resulted in a peer-reviewed issue of the Institute of Wetlands Science devoted to the issue of isolated wetlands. Scientists from the academic community reported on research

related to the relationship of wetlands to navigable waters and wetlands' contributions to ecosystem services. The issue has stimulated research in the academic community on key issues related to wetlands and perennial streams.

OWOW's science activities also include the Ocean Survey Vessel Bold, EPA's sole ocean and coastal monitoring vessel for both the Atlantic and Pacific Coasts. The ship supports monitoring needs for regions and program offices. Because of reduced budgets and because monitoring activities can be expensive. OWOW has encountered challenges to maintaining funding for this vessel and scientific studies.

OWOW also has new regulatory responsibilities associated with the Clean Boating Act and an act to regulate discharges from Alaskan cruise ships. These regulations require EPA to take action within a short time frame, with a limited budget, and limited available scientific information. It is difficult to collect sufficient data from boaters, given the resource and time constraints. Given the constraints, OWOW scientists have accessed available information from the U.S. Coast Guard, states, and secondary information from trade groups and associations and will characterize uncertainties and data limitations.

There are human resource barriers to supporting scientists in OWOW interested in science integration for decision making. There are few or no GS-14-level positions for environmental scientists working at a high level. Increasing program responsibilities require that scientists assume additional contract or grant management functions, which detract from scientific activities, science assessment, and efforts to keep current with scientific advances in fields of importance to OWOW.