

December 23, 1996

EPA-SAB-EC-LTR-97-003

Honorable Fred Hansen
Deputy Administrator
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Subject First Report from the Science Advisory Board (SAB) Lookout
 Panel: Focus on Water Issues

Dear Mr. Hansen:

In July, 1995 you came before the Science Advisory Board (SAB) Executive Committee (EC) and asked the group to assist in the implementation of our 1995 Beyond the Horizon: Using Forecasting to Protect Our Environmental Future report (EPA-SAB-EC-95-007) by serving as a Lookout Panel.

The purpose of this letter is to summarize the early EC's experience in carrying out this mission. In accepting the challenge, we were aware of a number of constraints facing the EC; e.g., the limited range of experience and perspective among the EC members, the demands of other projects, and the lack of resources to delve into background material in a number of interesting areas. At the same time, we recognized that there are several reasons that argue for the EC's being the appropriate group for serving as the Lookout Panel:

- a) Many of the EC members participated in the Environmental Futures Committee (EFC) and thereby have acquired both practical experience and a certain "momentum" in futures work that should serve the EC and the Agency well.
- b) The EC includes a significant number of members who were not a part of the EFC. These individuals will learn from the Lookout Panel experience at the same time that they enrich it by providing fresh insights.

- c) The Agency is the "customer" for the output of this exercise. Since the EC both knows and is known by the Agency and its programs, we can provide an active, open forum in which substantive, informed dialogue can take place among SAB members and between SAB members and the Agency.
- d) The arrangement is cost-effective.

In short, the SAB is happy to accept this challenge since we deeply believe that the Agency, the country, and the world need to do a better job of incorporating the fruits of futures thinking into their plans and in their actions. We recognize that it is often difficult for governmental agencies, who are continually facing near-term deadlines and demands, to take the long view. We believe that the SAB, at least at this time, is in a good position to help the Agency reflect upon the future and thereby demonstrate the value of taking the long view.

Before presenting the specific results of the first session of the Lookout Panel, I want to describe briefly four premises that provide the foundation for our exercise and a context for our results.

First, as articulated in Beyond the Horizon, the goal of the Lookout Panel is to stimulate serious thought about the future in order to be better prepared to anticipate, react to, and structure that future. The focus of the exercise is on increasing the flexibility with which the Agency will confront the future, not on cataloging a series of predictions by the EC.

Second, based upon your charge to us last year, we recognize that the Lookout Panel function is a qualitatively different function from any that the SAB has had before. This effort is meant to be a low-investment, provocative exercise, in contrast to the more in-depth, rigorous reviews or *de novo* contributions that are characteristic of other SAB efforts. You explicitly cautioned that there would be no additional SAB resources available to support the Lookout Panel function, although some support would be provided through the Office of Planning, Policy, and Evaluation.

Third, we recognize that the Agency will generally not mount a large effort to respond to the outputs from the Lookout Panel. In fact, the major benefits to the Board and to the Agency are likely to come from the conduct of and participation in the exercise itself, again as described in Beyond the Horizon.

Fourth, we recognize that there is no single, best approach for conducting a Lookout Panel. There are a variety of approaches that could be used and should be explored; e.g., tapping personal networks, inviting speakers, working with outputs from other groups, and coupling early Lookout Panel results with different scenarios.

Working from these premises, the SAB has chosen to do the following:

- a) The results of the activities of the Lookout Panel will be summarized in the form of a letter to the Deputy Administrator, in contrast to all other formal SAB communications to the Agency that are invariably addressed to the Administrator. This procedure will emphasize the fact that the Lookout Panel function is qualitatively different from other functions of the Board.
- b) The first few sessions of the Lookout Panel will likely be conducted as a series of experiments in which different approaches to the function will be explored. For example, for the first session (February 29, 1996) the members of the Executive Committee used their own personal networks as input to the process. For the second session (September 19, 1996) the output of the Millennium Project¹ was a focused source of information for the Lookout Panel.
- c) The SAB expects that at least one Assistant Administrator or higher-level Agency manager will participate in each of the Lookout Panel sessions. This arrangement will insure that: 1) the SAB has the benefit of the insights and foresight of top Agency managers; and 2) those managers receive the personal stimulation associated with involvement in the process of confronting possibilities about the future.
- d) The SAB may augment the Lookout Panel with participants selected from the cadre of SAB members and consultants and/or invited experts who are particularly well-versed in the technical area under discussion.

In order to clarify this Lookout Panel activity for the Agency, the public, and ourselves, we generated draft Mission and Vision Statements (Attachments A and B).

1. The Millennium Project is an international effort to link innovative thinkers into an electronic web for the exchange and exploration of ideas about the future. The Agency is participating through the efforts of the Office of Policy, Planning, and Evaluation.

While these Statements will likely evolve over time, we expect them to provide the direction and power behind our initial thrusts into this project arena.

With these understandings and expectations as a backdrop, we based the first experiment as a Lookout Panel on input from the personal networks of the members of the Executive Committee. In late 1995, each member was encouraged to use his/her professional contacts to gather issues/topics that could be considered for discussion. From all of the ideas submitted, we selected a subset of issues that sounded a common theme; i.e., water resources, as the focus for the first meeting. The results of our discussion are captured in the intentionally short description in Attachment C.

In short, in its brief, non-comprehensive look beyond the horizon, the Board sees three water-related issues that could have significant implications for the Agency and the country; i.e., the quantity of available high-quality water, the growth of high water use industries, particularly agribusiness, and the status of our infrastructure of the collection and distribution of water.

The Board is still experimenting with the best way in which it can perform its role as a Lookout Panel. The Agency's feedback on substance and process, as well as its active participation in the effort, is both welcome and requested. We look forward to a good interaction with the Agency as we collectively prepare ourselves for the future.

Sincerely,

A handwritten signature in black ink that reads "Genevieve M. Matanoski". The signature is written in a cursive, flowing style.

Dr. Genevieve Matanoski, Chair
Lookout Panel
Science Advisory Board

Attachments:

A - Mission Statement for Lookout Panel

- B - Vision Statement of the SAB Lookout Panel
- C - Summary of Discussions at SAB Lookout Panel Meeting
on February 29, 1996

ATTACHMENT A

MISSION STATEMENT FOR LOOKOUT PANEL

The mission of the SAB Lookout Panel is to serve as early-warning system to identify and bring to the attention of the Agency:

To identify and communicate to the Agency

- a) Potential future environmental problems that have not been generally recognized.
- b) To identify Recognized environmental problems that could potentially increase significantly in intensity in the future.
- c) Potential solutions to currently intractable environmental problems.

The time horizon is 15-30 years into the future. The geographic scope is global, including both the truly global (e.g., stratospheric ozone depletion) and the aggregate effect of local actions (e.g., use of pesticides indoors), with a focus on how the U.S. is likely to be affected.

The process should involve the Agency in a substantive manner.

ATTACHMENT B

VISION STATEMENT OF THE SAB LOOKOUT PANEL

1. Current Situation

The SAB Executive Committee meets semiannually as a Lookout Panel to share and discuss issues "beyond the horizon" that could have a significant effect on the environment 15-30 years into the future. Since the environment is global in extent, the Lookout Panel's scope is also global, although its focus is on how the emerging problems will impact the United States. The Panel is free-thinking, wide-ranging, and explores a variety of approaches to carrying out its function.

The intent of the exercise is to assist the Agency in thinking about the future by challenging it to consider issues that are not yet on the Agency's agenda. The Lookout Panel is designed as a low resource-intensive effort in which the Executive Committee (many members of which participated in the Environmental Futures project in 1995) use a variety of approaches to share their insights in forecasting what the future might hold.

2. Future Vision

In the future the Panel will be seen as a significant source of solid information, productive speculation, and creative forecasting about potential environmental problems of the future. The Panel will solicit/gather potential topics from a wide range of sources, both domestic (e.g., the SAB members and consultants) and international (e.g., G-7 countries) with whom the SAB will establish collaborative relationships.

Through semi-annual meetings the Panel will bring focused attention to selected, specific issues that have cross-cutting impact on a variety of environmental media/problems. The Agency will look forward to the release of the Panel's succinct reports and will reflect and report on the implication of those observations for the EPA mission and methods.

The Agency will also develop or gather scenarios of alternative futures. Following consultation with the Panel, the Agency will use these scenarios, together with the Panel's reports on specific issues, to forecast future conditions, thereby providing insights to evolving environmental protection policies and methods.

The Panel will become part of a network of comparable advisory bodies throughout the world who will trade forecasting information and insights via several means--including the Internet--thereby sharpening their vision and broadening the impact of their reports.

The success of the Panel will be measured by the increased agility with which the Agency faces the future, rather than by the increased accuracy with which the Panel predicts it.

ATTACHMENT C

SUMMARY OF DISCUSSIONS AT SAB LOOKOUT PANEL MEETING ON FEBRUARY 29, 1996

At its first meeting as a Lookout Panel in February 29, 1996, the SAB met with Mr. Robert Perciasepe, AA/OW, to discuss future problems in the area of water. The results of those discussions presented below are not based on either intensive or exhaustive treatments of the issues. Rather, they are presented as the impressions and ideas of a group of technically trained individuals who are alert to environmental problems that the Agency could be facing in the future.

1. The availability of high quality water

Population size and economic growth continue to be among the major drivers that determine the availability of fresh renewable water. The four largest use categories of agricultural irrigation, thermoelectric facilities, public supplies, and industry account for 96% of the renewable freshwater used in the United States (1990 data). As population pressure, pollution, and other factors impact our renewable freshwater supplies, competition between human and ecological uses will intensify. However, as water treatment technology advances, it may be possible to use some source waters of lesser quality for human use because of treatment plant efficiencies in removing both chemical and microbial contaminants while retaining more of the freshwater resource for ecological purposes.

In addition to increased demand, our water resources are further strained by a non-uniform distribution across the country that requires a tremendous capital investment to overcome; e.g., construction of dams, pipelines, etc.

We can already see evidence of how people will address this problem in the future. In some cases, such as parts of Florida, the issue is one of adequate storage of the water resources that are available. In some areas economic and social forces are leading to imaginative ways to "wring more use" out of a drop of water. For example, drip agriculture is developing as a significant means of lowering agricultural demand for water in some regions and on some crops. On the other hand, some economic and distribution practices have the effect of encouraging comparatively profligate use of water in neighboring areas.

As it considers the future, the Agency should become as concerned about the quantity of water that is available, as it is about the quality of the water that is available. The nation's experience in energy conservation should be seen as a harbinger of the possibilities (financial and environmental) that could be realized from a conscientiously coordinated approach to water conservation. In fact, the government should review the energy conservation experience in order to design an improved approach that benefits from the "lessons learned" in that exercise.

The emphasis on quality, rather than quantity, may be a result of the perspective of a Congress responding to today's articulated needs. Therefore, there is a need for foresighted thinkers who will speak out persuasively so that our lawmakers explicitly consider the future when they make their decisions.

The quality of water, particularly for human consumption, is a growing concern. In the face of rising demand, suppliers are turning increasingly to lesser quality surface water sources with their associated concerns about toxics and microbes. This trend is occurring at a time when the country is exploring disinfection strategies based on treatments other than chlorine gas and whose effectiveness and ancillary risks are being examined.

For several years the SAB, through the DWC, has called upon the Agency to exercise increased vigilance and develop greater expertise to deal with the risks associated with microbes. The future would be well-served by our re-echoing that sentiment here. The Board looks forward to continuing its advisory capacity to the Agency as it conducts careful studies on the complex question of disinfection alternatives.

2. High water use industries, particularly agribusiness

As a part of the increased pressure on our limited water resources, the introduction of high water use industries creates special problems. In addition to obvious water demands created by growing food and fiber crops on marginal land, animal husbandry operations have been scaled up to such an extent that a single installation can rival a small city in terms of the water resource needs. For example, the construction of a hog raising/butchering operation in a rural setting can have the same impact on water resources as a 20,000-person town, only the environmental impact can be more immediate and more localized, often without the attendant financial resources to address the problem effectively.

Further, the technology for using the water and handling the wastes at such

operations is roughly 30 years old and has failed with unfortunate frequency. The regional impacts of such operations can be significant. On the positive side, there are some signs that with vision and imaginative engineering, such wastes could be recycled through a productive process.

3. Status of infrastructure for collection and distribution of water

The Board called attention to a situation that is becoming all-too-evident: the deterioration of the infrastructure for collecting and distributing drinking water. This situation is likely become significant in the near-term, rather than long-term, future. It would appear that the nation currently lacks a strategic vision for addressing the problem.

As Mr. Perciasepe pointed out, while the country spends billions of dollars on infrastructure capital expenditures every year, much of those dollars are directed at problems of waste collection and treatment. The country has never made that kind of investment in drinking water supplies and distribution.

In summary, the Board re-iterates the fundamental importance of water to the economic, environmental, and physical health of the country. At the same time, we foresee increased pressures on those resources developing in the face of a patch quilt of policies that both invoke and reject market forces, that both invoke and reject engineering intervention.

In many respects, for some years, water issues -- particularly drinking water issues -- have been in the "vigilance/maintenance mode". There are indications that current level of vigilance/maintenance will be insufficient to provide us with the quality and quantity of water that we will need for the kind of future we would like to have for ourselves and our children.

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* Indicates members of the Executive Committee who participated in the February 29, 1996
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