



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

DEC 3 2002

THE ADMINISTRATOR

Dr. William Glaze  
Science Advisory Board  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460

Dear Dr. Glaze:

My thanks to you, Dr. Terry Young, and Dr. Virginia Dale for your letter and the SAB's review of the Southeastern Ecological Framework. As you recognized, the SEF's holistic approach shows great promise, exemplifying how geo-spatial tools can help us work effectively to leverage limited resources, act in advance of resource degradation, and target mitigation.

Facilitating the protection of areas before degradation occurs, the SEF marks an important change in direction and, as you noted, provides a good first step in developing a more robust geo-spatial tool with which EPA and our partners can consider the impacts of land-use management decisions on ecosystems. Integration of various regional assessment approaches and applying the *SAB Framework for Assessing and Reporting on Ecological Condition* are important next steps now under review by the Critical Ecosystems Steering Committee.

The Office of Policy, Economics, and Innovation is working with Region IV's Planning and Analysis Branch to determine how best to improve the SEF. We will also take steps to support the creation of a National Ecological Framework. I am asking Regional Administrators to appoint members to the steering committee formed during the Keystone Conference. Under our new innovation strategy and building upon the Keystone Critical Ecosystem Workshop, OPEI will help Regions share methodologies, technical expertise, and experiences in using geo-spatial tools in programmatic decision-making. Initial funding has been approved for OPEI to work with Region IV's Planning and Analysis Branch, and other interested offices, on developing an ecoregional protocol to identify critical ecosystems. In addition, the National Center for Environmental Economics has agreed to begin an assessment of the economic value of the ecosystem services provided by various land types identified in the SEF.

Again, I thank the SAB for its thoughtful review of the Southeastern Ecological Framework, and I share your support for the value this approach offers EPA and our partners.

Sincerely yours,

*/Signed/*

Christine Todd Whitman

Enclosure

**Region 4 Addendum to the Administrator's Response to  
*Review of the Southeastern Ecological Framework:  
An EPA Science Advisory Board Report***

Region 4 would like to thank the Science Advisory Board (SAB) for the opportunity to present for their review the Southeastern Ecological Framework (SEF). We would also like to thank the Office of the Administrator for their response to the SAB's review. It is our opinion that the SEF modeling process and the use of Geographical Information System (GIS) technology is a positive step in EPA's future and the Agency's ability to integrate holistic ecosystem approaches into day-to-day activities. These tools also allow EPA to proactively plan where and how to allocate resources to best meet the mission of clean air, pure water and protected lands.

EPA Region 4 prepared this addendum to address the concerns raised in the SAB's letter to Administrator Whitman on June 10, 2002. Our response focuses on several key issues. First, we discuss recently completed documentation and identify three additional analyses that have been conducted since the SAB review. Second, we respond to comments referring to the SEF as a megafauna model. And, lastly we present several on-going activities both within our Region and across Regions aimed at developing a regionally-driven "national framework" to support Agency programs and partnerships.

I. In July 2001, when the SAB reviewed the SEF project, Region 4's GIS analysis was complete. However, it was not until March 2002 that the documenting materials were finalized. As such, the SAB's comments regarding documentation and selection criteria have been addressed in the SEF final report. The final report, which is 300 pages in length, is currently available and comes with 3 compact disks of GIS data obtained or modeled for the project. This report also includes summaries of the additional three analyses used to characterize the SEF across the southeast, the lower Mississippi Delta region, and within a single county in Georgia.

The first analysis characterized the SEF across the entire Region 4 area. The University of Florida, working with Region 4, prioritized the natural resources across the Region and within the SEF. This prioritization was done for four major areas: ecosystem biodiversity; ecosystem services; threats and conflicts; and recreation potential. Each prioritization analysis was done across the eight southeastern states, the SEF as a whole, the SEF's hubs, and the SEF's corridors. The characterization of the four categories across the four landscapes provides users of the SEF with additional prioritization tools that can further enhance their decision-making.

The second analysis completed by Region 4's GIS analysts, focused on portions of five states within the lower Mississippi Delta. This Delta Ecological Framework (DEF) was done at the request of the Southeastern Natural Resource Leaders Group made up of eleven federal agencies charged with managing natural resources within the Southeast. The purpose of the DEF was to identify areas of mutual federal interest for protection, restoration, and/or mitigation during the alignment of Interstate 69. The DEF information has been supplied to over thirty working partners for use in guiding the alignment and identifying National Environmental Policy

Act (NEPA) issues. By incorporating ecosystem issues in the initial planning of the new interstate project, the federal, state and consulting partners hope to streamline the NEPA process and target mitigation projects that enhance the ecological integrity of this highly agricultural region. As an added benefit, the Forest Service, along with several non-profit organizations and electric utilities, are using data from this analysis to prioritize reforestation opportunities for carbon sequestration projects.

The most recent analysis used the SEF approach at a local level. Working in cooperation with EPA, Region 4 staff, the Conasauga River Alliance, and Murray County's Commissioner, a graduate student at the University of Florida developed a County Ecological Framework for Murray Co, Georgia as part of her Master's Thesis. The analysis focused on using the SEF to develop a greenspace strategy for the county. The analysis incorporated the generally smaller priority landscapes identified as Significant Ecological Areas (SEA) and local priority areas, such as schools, community parks, conservation easements and local bike trails, to develop a community framework that incorporated the larger ecological issues. This project was undertaken to show that the SEF methodology could be applied to a county decision-making process such as Georgia's Community Greenspace Program. The results of the analysis are helping the County Commissioner and his Planning Department to develop their Comprehensive Land Use Plan, create a community outreach strategy, and enhance existing zoning laws that support their greenspace planning effort.

II. The SAB review did raise an issue of particular significance that we would like to address. That issue being the description of the SEF as a megafauna model. As the review suggested, it may be more accurate to call the SEF a *Framework for Identifying Priority Ecological Areas*. The use of "megafauna" seems to come from the perception that the black bear habitat model is the primary driving factor in the SEF's development. Although this layer and other data layers, such as species location or habitat diversity models, are important, they were used as surrogates for ecological integrity. Your review recognizes this aspect of our approach, however the review continues to refer to the SEF as a megafauna model due to the use of the black bear Priority Ecological Areas (PEA) layer. Because the ecological requirements for black bear are significant, the use of black bear as a focal or umbrella indicator allows the SEF to capture the habitat requirements for many of the smaller species as well as the ecological function of the ecosystem as a whole. It is also important to note that the black bear PEA is only 1 of the 18-24 different PEA layers used, depending upon the state (see Table 1 in SAB review materials). Nearly 22% of the SEF is identified by three or more PEA layers, 45% of the SEF is represented by 2 PEA layers, and the remaining 33% of the SEF is represented by only one PEA layer. However, the black bear habitat model only represents about 3.4% of the SEF that is identified by only one PEA layer. It is important to view the process as a multi-factor model that represents a variety of priority ecological areas. We believe that the use of high stream reach density, wetland areas, and unfragmented landscape are equally important in the development of the SEF.

III. With regard to the use of the SEF methodology in other regions to develop a national framework and its applicability to other EPA program and partnerships, we appreciate the favorable comments and insights. We have found them to be very helpful in our efforts to

expand the use of the SEF as a geo-spatial decision-making tool. We are currently working to fill in identified data gaps that could provide additional insight into ecological integrity. The SAB's "*Framework for Assessing and Reporting on Ecological Condition*", published several months after review of the SEF, provides guidance for organizing ecological studies and analyses using a series of essential ecological attributes. In organizing the data layers from the SEF into the SAB Framework, we found that most of the data for the SEF fell into only three or four of the six essential ecological attributes identified. This effort also pointed out the difficulty in developing priority ecological areas for regional analyses that are based on ecological processes and natural disturbances. Further work on many levels is needed to accurately quantify this type of information within the resolution needed for regional ecological framework analysis. This was also supported by the various assessment approaches presented during the Critical Ecosystems Workshop held at Keystone, Colorado in June of this year. To address the ecological attributes that are missing in the SEF, we are currently working with ORD and EPA headquarters to identify potential data sets. This should enhance the SEF by providing a more scientifically rigorous approach to its development.

Over the past year the Region has moved forward to work with other EPA programs and partnerships expressing interest in using the SEF. A number of activities have been started and the Region will continue to aggressively address the issues raised in your review. Below you will find five specific avenues that Region 4 is pursuing in both applying the SEF to our day-to-day activities and working with other regions to enhance the data and methodology.

#### A. *Keystone Critical Ecosystems Workshop*

In June of this year, approximately 60 EPA employees and several invited guests held a Critical Ecosystems Workshop in Keystone, Colorado. During the four-day workshop, speakers presented information on the SEF and other critical ecosystem work being conducted in various regions and within ORD. The meeting provided a chance for Regional, Headquarters and ORD staff to discuss the growing use of geo-spatial analysis as a tool for Agency decision-making. The meeting provided an important sounding board for various methodologies and approaches to be heard and discussed. In addition, Dr. Virginia Dale of the SAB presented a keynote address on their recent "*Framework for Assessing and Reporting on Ecological Condition*". After the workshop, a steering committee was formed to further discussion on the need for an integrated cross-regional approach to developing a national critical ecosystem framework as an ecosystem protection tool.

#### B. *SEF GeoBook*

Early in the development of the SEF, we recognized the need to share the GIS data and information with many of our state and local partners. This presented a number of issues that we needed to overcome in order to support their efforts to preserve natural systems and greenspace. One of the drawbacks of the many GIS data layers that were available from the project is that to use the data directly required some expertise with GIS software systems. Many of the direct users of the data do not or would not have this expertise to use the data directly. We worked with a contractor to develop a map viewer for GIS information that would integrate textual

information and geographic data in a package that non-GIS users would be able to utilize and learn from. This project (called the SEF GeoBook) is now in the final stages of development and will be used to provide data from the SEF to our state and local partners in order to integrate land protection activities from the local level up to the regional level. The SEF GeoBook is designed to provide information on various issues that may impact natural resources within a watershed. The web-based approach also allows for Internet connectivity to more detailed information concerning an issue as well as options for what could be done to protect the resource. Additional hyperlinks provide 1-meter resolution data for viewing on the ground landscape conditions and connectivity to EPA's EnviroMapper data viewing system. Although the SEF GeoBook is designed to work with a web browser, it is quite functional for the local user without Internet connectivity.

Two primary groups will test the SEF GeoBook as a pilot application to identify additional applicability to their work, data needs and the general value of the product. The pilot audience includes county officials and land trust organizations. We anticipate piloting the SEF GeoBook within the next two months. Initial interest from both groups is high and we have incorporated many of their issues and concerns into the pilot. We anticipate 20 organizations across the southeast in the pilot program at this point. We have received additional funding from the Office of Policy, Economics and Innovation to enhance the SEF GeoBook by providing the ability of users to identify and digitize lands that are currently under some form of protection. The location information will be recorded with additional information that will be sent to a single database in an effort to better understand the current state of protected land in the Southeast.

Region 4 is also working with various programs to support their activities via an intranet version of the SEF GeoBook. These activities include NEPA reviews, wellhead protection programs, wetlands mitigation, and Supplemental Environmental Projects. We are continuing our internal outreach efforts to identify additional programs that are interested in taking a more pro-active role in ecosystem protection. We are also beginning to review opportunities for integrating the SEF GeoBook approach onto the Internet in an effort to provide additional support to local community organizations.

### C. University of Florida Cooperative Agreement

One of the issues addressed in the SAB review of the SEF was the application of this type of modeling process to other regions. To that end, the Office of Policy, Economics, and Innovation has provided funding for the University of Florida (UF) to work on developing a methodology for a national ecological framework based on regional analyses. This work would provide information with the kinds of variation or changes that would be required to develop a national ecological framework. Several issues such as available national data sets, similar work by other regions and other agencies, and modifications of the methodology will be investigated. They will also use the SAB "*Framework for Assessing and Reporting on Ecological Condition*" as a guide to enhance the SEF approach. During this process, Region 4 will develop a peer review strategy for each phase of the UF work products. Currently, EPA Region 4 is in the process of developing a strategy for peer review of the existing SEF methodology. The information will be used during the enhancements to the SEF as well as with the work that is

completed in cooperation with other regions.

In reference to the validation issues that the SAB raised, we are working with Region 5 as they develop their validation protocol to the critical ecosystem work that they have completed. We also intend to work more aggressively with the Regional State Gap Assessment Program (GAP) coordinators to include a more comprehensive assessment of land cover types and conservation status of native vertebrate species. The GAP program information, although not consistent from state to state at the present time, does provide a more extensive ground truthed view of the landscape than the National Land Cover Data classification schema. We recognize the issues and concern that the SAB has brought to our attention and will work to address the issues concerning peer review and validation as we move forward.

#### D. Regional Coordination and Cooperation

Region 4 and Region 5 have developed similar GIS based products to help provide protection and awareness of important ecological areas. The Region 4 SEF was designed to link important large ecological hubs in a way that would help prevent fragmentation of the ecosystem and provide protection for important ecological processes and functions. Prioritization of the ecological framework was done after developing the network of connected hubs and corridors. The Region 5 Critical Ecosystems Team developed a GIS based model of highly valued ecosystems. Their approach was to prioritize existing natural areas for importance as pristine ecological areas. The main difference is that the Region 4 approach integrates connectivity as part of the GIS modeling process while the Region 5 project provided a scale of importance. Work is currently under way to coordinate efforts in both regions to understand and analyze each approach more fully and to cooperate in the development of a critical ecosystem approach that will work across regional issues. There is also interest in Region 7 to develop a similar framework for their states and some interesting work being developed in Region 8 at the present time. We will work closely with each EPA Region that views geo-spatial tools as an innovative approach to ensure that a consistent and flexible methodology is developed for a national framework.

#### E. Economic Evaluation of Environmental Services

In order to protect important landscapes for their intrinsic ecosystem function, EPA must partner with Federal, State and local groups. While EPA has no land acquisition program, it often can act as a catalyst when working with its partners. A topic that often comes up with county officials is how to evaluate the work that nature does versus the investment opportunities that local development has to a given community. While dollars circulate in the human system and provide impetus for development and economic growth, the work that nature does is often not valued or extremely undervalued. This often leads to environmental degradation and over development of natural resources. This causes a wide variety of environmental issues that EPA has to deal with after the fact. Region 4 is currently working with EPA's National Center for Environmental Economics (NCEE) to try and evaluate the SEF in the context of local development pressure.

In addition to the evaluation work performed by the NCEE, we are working with the EPA Coordinating Group for SAB Project “Valuing the Protection of Ecological Systems and Services” Panel to address ecosystem valuation issue. We have been in discussions with the SAB as the scope of work for the Panel is being developed. The SEF is currently listed as a proposed project by the EPA Coordinating Group. The project will focus on the Panel providing guidance and advice as the economic evaluation of the SEF moves forward with the NCEE. This will provide a greater understanding of the value of ecological services for our county and state partners as several of the states in the southeast continue with local and regional greenspace protection program strategies.

Finally, we would like to thank the Environmental Processes and Effects Committee for their dedication to this issue and their outstanding effort to provide useful comments on the SEF. We greatly appreciate all of your comments and will work toward integrating them into future versions of this approach to environmental protection. If you require clarification on any aspect of the SEF, please feel free to contact Cory W. Berish, Chief, Planning and Analysis Branch, Region 4 at 404-562-8276 or [berish.cory@epa.gov](mailto:berish.cory@epa.gov).