Draft Report on Strengthening Science and Decision Support for Ecosystem Management in the Chesapeake Bay and its Watershed

A draft report fulfilling Section 202(f) of Executive Order 13508

EXECUTIVE SUMMARY

To meet the charge of the President's Executive Order, there needs to be a new emphasis on a *sustainable* Chesapeake Bay and watershed. Addressing sustainability will require making decisions about the balance between (1) improving and sustaining fish and wildlife populations and their supporting habitats and water quality, and (2) meeting the increased demands for the goods and services of the 17 million people in the watershed. Ecosystem-Based Management (EBM) is the approach that will be needed to improve decision making to achieve a sustainable Bay and watershed.

Strengthening science and technical assistance will be critical to better plan, implement, and evaluate the actions, policies, and trade-offs needed for EBM. We need to significantly improve the effectiveness of information and decision-support tools to help key audiences make the difficult choices to improve the health of the Bay ecosystem while accommodating the needs of a growing population. The key audiences include:

- Citizens and watershed groups. Efforts should be focused on the agricultural community, suburban homeowners, and urban dwellers whose decisions influence the quality of agricultural, suburban, and urban lands, and the use of ecosystem goods and services.
- Local governments. Work with local land-use planning and zoning decision makers to address sustainability of their communities, watersheds, and the Bay.
- Federal and State resources managers. A primary focus should be on the inter-relation of decisions to improve water quality, habitat, and living resources and their effectiveness in sustaining the Bay and its watershed.
- Elected officials. Provide improved tools and implications of proposed legislation that will affect sustainability of the Bay and watershed.

The major recommendations to strengthen science and increase technical assistance are:

Focus the Chesapeake partnership on sustainability and adopt an adaptive, ecosystem-based management approach. Expand from the current emphasis on water quality to incorporating all aspects of ecosystem sustainability (ecological integrity, socioeconomic well-being, and effective partnership performance). This will require significant revision of the existing Chesapeake Bay Program goals and structure. The desired outcome is to transform the partnership to dramatically increase the involvement of citizens and local governments, and better align federal, state, NGOs, and academic efforts to strive for a sustainable Bay and watershed through EBM.

Integrate interagency support to improve decision-making for ecosystem management. Bring together subject matter experts, decision-support tools, key science elements, and the information technology structure needed for more timely and integrated decision making. This may include creating a Decision Support Center to synthesize information, conduct forecasts of different management actions and future conditions, and provide implications for different management options. Information would be provided to Federal, State, and local managers to improve planning, implementation, and assessment of management actions and policies. The key science elements needed to improve decision-making include more integrated monitoring, information management, research, models, indicators, communication products, and decision-support tools.

Expand partner efforts for a Chesapeake Monitoring and Observing System to provide integrated monitoring of upland watersheds, estuaries, and the coastal ocean using common criteria and standards. The monitoring system should build from existing monitoring and observing programs in the Bay and its watershed and be expanded to better address fish and wildlife, foodweb interactions, disease, contaminants, climate variability, land-cover and use, and tracking of management actions. The monitoring should occur at several scales ranging from the entire basin and contributing coastal waters down to small watersheds to assess effectiveness of agricultural and suburban practices. There are opportunities to build on existing networks and better align with national programs to improve the current monitoring system.

Align Federal research efforts in a new Chesapeake Bay Research Plan. The Plan will identify priority research needs of federal, state, and other institutions through stakeholder input, and describe the implementation of strategies to address those needs. The plan should help guide Federal research as well as Federal external funding opportunities.

Improve communications products, technical assistance, and social marketing campaigns to effectively translate scientific findings and illustrate the consequences of management options and decisions by the public, local governments, resource managers, and elected officials. Improved communication strategies and products would help link and simplify the technical concepts of ecosystem management with the sustainable benefits they provide to people in the watershed.

An assessment of existing monitoring programs and science efforts identified opportunities to better utilize on-going monitoring, information, models, and research; however, critical gaps that need to be addressed through new efforts include:

- **Monitoring** – Monitor not only water-quality, but also critical elements of sustainability including living resources (fish, shellfish, and wildlife), habitat, contaminants, land use, and natural disturbances in the Bay and its watershed while tracking socioeconomic changes and implementation of management actions. Monitoring more elements of the ecosystem will help to reduce uncertainty in models and better evaluate the effectiveness of management actions.
- **Information management** – Improve data integration and sharing for more accurate and timely assessments of ecological conditions and forecasts of changes that have socioeconomic and decision-making consequences.

- **Research** – Align and expand research to explain the relation between ecosystem changes, socioeconomic goods and services, and related management actions and policies.
- **Models and Forecasts** – Better integrate existing models, and develop additional models, to simulate factors affecting fish and wildlife and their relation to socioeconomic changes. Design integrated models at different scales to run scenarios to make tactical decisions (such as fishing harvest and land use) and strategic decisions for management policies.
- **Indicators** – Reexamine and expand the suite of indicators to address critical elements of ecological integrity, socioeconomic well-being, and partnership performance.
- **Communication products** – Produce products to translate science to improve decision making for resource managers, local governments, the general public, and elected officials.
- **Decision support tools** – Develop tools to facilitate decision making using the adaptive-management framework including (1) conservation and restoration site selection for habitat and water quality, (2) coastal zone management, (3) fisheries and wildlife management, (4) hazard assessment, climate change, and resiliency planning, and (5) land-use planning.