

# **Clean Water Action Plan: Coastal Research and Monitoring Strategy**

**By The**

**Coastal Research and Monitoring Strategy Workgroup  
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## **Executive Summary**

*The Clean Water Action Plan: Coastal Research and Monitoring Strategy* is a product of the Coastal Research and Monitoring Strategy Workgroup, which was formed in 1999 with representatives from Federal agencies, States, Tribes, and Non-Governmental Organizations. The *Coastal Research and Monitoring Strategy* presents current deliberations on proposed implementation of the *Clean Water Action Plan* in the coastal zone.

In terms of surface area, coastal waters of the United States represent the largest economic and environmental zone of the Nation. Because a disproportionate percentage of the Nation's population lives in coastal areas, the activities of municipalities, commerce, industry, and tourism have created environmental pressures that threaten the very resources that make the coast desirable.

To address these pressures, the Clinton Administration has called for a renewed effort to restore and protect our Nation's estuarine and coastal areas. The *Clean Water Action Plan*, announced by President Clinton and Vice President Gore on February 19, 1998, is intended to redirect the Nation's water programs to "protect public health and restore our Nation's waterways". The *Clean Water Action Plan* specifically calls for the development of a strategy for coastal research (Action Item 59) and a plan for coastal monitoring (Action Item 60) including a comprehensive review of existing programs related to the generation, transport, and effect of pollutants on coastal waters, habitats, and living and economic resources. This document addresses both Action Items because they are intrinsically linked for the purposes of assessing regional and national trends, determining cause and effect relationships, and implementing adaptive management principles.

While the national investments made as a result of environmental legislation have had a dramatic effect on improving the Nation's coastal water quality, there are still environmental problems in the coastal zone. Examples of environmental issues common to most coastal States include nutrient enrichment, habitat change, protection of living aquatic resources, invasive species, pathogens, toxic contaminants, and harmful algal blooms.

The Federal government invests annually about \$225 million conducting research and monitoring programs addressing these and other specific environmental issues in the coastal zone. Despite these investments, the importance of the coastal region to the Nation's economy, and the high potential for human use to adversely impact coastal resources and ecosystems, information about the status and trends of critical environmental variables in coastal regions is often lacking. Other

than programs for coastal weather, water levels, commercial fisheries, and point source discharges, there are currently no nationally consistent, comprehensive monitoring programs to provide the information necessary for effective management of coastal systems.

The *Coastal Research and Monitoring Strategy* employs a monitoring-research-assessment-management cycle that integrates coastal monitoring and research objectives to enable cross-cutting and comprehensive assessments of the Nation's coastal resources. The objectives of the *Strategy* are to:

- Document the status and assess trends in environmental conditions at the scales necessary for scientific investigation and policy development;
- Evaluate the causes and consequences of changes in environmental status and trends;
- Assess environmental, economic, and sociological impacts of alternative policies for dealing with these changes; and
- Implement programs and policies to correct observed environmental problems.

The key attributes of the proposed *Coastal Research and Monitoring Strategy* include co-funding by Federal and State programs; nested designs to allow State-specific issues to be addressed in a national context; collective reporting; and cross-system comparisons.

The strategy for a national coastal monitoring design is based on the three-tiered approach developed by the U.S. Environmental Protection Agency (Messer et al. 1991) and a similar version was recommended by National Science and Technology Council (1997) and has the following components:

- Characterization of Problem (Tier 1) – Broad-scale ecological response properties as a base determined by survey, automated collection, and/or remote sensing;
- Diagnosis of Causes (Tier 2) – Issue- or resource-specific surveys and observations concentrating on cause-effect interactions; and
- Diagnosis of Interaction and Forecasting (Tier 3) – Intensive monitoring and research index sites with higher spatial and temporal resolution to determine specific mechanisms of interaction needed to build cause-effect models.

Data and information generated at each tier help interpretation of results from the other tiers. For example, Tier 1 (Characterization) data provide geographic context for data collected at Tiers 2 and 3 (e.g., how widespread is the problem and how much of the nation's resources are affected by its occurrence). Likewise, Tiers 2 (Diagnosis of Causes) and 3 (Diagnosis of Interactions and Forecasting) aid in understanding how serious a particular relationship or issue is.

The focus of the *Strategy* and conceptual framework is monitoring in the coastal zone. However, important research activities must occur concurrently at each level of the monitoring framework. Research plays a vital role in increasing our ability to interpret data from our monitoring programs and enhance our monitoring tools and methods. Research is the foundation underlying

all tiers of the monitoring framework, and is critical to achieving the objectives of integrated assessments.

The objectives and the conceptual framework for a *Coastal Research and Monitoring Strategy* have been defined by the Workgroup and are included in this document. However, the Workgroup recognizes that further development of an implementation strategy which contains specific action plans for each of the following recommendations is necessary to execute the concepts of this *Strategy*. The final section of this document suggests issues that should be considered during implementation. However, development of an implementation plan is beyond the scope of this Workgroup.

The following six recommendations are offered:

1. *Enhance and adapt existing programs to support an integrated and effective national coastal monitoring program.* A high priority is placed on the development of a national coastal survey based on State-level coastal monitoring programs. The data collected from coastal States could provide a comprehensive and consistent picture of the “coastal health” of each State which would complement the partial requirements of Section 305(b) of the Clean Water Act. The data generated as a result of these monitoring activities could be used to support States’ 303(d) listing processes.
2. *Enhance and integrate interagency research efforts to fill data gaps, to increase the understanding of physical and ecological processes in the coastal zone, and to improve monitoring and assessment tools.* Opportunities must be developed to foster interagency solicitation, review, and support of research proposals. Appropriate methods include both competitive and external grant processes, and internal Federal competition and interagency agreements.
3. *Conduct periodic national and regional coastal assessments.* These would include national summary assessments, national habitat assessments, national issue-specific assessments, and regional assessments.
4. *Improve data management in support of the periodic assessments.* These activities include development and maintenance of an Internet-based coastal environmental data clearinghouse and directory of meta-data resources, development of performance-based standards for data management and data submission, and development of national data quality standards.
5. *Establish mechanisms to assess and adjust monitoring and research with changing national coastal priorities.* User-advisory and technical committees, composed of representatives from Federal, State, and local governments; academia; not-for-profit organizations; and the private sector would be established to ensure that the products and services of the system are relevant and stay on track and to ensure that development and implementation of the system uses the best available scientific methods and technologies.
6. *Establish a mechanism to define and develop an implementation plan for each of the Recommendations 1 – 5 and to oversee efficient execution of a national program.* To carry out the above recommendations and develop an implementation plan for a national strategy, the formulation of an interagency oversight committee is recommended. Long-term viability of the committee is essential.

The Coastal Research and Monitoring Strategy Workgroup. 2000. Clean Water Action Plan: Coastal Research and Monitoring Strategy. The U.S. Environmental Protection Agency (EPA), Oceans and Coastal Protection Division.