



The restoration and preservation of floodplains as natural resources is largely the result of efforts that are not well coordinated with the principal programs of floodplain management.

Floodplain, Wildcat Falls, Joyce Kilmer Memorial Forest, North Carolina.

Conclusion

Over the past 25 years, floodplain management has matured from a focus on reducing flood losses by using structural measures to a broader approach that incorporates structural and nonstructural measures for flood loss reduction and also takes into consideration the protection of the natural and cultural resources of floodplains. The examples of flood damages averted, lives saved, and resources preserved are plentiful. It is evident that substantial progress has been made, and that diligent work is underway to remedy past shortcomings and reach even greater levels of achievement.

If current trends continue, the near future will see a further broadening of the scope of floodplain management to encompass such activities as storm-water management, greenway and river corridor management, and watershed management. Further integration of individual strategies and tools is likely, so that a more unified floodplain management program can emerge, with fewer conflicts among goals and activities. Technological advances also promise the improved application of existing strategies and tools.

A number of important opportunities are emerging for improving the future effectiveness of floodplain management in the United States. This report on the nation's floodplain management activities—the first comprehensive assessment in over 25 years—has identified a plethora of actions to be pursued if significant improvements are to be made in floodplain management in the coming decade. Of these, two stand paramount: a simplification of the concept of floodplain management, and a set of specific national goals with a timetable for their achievement. These two needs should be addressed as the Federal Interagency Floodplain Management Task Force undertakes to further refine the *Unified National Program for Floodplain Management*.

INTEGRATING FLOOD LOSS REDUCTION AND NATURAL RESOURCE PROTECTION

Most local flood loss reduction programs focus primarily on the 100-year floodplain, while natural resource protection programs focus on a particular resource (wetlands, for example) which may or may not be located in the floodplain. The two types of programs also are triggered by different events. Disaster relief is provided after a flood; a section 404 permit is required when dredging or filling is planned, a wild and scenic river study begins after Congressional action. These basic differences make integration of the programs difficult.

RETROSPECT AND PROSPECT

—an invited comment by Gilbert F. White

This Assessment is unprecedented in its depth of analysis of the nature and effectiveness of the nation's management of floodplains. It is the most detailed and nearly comprehensive of all studies of those matters since the concept of floodplain management took official root in the mid-1960s. It places that concept in a broader context than ever before, and it provides a base for launching a series of steps to assure that local and state as well as federal programs can at last approach the aspirations that have evolved over the past 65 years.

That evolutionary process has been reflected in a stream of laws, executive orders, regulations, new groups, and reports. Debate over the wisdom of reliance on simple levees and channel modifications began in the wake of the 1927 flood on the Lower Mississippi. It widened to include issues of dams and economic justification after the Ohio River floods of 1936 and 1938 and a concurrent upstream versus downstream controversy over land treatment. By 1966 a still broader view of the potential role of nonstructural measures found favor. Then followed a series of revisions and expansions of federal and state activities. Those included the National Flood Insurance Act of 1968, a National Science Foundation appraisal of flood research in 1977, a *Unified National Program for Floodplain Management* in 1976, with revisions in 1979 and 1986, three Executive Orders, a formal linkage with emergency management programs, and the organization of vigorous nongovernment groups such as the Association of State Floodplain Managers and the Association of State Wetland Managers. All of this and much more is examined in the Assessment. To sum up, the report tells the country what has been happening in floodplain management; how well or how poorly the responsible federal and state agencies have been doing; and what are promising means of improving the prospect. The result is the first thorough appraisal of ambiguous national aims and how those compare with the present situation on the lands at risk—the diverse areas of watercourses, adjacent wetlands, and the shores of streams, lakes, and oceans.

The report candidly recognizes the severe handicaps of incomplete and inconsistent collection of data on which policy judgments must be based. The data base is the one need specified in the 1966 House Document on which almost no action has been taken.

For other needs, the record of change has been diverse but generally positive. In no instance, however, has achievement matched the hopes of earlier years. The definition of precisely what is meant by floodplain management in particular areas of the country or under the jurisdiction of specific agencies is still far from clear or uniform in either principle or practice. The policy goals for the sustainable use of floodplains have progressed in agency thinking but are proving difficult to meet in operation in the field. It has not been made clear how floodplain use is inseparably linked to the maintenance of natural resources for the common good for the foreseeable future. The effectiveness of individual federal and state programs, each with a different statutory authority, suffers thereby.

Cooperation among the administrators of federal programs, while generally cordial and helpful, has not yet yielded a genuinely unified effort. Lacking exemplary effectiveness at that level, state and local agencies cannot be expected to act in concord in meeting national goals.

Great gains have been made in public information and education. Far more legislators, administrators, business executives, farmers, householders, and school children are aware of flood hazards than a decade ago. The level and quality of information, however, still is far below what would be required to induce effective action in the event of a threatening flood, and even more so in the days when measures are needed to mitigate future emergencies.

Flood forecasting precision has generally improved. The demonstrated ability of communities to respond positively to a warning is less certain and is uneven.

The report suggests lines along which improvement can be brought about and recommends consideration of a number of changes in policy and procedure. The report's Review Committee does likewise with its *Action Agenda for Managing the Nation's Floodplains*. These must be examined now against the background of experience with previous statements of optimal floodplain policy, such as House Document 465 or the *Unified National Program for Floodplain Management*. Only fragments of those proposals were adopted. Can anything be learned from the conditions that either promoted or blocked them? What are the factors in climate of public opinion and in government organization that worked for or against them at that time and that may have changed subsequently?

It is evident that the reconciliation of thinking among professional groups, for example, has been advanced by research, conferences, training, and publications. Hydrologists, engineers, geographers, economists, land planners, ecologists, city managers, insurance executives, and disaster relief directors, among others, now are speaking the same language. But there are at least three directions in which lessons learned are still not practiced.

One important lesson is that quick and nation-wide change in procedures without careful trial in selected areas and without subsequent critical appraisal can be counter-productive. When the Tennessee Valley Authority established its community assistance program for flood damage prevention planning in 1953 and the Corps of Engineers introduced its floodplain management services program in 1960, they moved cautiously and employed a variety of trial approaches. In contrast, when national flood insurance was introduced in 1968 there was a brave commitment to offer coverage to all parts of the country at once. Little attention was given to post-audits of the rates, terms of insurance, map adequacy, and relation of detailed regulations to local physical and social conditions. As a result, the Federal Insurance Administration found itself locked into sometimes unwieldy or ineffective procedures that might well have been avoided in the light of experimentation. The attempt in the late 1970s to set up a nation-wide floodplain map file was likewise an unfortunately hasty enterprise. In its 23 years of operations, the National Flood Insurance Program has achieved much and continues to gain new experience. The current implementation of the Community Rating System now offers special opportunities to appraise the suitability of national standards and procedures at the local level. As new improvements are made in federal programs, it will be important to craft them on an experimental basis with careful provision for evaluation as they are launched.

A second lesson derives from the contrast over the years between expressions of desirable unified policy and measures to, in practice, unify the activities of agencies which in theory subscribe to the policy. There has been neither a single statement of Congressional intent with respect to floodplain management similar to the Earthquake Hazards Reduction Act of 1977, nor a delegation to a single executive agency of responsibility for coordination of the various federal programs. The Bureau of the Budget was interested in such coordination in the mid-1960s but did not take a strong hand. The Water Resources Council served as a meeting place of interested agencies without having statutory authority. After the council disbanded in 1982 it was followed by the Interagency Task Force, a voluntary group that also lacked authority to enforce desirable action as outlined in three Executive Orders. It cannot be expected that conscientious administrators will abandon their own statutory authority and responsibility before joining cooperative ventures, no matter how desirable the goals. It is just as clear that unless a strong statement is made by the Congress on the ways in which the basic policies of the individual federal agencies are to be related to the underlying aims in managing floodplain resources, those policies will have little significance in the field, where they influence or are constrained by state and local practices.

The third major lesson is that floodplain policy changes must be taken in the context of broad environmental goals applied to local conditions. This was the case in the unfolding of the Coastal Zone Management Act where four federal agencies have joined in a partnership for action on habitat protection, nonpoint source pollution management, and sediment control. It occurs in the implementation of soil conservation programs on lands where environ-

mental integrity must harmonize with economic considerations. It is acutely the case in the delineation of wetlands, where the rigidity of proposed national criteria confronts wide variety in interpretation of suitable floodplain use. Coastal erosion raises similar issues. The reconciliation of multiple and sometimes inconsistent national goals is an endemic problem in resource management. It can only be achieved effectively by dealing with particular landscapes in particular regions. When national goals shift or are clarified, as they surely will, the complexity increases. Unless floodplain management practices take into account local food and fiber production, biota, water supply, urban land use, recreation, and more—in addition to flood loss reduction—the goals for maintaining the sustainability of floodplains will surely not be met.

Experience over the past 25 years suggests that to help achieve the improvements in prospect will require a willingness to test and appraise new programs, a Congressional definition of unified federal policy, an executive decision to assure the coordination of the federal agencies, and a commitment by representatives of the principal state, local, and nongovernment groups to collaborate in adapting national aims to local conditions where the benefits will be seen—on the borders of the nation's rivers, lakes, and coasts. Without these measures, the resources of those areas will remain unduly vulnerable to natural extremes in stream flows and tides, and the people of this nation will receive less than optimal benefits from floodplains' amenities, soil, water, and biota.

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Illustration of some flood consequences and floodplain management measures. Clockwise from top:
1 Flood water detention 2 Regulations and development policies 3 Information 4 Coastal protection 5 Flood emergency measures 6 Natural protection systems 7 Preserving natural resources 8 Mapping flood hazard areas 9 Structural elevation