

# **FLOOD RESPONSE AND THE RESTORATION OF WETLANDS, RIPARIAN AREAS AND BROADER FLOODPLAINS: Lessons Learned from the Great Flood of 1993\***

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## **Introduction**

Response to the 1993 flood event was unique in terms of the broadscale interest in "restoration" of wetlands, riparian areas, and broader floodplains. Before the flood waters had receded, there were calls for relocation of floodplain occupants and restoration of some areas from a broad range of groups and individuals (some governmental officials, environmental organizations, and much of the press). Chapter 4, in particular, in *Sharing the Challenge* addressed the need to better integrate ecological considerations and future flood loss reduction efforts. The report recommended as a strategic goal: "preserve and enhance the natural resources and functions of floodplains" and recommended, more specifically:

"Treat the floodplain as part of a physical and biological system that includes the floodplain with the larger context of its watershed. Seek to identify and enhance the cultural, historic, and aesthetic values of floodplains. Where appropriate, restore and enhance bottomland and related upland habitat and flood storage. Use existing government and private programs to acquire, over time, environmental interest in these lands from willing sellers. Ensure the consideration of social and environmental factors in all actions relating to the floodplain."

A year has now passed since the 1993 flood. What lessons have been learned that should be applied in the upper Mississippi and lower Missouri and elsewhere with regard to post flood restoration? What initiatives have been undertaken to encourage restoration?

## **What Has Been Learned**

The post disaster response to the 1993 flood included interest in nonstructural measures and the restoration of floodplains and wetlands. The total amount of wetland and floodplain restoration which will have been accomplished by these efforts is yet to be determined due in part to the ongoing nature of these efforts and the lack of "on the ground" evaluations. But more than \$59,000,000 has been committed from the Emergency Wetland Reserve alone.

Despite the lack of acreage estimates and many problems encountered with restoration, which will be

discussed shortly, it is clear from the experience with the 1993 flood, that flood disasters do create restoration opportunities. The flood of 1993 provided a broad range of restoration and hazard mitigation opportunities which have also been encountered with past flood events and are likely to be provided by other flood events in the future:

- The physical destruction caused by flooding such as breaches in the levees, destruction of houses and roads, and erosion returns some land to a semi-natural condition and restores the natural connections between rivers and adjacent floodplain areas which are cut off by levees. Such destruction was particularly severe along the Missouri where many levee breaches caused severe scour holes and deposition of sediment on farmlands.
- Many landowners suffering severe flood damage do not want to return after the flood event. This is particularly true immediately after a long duration flood event.
- Relatively large sums of money that are made available for emergency housing, clean up, repair of structures and infrastructure, and relocation provide potential funding for restoration. However, there are also problems in using such funds for wetland restoration because of other statutory goals.
- Local governments and states are forced by the widespread destruction caused by flooding to reevaluate their priorities and needs for future use of floodplains. Creation of greenways, parks, and restored wetland areas may be attractive alternatives to simultaneously both reduce future flood potential and meet additional needs such as water quality improvement, urban renewal, and ecotourism.

Despite these restoration opportunities created by flooding, there are also severe restraints upon restoration in post flood contexts. The following conditions were encountered in the 1993 Mississippi flood context and will likely be encountered in other floods in the future.

- The overall post disaster "machinery" of government at federal, state, and local levels has been set up to help people meet emergency needs and to return people to infrastructure and local economics to an operating condition. This machinery is not set up to restore wetlands, riparian, and floodplain areas and in many instances works against such restoration by encouraging immediate repair of infrastructure and individual dwellings.
- Prior to the 1993 floods, there was no mention of natural system restoration as a goal in government post disaster policies and in funding guidelines. Very few legislative or administrative changes have as yet been made as a result of the 1993 flood. The goal of natural system restoration needs to be institutionalized in post disaster response measures by revising the floodplain and wetland executive orders, adopting a new floodplain management act with natural system components, including restoration of natural systems in post disaster guidelines, and other measures.
- Limited inventories of potential restoration sites were available at the time of the 1993 flood except for some areas along the main stem of the Mississippi. It was also very difficult to quickly develop such inventories due, in part, to the lack of agreement concerning criteria for designation of restoration sites, the lack of certain types of information (e.g. landowner preferences), and the severe economic burdens placed upon agencies by the flood losses and competing claims for limited staff and budgetary resources.
- Restoration of natural areas in a post flood context can be politically very difficult because many landowners want governments (federal, state, local) to rebuild their houses and infrastructure at public expense rather than restore lands to a natural condition.
- Limited funds were available specifically for land acquisition and restoration in the immediate post flood context where landowners were most willing to sell. Most of the funding available for relation is available for structures and not for acquisition or restoration of lands.
- Difficult and not easily resolved conflicts exist where one landowner behind a damaged or destroyed levee wishes to restore the levee and a second wishes to restore the natural wetlands.
- There were serious coordination problems with regard to restoration in post flood contexts. The U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency (EPA), the National Oceanic Atmospheric Administration (NOAA), the U.S. Army Corps of Engineers, the Soil Conservation Service (SCS), and other agencies may all have an interest in restoring some wetland and floodplain areas, but no single agency is in charge in a particular context and there are few coordinating mechanisms available to coordinate and combine programs into an integrated package.
- Landowners, local governments, nonprofits, and others are not aware of the funding sources available for restoration.
- The constituencies in favor of restoration of natural floodplain systems--floodplain managers, wetland managers, sportsmen, birdwatchers, recreation users--are not well organized and represent the public at large in contrast with floodplain occupants. This limits their effectiveness with government agencies and legislative bodies.

In summary, federal, state, and local government efforts to "restore" wetlands and floodplains after the flood of 1993 provided many lessons which should be applied in future efforts. Floods do create restoration opportunities. But, there are also severe impediments to restoration in post flood contexts, given the limited statutory goals of post disaster programs which do not address the restoration of natural systems, the narrowly targeted funding, the lack of pre-flood assessments and plans, the lack of coordination of agency efforts, and the need to deal with immediate and real suffering and human needs. New institutional mechanisms are needed to both identify general restoration opportunities prior to flood events as part of broader ecosystem management planning and to rapidly assess specific restoration opportunities (which will depend upon the nature of the flood and the specifics of the damage) after a flood event. Emphasis should be placed upon the identification of "win/win" situations where natural system and human needs can be simultaneously met. Once such "win/win" situations are identified, improved mechanisms are needed to target post disaster funds (Emergency Assistance, Community Development Block Grant, etc.) to these areas and to apply these funds in a coordinated and expeditious manner.

#### **Future Initiatives**

Based upon what has been learned, a number of recommendations may be made for both the Mississippi Basin and other future contexts. All of these are consistent

with the overall recommendations of *Sharing the Challenge* but are more specific in some instances:

First, implementation of the overall floodplain management recommendation of *Sharing the Challenge* which calls for more even-handed assessment of floodplain management opportunities, including the utilization of nonstructural measures and ecosystem sensitive approaches could form the essential underpinning of future efforts to better manage and restore floodplain and wetland ecosystems. Although the report has many strengths, it provided relatively few specific recommendations with regard to the procedures and processes for better assessing, planning, and managing floodplain ecosystems as part of broader floodplain management. The white House, federal agencies, and Congressional Committees should develop and implement more specific ecosystem and watershed recommendation of the sort suggested below.

Second, although over a year has passed, it is not too late to do much in the Upper Mississippi and lower Missouri basins. Restoration priorities may include:

- Acquisition and restoration should take place for "blowout" areas along the lower Missouri including areas covered by sediment. There is general agreement among the environmental and farming communities concerning the desirability of buyouts here although there are differences of opinion concerning the price paid for the lands. Authorization and funding of a Missouri River floodway is a priority although more modest acquisition might be achieved through Wetland Reserve and other available funding sources. funds are needed (from whatever sources) to pay the costs of land acquisition to permit the construction of semi-ring levees to the landward side of such blowout areas.
- Acquisition and restoration should take place for all or a portion of the Missouri/Mississippi River confluence area and other confluence areas. These areas have been subject to severe and repeated flooding and are natural wetland areas.
- Restoration plans and priorities should be prepared not only for the main stem of the Mississippi and Missouri Rivers but other tributary rivers including watershed areas based upon natural resource characteristics, management capabilities and needs, and willing seller status and costs. Such efforts to determine restoration priorities should involve not only natural resource evaluation but identification of land ownership and survey of landowners to

determine their possible interest in acquisition and restoration. Priority areas should include: endangered species habitat, areas immediately contiguous and hydrologically connected to river channels, confluence areas, lands adjacent to national wildlife refuges, national parks, state and local parks, etc., former wetlands (e.g. hydric soils, partly drained), areas repeatedly and seriously flooded, large blocks of land in private ownership, and lands needed to permit operation of flood control structures in a manner that will simulate natural flow regimes.

- Community and state multiobjective watershed and floodplain management should be encouraged by federal agencies and states to prevent future flood problems and address existing problems.
- Headwater restoration sites should be identified through preparation of community wetlands and watershed management plans.
- Action by Congress or the U.S. Army Corps of Engineers is needed to allow the use of existing funds under authorities such as the Environmental Management Program for land acquisition.
- Action by Congress is needed to establish and fund a Missouri "floodway".

Third, much has been learned from the Mississippi and its tributaries that should be applied to other rivers and flood events in the future:

- Floodplain assessment and restoration plans and priorities need to be developed on regional and local scales prior to flood events. These assessments and plans should be undertaken at federal, state, and local levels separately from flood control planning efforts to provide an independent basis for selection of alternatives by legislative bodies, agencies, landowners, etc. The white House, OMB, other federal agencies, and states should support such independent planning efforts. The Department of the Interior should take the lead in preparing such plans at the regional scale for the Upper Mississippi and Lower Missouri. These plans should be considered "pilots" for planning efforts for other areas. Lessons learned here should be applied elsewhere in the nation.
- The Secretary of the Interior should create a river management division or task group within

the Department which would draw upon the U.S. Fish and Wildlife Service, Geological Survey, Bureau of Reclamation, Rivers and Trails Program of the National Park Service and other divisions and bureaus. The role of this division or task group would be to help assess and prepare river ecosystem plans for the Upper Mississippi and, later, more broadly for other areas of the nation.

- Local governments and states should undertake wetlands and watershed management planning for floodplains and headwater areas to identify restoration sites along rivers and streams and in headwater areas of the sort recommended in President Clinton's 1993 wetland policy. The White House should provide further guidance concerning such wetlands and watershed management efforts. Congress should authorize and fund such efforts.
- A single federal agency should take the lead in coordinating restoration of wetlands and other habitats in specific post flood contexts. The U. S. Fish and Wildlife Service may be the logical lead agency in many contexts, but with strong assistance from the U.S. Environmental Protection Agency, the Soil Conservation Service, and the U.S. Army Corps of Engineers. These other agencies may take the lead in other contexts. The white House or OMB should issue guidance with regard to leadership roles.
- Congress should, in future disaster appropriations, make available specific "pots" of money for land acquisition and restoration by the soil Conservation Service, the U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers. In addition, Congress should provide federal agencies with more flexibility in funding and carrying out post disaster activities so that restoration of floodplain and wetland areas could be undertaken where it is more cost effective than repair of levees, repaid of infrastructure, etc.
- The white House, OMB, and other agencies should create post-disaster ecological teams resembling the cooperative federal/state post disaster mitigation teams which have been mobilized by federal agencies since 1989. these ecological teams involving the Department of the Interior, the Environmental Protection Agency, the Soil Conservation Service, NOAA, and other agencies would identify short-term restoration opportunities and make

recommendations for implementation to other post disaster teams and agencies. Such teams would be consistent with and help implement the recommendations contained in *Sharing the Challenge* for "collaborative efforts" (page 87).

- Reports and analyses should be prepared describing successful efforts to restore wetland and floodplain areas in the 1993 flood and other flood events (e.g. Louisa). The factors that led to the success should be identified. Copies of these reports and lessons learned should be broadly distributed to agencies to help guide other efforts.
- Training videos and other materials concerning identification of restoration opportunities, plans and procedures for restoration and restoration funding sources should be cooperatively prepared by the Department of the Interior, the U.S. Department of Agriculture, the Federal Emergency Management Agency, and the Corps of Engineers for use by federal, state, and local post disaster staff. Training of such staff should also be carried out.

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