

# **Floodplains:** *They Will Protect Us If We Protect Them*

## Part 2

By Gloria Bucco

*Last month we began examining the issue of building on a floodplain. We looked at the importance of floodplains, the results of overdevelopment, and the reasons for overdevelopment. This month we continue exploring floodplains by considering how a floodplain should be treated; the status of Nebraska's floodplains; what other communities, states and countries are doing to protect their floodplains; what FEMA is doing; and what can be done in the future to save these essential yet fragile places.*

### **How a Floodplain Should Be Treated**

We now know that overdevelopment on floodplains deprives flooded rivers of the open space they need for drainage. This causes flood waters to flow farther inland damaging cities and farms, and forces more water downstream for other communities to deal with. Flood waters then recede slowly because they cannot be absorbed through concrete and asphalt.

Even though all of this was known after the great floods of 1993, most communities rebuilt on their floodplains and continued developing these fragile areas. In fact, several of the communities and neighborhoods hardest hit this spring were areas that were severely damaged in 1993, but that allowed redevelopment (and further development) to occur in their floodplain.

The main mistake that was made post-1993 was the failure of many communities to plan for the next disaster – which turned out to be this spring. “Our tendency is to want to put bad experiences behind us,” explained Gary Taylor, an assistant professor at Iowa State University, writing for the Des Moines Register.

“After two catastrophic floods in 16 years,” Taylor noted, “now is the time to conduct serious, deliberative disaster-mitigation planning, so that rebuilding after the next disaster takes place in a way that protects lives, property and public investments.”

Taylor also blames common terminology for allaying fears better faced and dealt with. “The continued inaccurate use of the term ‘500-year flood’ gives people a false sense of security, leaving them thinking that such an event will not occur again for a very long time. Taken together, these human reactions often push planning for the future to the back burner,” he added.

Taylor acknowledged that some relocation did occur where the public and private investments in flood-damaged areas were relatively small, and relocation was politically feasible. “However, where the affected areas contained millions of dollars of investment in homes, businesses and public infrastructure, significant relocation was neither practically nor politically feasible,” he said.

So what can be done to strike a balance between development and nature that will protect against future flooding? A number of basic suggestions include:

**\* *Move structures off floodplains and relocate them to higher ground.***

Move homes and business structures away from wetlands and floodplains to allow rivers to access these areas when water levels rise. One of the toughest lessons of the '93 floods, according to an editorial in USA Today, was that some houses, businesses and even towns are better off moving from their flood-prone locations.

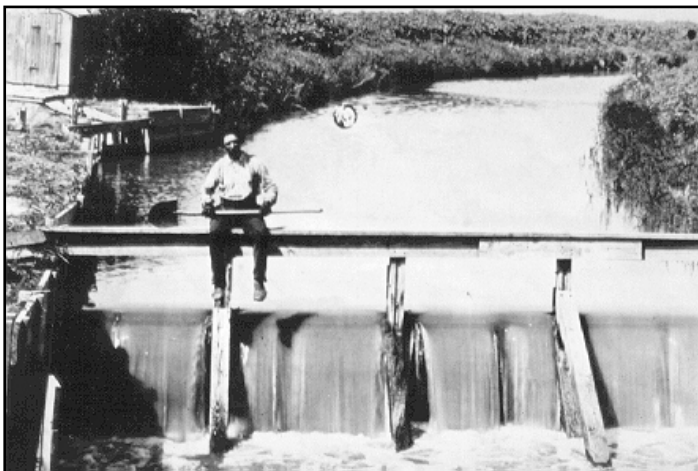
**\* *Restore wetlands and allow floodplains to recover.***

Allow wetlands to return to their natural state and become riparian areas and wildlife refuges. Use vacated floodplains for riverside parks, trails, ball fields and other recreational uses.

**\* *If levees are rebuilt, put them farther away from the river to allow more space for flood waters.***

Levees are a “double-edged sword” the Association of State Floodplain Managers warned last year, echoing years of research by scientists and engineers. Levees often encourage development but they are not indestructible. They offer a sense of protection, but when they eventually fail, and they will no matter how carefully they are built, the flooding is forceful, damaging and often a surprise to unwary residents. Plus, there will be more infrastructure in harm’s way.

(Continue Reading)



*Mill dam at West Point, Neb., circa 1880s. Supplied power to run the mill but was destroyed by a flood.*

## Nebraska’s Floodplains Are Important

Every Nebraska county has floodplains along its rivers, streams, creeks and sloughs. Most Nebraskans would agree that floodplains are very important and it is wise to keep development out of them. Nebraska floodplains enhance soil

fertility and provide recreational opportunities. In addition, Nebraska wetlands are highly regarded as natural phenomena that reduce flooding and improve water quality.

Many of Nebraska's communities, however, were developed *because* of the floodplain. They were initially settled near water to be close to the number-one resource necessary for habitation, industry and agriculture. Town after town in Nebraska was built near a water mill. Now in an age of wells, water plants and transmission mains, being in close proximity to a river or stream may produce more risks than benefits.

A typical stream in eastern Nebraska will run full every two to five years. A 10-year flood will cause streams and rivers to overflow their banks. Even so, since most of Nebraska is predominantly rural, it usually takes a more significant flood event to inundate anything more than low-lying agricultural land. Flooding in northeast Schuyler earlier this year was close to a 100-year flood. Nevertheless, it was only the fourth highest crest in the last 40 years, according to the Columbus gauge at Shell Creek.

Since Nebraska's climate changes dramatically from east to west, these differences affect its floodplains. In eastern Nebraska we can all recognize flat land next to streams and rivers as being flood prone. In the semiarid western part of the state, however, additional risks exist in the form of flash floods in dry washes and alluvial fans resulting from intense rainfall. One unique example of this is the city of Scottsbluff experiencing flooding from water pouring off the Scottsbluff National Monument.



Downtown Kenesaw, 1967. Flash flood on 32-Mile Creek.

## Nebraska Counties and Communities Have Ultimate Control

The Nebraska Department of Natural Resources supports wise floodplain management practices and can offer technical assistance to counties and municipalities. It can even help establish minimum standards for local floodplain management regulations. However, it is the domain of counties and communities to adopt and enforce resolutions and ordinances to manage their floodplains and wetlands.



One example of a Nebraska community taking steps to reduce flood damage and restore its floodplain occurred in Beatrice. After a number of floods along the Big Blue, Beatrice officials realized they could not fight the river and decided to clear its floodplain instead. Today, ball fields have replaced homes.

Another example of Nebraska taking on the responsibility of protecting its floodplains involves the efforts of the Lower Platte River Corridor Alliance, created in 1996. The Alliance is a consortium of three Natural Resources Districts and six state agencies dedicated to working with people to protect the long-term vitality of the Lower Platte River corridor.

The Lower Platte River corridor is generally defined as the Lower Platte River itself, the bluffs, and adjoining public and private lands located within the floodplain from Columbus to the river's mouth near Plattsmouth. This area, which runs 110 miles, supports exceptional biodiversity and serves as a valuable

resource for Nebraskans.



A more informal but just as dedicated effort comes from a grassroots group called Friends of Wilderness Park in Lincoln. This organization works to

*Salt Creek in Lincoln, 1972.*

preserve and protect Wilderness Park, a seven-mile-long stretch on the city's southwest edge in the Salt Creek floodplain. The group also educates people about the park and other environmentally sensitive areas in Lancaster County.

## What Others Are Doing

### China

China will boost its investment in wetlands protection and put more wetland areas under state protection in an effort to save them from destruction. China's 163 million acres of wetlands are the largest in Asia and fourth largest in the world. Currently, 40 percent of China's wetland areas are protected. This is

expected to increase to 70 percent by 2010. The government will also spend \$1.1 billion on wetland conservation by 2010.

## **Congo**

Congo has set aside a significant wetlands reserve of nearly 6 million hectares of inundated forest making up the Grand Affluents wetland in the middle reaches of the Congo River. These wetlands will not only help secure water and livelihoods for millions of people plus the conservation of important water features, forests and habitats, they are also particularly important dry-time refuges for elephants, hippopotamuses and buffalos, and for many migratory bird species.

## **Denmark**

River restoration was incorporated in the Danish Watercourse Act as early as 1982. The Danish Parliament passed this act because scientists informed them that of 30,000 km (18,641 mi.) of natural Danish watercourses, only 900 km (559 mi.) were still in their natural state. Since 1982, more than 1,000 small- and large-scale stream restoration projects have been undertaken, including the restoration of streams to allow for the natural flooding of adjacent meadows.

## **Iowa**

Since the 1993 floods, forward-thinking relocation efforts led Iowa to initiate more than 46 acquisition or relocation projects. The best examples of smart rebuilding were in Cedar Falls and Independence, where a total of 126 families were voluntarily relocated to higher ground.

After the city of Davenport was hit by flooding in 1997 and again in 2001, officials abandoned a plan to build a levee wall around the city, which had been considered as far back as the 1960s. Instead, they decided to relocate properties and develop the riverfront in accordance with nature.

## **Minnesota**

Dedicated conservation funding amounting to some \$200 million a year will be on the statewide ballot this November. If passed, this money would be used to improve wetland, upland and watershed management.

## **Montana**

Rapid growth in the western part of the state has at least five western counties considering adopting or expanding streamside setbacks to protect their waterways. About 10 other counties have recently adopted some form of setback. Streamside setbacks have a number of benefits. They can protect homes from the risk of flooding and may increase property values. Also, since

native plants can help preserve water quality and wildlife habitat along riverbanks, Ravalli County's setback proposal forbids their removal.

In addition, national and state groups are considering ways to preserve Montana's floodplains while allowing landowners to maintain their property rights. American Rivers, the Greater Yellowstone Coalition and other conservation groups are aggressively pursuing easements as a way to protect floodplains and free the river to flow naturally, according to Alan Kesselheim, writing in High Country News. The conservation groups are hoping that property owners might be enticed with tax breaks and cash payments to enroll land in a variety of programs.

### **New Jersey**

A northern New Jersey township is purchasing at least six homes along the Pompton River that it will demolish to build a walkway. The move is designed to not only make trails and open space available, but also to provide the community with much needed flood control. The Pompton River floods regularly and the mayor of Pequannock Township says the venture will give people who live along the river a chance to get out at a fair price while the city will get the property for flood retention and walking trails. Other North Jersey towns have plans to develop walkways along their rivers for recreation. In addition, several towns intend to remove frequently flooded riverfront homes and return the land to its natural state.

### **One Man's Quest**

Bill Zeedyk calls himself a "riparian restoration guru." The 72-year-old former Forest Service biologist was recently featured in High Country News talking about his passion -- "induced meandering" -- a technique using wood and rock structures to help damaged streams return to a healthy flow. Zeedyk described a river as an animal, "One that migrates in seasonal floods, erodes banks to make room for itself, and struggles to evolve a level of flow that will nurture the surrounding habitat." He travels around the Southwest presenting his induced meandering workshop to groups of ranchers, conservationists, scientists, fly-fishers and others who want to learn how to turn a gullied waterway into a more riparian area of green trees and lush grass that supports a variety of plants and animals.

### **FEMA's Mandate**

Since the floods of 1993 and the aftermath of Hurricane Katrina, one of the Federal Emergency Management Agency's primary objectives has been to guide development away from high flood-risk areas.

“We must and can work to design and build our communities better and, to the extent possible, out of harm’s way,” former FEMA Director James Lee Witt told Congress in 1993. “Mitigation must become a priority throughout all levels of our government. We must be proactive on mitigation and not reactive.”

And FEMA has acted on this mandate. In the nine states flooded in 1993, the agency ultimately moved more than 300 homes, and bought and razed nearly 12,000, at a cost of over \$150 million. The lands were turned to flood-friendlier uses like parks and wildlife habitat.

The village of Valmeyer, Ill., just downriver of St. Louis, became the foremost example of a buyout. Devastated when floodwaters overtopped its levee, the entire town packed up and moved to a new site two miles away on a bluff 400 ft. above the Mississippi floodplain. When another flood hit two years later, Valmeyer and its residents stayed high and dry.

But this example of smart rebuilding is the exception, not the rule. In one area that in 1993 was under 10 ft. of water, developers have built strip malls, office parks and 28,000 new homes. In St. Louis, there has been more building on the floodplain since 1993 than in its entire history. FEMA has relocated only a few thousand people, leaving nearly 10 million people in the U.S. living in floodplains, according to federal disaster officials.

Current National Flood Insurance Program regulations minimize the impact of structures built in floodplains by requiring them not to cause obstructions to the natural flow of floodwaters. Also, as a condition of community participation in the NFIP, structures built in floodplains must adhere to strict floodplain management regulations enforced by the community.

Modern floodplain management practices include regulations that control the location and structural characteristics of new construction. Floodplain management may be defined as the full range of public and private policy and action to:

- \* Promote the wise use of floodplains.
- \* Reduce flood losses.
- \* Protect the natural functions and values of floodplains.

Floodplain management places special importance on floodplains and directs federal agencies to avoid conducting, allowing or supporting actions on a floodplain.

FEMA has taken heat over its ambitious plan to map the nation’s floodplains with new scanning technology that is more accurate than past attempts. Consequently, floodplains have expanded and water flows have changed due to

development and erosion. Many more people are finding themselves in designated floodplain areas.

In addition, the Coastal Barrier Resources Act of 1982 relies on the NFIP to discourage building in fragile coastal areas by prohibiting the sale of flood insurance in these districts. While the NFIP does not prohibit property owners from building in these areas, federal financial assistance, including federally backed flood insurance, is prohibited. However, the Act does not prohibit privately financed development or insurance.

## What We Can Do

Almost everybody is saying the same thing, but is anybody listening?

*Floodplains must be protected.*

*Development must be discouraged.*

*Rebuilding should not take place in a floodplain after a flood.*

*Floodplains should be used for recreation.*

*Wetlands should be returned to their natural state.*

*Residents must be adequately compensated and encouraged to move to higher, safer ground.*

*We cannot rely on the engineered fixes of the past.*

While levees will still play a role in flood management, according to the organization American Rivers, we need to focus on common-sense, cost-effective natural flood protection solutions like restoring wetlands, keeping people out of harm's way in the first place, and allowing rivers to follow their natural, meandering channels. Our approach must be to work with nature and not against it. Working with nature, we can have clean, healthy rivers that make communities more resilient and more able to withstand droughts and floods in the years to come.

A group called The Wetlands Initiative believes society should change course in at least two ways to prevent costly floods.

\* First, restore a floodplain's natural hydrology and reconnect some leveed floodplains to the parent river to take advantage of the flood storage potential that wetlands provide.

\* Second, where lands are frequently flooded, eliminate economic activities that are adversely affected by inundation. Bottomlands should be returned to their natural state, allowing them to hold floodwaters for weeks and maybe months at a time. Levee districts could be used for strategic flood control by capturing flood peaks when and where needed.

More suggestions come from the Environmental Defense Fund:

- \* Buy out vulnerable lands to decrease people and property in harm's way.
- \* Return these lands to forests and wetlands to provide flood buffers.
- \* Reform the taxpayer-funded NFIP to remove incentives for new floodplain development.
- \* Better educate the public about the risks of living in floodplains, especially those living behind a levee.
- \* Reorient our approach to flood protection by placing high priority wherever possible on the use of a river's natural floodplain rather than on expensive engineered levee and pump systems.

But we cannot simply rely on FEMA or state governments to help us along. Local officials need to incorporate smart zoning, building and land-use practices into rebuilding efforts after a flood, according to Julie Rochman, president and CEO of the Institute for Business and Home Safety, and Rebecca Wodder, president of American Rivers. They add that building codes must be adopted and reasonable construction methods enforced. Residents should also be encouraged to purchase flood insurance through the NFIP or work with local leaders to pursue federal options for relocation.

*"Mother Nature is trying to tell us something.  
Let's listen before she yells any louder."*

*Environmental Defense Fund*

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