CHALLENGES FOR THE FLOODPLAIN MANAGER OF TOMORROW

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I have been invited here today to talk about the challenges floodplain managers face in the future in the context of other hazards and from the objective viewpoint of an academic setting. Before I begin, I would like to preface my remarks with a few caveats. First, I want to warn you up front, that my "hazards" roots are in floods. Before moving to the University, I worked for several years in the water resource agencies of the states of North Dakota and Illinois in their floodplain management offices. As a result, I tend to look at other hazards in the context of floods, and not vice versa. Second, having benefitted from the experience of being a "practitioner"—a state floodplain manager who spent a lot of time driving the highways and byways of those two states to work with local communities on their floodplain management programs—I cannot claim that my comments are as "objective" as they might be coming from a different representative of the academic community. Finally, for the past few years, I have had the opportunity to work on a fairly regular basis with Gilbert White. Hence, I am somewhat "contaminated" by his ideas. In particular, since last summer we have worked together on flood-related projects. As you might suspect, this has been a floodplain manager's dream come true. I have learned a tremendous amount just being around Gilbert, and hope that I can remember at least half of what he has taught me. In no way is he responsible for what I have to say today, but let me take this opportunity to publicly thank you, Gilbert, for the encouragement and friendship you have given me so generously for the past few years.

What are the major challengers for future floodplain managers? Several have been raised during this week, but I suggest that there are five major issues that are changing or evolving to present both challenges and opportunities to floodplain managers in the future.

Placing Design Standards in Context

The first of these challenges is that of the 100-year standard. For many years, we have relied on the 100-year or 1% standard as a basis for many of our flood management programs. What has been forgotten however, is that from the first, the 100-year standard was regarded as only a minimum standard for these programs. In using this standard, by default there seems to have developed a

widespread belief that if we are protected from a 1% chance flood, then we are "safe" and not at risk from floods.

There is a reason uniform national standards have become commonplace in the United States. They are relatively easy to define and enforce, and they create the impression of even-handedness, a notable virtue that has been embraced by both members of Congress and the federal agencies. But do they serve well the needs of widely differing communities?

The need for some uniform national design standards is obvious. There must be a clear definition of the scope of any public program. But these public programs are applied at unique locations in the country and they must be flexible enough to be adapted to those locations.

Just as uniform federal standards are needed for certain federal purposes, so too are site-specific local standards needed to address appropriately the widely varying conditions of the nation's flood-prone communities and states. The federal 1% standard does not necessarily make sense as a local floodplain management standard because it is unrelated to the specifics of the local flood problem. The definition of the hazard zone should depend upon each community's own unique hydrologic, topographic, economic, and demographic characteristics. This was demonstrated beautifully in Jack Page's presentation about Tulsa, in which he described that City's regulatory program, which far exceeds minimum standards.

What was originally intended to be a politically acceptable *minimum* standard of protection has too frequently become the *only* standard, and an inappropriate one in many circumstances. It has had the unfortunate effect of encouraging public officials, developers, and the general public to believe that land outside the A zone on a Flood Insurance Rate Map is not subject to flood risk. There are many of us, I am sure, who have seen a line on a map and gone to find that line in the field and try to explain why the land on one side of the line is subject to regulation while the other side is not. Further, this default 1% standard has given many the false presumption that whenever any flood control project is in place it is sure to keep flood waters away forever. We saw this last summer when agricultural levees along the Mississippi River designed to protect against frequent small floods engendered a false sense of security, encouraged development behind them, and increased the damages suffered when the flood of 1993 struck.

The challenge for floodplain managers is to help each community seek the maximum net benefits from its floodplain management planning and regulation program. It has been pointed out that such a goal was suggested as far back as 1936, when the Flood Control Act of that year proclaimed that for federal projects, "the benefits, to whomsoever they may accrue, shall exceed the costs." This language offers only a constraint to protect against development

which is unduly costly to the nation's taxpayers. An appropriate goal at the local planning level would be to maximize net benefits of floodplain land uses.

Defining Costs and Benefits

A natural followup to this discussion is the next major challenge I see for floodplain managers: defining "benefits" and "costs." Most often these words are construed only to refer to short-term monetary benefits and costs. While I want to say this should not be the case, the fact of the matter is that decisions made about flood protection programs—by local, state, and federal politicians—frequently are based on short term (i.e., the length of their term in office) fiscal prudence. We do not have the benefit of as many visionary people like J. D. Metcalfe as we would like to in this world. As a result we have difficulty in determining the true costs and benefits—both tangible and intangible—of many of the public policy decisions that are made. The challenge to floodplain managers is to do a better job of identifying, documenting, and quantifying—in monetary terms—especially the non-tangible costs and benefits of occupying or not occupying flood-prone lands and of various structural and nonstructural programs in the long run. It must be done in such a way that decision makers and the public, who have so many other items on their agendas, can clearly have *all* the information they need to make wise decisions.

Making Flood Insurance Work

Since its inception in 1968, the National Flood Insurance Program (NFIP) has been unsuccessful in getting people to purchase flood insurance. In particular, the number of policies in force has stayed fairly constant over the past decade. While I applaud the commitment the new Federal Insurance Administrator, Elaine McReynolds, has made to "increase market penetration," I remind all of you that this is not the first time we have heard such a statement from a new administrator. I see three major reasons for the failure of flood insurance. The first has to do with the lack of compliance with the mandatory purchase requirements. Perhaps the solution to this particular part of the problem will soon appear if the current legislation in Congress to reform the NFIP passes with sufficient penalties for lending institutions that fail to comply. This is not going to be the full answer to the problem, however, as it applies only to structures with loans. The second major reason is disaster policy. Current disaster policy provides no incentive, and sometimes it provides disincentives, for victims of floods to carry flood insurance. Unless strong requirements are put in place for flood victims who receive federal disaster relief to acquire and maintain flood insurance, insurance will never be the powerful tool it could be to promote mitigative behavior. The third reason flood

insurance is a problem is that it fails to act like private insurance. With private insurance, when a claim is made against a policy, the insured soon learns that his or her premiums go up. If a second claim is made on that policy, the insureds often discover that they will no longer be covered. At this point, the individual has to make a decision—she can take steps to mitigate further potential loss and qualify for insurance again, she can decide not to file a claim and assume the costs herself, or she can take the risk of not being covered for a catastrophic event.

Let me give you an example. I live in a condominium complex comprising mainly town homes with wood shake shingles. When it came time to renew our policy this year, we were told flatly that we would not be renewed because we had more than 50 units with wood shake shingles that were more than five years old. Period. End of discussion. The company claimed that wood shake shingles were too vulnerable to wind and hail damage. While we were able to find another company to carry us, we are starting a reroofing project this summer that will make our complex more resistant to damage from wind, hail, and fire. Insurance is the "stick" that is causing us to take mitigative behavior. Why should people who carry flood insurance be any different? Why shouldn't it be designed to encourage people to take steps to reduce their vulnerability to damage? I realize that attempts have been made in the past to increase rates for repetitive loss structures and that Congress has failed to do so. This, however, is one of the big challenges for floodplain managers—to keep fighting that battle.

Using Windows of Opportunity

I would like to be able to say that new reforms in disaster policy might put some teeth into making individuals and communities more responsible for the unwise decisions they have made, which often turn natural hazards like floods into natural disasters, but I think it unlikely that state and federal politicians will forego the opportunity to bail out victims of disaster. As you know, right after an event, there is a tremendous amount of interest in, and political, public, and financial support for, implementing mitigation programs. The smart floodplain manager will recognize this well in advance of an event and be prepared to take advantage of such opportunities. So the challenge to you is to do "pre-event" planning for "post-event" recovery. If you are ready to begin recovery, your community will fare much better.

For example, the City of San Jose, California, after experiencing minor damage from an earthquake in 1984, decided it was critical to create a Comprehensive Earthquake Master Plan. This plan was finished, and slowly and incrementally the City has been implementing the plan. However, the implementation process got a big shot in the arm when hazard mitigation funds became available after the Loma Prieta earthquake. Because the city had done

advanced planning and had already evaluated buildings that needed to be retrofit for seismic safety, and had cost estimates in hand, they were ready to move forward with decisions about which buildings to retrofit. They did not have to start from square one. Their planning process—nicknamed "Plan Ahead Yesterday"—in which the city spent money planning for unknown future funding sources, paid off for them.

San Jose provides a good case example to show that if plans and processes for recovery are in place before an event takes place, then decisionmaking for recovery can be done in a wise fashion. The floodplain manager can play a very important role in this process. While you might see this as something that makes more work for you, mark my words—pre-event planning will make the job of recovery, not if, but when, the flood occurs, easier.

Incorporating Resource Management

Finally, I am not the first this week to talk about the fact that there is a growing trend to view floods and floodplain management in a broader resource management context. In fact, that is part of what this whole conference and its theme—Nania—is all about. The floods of this past summer brought to the forefront the notion that floodplains are meant to be shared; that there is a need to balance human use of floodplains with the natural components of the landscape. The floods reminded us that conventional wisdom about how we do or can deal with floods is changing. We no longer look at floods with tunnel vision of simply trying to reduce flood losses by keeping flood water away from people or people away from flood water. Rather, we are recognizing that the sustainability of our communities, our regions, our states, and our country is dependent on how well we manage floodplains as part of a whole. Natural hazards, like floods, present a true challenge to society. The sustainability, if you will, of a society can be measured by how resilient it is to disaster. As floodplain management professionals you have a tremendous challenge as well as opportunity to help society deal with disasters and hence make the environment more resilient.

This challenge must be met with the understanding that flood loss reduction efforts—indeed, all hazards reduction or management efforts—must be a day-in and day-out process, not a disaster strategy. It is a process that must consider "quality of life" as well as the protection of health, safety, and welfare.

This is the hard part. You cannot meet this challenge with a tunnel view. You cannot just think about regulating development, preserving natural functions, or controlling flood waters. Rather you must think about how every decision made every day by your local and state government, by developers, and by individuals either increases or reduces the likelihood that flood damages in

the future will be worse. And, you must think about how you can influence those decisions.

I think the Association has done a tremendous job in promoting this concept of sustainability by forging new partnerships with other organizations, especially those with environmental interests to preserve the natural resources of our great country. This is a good start, but the work must be continued—to maintain and nurture those partnerships that have been created, to translate them from talks among professional organizations at the national level to their counterparts at state and local levels, and to draw even more partners into the fold, especially the private sector, which invests the capital into our communities.

So these are the challenges I see ahead. I look forward to working with all of you as our Association continues to meet the challenges and make the world a safer place.

THE LOCAL OFFICIAL'S ROLE

Fred R. Brusso, Jr.
City of Norfolk, Virginia

In the past, the local official's role has been underestimated, often ignored, and/or considered subservient by lending institutions, banking facilities, and state and federal agencies. Likewise, the local official has at times treated these groups as well as the citizens they serve in an antagonistic or cavalier manner. These actions and reactions between groups are changing, as they must, through the programs of the Association of State Floodplain Managers, the new direction of the Federal Emergency Management Agency under the leadership of James Lee Witt, and the disasters delivered by Mother Earth.

As we all are aware, Mother Earth has given us Hugo, Andrew, Iniki, The Blizzard of the Century, and the Flood of the Century—all in the last five years. There is one school of thought that Mother Earth has used these disasters to draw our attention to the greatest disaster of all, the way we have been independently reacting to these reccurring natural events. We have heard during news media reports and testimony of experts that the damage is caused by too much rain, soils that are supersaturated, etc. Our blame is placed on nature, not on ourselves, where the blame truly lies.

Finally, through our experiences with the Midwest floods, we now are recognizing this true disaster and as such we can begin mitigation and recovery. Each of us now has a choice. We can

- Cry and comment on the situation until the public is tired of us and no conclusion is reached, or
- Move together into a future that is remembered as an era of cooperation and accomplishments.

I am proud to say from the discussions and meetings during this national convention we *all* are assuming new roles and understandings to accomplish what we could only dream of a year ago.

To stand before you and explain the duties and challenges the local official faces is, especially with the large number of local officials present, preaching to the choir. But, as you and I have at times seen, some members of the choir need reminding and all of us need to be informed of which hymnal and page to sing from. Therefore with only a little reminding let us look into my city-issued crystal ball and outline the role of the local official of the future.

First we need to know, Who or what is a local official? Since the National Flood Insurance Program began, the local official has been either the

Building Official or Zoning Administrator for a town, county, or independent city.

What was/is our role? According to many at the state and federal level, our role has been to interpret the Flood Insurance Rate Map, inspect buildings, and maintain a set of regulations that the regional FEMA office has approved, thus keeping new development out of hazard areas or, if allowed, assuring that construction is completed in a prescribed manner.

Is this an accurate description of our duties? No! It is incomplete. In addition to these duties generated by the NFIP, the local official must:

- Prepare a budget;
- Oversee employee concerns;
- Plan for structural as well as organizational office modifications;
- Spec and write contracts for GIS systems and other computer systems;
- Oversee erosion and sediment regulations;
- Oversee construction structural concerns;
- Oversee or coordinate stormwater concerns involving both quality and quantity issues;
- Enforce American Disabilities Act regulations;
- Prepare public education programs for all activities;
- Testify in court on issues involving all activities;
- Write and review new ordinances;
- Prepare new forms and applications;
- Speak at council, commissioner, and civic groups;
- Do determinations of FIRMs for determination companies;
- Check bars and restaurants to enforce proper hours of operation;
- Investigate complaints concerning neighbors' lights that are too bright, cars parked on the lawn, and commercial vehicles in residential districts; and
- Play host to state and federal officials who want to check on how their specific program is proceeding or being enforced.

While the list can continue, I have already provided duties that many will have difficulty remembering. An easier way to think of the current duties of the local official is to consider the local official as the catcher on a baseball

team. He or she calls for a specific pitch and then blocks a wild pitch. We are the only player on the field who can see the entire field of play and all of the players: local administrators, citizens, lending officers, insurance agents, neighboring officials, state and federal agents, etc. Also, we are the last line of defense and must try to correct the errors of all the others.

Additionally, the local official is a bus driver. We are assigned a vehicle, a prescribed route, and the responsibility to return the bus in good shape while delivering passengers safely and on time to their destination. All while others are blocking our path, parking in our stops, and at times actually physically attacking us.

Finally, the local official is a parent who with love and dedication nurtures and provides for several programs.

With the changes we are participating in, what will our role as a local official be? Will there be additional duties? Will there be a modification of duties? I believe that in the future:

- I will have to be a team player who gets results, not someone who protects a process.
- I will have to realize that *all* members of the team—local, state, federal, and citizen—are important.
- I will have to communicate and coordinate activities within the locality with regard to the construction of buildings, management, identification of stormwater issues, and conservation and the wise use of the environment.
- I will have to communicate and coordinate activities with neighboring localities with regard to the construction of buildings, management, identification of stormwater issues, and conservation and the wise use of the environment.
- No longer will I be able to be satisfied with a robotic existence.
- I will have to be open minded.
- I will have to approach problems with an attitude of solution not condemnation.
- I will have to be a part of the floodplain management family.

Sounds a lot like a Scout pledge or a parents' promise to a newborn, but to be successful in the future, dedication will be required.

With the local official as a member of the floodplain management family there will be many external events that will shape the future. Most of the these events are just below the horizon where we cannot see them and will

surprise us. Some of the surprises will be pleasant experiences, like the current spirit of cooperation we are experiencing with FEMA. Others, while unseen, can be classified as legislative issues, training and education, and policy changes at local, state, and federal levels

Legislative Issues

We have to be aware of the pending changes to the floodplain regulations on state and federal levels. We also must be aware of changes to neighboring communities, whether they or right or wrong. Through the Association, the status of pending legislation is reported in a most timely manner. We must be concerned with what new regulations on a local, state, and federal level are being developed which, while not affecting floodplain regulations, will if adopted affect our ability to devote sufficient time to the management of floodplains.

Training

Often we ask, Do I have the time and resources for training? Then immediately ask, Do I have the time and resources to ignore training? There is an old saying, "Learn to do the job right. Afterwards, quick and pretty will follow." Look to the various training classes and sessions being developed. These need to be completed and offered to all local officials. Perhaps completion of specific training could be used to grant credit for Community Rating System communities.

Policy Changes

This may be the largest question mark on the horizon of the each local official. Laws may change, training increase or decrease, but policy changes always seriously alter the way we do business. And they occur without public hearings or comment. One such example being considered on the local level is that of privatization of services. I am not here to say privatization is good or bad, just that when it occurs the role of the local official will change. Already many localities are experimenting with a modification of duties by contracting to the lowest bidder responsibility for police and fire protection. Programs are in the planning stage in some localities to include school operations and inspection services. Some smaller communities are already experiencing a form of privatization through agreements with neighboring communities. The extension of this privatization into the duties and services we now are providing is assured because of the reduction of funding sources. The major question we face is the extent of it.

I could have stood before you today and told you local officials work hard, and have a lot to do, and not held you for the past ten minutes. To do so would have been a disservice to all, for without understanding the trail the local official walks on, no one could have understood what our future will be. To remember the local official at times has to say no to neighbors and family, while others work with a concept is most important.

The future local official's role will be that of the spotter in the field learning from Mother Earth. With this knowledge we will be administrators, visionaries, and technicians. To accomplish this goal we only ask to be received, supported, and considered a member of the floodplain management family. Then together we *all* can accomplish the ultimate goal of protecting the citizens, property, and environment from the injury, loss, and destruction associated with floods.

FLOODPLAIN MANAGEMENT IN THE 1990s

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Over the past 20 years, flood control districts, cities, and counties have become well versed in the efforts and processes required for implementing structural flood control solutions. Such solutions often require feasibility studies, preliminary planning and design, public workshops, environmental documentation, project design, and permit processing. Project approval and financing is never guaranteed. Even when local governments are successful, many years of effort are required before benefits are realized. Lacking the revenue, personnel, time, or public support needed to implement a major capital improvement program, many local agencies have implemented floodplain management practices as non-structural alternatives. A floodplain management partnership has been formed between local and federal government which defines a three-step process whereby: 1) flood risks are identified; 2) communicated to the public; and 3) minimized by local regulation.

However, floodplain management has become much more complicated since the early 1980s, especially in California where land is at a premium and environmental activism at a maximum. The traditional three-step process no longer assures flood protection, nor does the traditional local/federal partnership have the ability to resolve floodplain management conflicts.

The traditional three-step process may protect the floodplains from incompatible human intervention, but it does not necessarily preserve the flood-carrying capacity of the watercourses, our true goal as floodplain managers. In Southern California as in other arid or semi-arid regions, most watercourses are ephemeral in nature: alluvial systems that continue to change in position and shape. It is the rule rather than the exception that banks erode, sediments are deposited, and floodplains undergo modification with time. For example, in Santa Barbara County there have been creeks that have completely filled with rock and sediment upon flow events, creeks that formed new courses due to blockages of downstream bridges and culverts, a river that degraded over 16 feet during one winter, and a river that in four years became so choked with 30-foot-high willow trees that you could not walk within the riverbed.

The traditional three-step process really works only for stable geomorphic conditions, not for alluvial systems. The only reasons the process has worked effectively in the past in arid and semi-arid areas are that population densities in the impacted communities have remained low, the creek or river has been turned into a concrete canal, or the creek or river has been maintained

simulating stable conditions (routine removal of flow-obstructing vegetation and sediment accumulations to provide similar channel capacities year after year).

Communities that maintain their watercourses in order to manage their floodplains are finding that it is becoming difficult, if not impossible, due to the interpretation of state and federal environmental laws and the state and federal resource agency enforcement of environmental mandates. In many cases the community's floodplain regulations, adopted in the 1970s and 1980s, were based on maintenance of the watercourses. If the watercourses cannot be maintained in the 1990s, not only do the regulations become meaningless, but also many people thought to be safe will be exposed to flood damages.

Although flood control officials in Southern California have been struggling with this maintenance conflict for about seven years, because of a prolonged drought the damages which result have only been observed within the last three years of runoff. However, in Southern California alone, flooding occurred on the Mohave River in San Bernardino County, the Santa Ynez River in Santa Barbara County, and Murietta Creek in Riverside County as a result of the inability of the flood control officials to obtain environmental permits necessary to maintain the watercourses. In addition, it has been reported that the inability to provide maintenance has been a key factor in erosion damages along the Santa Clara River in Ventura County and the destruction of two of three bridges across the Santa Ana River in Redlands, San Bernardino County. These events resulted in millions of dollars in property damage and, in most cases, life-threatening situations.

The traditional local and federal government partnership has provided the basis for floodplain management throughout the country. In regard to the maintenance conflict affecting floodplain management in arid and semi-arid communities today, this partnership is dysfunctional. On one hand, the Federal Emergency Management Agency (FEMA) and the U.S. Army Corps of Engineers (Corps) are actively participating with local government in the three-step process to reduce flood losses. On the other hand, the federal regulators (the Corps, the U.S. Fish and Wildlife Service, and the Environmental Protection Agency) are preserving air quality, water quality, wetlands, riparian habitat, and endangered species. The Congress has adopted a myriad of environmental laws spreading authority for preservation among the regulating agencies, yet the responsibility for flood protection lies solely on the shoulders of the local flood control agencies. The federal government has removed itself from the inherent conflict, letting local government fend for itself while weaving through the federal regulatory maze. The irony is that upon flooding, the federal government provides the community with disaster assistance, but can reserve the right to subrogate on any claim in which flooding was caused by the lack of maintenance.

Solutions

Operating a preventive maintenance program in the 1990s requires a strategy that allows for achievement of stated goals. This strategy must recognize that environmental attitudes and values are part of our society. It is important to remember that without environmental permits, there will be no maintenance. Our goal in Santa Barbara County is to provide the historical level of flood protection, but in an environmentally sensitive way. The obstacles that have continued to stand in our way have been process time and costs, therefore our strategy was to streamline process in an effort to maximize productivity and minimize costs.

In streamlining process time and costs, the Santa Barbara County Flood Control District prepared a comprehensive environmental document for its preventive maintenance program. In addition, a task force was formed with representation from state and federal resource agencies as well as the public, for the express purpose of developing standard maintenance practices, associated policy statements, and an annual planning process consistent with the stated goal. The result was the first program EIR adopted for creek maintenance in the State of California and a revised creek maintenance program that was developed with input by many.

Generation of annual maintenance plans has provided multiple benefits: the plans serve as a basis for demonstrating need, analyzing alternatives, proposing mitigation, and selecting the most effective and least environmentally damaging maintenance practice. The plans also allow for priority-based budgeting as well as management of individual projects.

The Program EIR and revised maintenance program development resulted in a direct savings of $75,000 in the first year and $66,000 in the second year. Permit processing time has been significantly reduced. In some instances, state and federal permits which had previously taken six months to obtain have been issued in one day. However, the biggest success of this program has been measured by the fact that only minor flooding occurred in Santa Barbara County in the 1992-93 storm season, despite the heavy rains in southern California; and no flooding occurred during 1993-94, despite a major watershed burn and normal rainfall. Without maintenance, many of the watercourses would have flooded, causing a great deal of damage with significant costs.

In summary, communities in arid or semi-arid areas of the United States that depend on creek maintenance need to develop a plan. To derive any benefit, the plan must be coordinated with state and federal resource agencies. Upon plan acceptance, the agency or community then needs to pressure the resource agencies for a streamlined process and/or general permits. Santa Barbara County Flood Control District has shown that a successful plan will

cover 75-90% of required maintenance projects each year. Program success can be measured easily in terms of reduced cost, reduced permit processing time and operational efficiency.

Despite the local planning effort, there will still be 10-25% of the necessary projects not mutually accepted by the resource agencies, requiring an inordinate amount of time, huge expense, and a tremendous effort to resolve. For these projects, legislative relief or oversight is necessary and the federal government must engage in the process. In the author's opinion, FEMA has a vested interest, and should be the lead federal agency in this effort. The maintenance conflict must be resolved now, as nature will not allow us to ignore the issue any longer.