

# Can Planners Raise Concern BEFORE The Flood?

To the national news media and many decision-makers, flooding events are catastrophic disasters, characterized by basin-wide flooding, the evacuation of people, and massive property losses. The planner working in urban areas, however, faces a more subtle but equally serious flood hazard, the non-catastrophic urban flood. The United States Water Resources Council has estimated that overflowing rivers and streams and related drainage problems cause significant damage and disruption in almost 3800 cities, with annual losses exceeding \$2 billion. They also forecast that annual public and private flood losses will escalate to \$5 billion by 1985.

Within individual urban centers, increased flood hazards can be related to the widespread urbanization of flood-prone areas and the increasingly impermeable landscape created by highways, roofs, and parking lots. In many cities the results are more localized flooding, particularly in headwater settings. Older neighborhoods which previously suffered only occasionally from overflowing streams find themselves facing increasingly frequent and severe flooding events. Once treated as a nuisance, the flood becomes a threat. For persons living in these areas it is a frustrating experience leading to greater expense for protecting one's property. Moreover, decreasing property values may make it difficult to leave the neighborhood without financial loss.

If planners are expected to mitigate the losses associated with localized urban flooding, it is critical that we understand public reaction and perception of the problem. Without insight into public response and adjustment to these events, it is impossible to develop technically sound and socially acceptable remedial measures.

## Research Framework

Natural hazards research has emphasized the important interplay between the nature of the hazard and the experience, goals, and limitations of the population affected. Specifically, variations in experience and other behavioral characteristics produce significant differences in both the perception of and the response to the hazard.

Several researchers have conceptualized the response to hazard as an economic decision in which the affected individual attempts to minimize economic loss from an extreme natural event

by using the most efficient combination of damage-reducing adjustments. The individual weighs the risks of a hazard occurring and the degree of property or personal damage which might occur against the various adjustments which could be made. For example, if the chances of flooding are high and the costs great, an individual might simply move out of the flood plain. Conversely, if the risks are low and/or the economic costs acceptable, no adjustment to flooding might be taken. There are, of course, a wide array of alternatives between these two extremes.

## Study Design

With these issues in mind, the authors examined community attitudes and perception toward flooding in an urban area which had recently experienced a non-catastrophic flood. The study areas were two established neighborhoods in Charlotte, North Carolina. Both neighborhoods may be classified as lower/middle income or "working class" in character. Most of the residents of one neighborhood were black while the residents of the other were mostly white. Three weeks after the flood, 170 residents were given questionnaires to fill out and mail back to the researchers. Approximately half of the questionnaires were completed and mailed to the researchers.



*Irwin Creek with newly added riprap banks*

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## Findings

The survey results showed that flooding was perceived as one of the most serious problems facing the study areas. While this strong concern is partially inflated by the recent flooding event and probing by the survey, the strength of public anxiety cannot be discounted. A significant portion of the sample were concerned enough to attempt flood-proofing measures. Almost 28 percent of the respondents reported that they had previously taken actions to reduce flood damage. Among the adjustments undertaken were digging ditches, installing drains, constructing berms, laying polyethylene liners beneath structures, installing sump pumps, and reserving areas of their property for flood coverage. The imagination and personal cost associated with measures to reduce flood damage suggests that many property owners were not content with bearing the costs of repeated flooding or waiting for relief by public agencies. A significant number of residents were willing to accept some responsibility for protecting themselves.



The survey results also indicated that the respondents possess a realistic understanding of the reasons for flooding and the financial impact of these events on their property values. The respondents were not fatalistic or naive, but rather recognized that flooding was a controllable natural phenomenon. Surprisingly, a sizeable component of the sample were aware that urban development can aggravate flooding problems. Many property owners (45 percent) also recognized that their property was worth less

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### A SIGNIFICANT NUMBER OF PROPERTY OWNERS ARE WILLING TO ASSUME SOME MONETARY COSTS FOR PROTECTING THEIR HOMES AND SAFETY

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because of the flooding hazard. Nevertheless, respondents were strongly reluctant to relocate into non-flooding neighborhoods. Almost 60 percent of the sample indicated that urban flooding was not a serious enough hazard to warrant leaving their neighborhood. One may infer that the economic costs of repeated headwater flooding do not outweigh the social costs and adjustment which are associated with relocating out of the neighborhood.

When questioned about public sector activities and policy actions to reduce the frequency and severity of flooding, residents overwhelmingly supported public action. Among those citizens who were familiar with the impact of urban flooding, there was no hesitancy in supporting increased public sector involvement to improve the situation. Interestingly, the most strongly favored adjustment was increased police power regulation to restrict future floodplain development. This alternative was preferred by a larger number of respondents than was the construction of control and protection devices or relief and rehabilitation actions. These data suggest that new public policies to restrict urban development in flood-prone areas would enjoy strong public support among city residents experiencing flooding hazards.

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TABLE 1: COMMUNITY ASSESSMENT OF NEIGHBORHOOD PROBLEMS (PERCENTS)

	Not Important at All	Slightly Important	Somewhat Important	Very Important	Don't Know/ No Response
Poor condition of streets	22.8	12.7	21.5	22.8	19.0
Crime and vandalism	11.4	19.0	19.0	35.4	15.0
Unemployment	22.8	11.4	19.0	24.1	22.8
Unsupervised children, youths	10.1	16.5	16.5	34.2	22.8
Inadequate city services, like garbage pick-up	26.6	16.5	13.9	29.1	13.9
Flooding	6.3	11.4	21.5	44.3	16.5
Poor conditions of some houses	5.1	16.5	22.8	41.8	13.9
Speeding traffic	11.4	8.9	19.0	48.1	12.7
Lack of parks, recreation areas	25.3	10.1	10.1	39.2	15.2
Water, air pollution	11.4	19.0	20.3	30.4	19.0

TABLE 2: COMMUNITY ATTITUDES TOWARD FLOODING EVENTS AND GOVERNMENTAL RESPONSIBILITIES (PERCENTS)

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree	Don't Know/ No Response
Because of flooding, my house and land are worth less money.	10.1	16.5	16.5	20.3	25.3	11.4
I wish I could move into another neighborhood where there is no flooding.	8.9	29.1	12.7	16.5	20.3	12.7
I like my neighborhood and would not move just because of some flooding.	5.1	17.7	8.9	43.0	16.5	8.9
A flooding creek is an act of God and so there is nothing to really stop it.	35.4	22.8	8.9	10.1	12.7	10.1
The local government should build dams or lakes to reduce neighborhood flooding in Charlotte.	5.1	5.1	15.2	25.3	36.7	12.7
Charlotte should use zoning and other regulations so that more houses are not built in areas that flood.	3.8	6.3	8.9	30.4	40.5	10.1
The government should provide money to help people repair or replace flood damage.	2.5	10.1	11.4	26.6	35.4	13.9
My house and land are worth more money because of the creek in my neighborhood.	31.1	27.8	19.0	6.3	3.8	11.4

### Conclusions

While the Charlotte survey findings lack direct transferability to other cities, several observations for planners in other communities are appropriate. First, the distress and disruption caused by non-catastrophic floods are a genuine neighborhood issue. While the flooding of streets and structural damage to homes may not warrant extensive attention in the news media, it is a serious concern to the affected neighborhoods. Faced with frequent flood damage, a significant number of property owners are willing to assume some monetary costs for protecting their homes and safety. They are not, however, amenable to measures which would necessitate relocation out of their neighborhood.

Secondly, urban neighborhoods subjected to non-catastrophic flooding present an excellent opportunity for participatory planning. United in their concern for protecting their neighborhood, area residents show a strong orientation toward cooperating with planners to formulate and implement programs to mitigate flood hazards. Perhaps what is needed is greater governmental initiative to contact, mobilize and involve the community.



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