

Urban River Restorations  
And Watershed  
Management:  
Meeting Multiple Mandates  
and Policy Objectives

by Jan Chatten-Brown\*

In late April of 1994, EPA Administrator Carol Browner visited the Anacostia River, which runs through Maryland and Washington D.C., and declared the river a symbol of the nation's dying waters and moldering urban environments. The Anacostia River is but one of hundreds of urban waterways that have been channeled and polluted, to be used as storm drains rather than living rivers. Closer to home, last month the Los Angeles River, like the Anacostia, was listed by the Washington, D.C.-based American Rivers Association as one of North America's thirty endangered or threatened rivers. At the same time, in the aftermath of recent flooding in the midwest and elsewhere, communities across the nation are struggling to control what appear to be ever-increasing flood risks.

Any effort to restore the Anacostia and Los Angeles Rivers and other waterways requires that an underlying question be addressed: Can flood risks be minimized while we reestablish streams, rivers, and wetlands as urban amenities? Increasingly, public officials, planners, hydrologists, and community leaders believe we can do so, while at the same time meeting

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multiple legal mandates and public policy objectives. The solution will involve the development of comprehensive watershed management programs for localities that can reconcile the competing interests relative to the nation's waterways.

## Case Study: The Los Angeles River Controversy

There are already some urban river restoration success stories in California, and throughout the country, and much can be learned from examining them. The tremendous challenges faced in the ongoing effort to restore the Los Angeles River provides a good example of the conflict between comprehensive flood management (which embraces watershed management) and traditional flood control policies and the means to resolve those conflicts. The debate juxtaposes the proposed construction of parapet walls against a vision of an urban river parkway threading its way through the heart of Los Angeles.

Most who speed past the LA River on one of Los Angeles' freeways think of the waterway as a giant, open, concrete storm drain. In fact, the river originates in the Calabasas and Bell Creeks in the Santa Monica Mountains, is joined by a number of tributaries, and eventually flows over fifty miles to the mouth of the Long Beach Harbor. The river drains an area of 824 square miles, with a population of approximately eight million people. Originally a free-flowing network of rivers and streams, the Los Angeles river was channelized as part of a massive flood control project in the 1930's. However, 12 miles of river have remained soft-bottomed because high groundwater tables made cementing impossible. These areas are heavily vegetated, with abundant wildlife, and provide a glimpse of what the river could become.

In the mid-1980's a diverse group of area residents formed Friends of the Los Angeles River, beginning the effort to restore the river, providing park-poor Los Angeles with a river parkway with bicycle paths, hiking trails, and wildlife viewing areas. However, these river restoration efforts were threatened in 1991, when the Army Corps of Engineers and the Los Angeles County Department of Public Works announced plans for a \$400 million project to raise the concrete walls an additional eight to ten feet on 21 miles of existing levees on Compton Creek and the southern portion of the River, and to raise 27 bridges to accommodate these walls.

The purpose of the so-called "parapet wall project" is to provide protection for the area determined to be within the one-hundred year flood plain.<sup>1</sup> Without "adequate progress

on the construction of a flood protection system," the down-river jurisdictions face building restrictions and high flood insurance burdens. [See 42 U.S.C. § 4014(e) and Federal Emergency Management Agency (FEMA) implementing regulations, 44 C.F.R. Parts 59-77.] The EIS prepared by the Army Corps of Engineers rejected numerous alternative flood management measures recommended in public com-

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ments as not being cost effective, based solely on flood control considerations. In this process, opponents of the parapet wall project argued that such a single purpose project is too expensive and that the wall will impair views, be a magnet for graffiti, preclude development of trails and bike paths, and further separate the community from the River. They argue that flood control objectives could be achieved without further sacrificing the River, and that construction of the walls would mark a lost opportunity.

Opponents to the parapet wall project noted that California Water Code § 8110 specifies that the purpose of a flood control district such as that administered by the Department of Public Works is not only to protect and preserve lands from flooding, but also to provide for the improvement of rivers and streams. They explained that section 8100 authorizes flood control districts to appropriate money for protection and reforestation of watershed and conservation of flood waters as well as traditional flood control. For these reasons, they argued, the Corps and the County should prepare and implement a comprehensive watershed management plan.

Between release of the Corps' Final EIS in 1991, and the release of the same document by Los Angeles County as a Draft EIR in 1993, little happened. When the County released the Corps' document as its EIR, extensive comments on its legal and technical inadequacy ultimately persuaded the County to prepare a new EIR, which will consider the alternative of a comprehensive watershed management plan. Even if a comprehensive watershed management plan is not adopted, opponents of the parapet walls believe there are alternatives to construction of higher levees and walls. Opponents have proposed, for example, engineering solutions, such as long-span bridge construction (with footings that would not reduce river capacity) additional detention basins to slow the flow of storm water, and increasing the upstream capacity of dams by removing silt and debris.

In the meantime, the Mountains Recreation and Conservation Authority, formed under a joint powers agreement between the Santa Monica Mountains Conservancy and several other jurisdictions, is working with a wide range of elected officials, public agencies, and private organizations in an attempt to develop pocket parks, trails, and wildlife viewing areas along the soft-bottomed section of the Los Angeles River between Griffith Park and Elysian Park. And both the City of Los Angeles and the County's Los Angeles River Master Plan support the extension of bikeways along the length of the river.

Many see river restoration and the development of a river greenbelt in Los Angeles as ways to provide much-needed

park space (especially through the low income communities south of Griffith Park), revitalize River area neighborhoods, restore wetlands and wildlife habitats, and improve the quality of storm water runoff. Examples of successful urban river restorations include San Antonio, Texas; Denver, Colorado; Portland, Oregon and a number of California jurisdictions. Comprehensive flood control plans for Wildcat and San Pablo Creeks in North Richmond and the San Lorenzo River in Santa Cruz, for example, preserved riparian habitat and enhanced recreational opportunities and aesthetic values while reducing flood hazards. Many other jurisdictions have or will be engaged in river and stream restoration projects.

If flood control objectives are accomplished by means of a watershed management plan that focuses also on detaining storm water and recharging groundwater, other important benefits can be achieved, *viz.* reliable local water supply and improved water quality. The next section will identify the components of a successful watershed management plan.

## An Overview of Watershed Management

Watershed management is a method of addressing water quality issues through comprehensive planning for future development and land use. A successful program will prevent and mitigate the effects of new nonpoint source pollution, and will include measures to mitigate the impacts of past development. Watershed management also can protect, and even increase, local water supplies by planning for recharge of groundwater supplies through stormwater runoff and reclaimed water, and by favoring development that makes the most efficient and environmentally compatible uses of water. Watershed management objectives can be most effectively attained through development and implementation of comprehensive watershed management plans. In many cases however, localities can work towards those objectives simply through measures adopted to comply with federal stormwater management regulations. These approaches to watershed management are discussed in more detail below.

### Watershed Management Planning

According to the EPA, the objectives of watershed management are to improve water quality by: (1) avoiding where possible the conversion of areas that are particularly susceptible to erosion and sedimentation; (2) preserving areas that provide important water quality benefits and/or are necessary to maintain riparian and aquatic biota; and (3) assuring that site development for private and public works

projects protects the natural integrity of waterbodies and natural drainage systems to the extent practicable. [EPA "Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters", January 1993, #840-B-92-002, at 4-36, issued pursuant to Coastal Zone Act Reauthorization Amendments of 1990, § 6217, hereafter "EPA Guide".]

The EPA Guide, which relies upon a report prepared by Livingston and McCarron (1992), describes a step-by-step process leading to the establishment of a watershed management plan. First, experts must delineate and map:

- (1) the watershed;
- (2) the natural storm conveyance system;<sup>2</sup>
- (3) the constructed storm water system, including detention ponds and retention areas, and their size, storage capacity, and age;
- (4) land use by sub-basin; and
- (5) soils by sub-basin.

Next, watershed planners must compile information regarding water resources in the watershed. This process should identify various indicators of water quality and quantity as well as sources of pollution and should map and analyze anticipated future land use and infrastructure improvements. Based on this information and local circumstances the Plan must then establish resource objectives. Only with all this information can appropriate management practices be developed to address existing and future land use plans, storm water management, wastewater management, and infrastructure and capital improvements [EPA Guide, p.4-43].

### The Stormwater Management Alternative

Although the EPA Guide may describe an ideal approach, fiscal constraints will prevent most jurisdictions from pursuing such a detailed analysis and developing policies precisely tailored to local conditions. Still, many of the objectives of watershed management can be attained simply by implementing the best management practices to reduce storm water pollution as required by the Clean Water Act [33 U.S.C. § 1342(p), 40 C.F.R. § 122.26]. Because even compliance with storm water management requirements can be costly (the City of Los Angeles reportedly spends approximately \$30 million per year on storm water management), local governments stand to benefit substantially if their compliance programs are integrated with other policies to reduce flood hazards and eliminate the need for expensive, environmentally destructive construction

projects while at the same time conserving water and reducing reliance on new, costly water conveyance systems.

As detailed in the November 1993 CALIFORNIA ENVIRONMENTAL LAW REPORTER, federal stormwater management regulations require Best Management Practices for municipalities with a population over 100,000, construction projects of greater than 5 acres, and industrial facilities.<sup>3</sup> Stormwater management strategies called for in the regulations are designed to protect and restore natural drainage systems and wetlands. Strategies include restricting development of wetlands; reducing run-off through measures such as reducing impervious surfaces and restricting development on slopes, limiting the type or time of grading, and requiring specific soil storage practices, requiring on-site detention basins or cisterns to capture runoff from new developments, and requiring on-site or off-site storm water treatment facilities. Structural mitigation measures include infiltration basins and trenches, vegetated filter strips, grassed swales, porous pavement, concrete grid pavement, filtration basins, water quality inlets and catch basins, catch basins with sand filter or oil and grit separators, extended detention dry pond and wet ponds, and constructed stormwater wetlands. [See EPA Guide, pp. 4-15 to 4-20 for description of advantages and disadvantages and cost comparisons, and pp. 4-21 for information on regional, site-specific, and maintenance considerations.]<sup>4</sup>

Urban forestry programs to identify and plant appropriate vegetation, remove inappropriate vegetation, and mulch exposed soil to reduce run-off can also serve stormwater management and flood hazard reduction goals. These policies would also benefit jurisdictions preparing Hazard Mitigation Plans to qualify for FEMA wildland fire grants pursuant to section 409 of the Stafford Disaster Relief and Emergency Assistance Act. Urban forestry programs can also lead to improved air quality and, through use of yard wastes for mulching, reduced solid waste disposal as required by Integrated Waste Management Act [Public Resources Code § 40000 et seq.].

In arid areas, watershed management plans provide an invaluable opportunity to develop water reclamation and reuse facilities. Policies regarding wastewater treatment plant siting are critical in this regard. In the 1970's many municipal waste water treatment plants were sited on expensive coastal property to facilitate ocean dumping of treated waters. Today, many question these costly decisions which defeated many opportunities for water reuse. Water districts now evaluate or implement plans to reclaim waste water and recharge their water basins. The U.S. Bureau of Reclamation, along with eight major water resource agencies in Southern California, is studying the possibility of developing a long-range water supply and reclaimed water manage-

ment program for Southern California. The Bureau notes that Southern California now uses about 250,000 acre-feet of reclaimed water per year, but that municipalities and sanitation departments in the region produce nearly 2 million acre-feet that could be reclaimed for additional use. Although historically there were concerns about the health implications of using this water for recharge, those concerns largely have been put to rest. For example, according to a study conducted for San Diego by the UCLA Center for Environmental and Occupational Health, properly reclaimed waste water is ten times as pure as Colorado River water. Reclaimed water uses could include not only groundwater recharge, but also conjunctive use of such water to create or improve wetlands, revegetate stream banks, and restore habitat for plants and animals. In light of new initiatives for wetlands protection and restoration, such uses are highly desirable.

To ensure that watershed management planning is an integral part of all local land use and public works decisions, the policies developed as part of a watershed management plan logically should be included in the next update of the Conservation Element of a community's General Plan. That element is required to include policies for the "conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, soils, river and other waters. . ." [Gov. Code § 65302(d)]. The Conservation Element may also include policies regarding:

- “(1) The reclamation of land and waters.
- (2) Prevention and control of the pollution of streams and waters.
- (3) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
- (4) Prevention, control, and correction of the erosion of soils. . . .
- (5) Protection of watersheds. . . .
- . . . .
- (7) Flood control.”

## New Initiatives Regarding Wetland Protection and Restoration

Recent wetland protection initiatives by the Clinton and Wilson administrations will give added impetus to river restoration and watershed management programs.<sup>5</sup> These

initiatives respond to findings that over 50 percent of the wetlands that existed in the lower 48 states in the 1600s have now been lost. In California, the statistics are even more striking: an estimated 90 percent of the 5 million acres of the state's original wetlands have been lost to agricultural, urban, and other development.<sup>6</sup> For example, the original extent of the coastal marsh in San Francisco Bay was over 200,000 acres; today it is under 40,000 acres. Newport Bay originally had 13,500 acres of mixed-water wetlands, but now has less than 800 acres. Wilmington Bay, which today includes 6 acres of wetlands, originally had a 3,450 acre wetland. By improving the quality of the upstream environment, river restoration and watershed management can play an important role in wetland protection and enhancement.

The Clinton wetlands policy favors watershed management to identify, map, and assess relative wetland functions throughout watersheds, and establish minimum standards for wetlands protection and restoration. The policy declares:

[t]o reduce the conflict that can result between wetlands protection and development when decisions are made on a permit-by-permit basis, the Administration strongly supports incentives for States and localities to engage in watershed planning.

[*Protecting America's Wetlands: A Fair, Flexible, and Effective Approach*, released August 24, 1993 by the White House Office on Environmental Policy, Summary, p.4.] Specifically, the Administration has proposed to seek amendments to the Clean Water Act to provide financial and technical support for development of watershed management. One of the primary purposes of this support is to better integrate advance planning into the Clean Water Act Section 404 regulatory process. In conjunction with the Clinton Administration initiatives, pending federal legislation encourages watershed management planning and provides financial support for such efforts. Numerous bills require watershed management plans for specific areas and others provide grants and assistance for local development of watershed management plans. One of the most ambitious is H.R. 3948 (Norton) which would establish a national urban watershed restoration program, providing grants for urban river restorations.

In California, the Wilson administration issued a wetlands policy on August 23, 1993, with a goal of increasing wetlands. The policy promotes measures to bring together various stakeholders on a regional basis to develop wetland protection and restoration plans, and to initiate wetland restoration demonstration projects. Taken together, the data collection, planning, regulatory, and financing components

of the state and federal wetland enhancement initiatives can provide a strong foundation upon which local watershed management programs can be based.

## Liability Considerations in Designing Watershed Management Initiatives

As with traditional flood control projects, watershed management plans must be developed in a manner that minimizes the agency's potential liability for flood damage that may occur notwithstanding the implementation of the watershed management plan. In light of flood damage arising from the recent failure of many traditional flood control projects and the growing body of evidence demonstrating the value of comprehensive watershed management plans, in many jurisdictions such plans may represent the best approach to minimizing liability.

Although the rules for governmental liability vary depending on whether damage occurs from a failed flood control project, increased flow in a natural waterway, or surface waters, the law uniformly limits liability for any reasonable government action. Thus, liability for failure of a flood control levee to retain water within its design capacity is limited absent a showing of unreasonable conduct. *Belair v. Riverside County Flood Control District* (1988) 47 Cal.3d 550. This no doubt gives public works departments considerable comfort when considering traditional flood control methods. However, in the wake of repeated levee failures nationwide, plaintiffs can be expected to begin questioning whether a given project's calculated design capacity is in itself unreasonable. Traditionally, design capacity has been based upon assumptions of smooth-bottomed and unimpeded channels. Recent experience tends to undercut such assumptions. This growing experience, coupled with public policies favoring conservation of waters and wetlands restoration, supports a more comprehensive approach based on more realistic assumptions and multiple, complementary objectives rather than a traditional flood control project seeking simply to "dispose" of waters as quickly as possible.

*Salton Bay Marina v. Imperial Irrigation District* (1985) 172 Cal. App. 3d 914, which concerns governmental liability for damages arising from increased flows into a natural waterway, demonstrates the courts' willingness to hold public agencies accountable for policy decisions that the agency has reason to believe will lead to flood damages. Imperial County property owners along the Salton Sea claimed inverse condemnation due to the Imperial Irrigation District's decision to increase water supplies to farmers,

which in turn increased the water flow into the Salton Sea. The District increased its water supply to farmers despite the knowledge that this change would result in an elevated lake level and damage to lakeside property. Imperial County sought to limit its and the District's liability by lease and by ordinance provisions adopted in connection with the County's approval of lakeside development. The court found such provisions contrary to public policy to the extent they attempted to exempt the District and the County from liability for active negligence, and because the District was violating its mandatory duty, pursuant to Article X, § 2 of the California Constitution, to avoid wasting water, which was construed to include a duty to prevent flooding.

A results-oriented reading of *Salton Bay Marina* might cause some concern about potential liability for attempting to reduce flood hazards with innovative watershed management techniques rather than simply developing large-scale flood channels. However, the better interpretation of the case is that liability will not lie where there has been a comprehensive flood-risk assessment and the agency has made a scientifically supported, good faith effort to reduce flood hazards through alternatives to traditional channelizing of waterways. In weighing the relative merits of watershed management versus traditional flood control projects, countless past floods teach us there is no assurance that a traditional project will protect people and property in a flood plain. Under these circumstances there is good cause to believe that implementation of a well designed watershed management plan would be deemed reasonable, and enjoy the same protections from inverse condemnation liability as does a traditional flood control project.

Two recent inverse condemnation cases provide indirect support for watershed management principles as a reasonable method to reduce surface flows to natural waterways from public projects and private developments. In *Locklin v. City of Lafayette* (1994) 7 Cal.4th 327, the plaintiff alleged that the City of Lafayette, CalTrans, and other government agencies had created and maintained an inadequate storm drain system, with the result that downstream properties were damaged. The California Supreme Court held that a governmental entity acting *unreasonably* may be liable in inverse condemnation when alterations or improvements on upstream public property discharge an increased volume of surface water into a watercourse and cause downstream property damage. Although the Court found that the plaintiff failed to present evidence of unreasonable conduct by the defendants, this decision is a departure from historical governmental immunity for damage caused by flooding from a natural watercourse: it imposes a rule of reasonableness on governmental entities in the management of the flow of stormwaters from their property.

The *Locklin* Court listed a number of factors to be considered by the trier of fact in determining whether a public agency's conduct is reasonable. These include: (1) the utility of the agency's use of its land; (2) the amount of surface water runoff added to the streamflow by the agency's improvements in relation to other developments in the watershed; (3) the cost of mitigation measures available to upstream and downstream landowners; (4) the foreseeability of potential damage to the plaintiff; (5) the availability of alternatives with lower risks; (6) the extent to which the risk of flooding is considered a normal risk of owning property in the area; and (7) the degree to which potential damage is distributed among other beneficiaries of the public project.<sup>7</sup> In addition to the majority's discussion of factors to weigh in determining liability, Justice Mosk's concurring opinion noted the continuing duty of public entities to monitor and mitigate the effect of their past actions on downstream property owners. These principles should cause public entities to carefully consider methods to reduce and monitor drainage from streets, highways, and other public improvements into waterways. Happily, the methods for monitoring and reducing runoff include many of those measures required by public entities as Best Management Practices under the Clean Water Act.

*Yue v. City of Auburn* (1992) 3 Cal. App. 4th 653 also demonstrates the advantages of adopting a comprehensive watershed management plan and related land use policies. *Yue* considered local government liability for damage caused by surface water from a private subdivision development that flowed into a drainage system approved and controlled by the local government. The construction of the subdivision increased impervious surfaces, which in turn substantially increased storm water runoff. The court found that the city failed to require the subdivision developer to mitigate the storm water runoff and the city failed to upgrade its own drainage facilities, causing plaintiffs' land to be repeatedly inundated. Liability was imposed upon the city, with the court holding that the fact that a contractor or subdivider constructed the drainage system did not exonerate the public agency that approved the project.

*Yue* supports the concept of local governments requiring private developers to mitigate the water flow impacts of their developments. Mitigation standards should reflect local conditions and, where possible, should be included as part of the jurisdiction's comprehensive watershed management plan and a part of the local general plan. Agencies should be careful to review these requirements, however, to ensure that they do not reach so far as to effect a taking. Flood hazard and other mitigation requirements imposed by the City of Tigard, Oregon, are now under review by the U.S. Supreme Court in *Dolan v. City of Tigard*. Tigard has a comprehensive flood management program requiring

developers throughout Tigard to contribute to developing increased water storage capacity to offset increased stormwater from developed property. Pursuant to this program, Tigard required the owner of riverside property, Dolan, to provide an easement on her land for flood protection improvement as a condition of development so that the City could widen the river channel at public expense. Dolan challenged this condition as a taking. The City and the Association of Floodplain Managers, which filed a brief in support of the City, argue that the conditions meet the test in *Nollan v. California Coastal Commission* (1987) 483 U.S. 825, because the condition mitigates the increased flood risk to downstream property that will arise as a result of the Dolan's development. The Association of Floodplain Managers' brief cites the 1993 Mississippi River floods as a vivid illustration of how channeling waters to allow development in floodplains increases the risk to downstream property. Despite the long history of judicial rejection to challenges of floodplain regulations,<sup>8</sup> jurisdictions involved with watershed management issues should watch for the decision in *Dolan v. City of Tigard* for its implications for flood management.

## Conclusion

Preserving life and property from flood damage is a public policy priority. We all know the rivers we sit beside to soothe our souls can also wreak terrible destruction. How we respond to the threat of flooding can greatly affect the quality of our lives. The science of hydrology and ecology have evolved, and given us a better understanding of our options. The law, too, is changing and will provide an appropriate framework for meeting the competing interests of flood protection and the environmentally sensitive management of our waters. With such development, small streams and large rivers, like the Los Angeles, can be restored, and once again provide a rich biological resource and urban amenity.

## ENDNOTES

<sup>1</sup> There is considerable controversy over the calculations defining the area subject to a one hundred year flood. Some hydrologists believe the Army Corps of Engineers modeling is flawed, noting the repeated failures of levees constructed by the Corps to withstand one hundred year floods. For an interesting discussion of levee failures and river overflows, see "Flood Control Versus Flood Management" by Philip B. Williams, *Civil Engineering Magazine*, May 1994. Dr. Williams is a widely known hydrologist who advocates flood management, and has been involved in numerous river restoration projects.

<sup>2</sup> A small portion of this information may be available from the U.S. Fish and Wildlife Service National Wetlands Inventory which provides detailed maps showing the location, type and distribution of the Nation's wetlands. This information is available by calling 1-800-USA-MAPS.

<sup>3</sup> As noted in the November 1993 article of the CALIFORNIA ENVIRONMENTAL LAW REPORTER, pp. 383-390, a number of municipalities have recently been sued by the Natural Resources Defense Council seeking compliance with the Act's stormwater requirements. Overall enforcement of the Act is expected to escalate.

<sup>4</sup> One local jurisdiction that has embraced such strategies is the City of Santa Monica, which has adopted policies to reduce impervious surfaces, increase percolation, and modify construction and landscaping practices as a part of an effort to reduce stormwater runoff. Santa Monica's ordinance requires new developments in the City to prepare and implement Urban Runoff Mitigation Plans and requires existing developments to abide by certain "good housekeeping practices."

<sup>5</sup> The implication of new federal and California policies favoring wetland protection and restoration policies for landowners' and permit applicants' were discussed in 1993 CALIFORNIA ENVIRONMENTAL LAW REPORTER, pp. 413-416. In addition to these regulatory com-

ponents, however, the initiatives include numerous provisions to promote effective local planning and land use policies.

<sup>6</sup> *Wetlands of the United States: Current Status and Recent Trends*, Ralph W. Tinder, Jr., Fish and Wildlife Service, March 1984, available through the Superintendent of Documents, U.S. Govt Printing Office, (202) 783-3238.

<sup>7</sup> The Court also ruled that agencies will be liable only for the proportion of the damage attributable to their conduct and that plaintiffs must show that they acted reasonably in attempting to protect their property.

<sup>8</sup> See, e.g., *Adolph v Federal Emergency Management Agency* (5th Cir. 1988) 854 F.2d 732, holding FEMA's land use regulations were not a taking as a matter of law; and *First English Evangelical Lutheran Church of Glendale v County of Los Angeles* (1989) 258 Cal. Rptr. 893, upholding a prohibition on development in a floodplain.