

A County Government Perspective

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Pima County, Arizona is a medium-sized Western county where only 25% of the land is privately held. Like many Western counties, private land is often found along the larger floodplains. Many of the towns in Pima County, including Tucson, originated along these floodplains. Since 1974, federal regulations have set the framework for how Pima County manages floodplain development.

Since the floodplain regulations went into effect, the population in the unincorporated County has tripled in size, and a great deal of the riparian habitat that was in the floodplain has been lost to housing, businesses and roadways. That rapid growth has sparked the desire among environmental and neighborhood groups to see riparian habitat preserved during development. These groups often believe that we floodplain managers can prevent floodplains from being developed, and hence protect streamside vegetation. This just isn't so. We only specify how floodplains may be modified. We can't prevent anyone from relocating or modifying the channel if it's done in a manner that won't directly affect adjacent properties. And of course, we can't prevent anyone from removing riparian vegetation from his property.

From my perspective both as hydrologist and as resident of Tucson, existing floodplain regulations have not protected riparian habitat. Federal and local floodplain policy statements may seem to encourage preservation, but actual floodplain regulations don't give us those powers. That's why last year we tried to amend our local floodplain management ordinance to require mitigation of riparian habitat losses due to development in the floodplain. Our County Board did not support the amendment, but directed us to explore placing regulations in the zoning code.

While floodplain regulations don't protect riparian habitats, land acquisition can. Many counties in the West have vigorously opposed federal land purchases, particularly along streams. But Pima County has supported federal acquisition of floodplains on a variety of grounds. We think that keeping floodplains natural upstream of Tucson makes sense. Why? Because broad, well-vegetated floodplains act somewhat like dams. They slow down the velocity of water and allow floods to spread out harmlessly on undeveloped public land before hitting downstream urban areas. If the upper watersheds were channelized, flood peaks downstream would increase. Upper watersheds also recharge the urban aquifer downstream—an ecosystem service that often goes unrecognized. In addition, Pima County residents seem to like the recreation and natural open space that public land can provide.

For example, Pima County tried to muster up millions of dollars to buy the 75,000 acre Empire Ranch, located upstream of Tucson. The Empire Ranch has one of Pima County's few perennial streams and is home to the Gila Topminnow, an endangered fish. In 1987, Anamax (a large mining corporation) began

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to market this land for "ranchette" development. When the County failed to strike a deal with Anamax, our Board of Supervisors got the Congressional delegation involved; the result was that the BLM acquired the Empire Ranch through a land exchange. We're now working with the BLM to encourage them to acquire additional riparian land.

Pima County has its own acquisition program, which has been very successful in preventing or removing development in floodplains. We have spent \$34 million buying flood and erosion-prone land along seven principal watercourses. Acquisitions have been financed through two bond elections and a secondary tax on real property. In some areas, we've found that it's cheaper to buy floodprone structures than it is to build levees and excavate channels to protect them.

Acquisition of floodplain property is an innovative technique of proven effectiveness in reducing flood losses. Purchased areas provide natural flood storage which reduces flood peaks downstream. One District study estimated flood-peaks would increase 40% if upstream floodplains were developed using conventional structural flood-control measures. Increased erosion of channel beds and banks resulting from structural flood-control projects can also be lessened by establishing areas where natural erosion processes can continue unabated.

Pima County's acquisition program has been a locally-initiated effort; it got started in 1984, following a series of four Presidentially-declared flood disasters in Tucson. (We just had a fifth one this January.) These floods have taught us that federal disaster relief efforts are slow and cumbersome. Also, federal relocation programs won't pay to relocate those who don't suffer damage, but are clearly at risk from future flooding or erosion. And federal programs won't usually pay to acquire undeveloped land either.

One of the unusual features of our acquisition program is that we can buy undevel-

oped land. About a thousand acres of mesquite bosques, cottonwood-willow forests, and xeroriparian habitat have been acquired specifically to protect these plant communities. For instance, we purchased a rare desert marshland and its associated mesquite forest along the San Pedro River. This area, known as Bingham Swamp, is managed for us by the Nature Conservancy. It lies adjacent to other lands along the San Pedro River that the BLM hopes to purchase. Another is located just downstream of the Empire Ranch along Cienega Creek.

Together with the BLM Empire Ranch trade, we've brought over thirty miles of Cienega Creek into public ownership. And we have taken our management responsibilities for these natural areas very seriously: we have reduced or eliminated off-road vehicular access and grazing along these areas, and have filed for instream flows.

We don't just buy perennial streams; more often we purchase ephemeral streams with limited streamside vegetation. You have to understand that in our community, the trails that are used by both wildlife and people are in dry streambeds, and there's a big constituency that sees value in bringing watercourses, even dry ones, into public ownership. That constituency comes into play during some zoning issues, with the result that the developer sometimes turns natural areas along the channels over to the County.

Federal agencies, acting through the Section 404 of the Clean Water Act, have been important in encouraging acquisition, by providing legal and financial disincentives for levees and channels. Although it wasn't the main intent, Section 404 mitigation requirements have doubled the cost of flood control structures. Section 404 hasn't stopped a single project of ours but has certainly provided us incentives to avoid riparian habitat losses. Another way Section 404 has helped save riparian areas is through restricting dredging of channels to remove sediment and vegetation.

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For instance, we've created a wonderful riparian habitat by discharging effluent into the Santa Cruz River. It's a great place for birds and local bird-watchers. But the vegetation sustained by the effluent also helps to clog the channel, so some of the floodplain farmers downstream want us to remove the plants. Again, the main reason it hasn't been done is Section 404. On the other hand, other sections of the Clean Water Act that regulate the quality of effluent may force us to dry up this habitat by diverting the effluent to other uses.

To sum up, I'd say that the federal government would have a hard time encouraging riparian habitat protection measures in an unwilling local community. On the other hand, there's no end to what communities can accomplish through good local leadership, even if no consensus exists. It's important to recognize that Pima County's accomplishments have occurred in a community which has been and still is divided on issues like the use of public funds for acquiring and managing of riparian lands.

