



Project Slows Flash-Flood Waters, Making Neighborhood Safer

Full Mitigation Best Practice Story

Santa Cruz County, Arizona



Santa Cruz County, AZ - The neighborhood around Calle Azulejo, in the small community of Rio Rico, was designed in the 1960's, before the dynamics of flash flooding was completely understood. As a result of building on unstable soil in an area prone to flash floods, some houses and streets were frequent victims of water damage, especially during monsoon season. The construction of houses, outbuildings and fences encroached upon the flood drainage easement, which channeled some of the rain water through the neighborhood, making the problem worse. The force of the floodwaters trapped large and small debris in fences and against buildings, making the drainage easement narrower, and the flow of water faster and more powerful. Where the drainage easement met Calle Azulejo, the rushing waters raged across the street and into homes, dumping tons of debris into the streets, yards and houses.

To address these serious flood problems, Santa Cruz County adopted a new floodplain ordinance in 2001 to prevent future development in flood prone areas and restricts certain activities in the designated floodplain.

But the new regulations proved to be inadequate to address the long-term flood storage and drainage problems that plagued the community of Rio Rico. During the first week and a half of the July 2006 monsoon season, Santa Cruz County's Flood Control District used all of their budgeted overtime for the entire year cleaning debris on the streets left by floods - up to 18 inches of mud, rock and woody debris.

The State of Arizona made FEMA hazard mitigation funds available to communities following a 2003 wildfire disaster declaration (1477-DR-AZ - the Aspen Fire on Mount Lemmon). Santa Cruz County applied for and was awarded funding for a two-part hazard mitigation grant to address repetitive damage done by flooding.

The first part of the project consisted of removing the crown from Calle Azulejo and replacing the paving in a V-shape to channel water down the middle of the road instead of propelling the water and flood debris over the crown and into private property on the downhill side of the drainage. In addition, large rip-rap was added at the foot of the hill next to the road to further direct the water and to prevent erosion.

The second part of the project involved the purchase of two land parcels and the construction of a detention basin at the top of the hill above the homes of this subdivision for the purpose of slowing the flow of water during and following heavy rain storms. The detention basin covered seven acres of land where two natural drainages converged and had a maximum capacity of approximately nine feet deep with a spillway designed for a 500-year flood event (a flood that has a .2-percent-chance of being equaled or exceeded in any given year).

When completed, this project will have not only protected lives and homes, but will have also saved Santa Cruz County hundreds of thousands of dollars in cleanup costs. "We use crew and equipment time to clean up the debris every time we get an inch or so of rain," explained John Hays, Floodplain Coordinator of the Santa Cruz County Flood Control District. With this project completed, that cleanup expense will have been dramatically diminished.

Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region IX**

State: **Arizona**

County: **Santa Cruz County**

Key Activity/Project Information

Sector: **Public**
Hazard Type: **Flooding**
Activity/Project Type: **Flood Control**
Structure Type: **Wood Frame; Mobile Home**
Activity/Project Start Date: **06/2006**
Activity/Project End Date: **Ongoing**
Funding Source: **Hazard Mitigation Grant Program (HMGP)**
Funding Recipient: **Local Government**
Funding Recipient Name: **Santa Cruz County Flood Control District**
Application/Project Number: **9999**

Activity/Project Economic Analysis

Cost: **\$432,053.00 (Estimated)**

Activity/Project Disaster Information

Mitigation Resulted From Federal
Disaster? **Yes**
Federal Disaster #: **1477 , 07/14/2003**
Federal Disaster Year: **2003**
Value Tested By Disaster? **Yes**
Tested By Federal Disaster #: **No Federal Disaster specified**
Year First Tested: **2006**
Repetitive Loss Property? **Yes**

Reference URLs

Reference URL 1: <http://www.dem.state.az.us/>
Reference URL 2: <http://www.fema.gov/government/grant/hmgp>

Main Points

- To address these serious flood problems, Santa Cruz County adopted a new floodplain ordinance in 2001 to prevent future development in flood prone areas and restricts certain activities in the designated floodplain
- The State of Arizona made FEMA hazard mitigation funds available to communities following a 2003 wildfire disaster declaration (1477-DR-AZ - the Aspen Fire on Mount Lemmon). Santa Cruz County applied for and was awarded funding for a two-part hazard mitigation grant to address repetitive damage done by flooding.
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Flash flood waters sweep down Calle Azulejo



Debris left after flood waters recede.



Calle Azulejo after being repaved



Construction of the project's detention basin