



Quarterly Report

September 2005

Paseo de las Iglesias



Paseo de las Iglesias Presented to Review Board in Washington D.C.

Paseo de las Iglesias is an ecosystem restoration feasibility study being conducted in cooperation with the U.S. Army Corps of Engineers (Corps), with input from the City of Tucson and other stakeholders. The study evaluates ecosystem restoration, flood control improvements and river park trail development along seven miles of the Santa Cruz River historic floodplain upstream from Congress Street. The recommended alternative includes restored mesquite bosques and shrub communities on river terraces and floodplain with hydriparian habitat conditions near river tributary confluences. Riverbanks will be laidback and/or terraced and planted. Water harvesting features will be incorporated and irrigation will be provided. Recreational elements will include the Juan Bautista National Historical Trail and other amenities.

In October, representatives from the Corps and Pima County presented the study findings along with local project context and support to the Corps' Civil Works Review Board in Washington, D.C. The project was approved by the Board and will now proceed for state and agency review. The draft Final Report and Environmental Impact Statement will be released later this month. Project design is scheduled to begin in 2006. More information can be found at: <http://rfcd.pima.gov/envrest/>

Rendering of Proposed Paseo de las Iglesias project



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August Monsoon Events

The Regional Flood Control District (District) has prepared this summary report for the August 2005 monsoon storms. This report outlines storm events, initial damage assessments and future repair and recovery actions that will be undertaken.

STORM EVENTS

The average monsoon rainfall for Tucson is 6.06 inches , which occurs between June and September with monthly average rainfall amounts of 2.30 inches in August . The 2005 monsoons in Pima County initially provided minimal rainfall until August with three significant storms occurring on August 12, 14, and August 23, 2005. During this 10-day period, the National Weather Service reported that some areas received over 4.5 inches of rainfall at Three Points and the Brawley Wash; the Pima County rain gage reported a total of six inches (see Table 1).

Table 1: Rainfall Across Pima County During 2005 Monsoon as Reported by the National Weather Service for June, July and August through August 2005

NWS Reporting Location	June	July	August
Tucson International Airport	0.01	0.72	4.52
Green Valley	0.53	1.86	4.81
Reddington Pass	0.00	1.95	2.74
Mount Lemmon	0.42	2.08	2.91
University of Arizona	0.10	1.18	5.10
Vail	0.00	3.00	2.10
Ajo	0.00	0.58	1.21
Organ Pipe Cactus National Monument	0.00	1.18	0.90

The following is a brief discussion of these storm events.

August 12, 2005

Gunnery Range Wash located at the northern boundary of the Town of Sahuarita was flooded on Friday, August 12, 2005. Weather forecasters reported up to 4 inches of rain based on radar estimates. Emergency personnel responded to a few trapped residents due to private road closures.

August 14, 2005

The August 14, 2005 storm heavily impacted the Altar Valley and Avra Valley areas. Lighter rains throughout the day followed a one-hour intense storm of 2 to 3 inches. In some areas, the one-hour storm was a 100-year storm. The flow at the Brawley Wash and Ajo Highway (State Route 86) was measured by the United States Geological Survey (USGS) as 8,000 cfs. Downstream, the Brawley Wash splits into 3 braided channels, and at Milewide Road the run off was measured in one channel as 6,000 cfs.

The major areas with severe flooding and damages included Diamond Bell, Three Points, Kinney Road at Kings Canyon, and north of Manville Road and the Blanco Wash area in northern Avra Valley.



August Monsoon Events (Continued)

In the Diamond Bell area, sheet flooding from the Sierrita Mountains caused significant damage to private and public roadways. Flooding of the roadways resulted in the loss of life when a 3-year old was swept away when the parent's car became disabled in a flooded wash.

Three Points and the Ajo Highway sustained heavy flooding from the Brawley Wash as well as several large tributaries that flow under Ajo Highway including Three Points Wash and Hour Glass Wash. Just north of Buckelew Farms, the Brawley Wash channel fans out spreading floodwaters and damaging roadways and isolating residential areas.

Kinney Road at Kings Canyon suffered major damages due to flow over the roadway that washed out the road and damaged the existing culverts.

In the Blanco Wash area, all dip crossings on Mile Wide Road and Manville Road were still flowing heavily 24-hours after the storm with significant pavement damage visible from the air. Flood flows continued north largely within the "mapped floodplain" areas of the Blanco and Brawley washes. Several road wash crossings on Avra Valley Road were flowing, but the roadway itself seemed to be intact. Inspection of culvert and bridge abutments will be conducted with the Department of Transportation to assess any damage to these structures.

August 23, 2005

High levels of atmospheric moisture in combination with a low-pressure system moving east from California resulted in very heavy rainfall in portions of eastern Pima County. The storm was widespread with intense downpours that lasted for several hours and resulted in substantial rainfall amounts with reports of 2 to 3 inches within one hour or less. Although the radar in Tucson was not functioning, Phoenix radar estimated 24-hour rainfall totals between 2 to 6 inches of rainfall in a 24-hour period south of Tucson between Mission Road and Wilmot Road, which was the center of the storm activity.

The description of this event from the National Weather Service is that it was an unusual event for a summer thunderstorm in that the rain produced substantial amounts of runoff, which again is attributed to the slow moving nature of the storm. This storm was in sharp contrast to the typical summer monsoon event, which is fast moving and intense for a short period of time.

And, because of the sudden intense nature of this storm, the potential for any flood warning was virtually eliminated. For example, at the hardest hit area was along South Nogales Highway, the County upstream rain gage reported 0.8 inches in only 15 minutes.

The watershed soils were saturated prior to this storm from the previous intense storm events, particularly the August 12 and 14, 2005 storm. Because of these conditions, the inflows to the major river systems along the Pantano Wash, Rillito Creek, Brawley Wash, and especially the Santa Cruz River, experienced flow depths that have not been seen for quite some time. In addition to these major watercourses, the smaller washes such as the Franco Wash at South Nogales/Summit also experienced substantial flows.

The USGS had initially estimated the runoff on the Santa Cruz River as 30,000 cfs, but they have since revised their estimate down to 15,000 cfs. We are still working with the USGS to determine a better estimate of flow on the major rivers.



August Monsoon Events (Continued)

STORM DAMAGES

A complete assessment of the consequences of, and damages from, these storms is still underway and will be provided as soon as it is completed. We are currently investigating 97 complaints of flooding throughout Pima County.

The access disruptions from these last two storm events have been substantial.

Kinney Road at Kings Canyon sustained the most damage from the August 14th storm. Roadway damages in Avra Valley, Tucson Mountains, and South Houghton occurred in both the August 14th and 23rd storm events.

On August 23, 2005, road closure conditions peaked at 29 roadway closures and 16 roads listed as Travel with Caution.

The most significant early consequences of the August 23, 2005 storm included substantial property damage at certain locations. The South Nogales area (east of Old Nogales Highway and South of Tucson International Airport) was especially hard hit because of the intensity of the storm reported by the National Weather Service was 2 to 6 inches of rainfall within 24 hours as well as the location of building sites relative to some of the natural washes. Evacuation was necessary at South Nogales Highway because a berm immediately downstream of the culvert under South Nogales Highway collapsed sending water through the homes in that area.

The property damage experienced in other areas of Pima County was primarily related to downed fences and flood yards and substantial disruption to private access to individual home sites.

The Pascua Yaqui reported roadway access problems especially along Camino de Oeste. Tohono O'odham's Tribal Emergency Response Committee (TERC) was mobilized. They are assessing damages from Santa Cruz flows. It was reported that the Sells Wash banks have eroded significantly in recent flows.

POST FLOOD ACTIVITIES

We have received one request for the Floodprone Land Acquisition Program in the Summit area and two requests in the Three Points area. Based on our acquisitions in Catalina, we would expect costs of about \$200,000 per acquisition for property (these are 4 and 5-acre lots with mobile homes) and relocation costs. An appraisal will be done to determine more accurate values. We anticipate additional requests in both areas.

At this time, no significant damage has been found along the Santa Cruz River. We are still assessing the following areas: Houghton and Wentworth, Bopp Road, South Mission Road, and South Nogales Highway along tributaries to Lee Moore Wash.

The District has mobilized our job order contractor, Hunter Construction to assist in addressing the most immediate flood and erosion control needs including:



August Monsoon Events (Continued)

Repair to Kinney Road at Kings Canyon, the washed out culvert structure is being repaired. The repair is estimated to cost is \$155,000, and is scheduled to be completed by October 15, 2005.

The berm failure at 9630 South Nogales Highway caused flooding to the mobile home park on South Nogales Highway. Repair work to the berm and restore the area downstream of the roadway culvert is estimated at \$250,000. The District's job order contractor, Hunter Construction, will provide a more accurate cost and schedule for the repairs. The entire channel and berm is in poor conditions and an estimated cost for permanent repair work is \$1,000,000, which would include rebuilding the failed section as well as replacing the old erosion protection on both sides of the channel. Other options will be evaluated including potential acquisition and relocation under the Floodprone Land Acquisition Program.

Other culvert structures along South Nogales Highways, including 10300 South Nogales Highway where severe downstream erosion occurred. The District is researching the ownership of the channels downstream of these culverts to determine ownership and whether a drainage easement was given to either the railroad or to the Arizona Department of Transportation (ADOT) when these channels were constructed. Long-term, the District will need to inspect all the channels along South Nogales Highway to determine their stability and the status of maintenance responsibility. South Nogales Highway was turned over to Pima County one year ago by ADOT. There are five other major culverts along this stretch of South Nogales Highway, which will be investigated.

Breached diversion berm on State Land at 11535 South Old Nogales Highway that could potentially impact downstream residents.

We anticipate that the primary requirement of the Department of Transportation will be to restore access at wash crossings along the public roadway system. This may involve clearing debris or pavement replacement as necessary. Given the magnitude of this storm event, certain drainage structures may need to be inspected to assure their integrity is maintained.



Flight Photos

August 15th Flight Over Brawley Wash



**AUGUST
MONSOON
PHOTOS**



Kings Canyon Repair

The District hired Hunter Construction to repair damage to Kinney Road caused by the August storms . Currently, 95% of the repairs have been completed and Kinney Road has been reopened to public traffic.



Before



After

San Xavier Cooperative Farm Rehabilitation

The District and the Bureau of Reclamation have entered into an Intergovernmental Agreement to provide 3.1 million dollars in funding to assist in constructing new infrastructure for the efficient conveyance of irrigation water to existing agricultural fields and promote on-farm water conservation. Currently, water losses attributed to evaporation, spillage and ponding within the distribution system and farm fields limit the productive use of available water supplies. On-farm improvements and efficient conveyance of water is needed to minimize water loss and maximize productivity of the land for agriculture. Rehabilitation of water conveyance and field irrigation systems will increase the land under active cultivation and improve the economic viability of commercial Indian agriculture.

Juvenile Detention Center Drainage Improvements

The District performed an investigation of the Juvenile Center Detention Basin on South Campbell Avenue. The investigation was needed after numerous residential complaints were received regarding mosquitoes, odors, and large amounts of standing water. The investigation led to the conclusion that modifications were needed to improve drainage conditions at the site. These improvements to the site are now complete.



Before Improvements



Drainage Repairs at 50% complete



Floodplain Management Service Totals

JULY, AUGUST, SEPTEMBER 2005

Month	Floodplain Use Permits Received	Floodplain Use Permits Issued	Walk-In Counter Customer's	Drainage Complaints Received	Drainage Complaints Completed	Floodplain Status Requests
July 2005	61	45	583	36	21	494
August 2005	74	58	622	97	33	610
September 2005	80	49	544	38	74	480
Total	215	152	1,749	171	128	1,584

10/4/05

The table above shows floodplain service activities performed at the District for a three month period. The District receives Community Rating System (CRS) credit points for tracking functions related to Floodplain Use Permits and Drainage Complaint processes. These processes fall into two CRS activity categories, Public Information and Mapping and Regulatory practices. Specifically, the District receives credit under the following activities: Elevation Certificates, Map Information, Higher Regulatory Standards, Flood Data Maintenance. Participation in the CRS program results in flood insurance premium discounts for residents in the unincorporated areas of Pima County. Residents of Pima County are receiving a 20 percent discount on flood insurance rates due to Pima County performing above and beyond the requirements of the National Flood Insurance Program.

Public Outreach

The District and Community Relations provided monsoon safety materials to KOLD TV for development of a \$10,000 public service announcement promoting driving safety on flooded public roadways, which was broadcast on local TV and radio stations during the summer monsoon. Flood Control Engineering's excellent video of floodwaters filling the Silvercroft Wash was featured in the message .

District employees contributed over \$7,200.00 to charities throughout Pima County during the Annual ECAP campaign!

Employee News



We're Happy to Welcome: Terry Juvera, CIP Project Manager
Stephanie Mancine, Administrative Support, Flood Control Engineering
Sheina Pool, Civil Engineer, Flood Control Engineering
Rick Harrington, Division Manager of Infrastructure



Moving up: Jason Green has been promoted from a Hydrologist to a Senior Hydrologist. Way to go Jason!



Congratulations: Nanette Reynolds completed the Certified Public Managers Program. Graduation was held at the Historic Train Depot on October 19, 2005.



We'll Miss You: Suzie Bohnet has left the Regional Flood Control District to join the City of Tucson. Good luck Suzie!

If you have any employee related news you wish to submit, please e-mail Nanette Reynolds