MEMORANDUM

Date: November 1, 2011

To: The Honorable Chairman and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

Re: **U.S. Army Corps of Engineers and Regional Flood Control District Projects**

Regional Flood Control District (RFCD) staff, Deputy County Administrator John Bernal and I recently met with the Commander of the South Pacific Division of the U.S. Army Corps of Engineers (Corps), Colonel Michael Wehr; Commander of the Los Angeles District, Colonel R. Mark Toy; and civilian and military personnel of the Corps to discuss a number of County RFCD projects.

The Corps has been an active participant with the RFCD for over 30 years in building and maintaining flood control facilities in Pima County, including the Rillito River bank stabilization, the Kino Environmental Restoration Project, the conversion of the Ajo Detention Basin and, currently, Arroyo Chico, also known as the Tucson Drainage Area Project.

I am attaching a copy of the briefing paper provided to the Corps, along with a summary of the costs and benefits of the Arroyo Chico project. This project has been under development for nearly 20 years and is nearly complete. The project significantly reduces flooding to existing development within the City of Tucson and the downtown area. The project has removed over 1,300 residential, multi-family, commercial and industrial properties from the 100-year floodplain. These properties are valued in excess of $365 million. By removing residential structures from the floodplain, if the owners have a federally backed mortgage, they are no longer required to carry flood insurance. Individual households will save between $2,000 and $3,000 annually in flood insurance, with a projected total annual savings to these households of $2,420,000.

The attached fact sheet provides more information regarding the overall project benefits. The project is in its final phase and requires an allocation of approximately $4,200,000 for final storm drain and channel improvements.

At the meeting with the Corps, two environmental restoration projects were also discussed. These projects are Paseo de las Inglesias on the Santa Cruz River between 29th Street and Ajo Way on the west branch of the Santa Cruz River, and El Corazón de los

Tres Ríos del Norte. Both projects involve significant local funding, some of which was already approved in the 2004 bond issue. We anticipate further progress for implementation of El Corazón de los Tres Ríos del Norte with land acquisitions scheduled to occur in early 2012.

The County has continued to enjoy a very good working relationship with the Corps and welcomes their continuing partnership to bring flood control improvements and benefits to our region.

CHH/dph

Attachment

c: John Bernal, Deputy County Administrator for Public Works
Suzanne Shields, Director, Regional Flood Control District

® **U.S. ARMY CORPS OF ENGINEERS**

Colonel
Michael C. Wehr
South Pacific Division
Commander

Colonel Mike Wehr assumed command of the U.S. Army Corps of Engineers (USACE) South Pacific Division June 3, 2011. Established in 1888, the division comprises one-fifth of the United States and is one of the Corps' nine commands. It includes four operating districts headquartered in Albuquerque, Los Angeles, Sacramento, and San Francisco.

As SPD Commander, Colonel Wehr is responsible for leading a professional workforce of over 2,300 people. The Division manages a $1.17 billion military and a $400 million civil works program. The region encompasses Arizona, California, Nevada, New Mexico, Utah, and parts of Colorado, Oregon, Wyoming, Idaho, and Texas. Key missions include strengthening national security, supporting Overseas Contingency Operations, and managing the nation's water resource infrastructure for economic growth and environmental sustainability. The SPD team synchronizes Corps efforts with those of other federal, state and local agencies, the Army and Air Force, the Administration, and the Congress to ensure that the Corps provides exceptional support to military installations and civilian communities throughout the region.

Recent assignments include: Engineer Director for the NATO Training Mission-Afghanistan from January 2010 to April 2011; following command of the Vicksburg District of the Mississippi Valley Division of USACE from June 2007 to December 2009. Colonel Wehr came to the Vicksburg District from an assignment to the U.S. Army War College with duty as a Military Fellow at the Massachusetts Institute of Technology. He is a registered professional engineer in the Commonwealth of Virginia.

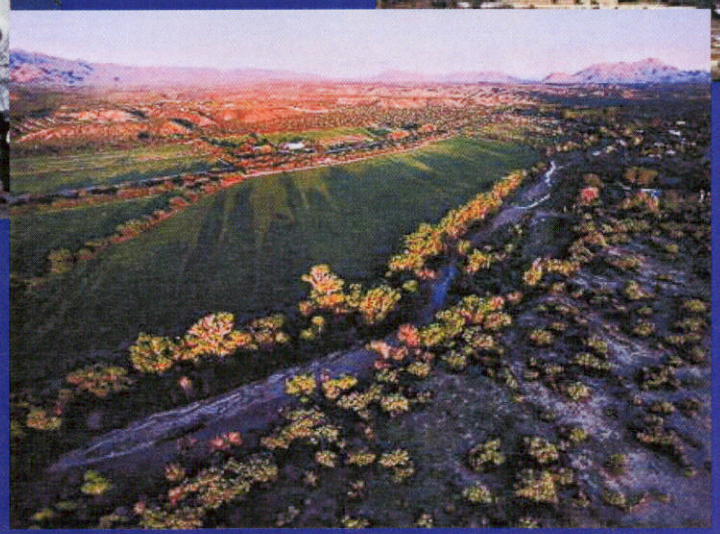
Colonel Wehr grew up in a military family, studied civil engineering, and was commissioned a Second Lieutenant through ROTC at Santa Clara University in 1985. Additional education includes the engineer officer courses, a Masters of Science degree in civil engineering from the University of Texas, and graduation from Command and General Staff and the Joint Forces Staff Colleges.

Colonel Wehr served in engineer battalion assignments as a Lieutenant at Fort Ord, Calif., in the 14th (Corps Wheeled); as a captain at Fort Bragg, N.C., in the 307th (Airborne); as a Major at Fort Stewart, Ga., in both the 92nd (Heavy) and the 11th (Mechanized); and returned back to Fort Bragg as a Lieutenant Colonel to command the 307th Engineer Battalion (Airborne) in Operation Iraqi Freedom. Following command, he continued to serve the 82nd Airborne Division as the Chief of Transformation for the Division. Other engineer assignments include the Japan Engineer District and U.S. Pacific Command. Tours overseas in Saudi Arabia, Iraq, and Afghanistan have afforded Colonel Wehr unique professional and joint opportunities.

His awards include two Bronze Stars, two Legions of Merit, a Defense Meritorious Service Medal and other awards. He is a qualified Master Parachutist, Ranger, and Sapper.

Colonel Wehr is married to his college sweetheart and blessed with two children.

Welcome !
Pima County Arizona



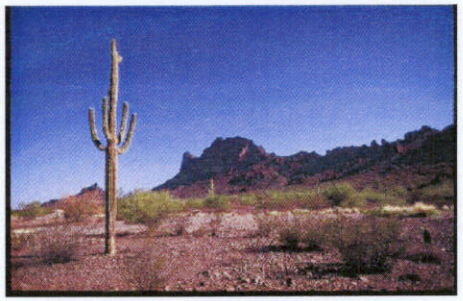
History With the Corps
Rillito River Flood Damage Protection

1983 Flood

2006 Flood of Record!

Santa Cruz River Watershed Plan

GILA RIVER, SANTA CRUZ RIVER WATERSHED
PIMA COUNTY, ARIZONA



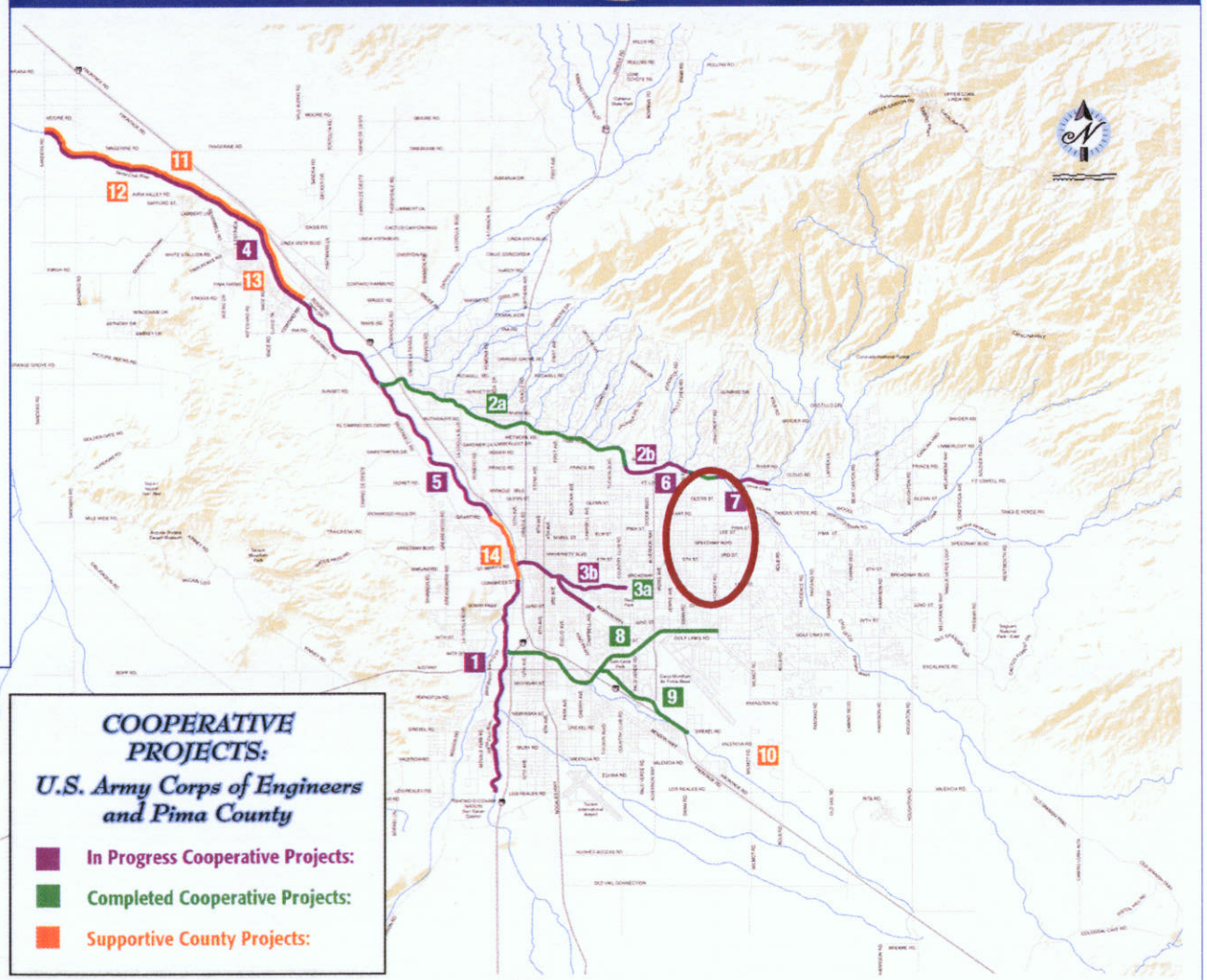
Final Feasibility Report

Pima County Arizona

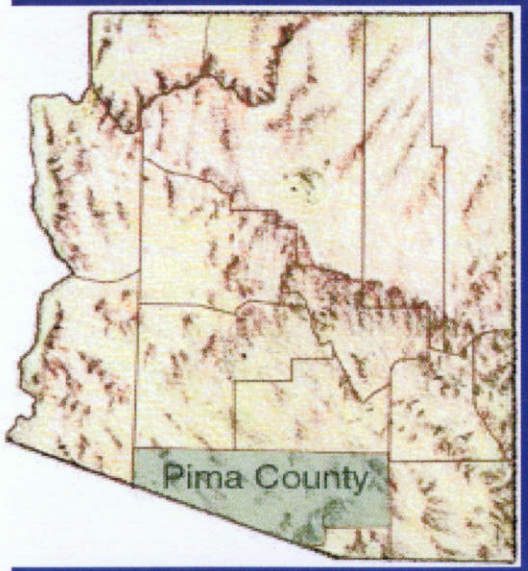
U.S. Army Corps of Engineers Los Angeles District

City of Tucson Arizona

August 2001



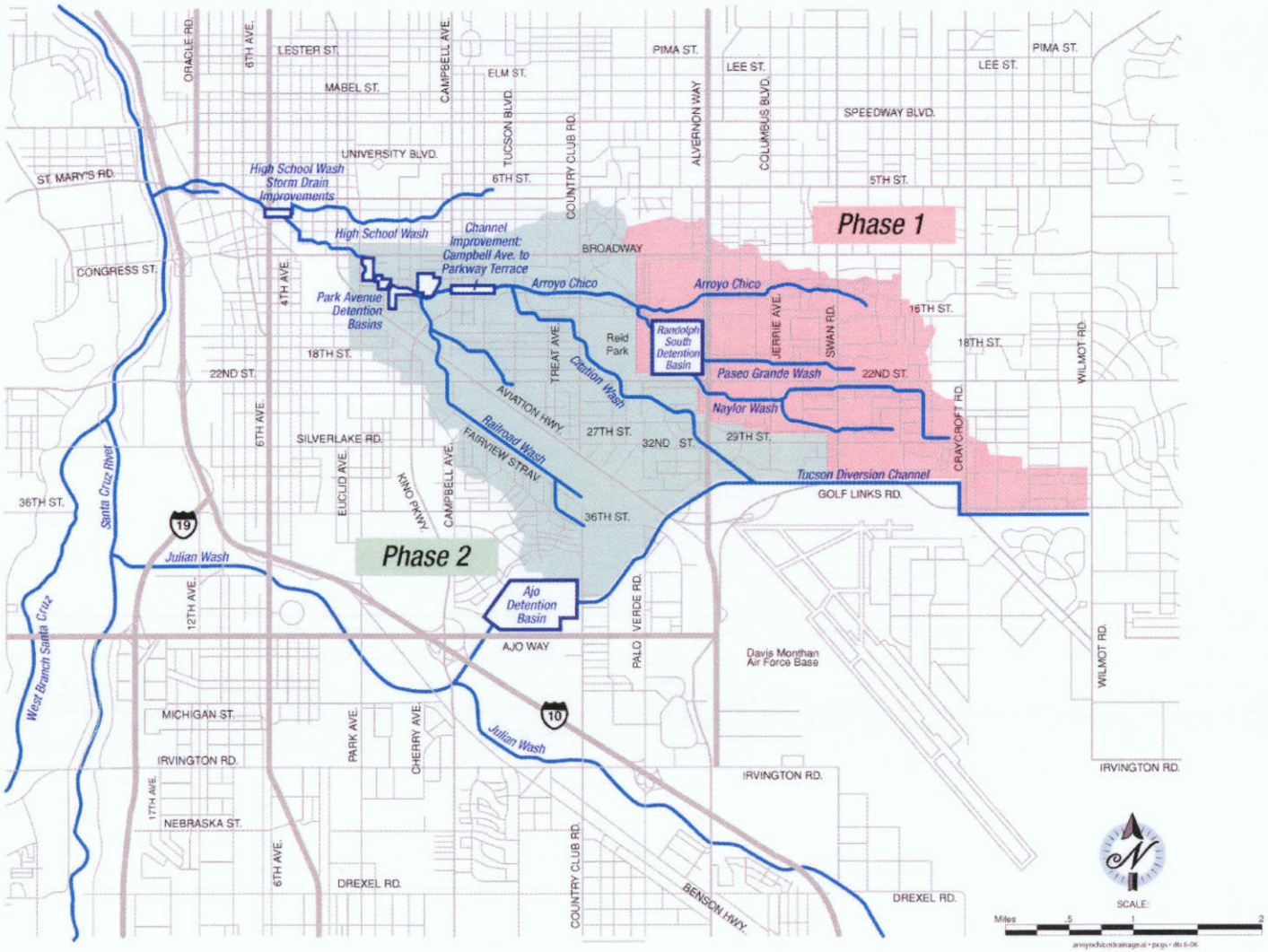
Pima County Current Projects



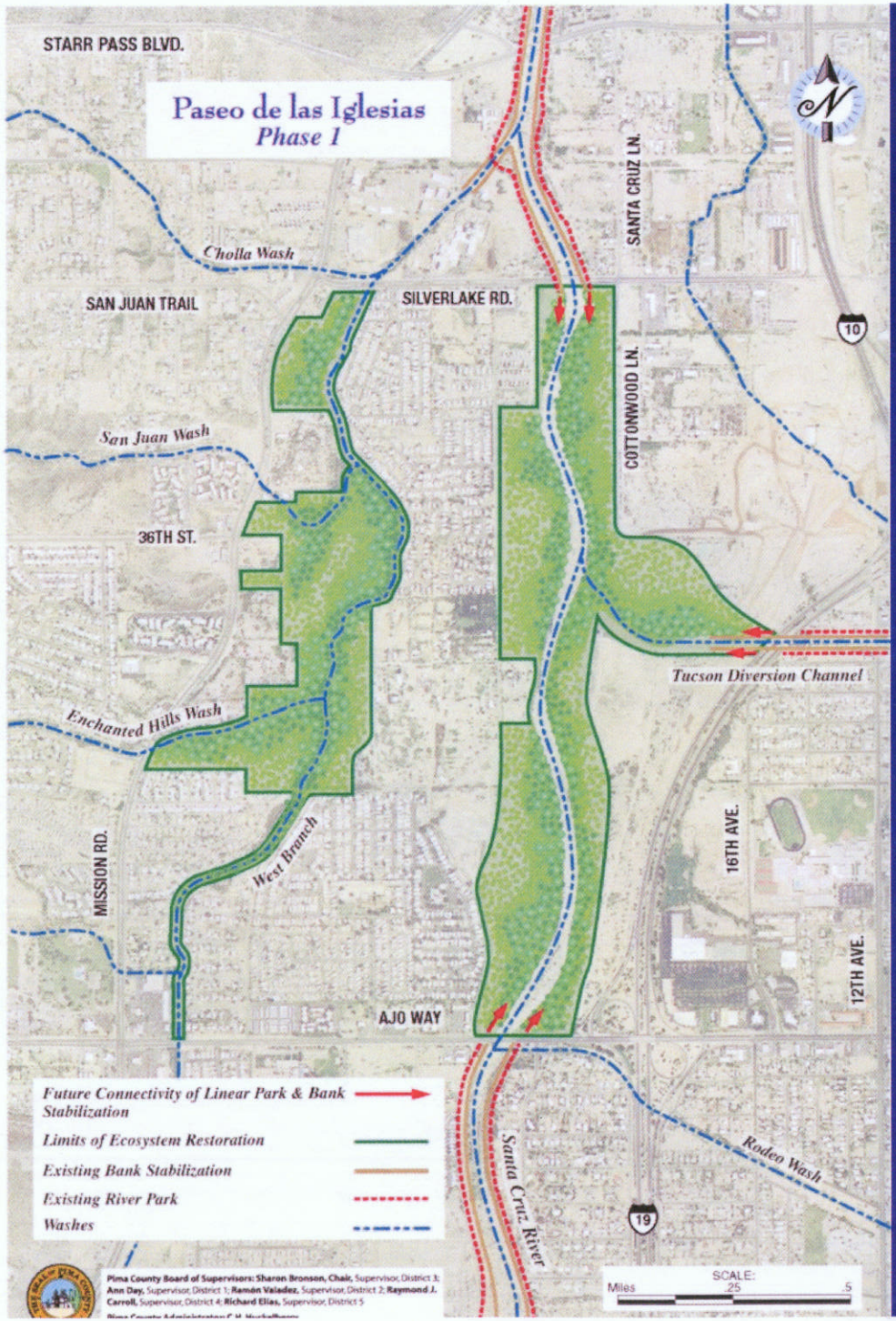
1. Tucson Drainage – Arroyo Chico
2. Paseo de las Iglesias
3. Tres Rios del Norte

URBAN FLOOD CONTROL SYSTEM

Tucson Drainage Area • Arroyo Chico



PHASE 2
PARK AVENUE DETENTION BASINS
KINO BOULEVARD TO PARK AVENUE



Paseo de las Iglesias Santa Cruz

El Corazon Tres Rios del Norte

TUCSON DRAINAGE AREA
(ARROYO CHICO)

FACT SHEET

Background

The U.S. Army Corps of Engineers ("the Corps") and the Pima County Regional Flood Control District ("the District") have worked very closely throughout the design and construction of the Tucson Drainage Area (Arroyo Chico) project ("the Project) to ensure cost effectiveness and to maximize benefits. The benefit to cost (b/c) analyses has been prepared at each step of the planning and design phases of the project, i.e., Project Feasibility Study (1996), Concept Design (1999); Value Engineering (2000); and Design Documentation (2001).

- Study and Design Costs:
  - Local Sponsor: $1,298,000
  - Federal: $2,598,000

- Construction Phase I (Randolph Detention Basin Complex):
  - Local Sponsor: $13,130,000 for Phase I in 1996 Dollars.[1]
  - Federal: None. Local sponsor paid all costs for Phase I. The sponsor sought and was granted project credit approval for construction costs incurred.

- Construction Phase II (Park Avenue Detention Basin Complex):

  - Phase II A, Cherry Field Basin Constructed in 2008 (1 of 4 detention basins):
    Local Sponsor: $ 2,888,000 (5% cash contribution and all rights-of-way)
    Federal: $22,283,000

  - Phase II B Final three detention basins and upstream channel:
    Local Sponsor: $ 5,794,300
    Federal: $18,225,500

Construction of Phase II B is vital as the upstream channel will direct flood waters to the Park Avenue Basin Complex and the final three detention basins are control structures to pond and raise flood waters elevations to fill the Cherry Field Basin.

Project Economic Benefits

The Corps' b/c ratio only calculates "federal" benefits associated with the flood control project. And while that is clearly important, it does not include additional and significant regional economic benefits that will accrue to the City of Tucson and Southern Arizona. Completion of the project will directly benefit the regional transportation infrastructure and the City of Tucson's downtown central business area.

- Direct – Immediate Benefits:

  1. Create 261 job years.[2]
  2. Direct employment of approximately 40 construction workers for 20 months.
  3. Remove 1,315 residential, multi-family, commercial, and industrial structures from the FEMA 100-year floodplain with a total assessed property value of $364,758,000.

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[1] Phase I costs when constructed in 1996; the value in 2008 is $18,800,000.
[2] Executive Office, Council of Economic Advisors, Estimates of Job Creation from the American Recovery and Reinvestment Act, May 2009

4. Remove 71 publicly owned parcels (not reflected in assessed value) including 3 schools and 8 acres the maintenance and bus yard for Tucson Unified School District.
5. Reduce flood repairs and inundation costs to the public infrastructure of $2,070,000 annually.

    - ✓ Protect 16 acres of active Union Pacific Railroad, 1.26 track miles.
    - ✓ Protect 4.6 miles of major streets including the Interstate 10 corridor.
    - ✓ Protect future Tucson Modern Streetcar, TIGER Grant, $63,000,000.

- Indirect Benefits:

    1. Jobs added in industries supplying construction materials and for operation and maintenance of the facilities.
    2. Construction and service industry providing construction material is estimated to generate $1,185,000 (5% of total construction costs) to local and state tax revenues.
    3. Residential structures removed from the FEMA 100-year floodplains would **save individual households $2,000 to $3,000 annually in flood insurance costs for a total annual savings of $2,420,000**. Households could then spend the savings on goods and services.

- Long-Term Benefits:

    1. Protect Interstate 10 from flooding and the federal investment to this transportation corridor. Currently, improvements to Interstate 10 are being completed through downtown Tucson using more than $200 million in federal funds.
    2. Protect State Route 210, the Barraza–Aviation Parkway through downtown Tucson, which includes $85 million in local funding.
    3. Increase economic development of businesses and industries in areas removed from the FEMA 100-year floodplain within the federally designated empowerment zone created to revitalize the Tucson economy.
    4. Increase economic development associated with the Union Pacific Railroad and Tucson's designation by U.S. Customs as a "Port of Entry" to facilitate the free and competitive flow of regional international trade between the U.S. and Mexico.

Environmental Benefits

Reducing flooding and ponding of storm waters along the railroad and associated industrial areas will significantly reduce the potential for increased soil and groundwater contamination. Shallow groundwater below the downtown Tucson area has been contaminated with petroleum hydrocarbons, most commonly diesel fuels, from leaking underground storage tanks associated with the railroad. There is evidence of gasoline and halogenated volatile organic compounds in the soil, shallow groundwater and regional aquifer. Much of the contamination in the soils and groundwater is derived from leaking underground storage tanks including dry cleaning facilities, pipelines, manufacturing sites and other industrial facilities concentrated along the railroad corridor. Within the current 100-year floodplain there are:

1) Two Arizona State superfund sites, Park-Euclid and 7th Street (Arizona), where volatile organic compounds have contaminated soils and groundwater. These sites total 33 acres.
2) Fifteen leaking underground storage tanks including diesel and volatile organic compounds.

During the design of the Park Avenue Basins, the Corps and Pima County worked closely with the Arizona Department of Environmental Quality on contamination issues related to the Park-Euclid superfund site to control surface flooding and the potential impacts to groundwater conditions.

Social Benefits

More than half of the households in the City of Tucson housing market are by definition "low-income" (derived from income and household size). The 2008 American Community Survey indicated that, for

Tucson as a whole, the median income per household is 70.4% below the national median income. Within the area to be protected by the proposed Park Avenue Detention Basins there are:

1. 9,467 households and of those households 2,780 or 29% are below the poverty level.*
2. 48% of the population are minorities*:

25%	Hispanic
11%	Other
4%	Asian
3%	African American
3%	Two Races
2%	American Indian

**2000 Census Data*

The residential structures being protected represent low to moderate income housing within Tucson's urban core.

Cultural Benefits

Tucson may well be the oldest continuously inhabited city in America with over 4,000 years of human occupation by Native Americans, Spaniards, Mexicans, and Anglo Pioneers—one civilization overlapping another. Arroyo Chico flows through Tucson historic zones including El Presidio San Augustín established in 1775 by the Royal Spanish Army as a frontier presidio. Later, the United States located the early Fort Lowell in the same location. Tucson incorporated as a City in 1877. The El Presidio Historic District was listed in the National Register of Historic Places (NRHP), and contains the oldest homes in Tucson built in circa 1850 to 1924.

- The flood control improvements will:

1. Remove 172 acres of National Registered Historic Districts from the 100-year floodplain.
2. Protect 11 NRHP structures:

- Hereford House 330 N. Main
- Hinchcliffe Court 405 N. Granada
- Hinchcliffe House 330 N. Granada
- Historic Warehouse District – UPRR-Toole-Stone
- Kruttschnitt House 297 N. Main
- Olcott House – 234 N. Main
- Rockwell House 405 W. Franklin
- Second Owl Club 378 N. Main
- Steinfeld House/First Owl's Club 300 N. Main
- Telles Block Washington – Telles – Meyer –Court
- Verdugo House 317-325 N. Main

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