



PIMA COUNTY

2016/2017 ANNUAL REPORT

# Regional Flood Control District

# Pima County Administration 2016/2017

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# Message from the Chief Engineer

**O**n behalf of the Board of Directors of the Pima County Regional Flood Control District (District), I am pleased to present the District's Annual Report for Fiscal Year 2016/17. The following are a few of this year's highlights, which are described in more detail later in this report.

Several significant rainfall events occurred in the early part of the fiscal year. While flooding issues within unincorporated areas were limited, Christmas and El Rio washes within the City of Tucson (City) caused problems with loss of access and flooded homes. In August 9, 2016, a storm event centered on the City, which filled the Kino Environmental Restoration Project to capacity, resulting in 350 acre-feet of harvested stormwater from this single event. The same storm also tested some of the newly built infrastructure at Arroyo Chico, which performed as designed reducing the severity of flood in the downtown area.

In order to better our understanding of these risks, the District continues its program of updating floodplain studies. During FY 2016/17, the following studies were completed or are ongoing:

- Catalina Mountains Unnamed Wash #4
- Christmas Wash
- Alamo Wash

Our Capital Improvement Program (CIP) continues to be successful resulting in the substantial completion of three flood safety projects each of which provide multiple benefits including flood control, recreation and neighborhood stabilization:

- Agua Caliente Park Pond Restoration
- Lower Santa Cruz Levee Bank Repair
- Paseo de las Iglesias, also known as the Santa Cruz River Flood Erosion Control & Linear Park: Ajo Way to 29th Street
- Santa Cruz River Pavement Rehabilitation: Cañada del Oro Wash to Silverlake Road

In order to ensure the flood hazard information that we use is accurate, the District convened a group of technical modelling experts including staff and consultants to develop guidance for acceptable use of floodplain models including two-dimensional modeling software. After many years of operating the Automated Local Evaluation in Real Time (ALERT) system, the District now has a record of data for storm events and resulting flood flows to allow us to calibrate the modeling software for local conditions. The guidance has been reviewed and approved by the Technical Committee of the Flood Control

District Advisory Committee (FCDAC) and the draft revision of Technical Policy 033: FLO-2D Technical Guidance for Hydrologic and Hydraulic Modeling is awaiting approval by the Pima County Board of Directors (Board).

In addition, last year the District established a committee to provide direction on our Program for Public Information. The committee is comprised of relevant stakeholders who would be recipients of the District's message on flood risk and flood safety and includes the Arizona Department of Insurance, Country Financial Insurance, Tucson Association of Realtors (TAR), Sonoran Institute, Southern Arizona Homebuilders Association, Sunstreet Mortgage, and Raytheon. This committee provided guidance on new outreach programs that were developed and delivered in partnership with these stakeholders including a workshop hosted by TAR and conducted by District staff for which attendees receive Continuing Education Credits toward meeting annual real estate professional certification requirements.

In July 2014, the Board adopted the "Rules of Procedures for Hearings and Review of Hearings," which provides a more formal process for performing compliance enforcement activities and includes potential fines for violations of the Floodplain Management Ordinance. In order to implement this procedure, hearing officers were appointed and an Appeal Board was established consisting of the Board-appointed representatives of the FCDAC. Last fiscal year was the first full year of implementation. Staff issues a Notice of Violation (NOV) when compliance issues are observed such as modifying regulatory drainage or constructing improvements without permits. The NOV contains a timeframe for the property owner to respond and a hearing date in the event the property owner wants to dispute the findings. I am pleased to report that the outcome has been extremely favorable; property owners have been bringing their property into compliance before the payment of fines is required.

I hope you'll take some time to read this year's annual report, which details our programs, CIP projects and other District activities. This year's report and all previous annual reports are available at: [www.rfcd.pima.gov](http://www.rfcd.pima.gov).



**Suzanne Shields, P.E.**  
Director and Chief Engineer



## Overview of the District

To comply with federal law, the State of Arizona passed the Floodplain Management Act of 1973, which authorized Arizona counties to adopt rules and regulations concerning management of floodplain areas. The Arizona State Legislature subsequently authorized flood control districts to levy taxes on real property to finance operating expenses. The Board organized the District on June 5, 1978. The District became operational on July 1, 1978.

Provisions of state legislation also allow incorporated cities and towns within Pima County to

undertake their own floodplain management duties and regulatory functions. In Pima County, the incorporated areas of the City of Tucson, the Town of Oro Valley, the Town of Marana, and the Town of Sahuarita have elected to assume floodplain management duties in their respective jurisdictions. The District is responsible for floodplain management activities for the remainder of unincorporated Pima County (with the exception of national forests, parks, monuments, and Indian Nations) and the City of South Tucson.

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### Mission

The District is a regional agency whose mission is to protect the health, safety, and welfare of Pima County residents by providing comprehensive flood protection programs and floodplain management services. These services emphasize fiscal responsibility, protection of natural resources, and a balanced multi-objective approach to managing regional watercourses, floodplains and stormwater resources.

### Vision

The District will continue to be a leader in providing quality flood protection and floodplain management services within Pima County.

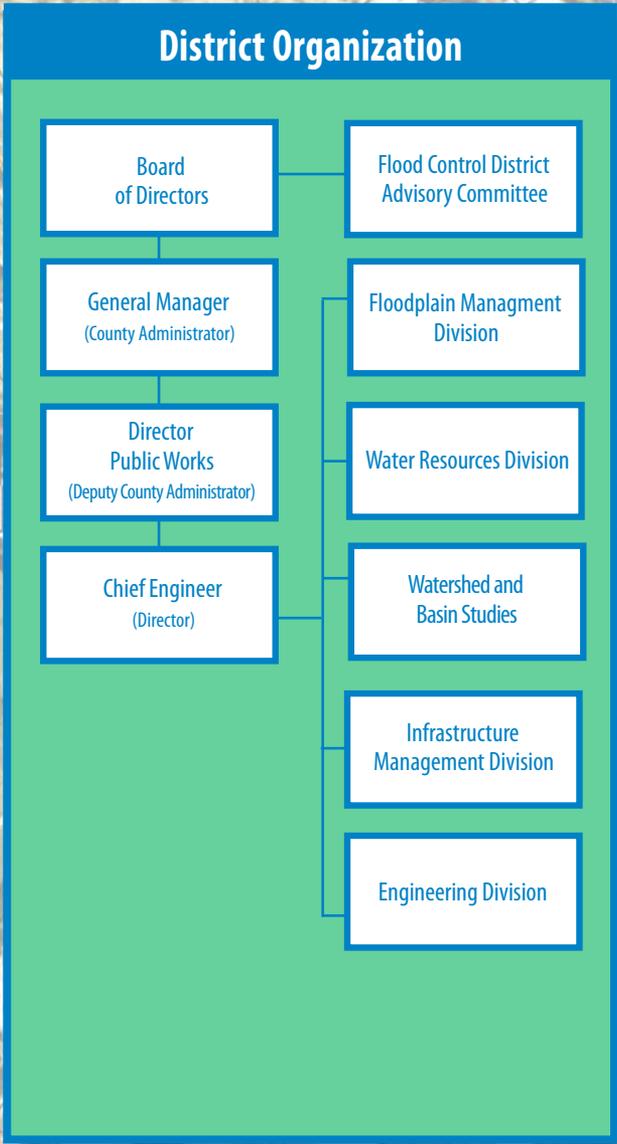
# Goals and Objectives

The goals and objectives of the District represent both flood control and resource protection. The District's approach varies from traditional flood control approaches because of its multi-benefit public philosophy. The District recognizes that it is necessary and desirable to maintain a balanced relationship between human communities and the land and resources that sustain them. To that end, the following policy goals and objectives have been adopted by the Board as part of the Floodplain Management Ordinance (Ordinance):

- Minimize flood and erosion damages;
- Meet or exceed state and federal requirements relating to floodplain management thereby enabling Pima County residents to purchase low-cost flood insurance, receive disaster relief (should the need arise), and seek residential and commercial real estate loans;
- Establish minimum flood protection elevations and damage prevention requirements for structures and other types of development that may be vulnerable to flood and erosion damage;
- Regulate encroachment and building development located within areas subject to flooding, erosion, or located within riparian habitat areas, and ensure that the flood-carrying capacity within the altered and/or relocated portion of any watercourse is maintained;
- Encourage the most effective expenditures of public money for flood control projects;
- Minimize the need for rescue and relief efforts associated with flooding and erosion, which are generally undertaken at the expense of the general public;
- Minimize damage to utilities and public facilities such as water and gas mains, electricity, telephone and sewer lines, and streets and bridges located in regulatory floodplain and erosion hazard areas;
- Help maintain a stable tax base by providing protection of regulatory floodplain and erosion hazard areas;
- Inform the public where property lies within a regulatory floodplain, riparian habitat area or erosion hazard area;
- Ensure that those who occupy areas within regulatory floodplain and erosion hazard areas assume the responsibility for their actions within those areas;
- Protect, preserve and enhance groundwater recharge; and
- Encourage the preservation of natural washes, riparian habitat, and preserve the riverine environment.



# District Organization



# District Activities

## Customer Service Programs

The District encourages residents to become familiar with flood-related hazards that may impact their property or properties they are considering for purchase. To assist in this research, the District maintains an abundant amount of information at our Floodplain Management Division's (Floodplain Management) customer service counter which includes floodplain maps, elevation certificates, detailed hydrologic and hydraulic studies, historic and current aerial photos and topographic information.

Residents may discuss any of this information with a hydrologist who will provide additional information regarding limitations on the property or requirements that may apply for proposed improvements due to the extent of flooding or erosion hazards.

Floodplain Management also provides an efficient Special Flood Hazard Area Identification service. This information is conveniently provided in writing via a Flood Hazard Information Sheet.

This form identifies whether the property is located in or out of the floodplain and/or floodway, and whether the structure is in or out of the floodplain. This service is provided at our customer service counter. Alternatively, by going to: <http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=59581>, a user can enter a Parcel ID or address and download or print a Flood Hazard Map.

Another customer service component provided by Floodplain Management includes performing field investigations in response to constituent complaints and concerns. Through these field investigations, Floodplain Management is able to ensure that property owners are not being adversely affected by improvements that they or their neighbors construct, and can provide advice regarding improvements to minimize potential flood damage. If non-compliant improvements are observed, Floodplain Management personnel will proceed with compliance enforcement actions.



*Flood Protection Assistance*

# ALERT

Last year the District upgraded its ALERT system software and launched a new publicly accessible website for displaying real or near real-time hydro-meteorological data for Southeastern Arizona. Precipitation, stream flow and other weather-related information produced by District ALERT stations and data generated by other agencies monitoring equipment, are now just a few clicks away.

The new website presents our ALERT data more reliably and offers much more information to assist local communities, public safety agencies, researchers and the general public about current weather conditions. The website provides real-time data from the District's 105 precipitation, streamflow and weather monitoring stations. In addition, the website can display weather and streamflow data from over 40 additional gaging sites run by partner agencies including the National Weather Service, U.S. Geological Survey, Arizona Game and Fish and Pinal, Cochise and Santa Cruz counties. The list of available cooperator sites continues to expand and new sites will be added as they become available.

The website's main feature is a map display containing locations of gaging sites along with real-time displays of the data generated at those sites. The map display is built on a Google Maps structure that provides an easy to navigate, reasonably up-to-date map that can be viewed in either a Street or Terrain View, and can display satellite imagery. Additionally, current radar images (both static and animated) can be displayed on the map along with National Weather Service storm warnings, which appear on the map as a box outlining the affected area(s).

Our new system has two versions, one for desktops/laptops and another for mobile and small screen devices. The system for desktop/laptop computers operates better with Google Chrome than with Internet Explorer. The mobile device version is a slightly simplified version that provides most of the



*Stream Flow Monitoring Station*

functionality of the full version. To access either of these two new map displays or to view the older system, which will continue to run for a period of time, please go to: <http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=60223>.

This year, District staff conducted in-service training for personnel from the Sheriff's Department, Office of Emergency Management (OEM), Rural Metropolitan Fire District (Rural Metro), and Southern Arizona Rescue Association (SARA). Operationally this system is used to direct deployment of Pima County Department of Transportation maintenance crews as well as Sheriff's deputies who erect barricades, monitor conditions and aid the public. During the 2017 monsoon, upstream spotters from SARA and Rural Metro near Tanque Verde Falls monitored the ALERT App and relayed information to on scene rescuers. Also during this year District staff participated in a "Table Top Exercise" conducted by OEM based upon a flooding scenario at 49ers Country Club, our largest Repetitive Loss Area per Federal Emergency Management Agency (FEMA) criteria. We expect to continue to expand the program.

# Hydrologic Modeling Improvement

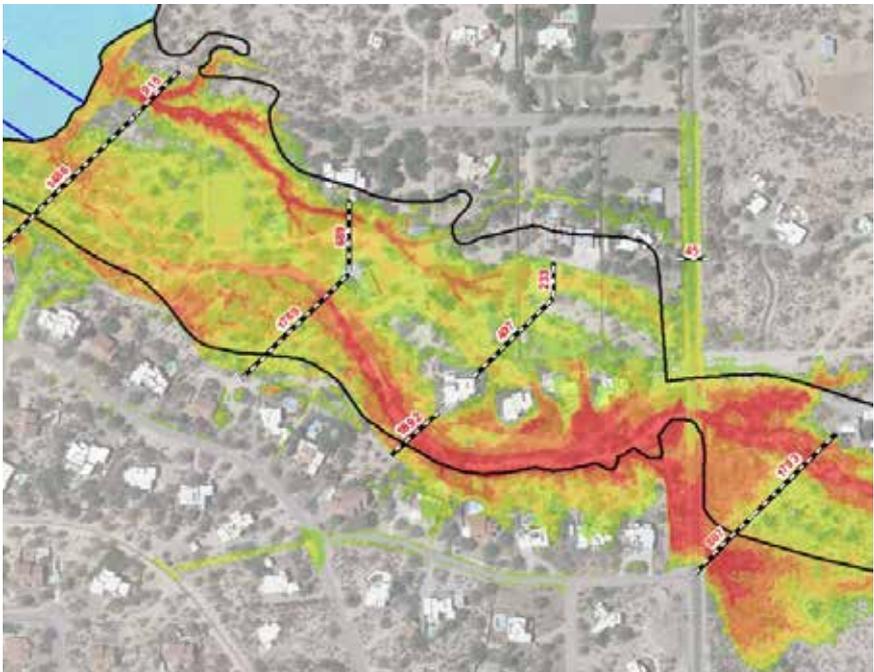
Only when floodplain extent, depth and velocity are known can safety be sufficiently addressed by site design and facility construction techniques. Approved techniques and software are used by certified hydrologists and engineers to map floodplains, determine flow rates, and identify maximum flow depths. During this fiscal year, the District convened a group of flood modeling experts including staff and consultants to develop guidance for the use of approved techniques including the FLO-2D software.

FLO-2D is a proprietary computer software program that conducts two-dimensional rainfall-runoff models. Two-dimensional models like FLO-2D provide an analytical environment suitable for mapping distributary flow conditions common to the southern Arizona terrain. FLO-2D (versions 2009, Pro) is FEMA approved to support hydrologic and hydraulic analyses in Pima County, Arizona. This is necessary because these models were not specifically developed for arid environments such as ours. Local expertise is needed to determine appropriate

inputs and the accuracy of results. We refer to this as parametrization and calibration.

After many years operating the ALERT system, the District continues to grow its record of data to assist in its ongoing model calibration efforts. The guidance developed identifies the appropriate modelling techniques to be used under differing drainage conditions encountered in Pima County. The different terrains include canyon washes, geologic floodplains, broad riverine basins, and alluvial fans.

A draft revision of [Technical Policy 033: FLO-2D Technical Guidance for Hydrologic and Hydraulic Modeling](#) has been produced and is being made available for public use and comment by qualified users. The guidance has been reviewed and approved by the FCDAC and is awaiting approval by the Board. The District recommends the use of the draft guidance as best practice in Unincorporated Pima County.



# Service through Partnership

As bond, federal and state funding sources have dwindled, District activities this year have been increasingly focused on regulatory, management and maintenance activities. Implementing policy changes adopted in prior years as well as managing lands controlled by the District necessitate partnering with stakeholders including other departments, organizations and neighborhoods. In the past year, such partnerships have resulted in several significant accomplishments.

## Restoring Heritage Waters

In October of 2016 the FCDAC endorsed the efforts of the Watershed Management Group (WMG) and Pima Association of Governments (PAG) to restore heritage waters including Sabino Creek. The WMG works with private landowners to reduce well pumping and install water harvesting and increase infiltration in areas where surface flows and groundwater levels have declined. In the last year, District staff worked with stakeholders as directed by the Pima Prospers Water Policy to develop methods for offsetting the increase in demand associated with rezoning entitlements in these areas. Revised Site Analysis Requirements including demand projection and conservation options were developed in consultation with stakeholders and will be presented to the Board for approval during the fall of 2017.



## Multi-Species Conservation Plan

Also in October the Board directed the District to implement the Multi-Species Conservation Plan (MSCP) after final approval by the U.S. Fish and Wildlife Service. This plan, of which the Section 10 Permit under the Endangered Species Act is a part, enables Pima County to complete CIP as a covered activity. This coverage for species “take” associated with development means projects may proceed smoothly without unexpected delays. Without the leadership of the Office of Sustain-

ability and Conservation as well as stakeholders in the private sector this would not have been possible. The booklet “This Land is Your Land” was published to both recognize and promote participation in land conservation efforts that support the plan and permit. The District has hired staff to begin a program of open space inspection similar to that for improved drainageways. Properties are inspected at least annually. Staff takes repeat photographs, lists flora and fauna species and assesses general conditions. Maintenance needs including fencing, invasive species removal, and trash clean up are coordinated with the Infrastructure Maintenance Division. Potential restoration projects are identified and pursued with partners including the Tucson Audubon Society, WMG and neighborhoods.

## Midvale Park Green Stormwater Infrastructure Demonstration

As part of the District’s ever expanding group of partners, the WMG has been working with the District to build this demonstration site with the following goals:

- Harvest stormwater from the neighborhood to revegetate barren property;
- Demonstrate the benefits of practices outlined in the District’s Low Impact Development and Green Infrastructure (LID and GI) Guidance Manual;
- Educate community members on the purpose of green infrastructure design and installation;
- Mitigate erosion, flood peaks and stormwater pollution.

This area had been previously graded and farmed prior to development of the existing subdivision where vacant land lies flat and barren. Construction began in April with rough grading and forming basins by a Pima County contractor. Then in May, WMG staff and volunteers completed fine grading, rock placement, and planting. Subsequently, the WMG has offered workshops for stormwater professionals that provided Continuing Education Credits (CEC) for Certified Floodplain Managers.

# Hydraulic and Hydrology Studies

Each year, significant rainfall events occur within a watershed or watersheds in Pima County. Some years, these events occur over a broad enough area to trigger regional flooding such as in 2006. That year, Pima County received record rainfall events in June, July and August with 8.6 inches of rainfall—two inches more than the seasonal average. This resulted in significant flooding along the Sabino, Agua Caliente, Tanque Verde, Rillito and Pantano watercourses. In other years, these significant events impact smaller watersheds, such as in 2007 when numerous homes along the Valley View Wash flooded.

The District studies the hydrology and hydraulics of all these watercourses to identify lands prone to flooding from the 1% chance annual storm (100-year flood). District staff continues to develop floodplain mapping studies needed in the

following foothills washes:

- Catalina Mountains Unnamed Wash #4
- Christmas Wash
- Alamo Wash

These in-house studies utilized approved local, state and federal methodologies to determine discharge rates and floodplain limits and have, in most cases, been used to submit Letters of Map Revision (LOMR) for approval by FEMA. These studies use better topographic, hydrologic and hydraulic data than was available when the original FEMA maps were created. Furthermore, these studies identified specific infrastructure including culverts, dip sections and bridges that may restrict flow. Notices have been sent to every impacted property owner. The notices specify whether property owners' buildings or land have been determined to be in or not in the floodplain.

## Christmas Wash Flooding

Christmas Wash has been identified as needing remapping by the City. On July 1, 2016, there was a large flow event in this area as noted by photos and video posted on social media and passed on by local television news. In particular, stalled cars were noted in the area of Country Club and Fort Lowell Road. The ALERT network showed little remarkable rainfall on the watershed. Rainlog.org records indicated rainfall up to 3.1 inches near Pima Street and Country Club Road.

District staff went to the watershed on July 06, 2016 to document the flooding that occurred in this area. A GPS camera was used to document high-water marks for future reference. These were added to a base map derived from preliminary floodplain mapping using HEC-RAS with Tucson Stormwater Management Study discharge valued on the 2015 LiDAR topography. This was a large event for this

watershed. A resident who had lived there 64 years noted that the flood extent was wider than any time she could remember.

Structures on the south side of Fort Lowell Road had high-water marks that indicated water could have come in, as did a few at the northern edge of the watershed near the Rillito River. Undersized infrastructure and increased impervious areas have contributed to the need to update mapping and examine CIP needs in partnership with the City.

The area to be mapped encompasses approximately 9.5 square miles within the City and includes the Alamo, Arcadia, Van Buren and Sahuara washes. The purpose is to identify flood hazard areas and drainage problems in order to develop a comprehensive flood control plan (Plan) that provides cost-effective solutions to alleviate and/or manage

flooding within the area. The goal of the Plan is to develop strategies that reduce flooding, improve public safety and provide a balanced multi-objective approach to managing the watersheds, floodplains and resources in a fiscally responsible way. In addition, the Plan will provide guidance for development, redevelopment and retrofits in floodprone areas and drainage alternatives to further limit the potential for flooding. Finally, the Plan will ensure that the floodplain management regulations will balance the competing community and private sector interests. A website for

the project has been created that contains project details including status, public sector stakeholders meetings, and open house meetings to solicit additional input from the public. As with other urbanized improved watercourses, the costs of replacing undersized infrastructure can be prohibitive in the short term. Therefore, the District focuses on studying aggradation and degradation to identify areas for sediment removal while retaining bands of riparian vegetation that provide amenity value and climate resiliency.



*Christmas Wash Flooding*

# Program for Public Information: Improving Pima County's CRS Rating

The Community Rating System (CRS) is a voluntary incentive program that rates local communities participating in the National Flood Insurance Program (NFIP). The program is for those communities that are interested in providing a level of service that is above and beyond the minimum NFIP requirements. Participating communities receive discounted flood insurance premium rates in increments of 5%. For example, a Class 1 community, whose service is considerably above the minimum, would receive a 45% premium discount, while a Class 9 community whose service is nominally above the minimum, would receive a 5% discount. A Class 10 community only meets the minimum level required, which in turn would result in no discounts for its constituents.

The CRS classes for local communities are based on 18 activities and are organized under four categories:

- 1) Public Information
- 2) Mapping and Regulations
- 3) Flood Damage Reduction
- 4) Flood Preparedness

In April 2017, FEMA conducted what is known as a Field Verification Visit with the District. During this visit, contractors from the Insurance Services Organization audit the District's performance under the NFIP CRS. Due to the continued success of CIP and regulatory activities, implementation of a Program for Public Information (PPI) created last year through a committee process endorsed by FEMA,

and greater weight given to open space programs, the score increased enough to further improve our rating. Ratings improvements come with greater insurance rate discounts as well as prerequisites. While enough points were awarded to merit a rating increase prerequisites in flood warning and planning require further attention. District staff are working toward meeting these prerequisites.

This year, as recommended in the PPI, the District staff worked with the Tucson Association of Realtors (TAR) to develop a workshop curriculum called "Floodplain 101." District staff including those involved in map information, permitting, and riparian habitat conservation deliver this course at the TAR offices for which realty professionals receive CECs toward maintaining their certification. In addition, as recommended by stakeholders involved in the PPI Committee, the District updated many of our outdated handouts by compiling them into a modern information package for major employers to use during new employee orientation. This was viewed as a simple priority for a targeted audience delivered by the stakeholders themselves as newcomers select neighborhoods in which to purchase or rent.

In recognition of the excellent level of floodplain management performed by the District, Pima County is a Class 5 community, which yields a 25% discount in flood insurance premiums for our constituents. Pima County is among the top participating communities nationwide.

# Completed Capital Improvements

As shown on the annual completed CIP list below, prior completion of bond-funded projects resulted in a short list this year. In addition, several projects described on the following pages are ongoing.

ID	Name	Completion	Expenditures
CFC.5SCRBR	FC - Lower Santa Cruz Levee Bank Repair	07/20/2016	\$ 335,000.00
CFC.5SERAJ	FC - Paseo de las Iglesias, also known as the Santa Cruz River Flood Erosion Control & Linear Park: Ajo Way to 29th Street	06/30/2017	\$ 14,336,194.00
CFC.5AGCAL	FC - Agua Caliente Park Pond Restoration	08/04/2017	\$ 439,548.00
CFC.5SCRPR	FC - Santa Cruz River Pavement Rehab CDO Wash to Silverlake	09/15/2017	\$ 1,443,850.00
<b>TOTAL</b>			<b>\$ 16,554,592.00</b>

## Paseo de las Iglesias



This project, within Board District 5, was funded by the 2004 Bonds and District property tax levy for a total cost of \$16,804,996 (this figure is from the Closeout Report). Located along the Santa Cruz River, between Ajo Way and 29th Street, this project started construction November 2013 and was substantially completed in May 2015. The project design team included Psomas, McGann and Associates and Recon Environmental. Construction management services were provided by Psomas and Recon. The project was constructed by the Ashton Company Inc., Contractors and Engineers (Ashton).

Included are over 400 acres of ecosystem restoration on both banks of the Santa Cruz River between Ajo Way and 29th Street (Silverlake Road), pathways, parking areas, a new restroom, an equestrian staging area, 1.4 miles of new soil cement erosion protection, 10,305 new trees, shrubs and cactus, three ramadas, and public art by Las Artes (Tucson), City High School (Tucson) and Chevo Studios (Colorado). The project also includes The Loop directional signage, interpretive signage and Juan Bautista de Anza National Historic Trail (west bank) signage.

With major erosion control and public improvements having been completed in previous years work turned to partnerships for riparian habitat restoration and further development of the Las Milpitas Community Farm. Partners including The Tucson Audubon Society, City High School, Tucson Electric Power (TEP), Community Food Bank and Wild at Heart helped bring this stretch of river back to life after the



floods of 1983 destroyed homes and farms. The Las Milpitas Farm has 84 garden plots with drip irrigation from a reclaimed water line provided by the District from the nearby recharge site. With TEP providing heavy equipment, volunteers also installed 16 artificial burrows for Burrowing Owls with staff feeding the nestlings. There has been agriculture here for 4,000 years and is once again contributing toward the availability of healthy food. Located along The Loop and connected by pathways, the gardens serve local families and anyone choosing to take advantage.

Paseo de las Iglesias has received multiple awards since its completion. The awards include

the Arizona Public Works Association (APWA) Southern Arizona Branch Public Works



Project of the Year Environmental Project 2016 (\$5-25 million category), APWA Arizona Public Works Project of the Year Structural Project 2016 (\$5-25 million category), Arizona Forward Award of Merit, Metropolitan Pima Alliance Common Ground Award of Merit 2016, The American Council of Engineering Companies (ACEC) Arizona Grand Award 2016 and ACEC National Honors Award 2017.

## Lower Santa Cruz River Levee Bank Repair

This project within Board District 3, was funded completely by the Tax Levy and was completed under a Job Order Contract by Ashton for a total cost of \$335,000, which was \$140,000 under budget.

In early 2013, the District performed a survey of the Lower Santa Cruz River using LiDAR. The results indicated severe scour next to the levee soil cement bank protection south of the Tangerine Landfill site and that only 3.3 to 3.5 feet of bank protection toe down remained. The levee certification requires

eight feet of toe-down below the flow line. This levee protects a large portion of the Town Marana.

To protect the soil cement bank protection from scour and meet the certification, the District constructed a new soil cement toe down between seven and nine feet deep. The soil cement toe-down section overlapped the existing soil cement bank protection by two feet, was 1,600 feet long and 11 feet wide.



# Agua Caliente Park Pond Restoration

This project, within Board District 4, was funded completely by the Tax Levy and was completed under a Job Order Contract by Ashton for a total cost of \$439,548, which is \$60,452 under budget.

As a result of overpumping and drought, the Agua Caliente Park spring has not been able to maintain sufficient water levels in pond numbers 1 and 2 since the early 2000s. In 2008, a well was constructed to supply supplemental water, but this water was only sufficient to maintain water levels in Pond 1. Pond 2 had been dry for some time.

The purpose of this project was to restore the water back into Pond 2 by constructing a liner to seal the bottom and reduce seepage losses. This will save precious water resources and provide visitors to the park another water amenity to enjoy that will be much more sustainable during the continuing drought. The completed project includes new asphalt paving along the perimeter, a decomposed granite path in the island interior and new landscaping vegetation and irrigation. Park restoration including preservation of the water source in Pond 2 is vital for both wildlife and recreationists in



the Tucson area. The park is enjoyed by well over 150,000 visitors per year and is included on the National Register of Historic Places. Installation of the liner and renovation of the pond is critical to improve both water quantity and quality conditions and to maintain the character of the park, provide diverse wildlife habitat and the lush environment that visitors have come to expect. Historically, visitors have enjoyed three ponds containing water. With this project, at least two ponds should be online at any time.



# Floodprone Land Acquisition Program

The Floodprone Land Acquisition Program (FLAP) provides relocation assistance to property owners and allows the District to purchase flood-damaged land, whether it is improved property or vacant land. Specific criteria used to rank FLAP applications and determine eligibility include the extent of flood damage or severity of potential flood and erosion hazards on the property. The highest priority is given to improved properties that have or may suffer significant damage as a result of flooding.

This program is completely voluntary and is designed to assist property owners who are likely to experience or have experienced flooding that resulted in severe damage and flood hazards. The community also benefits from these acquisitions by increasing open space for overbank storage, enhancing groundwater recharge, and providing riparian habitat preservation, wildlife corridors, passive recreational opportunities and protection of cultural resources. The FLAP also protects emergency responders and Pima County resources from harm by reducing potential rescue needs.

Additional grant monies to purchase floodprone and damaged properties became available

following flood disasters because Pima County had an established floodprone land acquisition program.

In 1986, after voters approved General Obligation Bond sales of \$20 million for floodprone land acquisition, a land acquisition plan was adopted by the Board. The plan outlined criteria to guide the District's overall acquisition efforts and allow the dedication of tax levy revenues to be used for acquisition of floodprone lands. This newly adopted plan aided in the expansion of the program to include purchasing undeveloped land to prevent future floodplain development in sensitive riparian areas and to meet the open space goals of the community.

In fiscal year 2016/17, the District spent \$625,500 and added 313.06 acres, including one 14.37-acre donation of land to the FLAP inventory, bringing the total of District-owned property to 12,892.07 acres at a cost of \$69,234,216 since the program's inception. These additions were in the Agua Caliente, Brawley, Black, Geronimo, and Tanque Verde Wash floodplains and habitat areas.



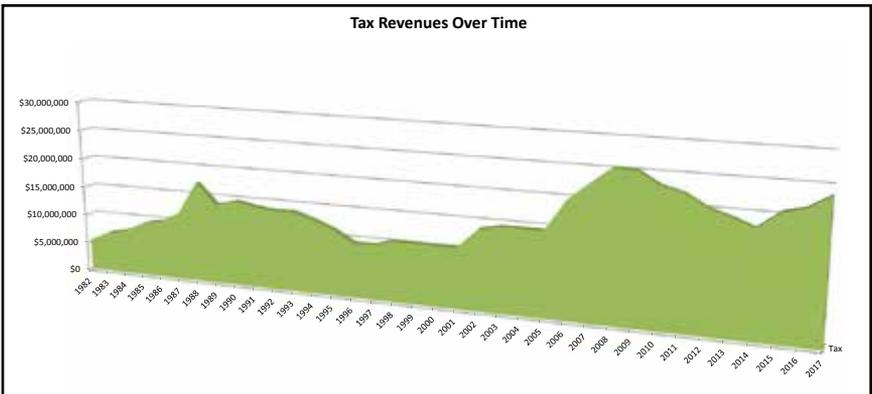
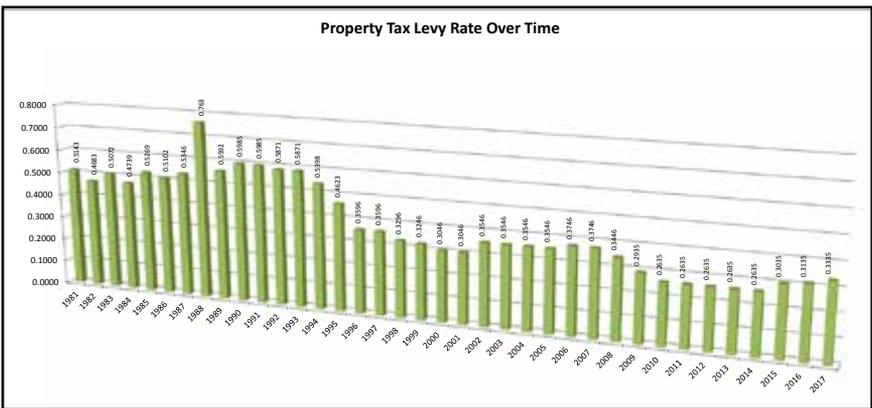
# Financial Overview

## Revenues

Although the District receives assistance from state and federal agencies to construct major capital facilities, over 98% of the District's funding was generated from the property tax levy this year. General Obligation Bond sales are authorized by the electorate. Information on the District's tax levy rate is shown on the table below.

## Expenditures

The table on Page 19 provides information on CIP expenditures for projects completed during FY 2016/17. The remainder of the District's 16 expenditures go toward debt service and operating expenses, which include funds allocated for maintenance of flood control structures, floodplain management, planning and administration activities.



# Financial Highlights

## Fiscal Year 2016/2017

### Revenues

The primary source of revenue is the District's secondary property tax levy of \$0.3335 per \$100 of real property assessed valuation. In FY 2016/17, the District received \$23,620,279 in tax levy revenue. Other minor sources of revenue include interest, rent and reimbursements. The total revenue from all sources in FY 2016/17 was over \$23 million.

Property Tax	\$ 23,620,279	98.6%
Rents & Royalties	\$ 73,499	0.3%
Miscellaneous	\$ 260,806	0.1%
<b>Total</b>	<b>\$ 23,954,584</b>	<b>100.0%</b>

The total expenditures for the District in FY 2016/17 were over \$26 million. The CIP expenditures of over \$8 million were direct capital expenses. The annual operating budget for the District was approximately \$14.5 million. A recurring expenditure is our contribution to the PAG.

Capital Improvements	\$ 11,513,126	44%
Operating Budget	\$ 14,654,210	56%
Operating Transfer	\$ 77,658	<1%
<b>Total</b>	<b>\$ 26,244,994</b>	<b>100.0%</b>

### Breakdown of Expenditures

#### Capital Improvements

The expenditures for capital improvements include engineering services costs for planning and design, construction costs, right-of-way acquisition and utility costs, and other costs such as preparing new FEMA FIRMs once a CIP is completed.

Right-of-Way	\$ 1,361,657	12%
Planning	\$ 723,657	6%
Design	\$ 358,743	3%
Construction	\$ 8,985,009	78%
Public Art	\$ 84,150	<1%
	<b>\$ 11,513,126</b>	<b>100.0%</b>

#### Operating Budget

The District's operating budget includes administrative, personnel, supplies, and service costs associated with Flood Control Support, Flood Prevention and Riparian Protection. Flood Control Support includes programs such as customer service, permits, public education and financial management. Flood Prevention includes maintenance, flood warning, emergency preparedness and enforcement activities. Riparian Protection includes environmental restoration, water resources and riparian habitat management programs.

Personnel	\$ 7,394,885	50%
Operating	\$ 7,005,963	48%
Capital Equipment	\$ 253,362	2%
	<b>\$ 14,654,210</b>	<b>100.0%</b>



# Coordination with other Agencies

## Pima County Department of Transportation

The District contracts with Pima County for services from divisions within the Department of Transportation:

- Field Engineering Division
- Maintenance Operations Division
- Real Property Division
- Technical Services Division
- Administrative Services Division

## Other Pima County Departments

The District cooperates with other Pima County Departments on various projects and exchanges information as needed:

- Pima County Attorney's Office
- Development Services Department
- Department of Environmental Quality
- Health Department
- Natural Resources, Parks and Recreation Department
- Tucson-Pima County Office of Emergency Management
- Regional Wastewater Reclamation Department (RWRD)

## Local Governments

The District has entered into intergovernmental agreements to provide specific flood control or floodplain management services to, or to jointly fund flood control activities with, the following:

- City of Tucson
- City of South Tucson
- Town of Oro Valley
- Town of Marana
- Town of Sahuarita

## Pima Association of Governments (PAG)

PAG facilitates coordination among local government agencies, including the District, on environmental matters affecting the community.

## State Agencies

The District coordinates activities with the following state agencies:

- Arizona Department of Water Resources
- Arizona Department of Environmental Quality
- Arizona Game and Fish
- Arizona State Land Department

## Federal Government

Several federal agencies participate in local flood control projects, as listed below:

- U. S. Army Corps of Engineers
- Federal Emergency Management Agency
- Federal Highway Administration
- U. S. Bureau of Reclamation
- U. S. Natural Resource Conservation Service
- National Weather Service
- U. S. Geological Survey
- U. S. Fish and Wildlife Service

## Nongovernmental Organizations

Other nongovernmental agencies that the District works with include:

- The Nature Conservancy
- Cortaro-Marana Irrigation District
- Central Arizona Water Conservation District
- Metropolitan Domestic Water Improvement District
- University of Arizona
- Watershed Management Group





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