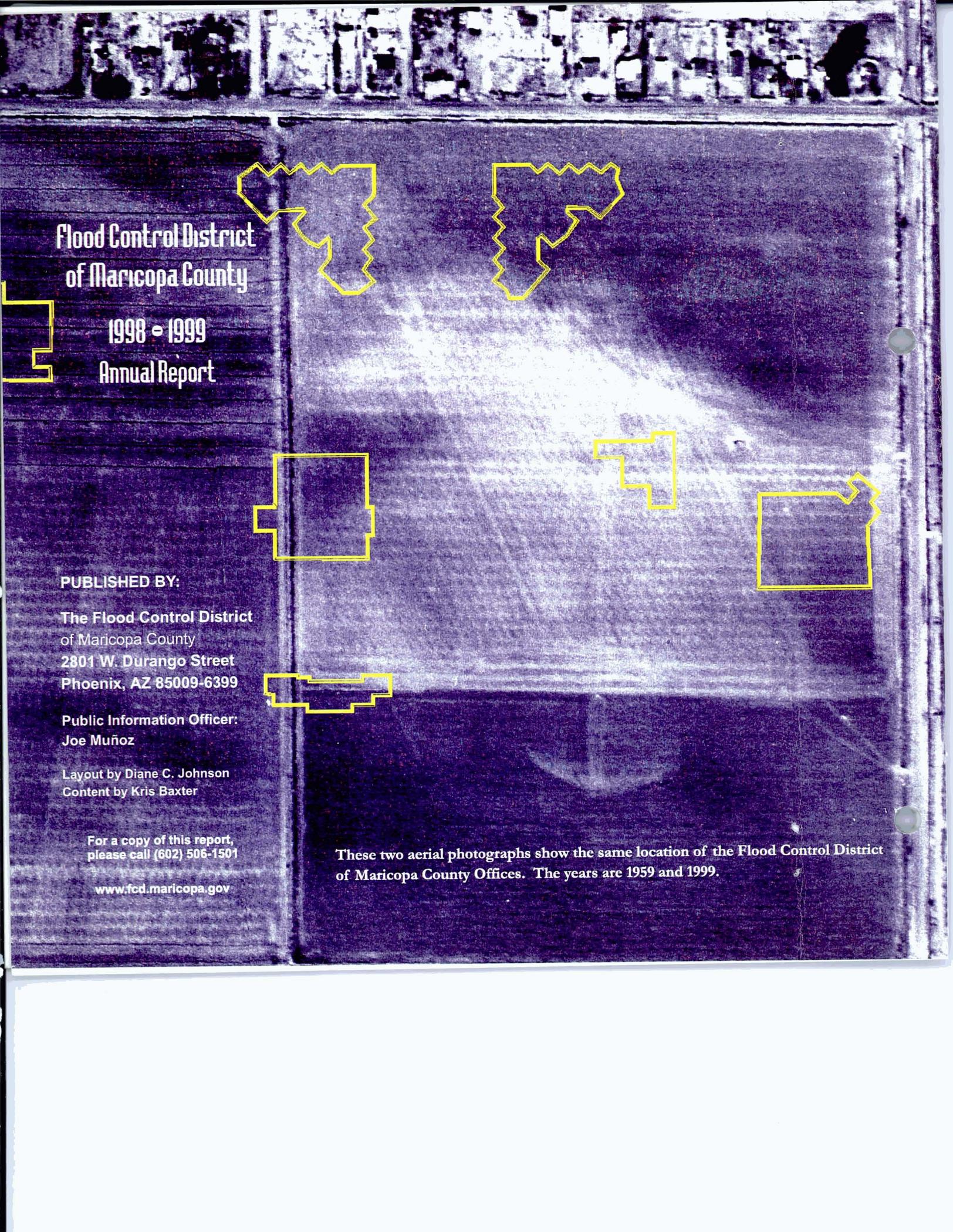


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Flood Control District of Maricopa County
Annual Report
1998 - 1999



Flood Control District
of Maricopa County

1998 - 1999
Annual Report

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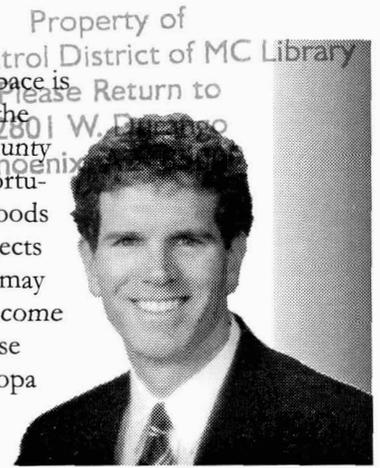
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These two aerial photographs show the same location of the Flood Control District of Maricopa County Offices. The years are 1959 and 1999.

Chairman's Message

As Maricopa County continues to grow, finding new ways to preserve open space is extremely important. While its primary mission is to protect the public from the affects of stormwater and floods, the Flood Control District of Maricopa County is working with the Board of Supervisors and other leaders to help plan opportunities to preserve land for community enjoyment. In years past, controlling floods meant pouring concrete and fencing off land. Today, it means designing projects for multiple uses to make the best use of land. For example, retention basins may be converted by cities into neighborhood parks. Land along a channel may become a jogging trail. These efforts by the Flood Control District to provide multi-use facilities are excellent examples of the forward thinking encouraged by Maricopa County as we go forward into the new millennium.

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Board of Directors

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- DISTRICT 2 DON STAPLEY
- DISTRICT 3 ANDREW KUNASEK
- DISTRICT 4 JANICE BREWER
- DISTRICT 5 MARY ROSE WILCOX



- DISTRICT 1 GILBERT ROGERS
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- CITY OF PHOENIX THOMAS CALLOW
- SALT RIVER PROJECT PAUL CHERRINGTON

Flood Control Advisory Board



Michael S. Ellegood, Chief Engineer and General Manager

Dear Stakeholder,

When I assumed the responsibilities of Chief Engineer and General Manager two years ago I established three key initiatives: make the District more **entrepreneurial**, more **digital** and more **sustainable**. We have made substantial progress in each of these initiatives:

Entrepreneurial: We have instituted rigorous project and cost control systems to give our managers a better set of tools to control the cost of our services. We have increased the percentage of local cost participation and we have pursued revenue generating opportunities on District owned properties. These combined efforts have resulted in a staff reduction of 10 percent and a reduction in the secondary tax rate of 6 cents this past year.

Digital: A major accomplishment this past year was the complete integration of the District's Flood Warning System with the County's Emergency Management System. This electronic integration allows real time weather forecasting and flood prediction to be superimposed onto street maps so that during flood emergencies street closures and potential evacuation areas may be quickly identified. This was accomplished using an electronic Geographic Information System (GIS) format. This coming year we will use the GIS as our primary planning platform and we are adapting our flood delineation methods to utilize it. When completed, this initiative will save the taxpayer approximately \$1 million per year because of improved efficiency.

Sustainable: The District owns nearly 25,000 acres of land in Maricopa County, including hundreds of miles of waterway. Most of this property is closed to the public, but in collaboration with Valley cities and parks and recreation agencies we are opening it for public access. We have started planning a 47-mile recreation corridor along the Agua Fria River in the West Valley and a 26-mile corridor along the East Maricopa Floodway in the East Valley. These projects will take years to complete, but generations to come will be able to enjoy these long stretches of open space.

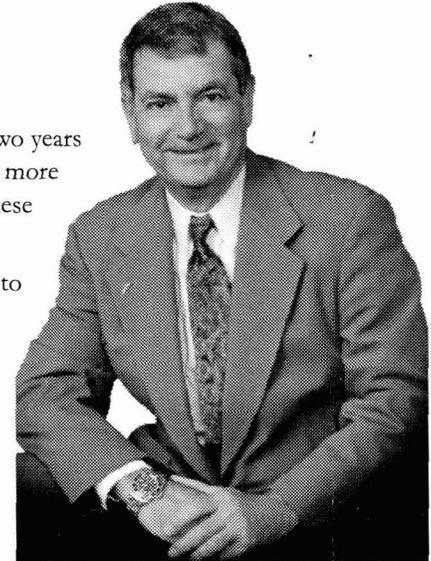
We are also softening our approach to flood control structures, integrating landscape design from the outset into the project. We are partnering with the US Army Corps of Engineers in two habitat restoration projects and we are using our planning activities to retain open space near flood hazard areas. In the future, we will consider acquiring flood prone properties to keep them from development. It is anticipated that this approach will save millions in future infrastructure costs and in potential flood losses while preserving our watercourses in their natural state.

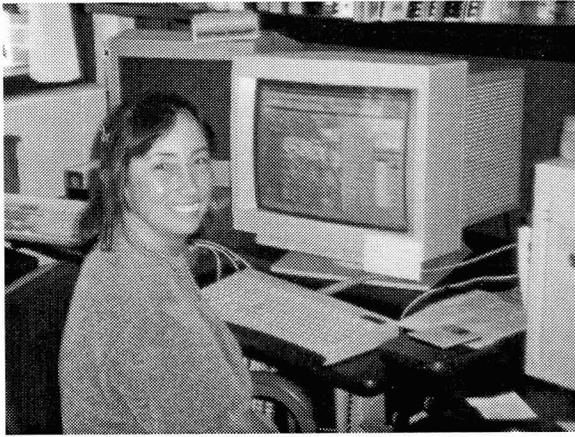
The District wants to be recognized as being the "Quality of Life People" Certainly keeping County residents safe from flood hazard goes a long way towards improving quality of life, but by providing flood protection while preserving open space and by integrating needed recreation corridors in our existing structures we can take quality of life and flood protection to a new level.

Yours truly,



Michael S. Ellegood, PE
Chief Engineer and General Manager





FAST Software

DIGITAL

A county-generated computer program can save county taxpayers money and prevent them from unknowingly buying land in a floodplain.

This year, Marta Dent, supervisor of the GIS section, developed an innovative software system called FAST, Floodplain and Address Searching Tool.

By simply typing in an address, a Maricopa County resident now can determine whether he lives in a floodplain and should have flood insurance. Those contemplating purchasing property may discover whether they can build on that property if it is in a floodplain. By pressing a button residents can see a current aerial photo of the area or a photo from 30 years ago.

FAST also contains census & property information to help planners determine how many people live in an area and what the value of their property is.

"This is very useful when we plan where to put flood control structures," Dent said.

Also, floodplain administrators can now perform functions that once took three or four hours in seconds.

The software is also being used by the Emergency Operations Center for Maricopa County. When massive flooding occurs, sheriff's deputies and Maricopa County Department of Transportation personnel may use the software to show in real time where they have set up barricades. Stars, representing sheriff's badges, appear on the computer screen once the deputy closes the intersection. Barricade symbols showing the

direction of closure appear when MCDOT crews replace the sheriff deputies.

The same holds true in case of an emergency at Palo Verde Nuclear Power Plant. This aspect of the software was tested successfully in February.

"You could watch the barricades go up remotely," Dent said. "It was really exciting."

The system is now on-line, allowing residents immediate, 24-hour access to this software.

"This is an important part of making the District more digital, which is one of our three goals," said Mike Ellegood, Chief Engineer and General Manager. "This kind of forward thinking makes the District among the most innovative in the country."

PREDICTING FLOODS.

- Hydrologists monitor data from the 227 automated rain gauges throughout the watershed and accumulate information from the 120 volunteer rain gauges.
- Hydrologists use data gleaned from the 15 weather stations throughout the district to monitor wind speed and direction, humidity and barometric pressure. Staff meteorologist Jim Perfrement uses weather radar to determine where it is raining, the direction of storms and the amount of rainfall.
- Staff hydrologists compare the historical data on flooding in an area to current rainfall
- If severe flooding is a possibility, the district notifies the sheriff's office to prepare residents for an emergency.

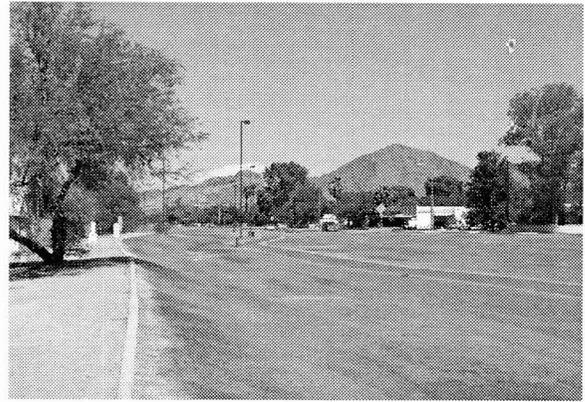
Old Crosscut Canal

Two neighborhoods once separated by an unsightly canal now socialize atop it, thanks to a \$20 million project by the Flood Control District of Maricopa County and the City of Phoenix.

Complaints about the amount of trash being dumped into the Old Crosscut Canal spurred the City of Phoenix and the Flood Control District of Maricopa County to investigate alternative methods to better control the flow of storm and irrigation waters while making the canal more aesthetically pleasing.

The Old Crosscut Canal links the Arizona Canal to the Grand Canal. Beyond carrying irrigation water, it can be used to prevent floods by channeling excess stormwater.

Flood control representatives determined that they could install two underground box culverts to carry irrigation and excess stormwaters. Above ground, they could build a



retention channel which the City of Phoenix could turn into a long, winding park where residents could walk, bicycle or jog when it wasn't carrying water.

The Flood Control District finished renovating the Old Crosscut Canal from McDowell Road to Indian School Road in March. By mid-2000 the City of Phoenix expects to complete the landscaping for the project.

"This is part of the new focus of the Flood Control District," said Mike Ellegood, P.E., Chief Engineer and General Manager. "We want to build flood control devices that contribute to the overall quality of neighborhoods and are more cost effective to maintain. We want to work in harmony with the environment and keep the public safe from the hazards of floods and stormwaters."

The canal, once blocked to residents by a tall fence, acted as a dividing line between the two neighborhoods between 48th Street and 47th Drive. Now, neighbors jog, bike and walk their pets atop the canal.

"We say hello to each other. It's a nice way to meet and see people. We don't stay in our backyards as much," said Dennis McDonald, vice-president of the Arcadia Osborn Homeowners Association.

Senior project manager Don Rerick said the Old Crosscut Canal was a good example of how the public involvement process works. "Everybody got what they wanted out of this," he said. "The citizens got a park and the city got a covered channel, which reduced its safety risks and improved the look of the area."

Public Information Outreach

The public information office of the Flood Control District of Maricopa County helps protect the public through education. Visiting schools, trade shows and airing public service announcements teaches people about the dangers of driving through washes, helps them determine whether they live in a floodplain and demonstrates the need for channels, dams and basins in selected areas.

Last year, approximately 25,000 Maricopa County residents received flood safety education. Flood Control District employees taught people about the district and its missions at some of these sites:

- Southwest Elementary School
- Arizona Best Realty
- Mesa Design Show
- Queen Creek High School
- EarthFest '99
- Maricopa County Fair



Value Engineering

Entrepreneurial

A new method of scoping projects has cut in half the amount of time it takes for the Flood Control District of Maricopa County to set the costs of consulting contracts. The same process slashed the average cost of negotiations from \$25,000 to \$5,000 per project.

The district uses what it calls value engineering to work out the details of consulting contracts. The process questions each step of a function in order to find more time efficient and cost-effective approach.

Value methodology originated in WWII when the shortage of traditionally available goods forced industries to find alternatives to required resources. Workers examined each item they used, determined its function, then matched it with other items that provided the same function.

Today, Geza Kmetty and other value engineers ask similar questions of themselves and consultants: What does this do? How does it do it? Why should we do it this way?

"We take short steps that build upon each other," Kmetty said. "These form the basis of conversation and eventually become a list of tasks. After we do this we become much more knowledgeable about the project ahead of us and the alternatives available to us."

The benefits to the Flood Control District of Maricopa County include:

- ★ The district issued fewer change orders than ever before
Overall negotiating costs dropped by 57 percent
- ★ The amount of time to negotiate a contract fell from about 300 days to about 130 days
- ★ Taxpayers saw a higher value per dollar

PLANNING A MULTI-USE CORRIDOR: The Process

- Engineers use state of the art methods to study a range of environmentally friendly flood control solutions to protect the public and make the best use of tax dollars.
- Consultants meet with citizens, public officials, environmental groups and others to determine if the flood control options may be designed to allow the public to use the open space surrounding them.
- Because the district can only pay for flood control devices and not other amenities, city officials must determine whether they want to build recreation facilities such as trails or parks in conjunction with flood control devices.
- In concert with city officials, landowners and residents, the Flood Control District chooses a design that provides the most protection, costs the least and brings the most benefit to taxpayers.
- The district examines if any land needs to be purchased or rezoned in order to build the appropriate flood control device.
- The district commissions a study to determine environmental impacts, historical significance of an area. If the benefits outweigh the impact, a flood control structure is built.

- ★ All involved walked away with a better understanding of each project
- ★ Team spirit rose

Here's how value engineering works at the Flood Control District of Maricopa County:

Once the district selects a consultant, a value engineer team leader is chosen to oversee the negotiations, which are called project scoping meetings. The term is appropriate because money is rarely discussed in these meetings; rather, the focus rests on finding the best way to accomplish the required work.

All the eligible value engineers at the Flood Control District have earned certification through the Society of American Value Engineers International. This gives them both the knowledge and credibility required to facilitate these important meetings.

The value engineer, together with the district's project manager, sets the number of mandatory meetings he believes will be enough to scope the project. This may be



as few as one or as many as five, day long sessions.

"It's okay to separate these meetings several days or weeks apart so people may do the outside research they need before coming back with their revised cost proposals," Kmetty said.

The team leader also determines which technical and administrative staff members must attend the meeting from the Flood Control District. Affected agencies and stakeholders may also attend these meetings.

"There is a true synergy that happens when you involve a variety of voices," Kmetty said. "People come up with new and innovative ways of accomplishing tasks."

The project manager and value engineer then create detailed agendas based on the scope of work and the five phases of value engineering.

The information phase asks participants to discover the main purpose of the project and determine if the end product will deliver that goal. Along the way, team members must analyze each of the functions suggested and determine whether they are required. They are also to discover any constraints in protecting the public from floodwaters.

In the speculation phase, the team weeds out any redundant functions which would have increased the cost of the job; then adds in missing functions which would have resulted in change orders. The scope is revised accordingly and the labor hours

PROTECTING TAXPAYERS: The Process

- Public meetings are held during the planning stage of any major project so taxpayers may express their opinions and ideas.
- A certified value engineer takes each Flood Control District project contract through a review process. This reduces costs, saves time and eliminates most change orders.
- Chief Engineer and General Manager, Michael Ellegood, P.E. reviews each project for efficiency.
- The Flood Control Advisory Board hears a presentation on each project before voting on it. To earn their recommendation, the project must receive a majority of the board's votes.
- A majority of the Board of Directors, which is also the Maricopa County Board of Supervisors, must approve the project before funds may be spent.

required are reassessed.

Once the scope of work becomes more accurate, the team may evaluate the desired level of effort needed for each step. By analyzing the expectations, the Flood Control District can save time and money the agency may have spent on elements not desired.

“This is especially effective when we are evaluating studies because they are so subjective,” Kmetty said. “The consultant may think we want a Cadillac when in reality we want a junkyard car, or vice versa.”

Then the team brainstorms alternatives to the traditional ways of completing tasks. Team members compare the new ideas with what previously worked - or didn't -- then select the best methods.

The scope of work gets rewritten for the last time. The consultant finalizes the cost estimate. Together, the team writes an implementation plan, agrees on a schedule of work, then documents the meetings.

The time involved is worth it, Kmetty said. Consultants agree with him.

Drainage Administration and Floodplain Management

As we move toward non-structural approaches to flood control, Drainage Administration and Floodplain Management play increasing roles in the successful accomplishment of our agency's mission. Floodplain Management seeks insurance discount for residents by actively participating in FEMA's Community Rating Systems. Drainage Administration coordinates closely with other agencies to insure that new development does not increase runoff, divert flows or back water onto other properties.

Floodplain Management

8	Floodplain delineation studies were begun
7	Floodplain delineation studies were completed
253	Floodplain use permits/clearances were reviewed
2828	Phone requests for general information were handled
717	Walk-in customers were assisted
8640	Flood hazard information requests were handled
201	Flood hazard information notices were recorded

Drainage Administration

10,715	Inspections conducted
167,719	Inspector's miles driven
4980	Drainage clearances issued
845	Total plan reviews completed
428	Drainage complaints investigated



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www.fcd.maricopa.gov

Financial Highlights

Fiscal Year Ended June 30, 1999

Preliminary and Unaudited

Revenues

	Dollars	Percent
Flood Control Tax	\$44,441,000	73
Local Participation	10,704,000	18
Interest Income	2,336,000	4
Land Sales And Rental	870,000	1
Miscellaneous	2,276,000	4
Total Revenue	60,627,000	100

Expenditures

	Dollars	Percent
Operating	16,794,000	28
Flood Control Capital Improvements	42,893,000	71
Vehicles And Equipment	800,000	1
Total Expenditures	60,487,000	100

Excess (deficiency) Of Revenues Over Expenditures

140,000

Fund Balance July 1, 1998

36,066,000

Fund Balance June 30, 1999

\$36,206,000

Flood Control District Tax Levy Rate

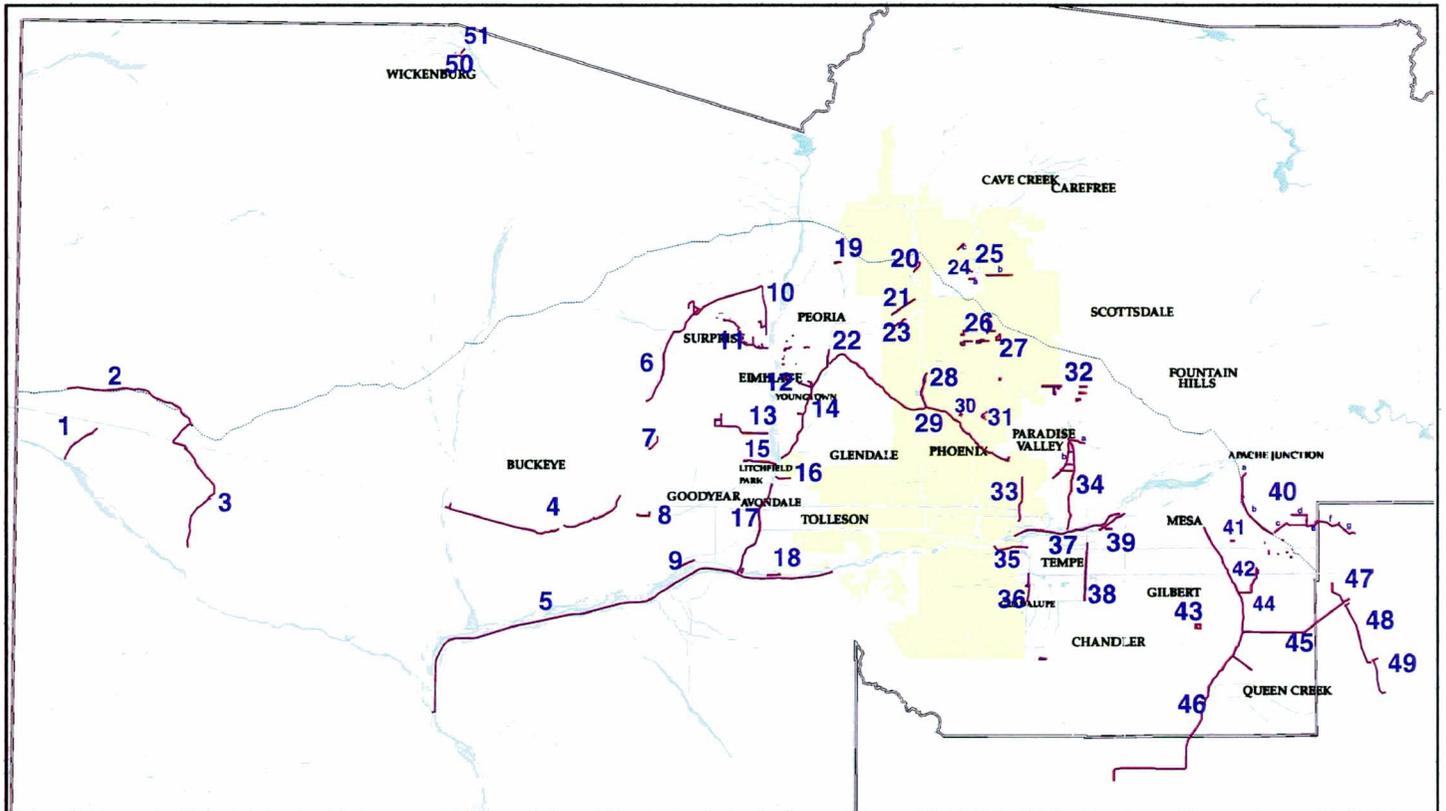
Fiscal Year Ending	Levy Rate	Tax Revenue
1961	0.05	\$253,000
1962	0.05	\$288,000
1963	0.02	\$126,000
1964	0.02	\$135,000
1965	0.02	\$145,000
1966	0.02	\$153,000
1967	0.02	\$158,000
1968	0.02	\$164,000
1969	0.05	\$446,000
1970	0.05	\$454,000
1971	0.05	\$480,000
1972	0.04	\$425,000
1973	0.05	\$645,000
1974	0.20	\$3,428,000
1975	0.20	\$3,747,000
1976	0.20	\$4,154,000
1977	0.20	\$4,395,000
1978	0.20	\$4,675,000
1979	0.20	\$5,026,000
1980	0.20	\$5,342,000
1981	0.43	\$11,825,000
1982	0.34	\$13,720,000
1983	0.50	\$21,779,000
1984	0.48	\$25,780,000
1985	0.50	\$28,697,000
1986	0.50	\$33,644,000
1987	0.50	\$41,556,000
1988	0.50	\$46,059,000
1989	0.50	\$51,345,000
1990	0.43	\$46,879,000
1991	0.42	\$39,715,000
1992	0.44	\$35,386,000
1993	0.39	\$39,715,000
1994	0.36	\$35,386,000
1995	0.36	\$35,281,000
1996	0.33	\$36,118,000
1997	0.34	\$38,712,000
1998	0.34	\$42,929,000
1999	0.32	\$44,441,000

'STILL ONLY A NICKEL'

When the District was being established in 1961, proponents touted that the tax was "only a nickel" Although the tax rate has fluctuated over the years, the rate this current fiscal year is \$.28. If that 1961 nickel were adjusted for inflation, it would equal \$.29 in current dollars! Though the revenues generated are 178 times greater, the impact on the individual property owner is the same.

In 1998, the District developed a comprehensive program to reduce the tax rate by six cents over a five year period. While a significant increase in the assessed valuation of Maricopa County properties in the past two years has greatly facilitated this effort, internal cost reduction efforts and a rigorous cost sharing program with our municipal partners has allowed the goal to be met in three years.

Flood Control District of Maricopa County Structure Map



- | | | | |
|-----------------------------------|--------------------------------------|--|---|
| 1. Centennial Levee | 14. New River Channelization | 27. Paradise Valley Detention Basin #4 | 40. Buckhorn-Mesa Flood Retarding Strct |
| 2. Harquahala FRS & Floodway | 15. Colter Channel | 28. Cave Creek Channelization | 41. University Drive Basin |
| 3. Saddleback FRS & Diversion | 16. Indian School Rd Drain | 29. Arizona Canal Diversion Channel | 42. Sossaman Channel & Basin |
| 4. Buckeye FRS 1, 2, 3 | 17. Agua Fria Channelization | 30. 10th Street Wash Basins | 43. Gilbert Crossroads Park Basin |
| 5. Salt-Gila Clearing and Channel | 18. Holly Acres Levee & Bank Stabil. | 31. Dreamy Draw Dam | 44. Guadalupe Channel |
| 6. McMicken Dam & Outlet Channel | 19. New River Dam | 32. PVSP Cactus Road Improvements | 45. Powerline Floodway |
| 7. White Tanks FRS 3 | 20. Skunk Creek Channel & Levee | 33. Old Cross Cut Canal | 46. East Maricopa Floodway |
| 8. White Tanks FRS 4 | 21. Adobe Dam | 34. Indian Bend Wash | 47. Powerline Dam |
| 9. Perryville Bank Stabilization | 22. Skunk Creek Channelization | 35. 48th Street Drain | 48. Vineyard Dam |
| 10. El Mirage Drain | 23. Scatter Wash Channel | 36. Guadalupe FRS | 49. Rittenhouse Dam |
| 11. Sun City West Drains | 24. Cave Creek Dam | 37. Salt River Channel | 50. Sunset and Sunnycove Dams |
| 12. Sun City Drain | 25. Cave Buttes Dam | 38. Price Drain | 51. Casandro Wash Dam & Outlet |
| 13. Dysart Drain | 26. Upper East Fork Cave Creek | 39. Alma School Drain | |