

# Flood Control District of Maricopa County

Property of  
Flood Control District of MC Library  
Please Return to  
2801 W. Durango  
Phoenix, AZ 85009

Annual Report 1993/1994

003.113

## Financial Highlights

Fiscal Year 1993/1994

Preliminary and unaudited. Amounts are rounded to nearest thousand.

	<u>DOLLARS</u>	<u>PERCENT</u>
<b>REVENUES</b>		
FLOOD CONTROL TAX	\$35,386,000	86
LOCAL PARTICIPATION	3,463,000	8
RENTAL INCOME	142,000	0
INTEREST INCOME	881,000	3
OTHER LAND REVENUE	861,000	2
MISCELLANEOUS	411,000	1
<b>TOTAL REVENUE</b>	<u>41,144,000</u>	<u>100</u>
<b>EXPENDITURES</b>		
FLOOD CONTROL CAPITAL IMPROVEMENTS	35,673,000	66
OTHER EXPENDITURES	18,333,000	34
<b>TOTAL EXPENDITURES</b>	<u>54,006,000</u>	<u>100</u>
EXCESS (Deficiency of Revenues over Expenditures)	(12,862,000)	
FUND BALANCE AT BEGINNING OF YEAR	<u>30,901,000</u>	
FUND BALANCE AT END OF YEAR	<u>\$18,039,000</u>	
<b>BREAK DOWN OF EXPENDITURES</b>		
CAPITAL IMPROVEMENTS		
SALARIES AND WAGES	\$ 984,000	2
REAL ESTATE	14,304,000	26
ENGINEERING	2,829,000	5
CONSTRUCTION	17,556,000	33
<b>TOTAL CAPITAL IMPROVEMENTS</b>	<u>35,673,000</u>	<u>66</u>
OTHER EXPENDITURES		
ENGINEERING	1,890,000	3
NPDES	828,000	2
HYDROLOGY	2,287,000	4
FIXED ASSETS	1,744,000	3
MAINTENANCE	6,274,000	12
ADMINISTRATION	5,310,000	10
<b>TOTAL OTHER EXPENDITURES</b>	<u>18,333,000</u>	<u>34</u>
<b>TOTAL EXPENDITURES</b>	<u>\$54,006,000</u>	<u>100</u>

## Program Summary - Expenditures

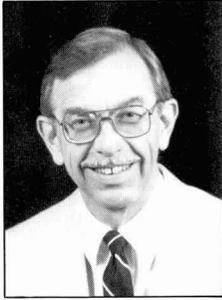
Fiscal Year Ending June 30, 1994

Preliminary and unaudited. Amounts are rounded to nearest thousand.

PROGRAM	<u>FTE's</u>	<u>PERSONNEL SERVICES</u>	<u>SUPPLIES &amp; SERVICES</u>	<u>TRAVEL</u>	<u>CAPITAL OUTLAY</u>	<u>TOTAL</u>
MAINTENANCE	117	\$3,295,825	\$ 3,673,563	\$ 22,950	\$1,043,820	\$ 8,036,158
ENVIRONMENTAL	10	335,121	744,855	6,826	81,180	1,167,982
FLOODPLAIN MANAGEMENT	19	748,187	1,075,253	12,581	57,446	1,893,467
DRAINAGE ADMINISTRATION	18	818,199	285,098	9,424	58,427	1,171,148
PROPERTY MANAGEMENT	6	229,477	112,105	3,887	16,925	362,393
FLOOD DETECTION & DATA COLLECTION	16	560,842	387,277	15,491	130,391	1,094,001
PLANNING	21	893,084	1,501,287	16,611	82,749	2,493,730
CAPITAL IMPROVEMENT PROGRAM	52	986,355	36,612,340	32,200	155,904	37,786,798
<b>TOTAL PROGRAM EXPENDITURES</b>	<u>259</u>	<u>\$7,867,090</u>	<u>\$44,391,778</u>	<u>\$119,970</u>	<u>\$1,626,842</u>	<u>\$54,005,677</u>

# A Year to Remember

Property of  
Flood Control District of MC Library  
Please Return to  
2801 W. Durango  
Phoenix, AZ 85009



by Dan Sagramoso, P.E.  
Chief Engineer and General Manager (Interim)

Fiscal Year 1993-94 was exceptionally challenging, in more ways than one. Maricopa County suffered racking financial crises that led to the resignations of many top managers and caused massive reductions in force and restructuring of the overall County organization and of most departments. At one point the County Manager described the condition of the County's general fund as the "moral equivalent of bankruptcy".

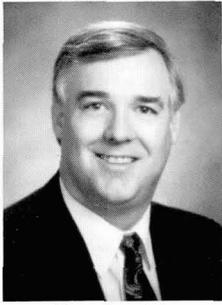
While the Flood Control District in no way contributed to the crises, we were affected in two ways. First, the District was unable to prepare its five-year capital improvement program (CIP) and FY 1994-95 budget with any confidence, because the flood control property tax might be lowered to offset increases in the primary (general fund) tax rate. Second, the District's internal restructuring was put on hold pending setting of the tax rate and approval of the CIP. Naturally, this created prolonged anxiety about the potential loss of jobs.

The departure of Chief Engineer and General Manager Neil Erwin in May 1994 was another destabilizing influence. Neil's leaving was not connected to the County's financial condition, and I want to acknowledge his many contributions to the District. Under Neil's leadership, in spite of the unsettled environment, with the joint efforts of our federal, state, county and municipal partners, lots of work got done. Here are a few examples:

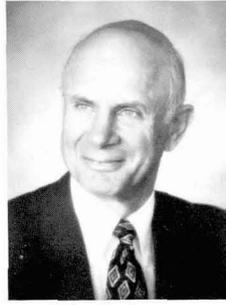
- Managed the construction of \$18 million in capital improvements, including the three-mile-long New River channel from Olive Avenue to Bethany Home Road.
- In partnership with the U.S. Army Corps of Engineers, completed the 16.5-mile-long Arizona Canal Diversion Channel (ACDC), the final feature of a system of channels and four dams protecting large parts of Glendale, Peoria, and Phoenix.
- Participated with Arizona Department of Transportation and City of Tempe in completing the Salt River Channel west of McClintock Drive in Tempe.
- Added 30 telemetered rain gauges to our flood warning system.
- Made 8,373 flood hazard determinations, had eight new floodplain delineations approved by the Federal Emergency Management Agency, and responded to 3,205 citizen requests for general information.
- Reviewed 52 subdivision drainage plans in unincorporated areas and 68 projects and proposed developments in cities. Issued 3,719 drainage clearances for construction sites. Our inspectors drove over 100,000 miles in making 5,619 inspections of private sector construction.
- Acquired about 3,000 acres of land in 254 parcels at a total cost of over \$13 million. Relocated 34 families and 3 businesses.
- Designed 23 projects in-house and reviewed designs and construction plans for 31 projects produced by consulting engineering firms under contract to the District.
- Repaired storm damage at 48 separate sites, and performed routine maintenance on 56 major flood control structures.

Heavy rains in October 1993 once again demonstrated that our structures work. Runoff pooled behind Dreamy Draw Dam to a depth of 19 feet. There were flows in the Indian Bend Wash Project of nearly 5,000 cubic feet per second and depths of over six feet. The ACDC registered flows of 5 feet in depth.

If we can get this much done in a difficult year, just think what can be accomplished next year, when things, hopefully, will be looking up.



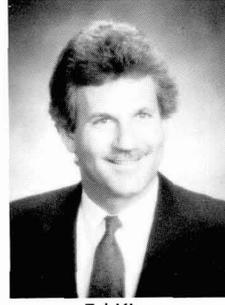
Tom Rawles  
District 1



John Katsenes  
District 2



Betsey Bayless  
District 3  
Chairman



Ed King  
District 4



Mary Rose Wilcox  
District 5

## Board of Directors

The Flood Control District of Maricopa County, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a five-member Board of Directors which consists of the elected County Supervisors.

The District has all the powers, privileges, and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost-sharing arrangements with the Federal, State, County, and local governments.

### Table of Contents

Financial Highlights .....	Inside front cover
Program Summary - Expenditures .....	Inside front cover
A Year To Remember, by Dan Sagramoso, P.E. ....	1
Board of Directors .....	2
Flood Control Advisory Board .....	3
Channel of Change .....	4
Drainage Administration Program .....	7
Maintenance Program .....	8
Floodplain Management Program .....	10
Flood Detection & Data Collection Program .....	12
Environmental Program .....	14
Property Management Program .....	15
Status Map of C.I.P. Projects .....	16
Planning/Capital Improvement Program .....	17
Awards Recognition .....	26
Building Renovation .....	29
Statement of Revenues .....	30
Area Drainage Master Studies - Expenditures .....	30
Capital Improvements - Expenditures .....	31

#### ON THE COVER

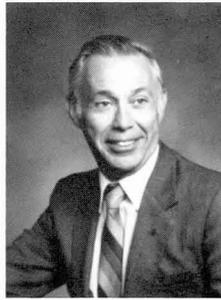
District-maintained landscaping enhances the Arizona Canal Diversion Channel, much as the recently-completed structure enhances flood protection for the Phoenix Metropolitan Area.

#### Published by:

The Flood Control District of  
Maricopa County  
2801 West Durango Street  
Phoenix, Arizona 85009  
(602) 506-1501



John E. Miller  
Chairman



James Matteson  
City of Phoenix



Paul Cherrington  
Salt River Project



William LoPiano



Samuel K. Wu

## Flood Control Advisory Board

The Flood Control Advisory Board (FCAB) advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. The FCAB reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors. The FCAB members also serve the District as members of the Floodplain Review Board and the Drainage Review Board.

The Advisory Board consists of seven members, five of whom are appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. In addition to those five members, the Salt River Project and the City of Phoenix appoint representatives who are ex-officio members of the FCAB.



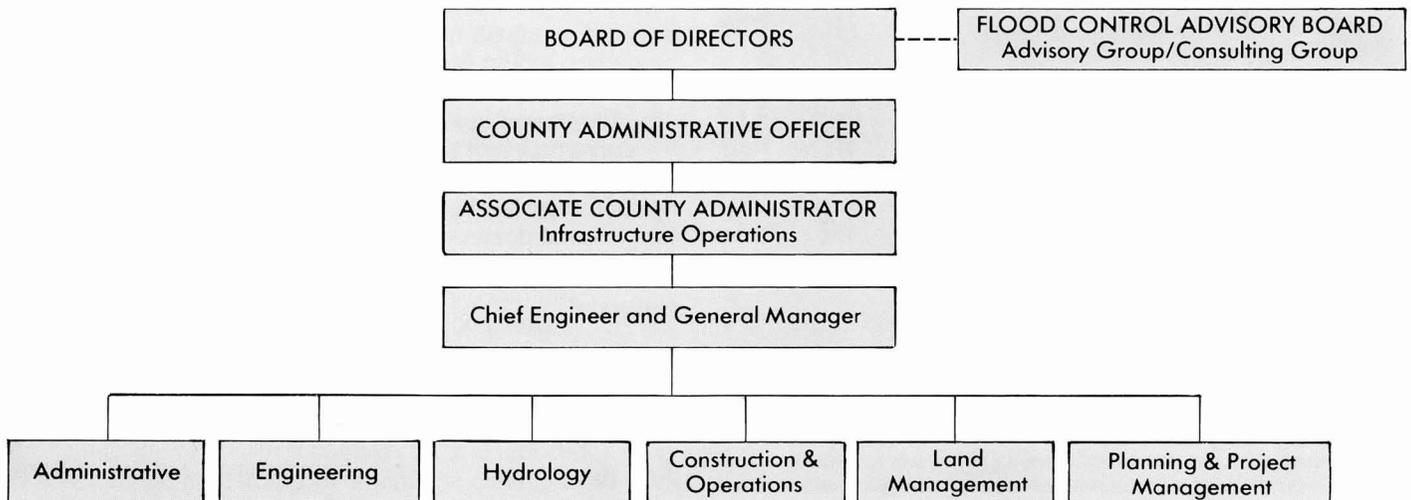
Ron Wheat



Marcella Peters

## ORGANIZATIONAL CHART

### Flood Control District of Maricopa County



# A Channel of Change

After more than eight years of construction at a cost of more than \$250 million, the largest and most ambitious federally-funded project in the District's 35-year history was completed.

The 16.5 mile Arizona Canal Diversion Channel (ACDC) was formally dedicated in ceremonies held on October 8th and attended by members of the District's Board of Directors, the Flood Control Advisory Board, three Valley mayors, the Corps of Engineers and others involved in the channel's planning and design.

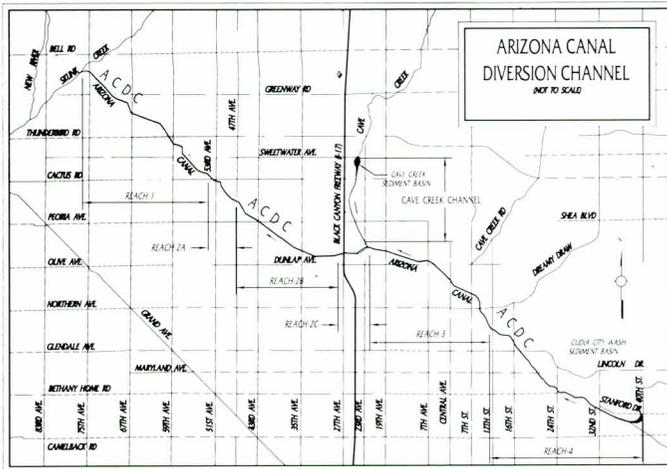
The ACDC is an integral part of the larger Phoenix and Vicinity (including New River) Flood Control Project developed by the Corps of Engineers in the 1960's and sponsored locally by the District. That project includes already completed dams on Cave Creek, Dreamy Draw, Skunk Creek and New River, plus the acquisition of flowage easements and the construction of bank protection on Skunk Creek, New River and the Agua Fria River.

The ACDC intercepts stormwater runoff that occurs north of the Arizona Canal and conveys it west to Skunk Creek. Large urban washes such as Cudia City Wash, Myrtle Wash, Dreamy Draw Wash, 10th Street Wash, and Cave Creek flow into the channel. Many city storm drains also use the channel as an outfall.

As the project's local sponsor, the District spent approximately \$140 million for acquisition of right-of-way, relocation of people, utilities and roads, and construction of bridges over the channel. We also contributed 2.3% of the construction cost and will pay for continued maintenance of the project.

Completion of the channel means thousands of acres of mostly urbanized property in Phoenix, Glendale and Peoria are now protected from the 100-year flood. In central Phoenix, for example, the combination of the ACDC and the new dam on Cave Creek Wash removed 12,700 homes and 670 businesses (including the Arizona Capitol building) from the Cave Creek floodplain. Along with the flood protection has come the reduction or elimination of flood insurance requirements on hundreds of properties, saving people thousands of dollars throughout the life of their mortgage.

The ACDC actually began paying flood control dividends well before it was complete. By constructing the project in segments or "reaches", and by beginning construction at the downstream end, the channel began working as each reach was completed. In one instance an unfinished section between 7th and 12th Streets saved dozens of homes from certain flooding when it filled with stormwater from a sudden flash flood. An estimated 73 million gallons of water pooled in the channel on July 24, 1992, submerging construction equipment, but saving downstream properties. During the January 1993 flooding, the ACDC filled to a depth of over 5 feet and provided an outfall for over 5 billion gallons (17,500 acre ft.) of stormwater runoff drained from behind Cave Buttes Dam.



Cave Creek Floodplain before ACDC.



Cave Creek Floodplain after ACDC.

Aside from its flood control benefits, the channel has also become a recreational mecca for thousands of residents living along its path. The western-most reach was developed into a park by the City of Glendale and features picnic ramadas, basketball courts, soccer fields and playgrounds.

Even in areas where right-of-way restrictions necessitated a rectangular concrete channel, landscaped service roads are havens for joggers, walkers, and bicyclists. Pedestrian underpasses were constructed at many major street crossings to facilitate public access. The channel is landscaped throughout its length and features buff-colored concrete and stylish steel fencing to improve its appearance. But in spite of its benefits and efforts to mitigate its visual impact, opposition to the project was fervent at times.

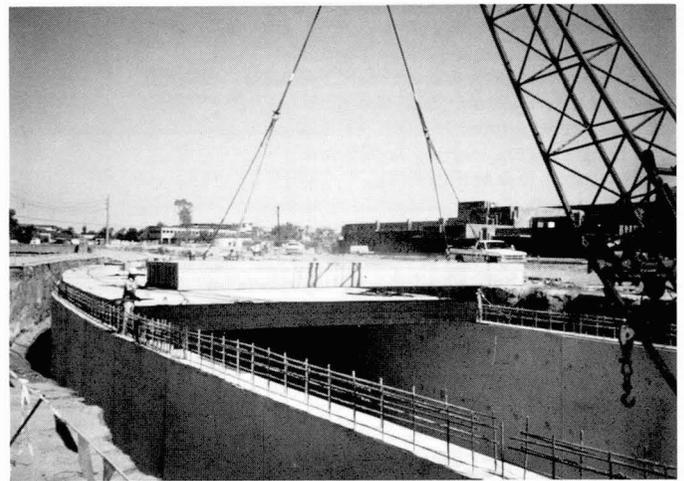
As construction of Reach 1 was getting underway in the Fall of 1985, the Phoenix City Council appointed a Citizen's ACDC Task Force to investigate concerns raised by residents of the Biltmore area opposed to construction of the channel through their community. "Citizen's Opposed to Reach 4" raised questions about the channel's cost-benefit ratio, its appearance and potential impact on property values.

This reach of the channel, which was not part of the original authorized plan, was added to the project in 1977 after the City of Phoenix and local interests requested that flood protection be extended several miles eastward where extensive flooding occurred in June, 1972. In that flood, over \$4 million in damages occurred from runoff in this area. Damages were caused by ponding along the north side of the Arizona Canal and from flooding below the canal due to overtopping at five locations between 12th and 40th Streets.

Following two years of public Task Force meetings, which considered several channel alternatives, the Phoenix City Council voted on June 23, 1987 to support Reach 4 as originally conceived. They did, however, appoint an aesthetics committee to work with the District and Corps of Engineers on developing plans to landscape and beautify the channel.

One of the channel alternatives evaluated by the Task Force involved the construction of four detention basins at the upstream end of the channel to reduce the cost and size of Reach 4. The alternative was shown to actually increase the cost of the project and met opposition from the Paradise Valley Town Council which passed a resolution in November, 1985 opposing the basins, but supporting efforts to reduce the channel's impact through aesthetic treatment.

Opposition to Reach 4 persisted in spite of renewed endorsements by Phoenix and Paradise Valley. Opposition by owners of the Biltmore Hotel centered around compensation for lost right-of-way and concern for lost business during channel construction. The Corps of Engineers and District agreed to cover the 1500-foot-long channel segment with a concrete lid and reduced construction time in half by asking the contractor to work double shifts.



Setting of box beams in front of the Arizona Biltmore Hotel



Board member John Katsenes represented Maricopa County and the District at the APWA "Contractor of the Year" award ceremony held May 20th at the ACDC near 20th Street and Maryland Avenue. Paradise Valley Mayor Joan Horne assisted in the unveiling of a plaque which is to remain on the site.

## Thank You

It required the efforts of many people to successfully complete a project as large as the Arizona Canal Diversion Channel. To all those who contributed to the project, we extend our thanks and appreciation for a job well done. While it is impossible to list all those involved, some of the many are listed below.

### Flood Control District

Shelby Brown, *Administrative Coordinator*  
Mark Brewer, *GIS CADM Technician II*  
Roberta Combs, *Administrative Coordinator*  
Francis Crosby, *Engineering Drafting Specialist*  
Leanna Cumberland, *Eng. Contract Specialist*  
Mike Cuneo, *Controller*  
Betty Dickens, *Revegetation Ecologist*  
Paul DiPierro, *Construction Inspector*  
Chris Franklin, *Land Management Specialist*  
Fred Fuller, *Chief of Construction Inspection*  
Ken Green, R.L.S., *Real Property Engineering Assoc.*  
Hedy Hall, *Land Management Specialist*  
Kumar Hanumaiah, P.E., *Civil Engineer*  
Jonathan Hughes, *Construction Inspector*  
David Johnson, *Hydrology Manager*  
Diane C. Johnson, *Land Management Aide*  
Ken Johnson, *Property Management Specialist*  
Bill Knight, *Revegetation Ecologist*  
Lisa LaMarche, *Administrative Coordinator*  
John Lang, *Civil Engineering Technician*  
Paul Lindgren, *O & M Supervisor*  
Dick McNamara, *Property Acquisition Manager*  
Catesby Moore, *Environmental Program Manager*  
Edgar Moreno, *Engineering Associate*  
Amir Motamedi, *Hydrologist*  
John Palmieri, *Property Acquisition Coordinator*  
O. Don Park, P.E., *Construction & Ops Manager*  
Bill Poppe, *Civil Engineering Technician*  
Edward A. Raleigh, P.E., *Engineering Manager*  
Don Rerick, *Project Management Engineer*  
Dan E. Sagramoso, P.E., *Chief Eng. & Gen. Mgr.*  
John Sanchez, *Real Property Engineering Assoc.*  
Jim Schwartzmann, *Land Management Manager*  
Gary Shapiro, *Civil Engineering Technician*  
Shewa Shivaswamy, *Construction Inspector*  
R.W. Shobe, P.E., *Project Management Engineer*  
Stanley L. Smith, Jr., P.E., *Deputy Chief Engineer*  
Laurence Spanulescu, *Construction Inspector*  
Jan Staedicke, *Civil Engineering Technician*  
John Svechovsky, P.E., R.L.S., *Water Resources Planner*  
Charles Wainwright, P.E., *Civil Engineer*  
Ray Warriner, *Property Acquisition Coordinator*  
Larry Wong, *Engineering Drafting Specialist*  
Connie Yanez, *Administrative Assistant*  
Joe Young, *Budget Analyst*  
and ACDC Maintenance Crews ... thanks!!!

### Former District Employees

Warren "Andy" Anderson, *Chief of Construction Inspection*  
John Burke, *Chief of Land Management*  
Herbert P. Donald, P.E., *Chief Engineer & General Manager*  
Neil S. Erwin, P.E., *Chief Engineer & General Manager*  
Susan Fitzgerald, *Public Involvement Coordinator*  
Nickolas Karan, P.E., *Chief of Engineering Division*  
Joy Ketchum, *Administrative Coordinator*  
Jim Langford, *Property Management Assistant*  
Emily Marak, *Land Management Assistant*  
William Mathews, P.E., *Chief Engineer & General Manager*  
Erv McLuty, *Chief of Real Estate Engineering*  
Sue Mutschler, *Public Involvement Coordinator*  
Edward Opstein, *Chief of Land Management*  
Robert Payette, P.E., *Chief of Construction & Operations*  
John Rodriguez, P.E., *Chief of Planning & Project Management*  
Mary Williams, *Administrative Assistant*  
Linda Young, *Administrative Coordinator*

### General Counsel

Larry J. Richmond, *Attorney*  
Julie Lemmon, *Attorney*

Meanwhile, Paradise Valley residents pressed for treatment similar to the Biltmore's, leading the Paradise Valley Town Council in December, 1989 to pass a resolution calling for the channel to be covered through their town. With the eventual support of Arizona's congressional delegation, those in favor of the covered channel successfully lobbied Congress for the additional funding.

By this time (August 1991), construction of Reach 4 was well underway. Fortunately, the District, the Corps of Engineers and the Reach 4 contractor (SundtCorp) had anticipated congressional approval of funding for the cover and altered the construction schedule to accommodate the change order. The District was even designing the cover two months before congressional funding became available, saving thousands of dollars in potential costly delays.

It was the overcoming of such obstacles that led the American Public Works Association (APWA) in May to recognize the contractor, the District and Corps of Engineers for their outstanding work.

In ceremonies attended by Governor Fife Symington, the APWA presented SundtCorp with the "Contractor of the Year" award for constructing Reach 4. The District and Corps of Engineers were recognized for their roles in supervising the project.

The sense of pride and accomplishment could be seen on the faces of those in attendance at both this event and the October dedication. The ACDC project had indeed been a challenging one, with emotional highs and lows as real as those found on the Castles 'N Coasters roller coaster ride constructed next to the channel near Metrocenter mall.

Everyone involved should take special pride in knowing that their contributions will live on through the successful performance of this remarkable channel. Their efforts will be remembered each time the ACDC flows with storm-water that a few years ago would have forced people from their homes and caused millions of dollars in damages.

# Drainage Administration Program

Program FTE's: 18	% District FTE's: 7
Program Budget: \$1,060,364	% District Budget: 2
Program Expenditures: \$1,171,148	% District Expenditures: 2

The Drainage Administration Program involves the review and inspection of drainage facilities in unincorporated areas to ensure that development will not adversely affect neighboring properties. In order to reduce existing and potential flooding problems caused by local stormwater (outside the jurisdiction of a delineated floodplain), the District administers the *Drainage Regulation for the Unincorporated Area of Maricopa County*.

## Drainage Administration Activity Chart

	1991-92	1992-93	1993-94
Inspections	4,389	5,848	5,619*
Drainage Clearances Issued	2,738	3,250	3,719
Subdivision Plan Reviews	26	29	52
Complaints Investigated	60	221**	145

\* Reduction in number of inspections as compared to previous year resulted from utilization of building inspectors to perform drainage inspections in Sun City West. This saved customers time and made more efficient use of staff.

\*\* Major storms in January 1993 increased significantly the number of complaints investigated during this fiscal year.

The District coordinates with the Infrastructure Planning Department (and Building Safety), the Maricopa County Department of Transportation, and the Maricopa Health Systems Department to ensure that new developments will not increase runoff, divert flows to another watershed, or cause backwater on other property. The District also investigates reports of flooding and possible flood hazards reported by citizens.

The rebound in the housing industry has meant an increase in the number of subdivision drainage plans submitted to the District for review (up 80%) and in the number of drainage clearances issued (up 14%). Last year marked the first full year of operation for the Sun City West Satellite Office, a One Stop Shop providing westside residents with a single, convenient location to obtain zoning reviews, building permits and drainage clearances.

The Sun City West Office accounted for 23% of all drainage clearances issued by the District last fiscal year and handled 690 telephone inquiries regarding permits, drainage problems and related concerns. Customers of the District gave Drainage Administration staff a 97% approval rating in April, with 93% of the surveys returned. Respondents indicated the staff were knowledgeable, courteous, helpful and efficient. ■



Civil Engineer Tech John Lang of the Sun City West Office talks to Peoria resident Tex Taylor and his son about finished floor elevations.

# Maintenance Program

Program FTE's: 117	% District FTE's: 45
Program Budget: \$8,730,469	% District Budget: 15
Program Expenditures: \$8,036,158	% District Expenditures: 15

Maintenance of our flood control structures is a high priority function, absorbing about 15% of our budget and 45% of our employees. The District is responsible for the maintenance of 56 major structures extending from far eastern Mesa, west to Wickenburg and the Harquahala Valley.

A maintenance staff of 95 is supplemented with prison labor to accomplish the job of keeping our dams, channels, floodways and drains performing at their optimum level. This past year saw significant effort go into the cleanup and repair of 48 separate sites damaged by the January 1993 floods. The majority of the work involved unclogging principal outlets, repairing erosion damage and removing sediment and debris.

Among the largest repair projects was the rebuilding of the Cave Buttes Dam Outlet and the Perryville Bank stabilization plus the removal of large amounts of silt and debris from the East Maricopa Floodway near Chandler Heights Road. Crews also labored to remove hundreds of tons of trash and debris deposited along the banks of the Salt River between 35th Avenue and 107th Avenue following the erosion of an upstream landfill during the January flood event.

In addition to performing routine maintenance and storm damage repairs, crews readied many structures for annual joint inspections performed by federal agencies such as the Corps of Engineers and Soil Conservation Service. These annual inspections are performed on projects built with federal funds, such as the Arizona Canal Diversion Channel (ACDC). All inspections involving dams must include the Arizona Department of Water Resources which has the legal responsibility for licensing such structures. Less formalized inspections are conducted semi-annually by the District on all major structures.

Helping guide the work of maintenance crews is an Ecology Branch staffed with revegetation specialists expert in the establishment and maintenance of plants as well as the control of insects and noxious weeds. An especially aggressive program to control erosion through the planting of desert grasses was implemented this year. The use of a hydromulcher accelerated this effort and resulted in the ability to seed about 100 total acres involving numerous dams and floodways. Control of unwanted vegetation was also a priority this year, with the development of a Structure Vegetation and Spraying Schedule to ensure timely and consistent application of control techniques.



Tom Siegried, Ed Loy and Bob Hare put the finishing touches on grouted rip-rap placed along Reach 1 of the ACDC.

A major addition to the District's maintenance responsibilities occurred as well, with the completion of Reach 4 of the ACDC. Upkeep of the nearly five-mile section of concrete channel passed from the Corps of Engineers to the District in February. Maintenance costs associated with the total 16.5-mile ACDC are estimated at \$40,000 per mile/per year.

Other highlights of the Maintenance Program from the past year include:

- Establishment of a satellite maintenance yard next to the East Maricopa Floodway in Mesa to be used as a staging area for crews responsible for maintaining East Valley structures. The eastside facility saves time and money by reducing travel times and providing storage space for tools and equipment. The idea for the facility was developed by a Total Quality Management (TQM) team made up of maintenance crew members.
- Development of a Work Control Center Cost Accounting System to track maintenance expenditures and material costs by structure and maintenance activity.
- Reorganization of the shop area in the Operations Building and installation of new storage cabinets and tool organizers to improve accessibility and efficiency. ■

DEPARTMENT OF THE ARMY  
Los Angeles District, Corps of Engineers

Mr. Don Park  
Flood Control District of Maricopa County  
Construction and Operations Manager  
2801 West Durango  
Phoenix, Arizona 85009

Dear Mr. Park:

I would like to extend my appreciation to you and your staff for the way they have maintained the facilities turned over to you by our agency. They are a model for all other flood control agencies within our district.

Please pass on to your maintenance crews our sincere appreciation and tell them to continue the good work. Their work shows their concern for the people and property protected by these facilities and their concern has not gone unnoticed.

Sincerely,

(Signed) Carl F. Enson, P.E.  
Chief, Construction-Operations Division



Except when asked to pose for pictures, O & M staff don't have much time for standing around when it comes to maintaining the District's many flood control structures.

# Floodplain Management Program

Program FTE's: 19	% District FTE's: 8
Program Budget: \$2,270,124	% District Budget: 4
Program Expenditures: \$1,893,467	% District Expenditures: 4

The Floodplain Management Program involves the delineation of 100-year floodplains in Maricopa County and the regulation of development within their boundaries.

The District is mandated to perform this function by Arizona State Statute and this past year had eight floodplain delineation studies comprising 266 linear miles approved by the Federal Emergency Management Agency (FEMA).

The study results are used by FEMA to update Flood Insurance Rate Maps (FIRMs) which visually display identified flood hazard areas. The federal government requires home and business owners within these areas to purchase flood insurance if their structures are financed with federally-backed loans, i.e., VA, FHA, Government Small Business Loans, etc.

The FIRMs are used by the District and other jurisdictions to manage development within 100-year floodplains to protect life and property. Guidelines for such management are detailed in the *Floodplain Regulations for Maricopa County*. Enforcement of the regulations can involve on-site inspections by Floodplain Representatives who inspect new construction and structural repairs to ensure compliance. The District's jurisdiction for enforcing the regulations applies to both incorporated and unincorporated areas of the County, unless a municipality specifically resolves to take jurisdiction. The District undertakes floodplain management responsibilities for the following communities: Buckeye, Gila Bend, Surprise, Cave Creek, Carefree, Chandler, Guadalupe, Queen Creek, Litchfield Park and Tolleson.

Floodplain delineations and accompanying regulation result in safer, wiser development and can have monetary rewards, too. The District's active floodplain management program is responsible for the current 15% reduction in flood insurance premiums paid by residents in unincorporated areas of the county. This reduction is the result of District participation in a federal program called the Community Rating System (CRS) which rewards a community's efforts to reduce flood losses by awarding flood insurance premium credits to its residents. The 15% reduction will increase in October, 1994 to 20%, thanks to additional efforts made by the District to improve its floodplain management program.

At the heart of the District's Floodplain Management Program is the delineation of 100-year floodplains. The floodplain delineation program began in 1973 when FEMA completed several delineations. Since then, federal budgeting has shifted the burden to the local level, forcing the District to become more active in this role. Since 1986, the District has delineated 559 miles of 100-year floodplain. This accounts for 58% of the county's total miles of delineated floodplains.

## FLOODPLAIN MANAGEMENT ACTIVITY INDICATORS

- 8 new delineations approved by FEMA.
- 64 floodplain use permits processed, 37 clearances issued, 1 variance approved.
- 26 violations investigated.
- 382 walk-in customers assisted.
- 2,823 phone requests for general information.
- 8,373 Flood Hazard Determinations made.
- 752 Flood Hazard Determination notices recorded.

District delineations approved by FEMA this past year include: Luke Wash, Apache Wash, Rainbow Wash, Star Wash, Daggs Wash, Powerline Wash and Tank Wash. Also approved were delineations associated with the White Tank/Agua Fria Area Drainage Master Study and the Buckeye Area Floodplain Delinieation Study.

Delineations in progress or awaiting FEMA approval are Rio Verde North and South, Salt-Gila River from Granite Reef to Gillespie Dams, Fountain Hills, White Tank Wash, Deadman Wash, and Iona Wash.

## Floodplain Manager of the Year

Floodplain Representative Ron Nevitt received national recognition in May for his contributions to local floodplain management efforts. Ron received the Larry R. Johnston Memorial Award naming him "Local Floodplain Manager of the Year". The award was presented by the Association of State Floodplain Managers in ceremonies held in Tulsa, Oklahoma. The award recognizes outstanding individual efforts and contributions to local floodplain management programs.

Ron has been instrumental in securing a 20% reduction in the cost of flood insurance premiums for residents of unincorporated Maricopa County through his oversight of the Community Rating System program. He also implemented a program of preventing flood losses through disclosure of potential flood hazards to realtors, property buyers and title companies. This is done by recording a "**Notice of Flood Hazard Determination**" to the chain of title of properties identified as being within Special Flood Hazard Areas. The program was selected as a semi-finalist in the Innovation in Government Awards Program sponsored by the Ford Foundation and the Kennedy School of Government at Harvard University. The recordation program placed in the top 75 among 1,200 entries submitted nationwide.

## Other Accomplishments

Some of the other accomplishments of our Hydrology Division staff include:

- The development of a new computer program called the **Drainage Design Manual System**, which facilitates the input and management of data used in hydrologic analysis. The new system allows rapid updates, corrections and examination of different watershed characteristics which effect hydrologic results.
- Participation in the development of a new multi-level floodplain delineation system for use in setting finished floor elevations for structures in areas outside of FEMA-designated floodplains. The system has been incorporated into State Floodplain Management Standards administered by the Arizona Department of Water Resources. ■



Floodplain Representative Ron Nevitt may need additional wall space to display all the awards he received this year.

# Flood Detection and Data Collection Program

Program FTE's: 16	% District FTE's: 6
Program Budget: \$1,378,990	% District Budget: 2
Program Expenditures: \$1,094,001	% District Expenditures: 2

The District operates and maintains a network of precipitation gauges and water level sensors (commonly referred to as "stage gauges") which provide current or "real time" information about rainfall and runoff across the County. Called Automated Local Evaluation in Real Time (ALERT), the system transmits information via radio waves to a base station at the District. This information is shared with the National Weather Service for use when issuing weather advisories. The data also is used in hydrologic studies and for monitoring flood control structures during storm events, e.g., monitoring water levels behind dams.

With the system's growth has come increasing interest on the part of other agencies and jurisdictions in obtaining data from the system. Fourteen outside entities have been linked to the network via telephone line, with another eight requesting access. Included among this year's additions were the Arizona Army National Guard, the Pinal County Flood Control District, the Phoenix Office of the U.S. Geological Survey, the City of Scottsdale Emergency Management Department and the Maricopa County Department of Transportation (MCDOT). Scottsdale and MCDOT, for example, will use the water level information from the ALERT system to anticipate road closures necessitated by rising floodwaters in local streams and washes.

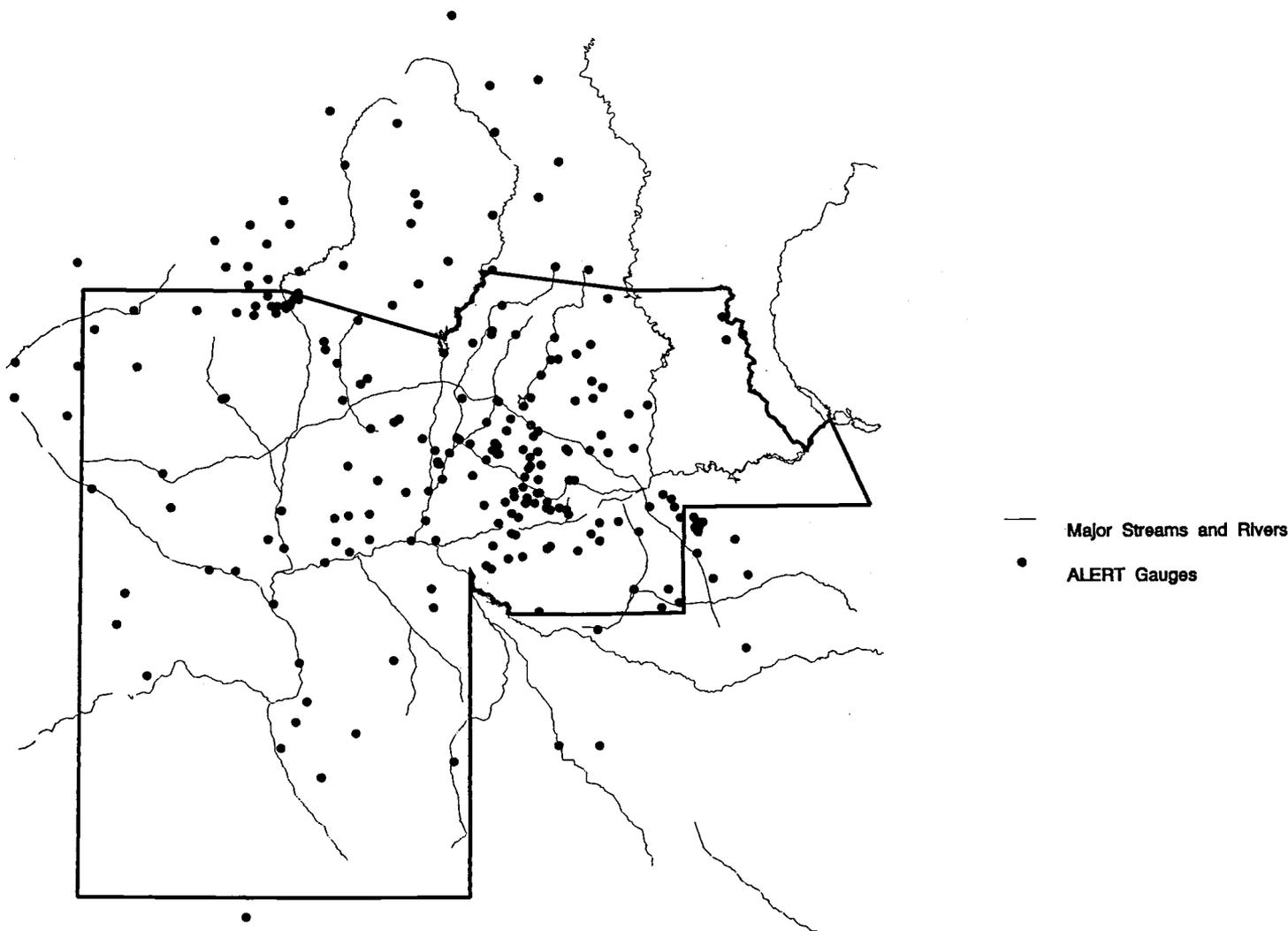
With the installation of stage gauges has come the development of "rating curves" for the 55 sites with water level sensors. Rating curves provide a rate of discharge or flow at the gauge, be it in a stream, flood control channel or dam. The information is used to predict downstream flooding potential.

The installation of a Virtual Rain Gauge System was accomplished this year, which, through the use of satellites, radar and computers, can derive rainfall data where there are no actual gauges. In addition, a satellite dish installed at the District receives weather data from radar stations around the state which is then automatically fed into a District computer. The computer is used to generate rainfall depth maps using different colors to denote different rainfall amounts. The depth maps provide hydrologists with overall rainfall distribution patterns useful during flood events and for developing hydrologic forecasting models.

With the increased demand for flood warning information collected by the District has come a growing interest in developing a statewide network to collect and share information. The District is participating with other agencies in the development of a conceptual design for such a system which holds the promise of improving flood-readiness throughout Arizona.



Hydromet Techs Tom Kiefer (L) and Charlie Klenner assemble an antenna during installation of an ALERT gauge.



## System Upkeep

In the past year, 30 new data collection sites were added to the system, many of them to fill "gaps" in the system identified during heavy rains in January, 1993. The new gauges bring the system total to 160 precipitation gauges and 64 stage gauges. In addition, ten full weather stations are tied into the system and provide such data as dew point, air temperature, humidity and wind speed.

Installing and maintaining this intricate network of District gauges is the responsibility of a six-member team made up of five Hydrometeorological Technicians (Hydromet Techs) and their supervisor. Travelling thousands of miles each month, these technicians ensure proper gauge operation by regularly calibrating the various sensors and radio transmitters associated with each data collection site.

In addition to performing preventive maintenance, the Hydromet Techs spent considerable time this past year upgrading data transmitters on stage gauges and weather

stations. New transmitters were installed which have the ability to store information for later retrieval in the event the "real time" transmission is interrupted due to signal breaks caused by lightning strikes or other weather phenomena.

## Publications

Other highlights of the Flood Detection and Data Collection Program from the past year include:

- Publication of the Annual Precipitation Report providing documentation of data collected by the District's ALERT system.
- Publication of a Storm Report summarizing rainfall and runoff amounts from the October 6, 1993 storm which impacted northeast Phoenix and Scottsdale. This storm provided the highest rate of rainfall ever recorded at a District gauge (1.5 inches in 15 minutes at Paradise Valley Park near Union Hills and 40th Street). Runoff from this storm sent an estimated flow of 7,600 cubic feet per second down Indian Bend Wash, a 25-year storm for this watershed. ■

# Environmental Program

Program FTE's: 10	% District FTE's: 4
Program Budget: \$2,445,696	% District Budget: 4
Program Expenditures: \$1,167,982	% District Expenditures: 2



ADEQ Director Ed Fox presented Environmental Program Manager Catesby Moore (R.) and Hydrologist Valerie Swick with an award for overseeing development of the Erosion Control Manual.

The Arizona Department of Environmental Quality recognized the Environmental Branch for their leadership role in developing an Erosion Control Manual providing best management practices for controlling construction site runoff. Staff received the Arizona Pollution Prevention Leadership Enhancement Award for Advocacy in ceremonies held last November.

The District continues to act as the regional coordinator in meeting the stormwater requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES). The regulations require large metropolitan areas to monitor pollution levels in stormwater and develop programs to reduce pollutant levels.

In January, the Maricopa Association of Governments (MAG) approved a model stormwater ordinance for use by cities in implementing stormwater quality regulations. The ordinance was developed by a MAG Stormwater Task Force coordinated by Environmental Branch staff working cooperatively with District legal counsel.

Another District endeavor receiving considerable recognition is a pilot project to remove petroleum contaminants from stormwater. The District's use of wetland plants and associated microbes to purify stormwater runoff from a vehicle maintenance yard is being recommended by the Arizona Department of Environmental Quality (ADEQ) for use as a Best Available Demonstrated Control Technology. This means ADEQ will accept the methodology for use by other agencies and jurisdictions who cite it in their individual stormwater permits.

Recognizing that a coordinated regional effort is the most effective response to the new federal and state requirements for monitoring stormwater quality, the Environmental Branch is negotiating intergovernmental agreements with Phoenix, Mesa and Tempe to operate and maintain those communities' stormwater monitoring stations and instream flow sampling sites. These agreements go a long way toward achieving the goal of establishing a regional stormwater monitoring network.

An effort to educate the public about stormwater pollution was also undertaken by staff. Five-hundred children from throughout the Valley competed in a poster contest organized by the Environmental Branch to develop a "spokes-character" for a stormwater pollution campaign.

Eight-year-old Lynn Erickson of Zuni Elementary School in Scottsdale created the character of "Drippy" after learning about stormwater pollution in class. A video about stormwater pollution and ways to prevent it was produced in conjunction with the campaign. ■



8-year-old Lynn Erickson displays her winning poster in the company of Board of Director's Chairman Betsey Bayless (R.) and Valerie Swick of the District's Environmental Branch.

# Property Management Program

Program FTE's: 6	% District FTE's: 2
Program Budget: \$400,521	% District Budget: 1
Program Expenditures: \$362,393	% District Expenditures: 1

The Property Management Program encompasses activities performed by the District's Land Management Division relating to the lease, sale and management of properties associated with flood control projects.

During the past year, staff have been actively involved in maintaining and securing District-owned property. Nearly \$1 million in revenue was generated by the Property Management Branch through easements, rental, lease, license and sale of District property. For example, an agricultural lease on property recently acquired along New River and Skunk Creek (the Willden-Red River purchase) is generating \$6,000 per month for the District. Property Management staff have also been promoting the concept of multiple-use flood control projects through formulation of various agreements with local communities for recreational use of District property.

At Cave Buttes Dam, the City of Phoenix wishes to develop recreational amenities on the property. The District has also negotiated an intergovernmental agreement with the City of Peoria to purchase District property which was obtained through an exchange with Westcor Partners. The City of Peoria wants the property for its regional sports complex. The sale will generate in excess of \$2 million for the District. The City of Peoria is also negotiating with the District to utilize and develop District right-of-way north of Grand Avenue in the New River Channel for a golf course.

The Property Management Branch also has developed an active identification and disposition program for parcels of property which are considered surplus. During the past fiscal year, six parcels were sold with a total revenue to the District of \$200,000. As a result of the District's responsibility to protect the petroglyphs at the south end of Adobe Dam, the District has provided right-of-way to the Corps of Engineers for construction of an Interpretive Center. Arizona State University will manage the center for public use. ■

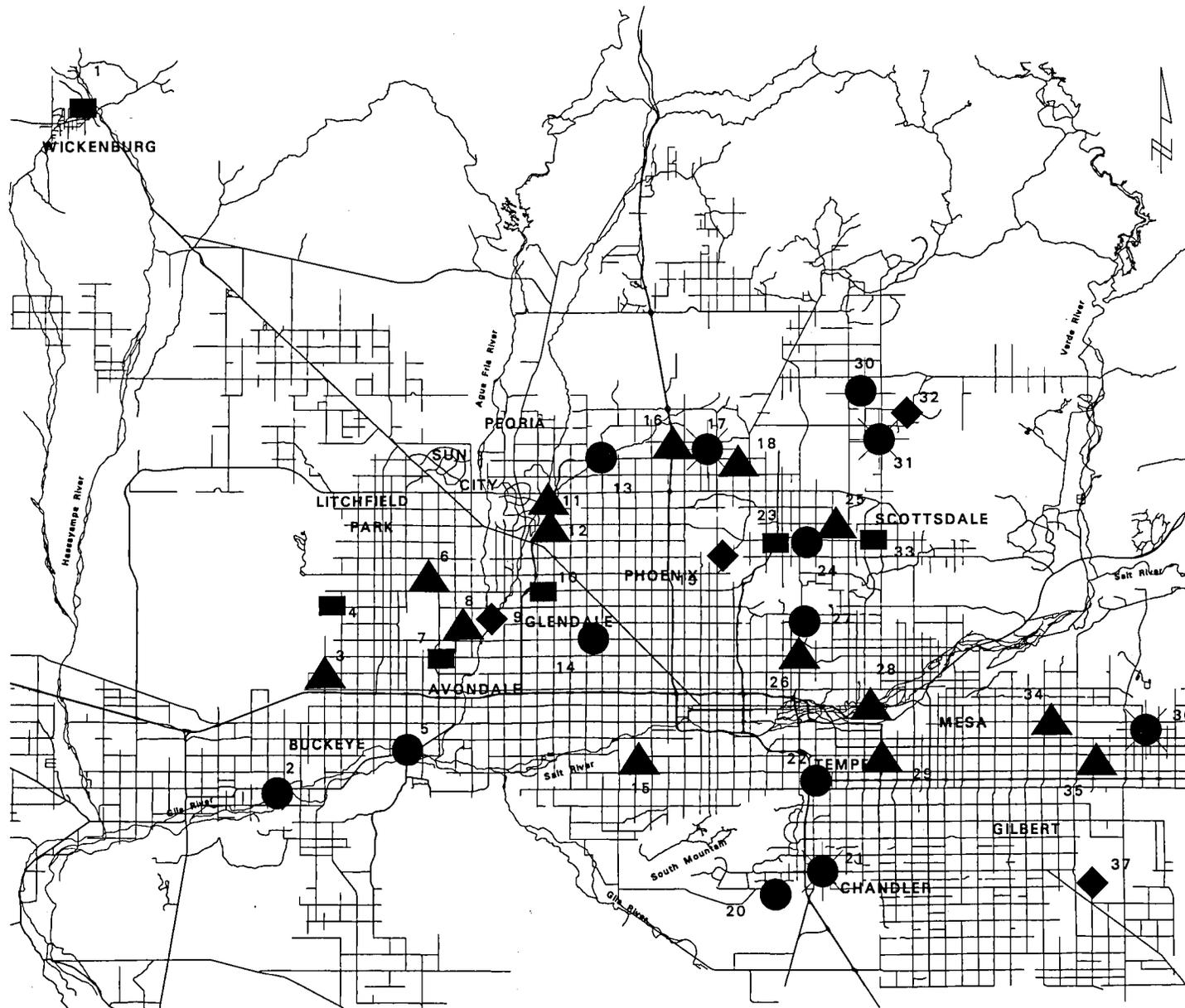


Portions of the Peoria Sports Complex rest on property presently owned by the District which will be sold to Peoria.

## Property Management Branch Activity Summary

Transaction	Parcels/Units	Revenue
Sale at public auction	6	\$200,900
Rental/lease	12	\$121,990
License/easements	70	\$618,998
IGA Agreement	1	\$ 15,750
Mobile homes leased to county agencies for nominal fee	23	-0-
<b>Total</b>	<b>112</b>	<b>\$957,638</b>

# Status of Major C.I.P. Projects



## Project Index

1. Casandro Wash Projects
2. Salt-Gila River Study
3. White Tanks 4 Inlet
4. White Tanks 3 Improvement
5. Bullard Wash Overchute
6. Dysart Drain Connector
7. RID Canal Overchute
8. Colter Channel
9. Agua Fria Easements
10. Northern/Orangewood Drain
11. Desert Harbor Drop Structure
12. Cactus Rd. Storm Drain
13. Skunk Creek Improvements
14. Maryvale Flood Mitigation
15. Maricopa Drain
16. Beardsley Rd. Drainage
17. Cave Creek Improvements
18. East Fork Cave Creek
19. 10th Street Wash Basin/Chan.
20. Gila Drain Improvements
21. Southeast Valley Regional Dr.
22. Town of Guadalupe
23. Tatum Wash Channel/Basin
24. Doubletree Ranch Rd. Imp.
25. Cactus Rd. Flood Control Str.
26. Old Cross Cut Canal
27. Arcadia Drainage Project
28. Salt River Channel
29. Price Road Drain
30. Rawhide Wash Channel
31. Pima Road Channel
32. Reata Pass Channel
33. 84th Street and Cholla Project
34. University Dr. Storm Drain
35. Sossaman Channel
36. East Apache Trail at C.A.P.
37. Rittenhouse Road Drainage

## Status

-  Construction
-  Study
-  Land Acquisition
-  Design
-  Planned

As of June 14, 1994

# Planning/Capital Improvement Programs

Combined Program FTE's: 73	% District FTE's: 28
Combined Program Budget: \$40,179,458	% District Budget: 72
Combined Program Expenditures: \$40,280,528	% District Expenditures: 74

The Planning Program identifies areas with existing or potential flooding and drainage problems and develops alternative solutions to resolve such problems. Ever guiding the planner's efforts is the District's mission of protecting life and property of County residents. The Capital Improvement Program (CIP) is an allocation of resources and a timetable for major construction projects and property acquisitions to be undertaken by the District to resolve identified flooding problems. The Planning and Capital Improvement Programs account for over 75% of the District's Budget.

The planning effort involves activities such as obtaining rights-of-entry to property, performing environmental and archeological assessments of potential project sites, developing hydrologic information through drainage studies, negotiating intergovernmental agreements with other agencies and jurisdictions involved in the project, and instituting a public involvement program to educate citizens about the project and to obtain their input.

The CIP effort includes acquiring of right-of-way, relocating utilities and affected property owners, developing design plans, and constructing the project.

One of the ways that CIP projects are identified is by asking local communities and county, state and federal agencies to submit project proposals to the District for funding consideration. The requests are evaluated using a Project Prioritization Procedure adopted this past year which grades each project using community-approved criteria. Individual criteria include; level of flood protection provided by the project, regional significance, level of local participation, public protection benefits, total project cost, permit requirements, local priority, and potential for multiple use. Projects with high scores receive priority status when developing the District's Capital Improvements Budget and 5-Year Capital Improvement Program.

In addition to soliciting community proposals for flood control projects, the District also develops its own information on flooding and flood-prone areas through its Area Drainage Master Study (ADMS) program. These studies identify existing drainage problems as well as potential problems that may occur in the future as development continues. A product of these studies is an Area Drainage Master Plan (ADMP) which proposes alternative solutions to identified problems.

There are 23 ADMS areas identified in Maricopa County, with study areas ranging from 15 to 280 square miles. Ten of the studies have been completed and three are currently underway.

Studies completed this past year include:

**White Tanks/Agua Fria ADMS:** The hydrology for the 240-square-mile watershed was developed along with 151 linear miles of floodplain delineations. The study area is bounded by Grand Avenue on the north, the Gila River on the south, the White Tank Mountains on the west and Agua Fria River on the east. Study information was approved by the Federal Emergency Management Agency (FEMA) in April and is being used in the development of numerous flood control projects including the Dysart Drain Improvement Project, Colter Channel, and Bullard Wash Outfall.

**Wickenburg ADMS:** Hydrology for the 280-square-mile watershed was developed along with 105 linear miles of floodplain delineations. The study information has been submitted to FEMA for review and approval is pending. The Casandro Wash Dam and Outlet projects are being undertaken as a result of this study.

**Gilbert-Chandler ADMS:** Hydrologic information was developed by in-house staff for 120 square miles. The study area is bounded by the Superstition Freeway on the north, the Gila River Indian Community on the south, I-10 on the west and the Eastern Canal on the east. Projects benefitting from the study results include the Gila Drain Floodway and drainage designs for the San Tan and Price Freeways.

On-going ADMS's include:

**Arizona Canal Diversion Channel (ACDC) ADMS:**

Hydrology is nearly complete for the 180-square-mile study area. The study area is bounded generally by Dynamite Road on the north, the ACDC on the south, 99th Avenue on the west and 40th Street on the east. Study information has benefitted pre-design efforts on 10th Street Wash Improvements in Sunnyslope and will help identify optimum locations for additional stormwater inlets along the ACDC.

**Laveen ADMS:** Hydrology for 43 square miles has been developed and a feasibility study has been undertaken to identify possible solutions to historic flooding problems. The study limits include the area bounded by the Salt River on the north, South Mountain on the south, 67th Avenue on the west and Central Avenue on the east.

**Maryvale ADMS:** Aerial mapping and topography for portions of the 80-square-mile study are underway, along with a feasibility study to identify possible solutions to recurrent flooding problems along the north side of the Grand Canal at two locations: 47th Avenue and Crittendon Lane and 64th Avenue and Sunset Drive. The study area is bounded on the north by Olive Avenue, on the south by I-10, on the west by the Agua Fria River and on the east by I-17.



Project Manager Michael Lopez (with back to guard rail) conducts a tour of 10th Street Wash with members of a citizen's advisory committee.

---

## Planning Efforts Initiated

Highlights include:

**10th Street Wash Detention Basins and Channel Improvements:** A project involving detention basins and possible channel improvements was initiated in January to remove 575 homes and businesses from the 10th Street Wash floodplain in Sunnyslope. Through extensive community involvement, two basin locations were identified, land was purchased, and design consultants have been hired to develop final design plans. Concurrent with this effort is a feasibility study to develop alternative channel improvements to remove that portion of the floodplain not eliminated by the basins. A Citizen's Advisory Committee appointed by the North Mountain Village Planning Committee is working with the District to develop a preferred design alternative for channel improvements.

**Arcadia Area Drainage Study:** A consultant has been selected and a scope of work is being finalized for a pre-design study to solve flooding problems along the north side of the Arizona Canal between 40th and 64th Streets. The study will propose a storm drainage system for about four square miles, using the improved Old Cross Cut Canal as an outlet.

**Bullard Wash Outfall Study:** A 9-month study initiated in June will develop a preferred drainage master plan for reducing the flood hazard potential associated with Bullard Wash in Goodyear. Approximately \$10 million of City of Goodyear infrastructure and several hundred acres of farmland and primary arterials are currently at risk due to sheet flow and ponding north of the Buckeye Irrigation District Canal.

**Doubletree Ranch Road Improvements:** A consultant has been selected and contract negotiations are underway for a 15-month pre-design study to address flooding problems along an urbanized watershed in Paradise Valley which flows northeast from the Phoenix Mountain Preserve to Indian Bend Wash. The project will be combined with improvements to Doubletree Ranch Road being planned by the Town of Paradise Valley.

**Maryvale Area Flood Mitigation Project:** A consultant is under contract to identify alternative solutions to flooding problems along the north side of the Grand Canal at two locations in Maryvale. The Grand Canal impedes stormwater flows that historically have flowed in a southwesterly direction toward the Salt River, but now pond behind the canal and flood local residential areas.

**RID Canal Overchute:** Construction plans and specifications are being developed for a 100-year capacity overchute on the Roosevelt Irrigation District Canal at the Old Litchfield Road alignment. The project will provide an outfall for 1.6 square miles of existing development in Litchfield Park, Avondale and Goodyear and remove some developed areas in Litchfield Park and Avondale from delineated floodplains.

**Skunk Creek Improvements:** A master drainage study was initiated in April to identify channel improvements needed along Skunk Creek between Adobe Dam and the ACDC. The 100-year floodplain breaks out beyond the mapped floodplain limits at several locations. Conveyance of the 100-year discharge from Adobe Dam into Skunk Creek was a condition of the U.S. Army Corps of Engineers agreement with the District for the Phoenix and Vicinity (including New River) Flood Control Project.

**Tatum Wash Channel and Basins:** Hydrology for the contributing watershed is being developed along with hydraulic modeling for use in defining the flood hazards associated with Tatum Wash. The information will be used to identify a preferred alternative solution to flooding problems within 2,000 floodprone acres between the Phoenix Mountain Preserve and Indian Bend Wash (IBW) near Shea and Tatum Boulevards. An interim solution has been designed by District and City of Phoenix staff which involves construction of a large drop inlet across Cholla Street which will outfall into the IBW. In addition, five existing storm drain inlets will be enlarged.

**Town of Guadalupe Pre-Design Study:** A consultant has been selected to develop a preferred alternative drainage master plan for the town of Guadalupe which experiences flooding due to inadequate drainage facilities.

## Continuing Project Planning Efforts

Highlights include:

**Gila Drain Floodway:** Planning efforts continued on the development of a multi-use flood control project along 12 miles of floodplain adjacent to the Gila Drain from Maricopa Road west to the Gila River near 51st Avenue. The floodway will provide an outfall for the Southeast Valley Regional Drainage System, conveying flows from an Arizona Department of Transportation (ADOT) channel near Maricopa Road. The District is funding a study to assess multi-purpose development of the floodway which may result in a non-structural flood control project encompassing the western nine miles of the floodplain.

**Laveen ADMP:** A consultant has been selected and a scope of work is being developed for identifying alternative solutions to historic flooding problems in the Laveen area between Central and 43rd Avenues, from the Salt River south to South Mountain. The consultant will use hydrologic information previously developed in the Laveen ADMS.

**Old Cross Cut Canal:** An intergovernmental agreement with the City of Phoenix was amended to accommodate roadway and park improvements desired by Phoenix. The amendment calls for a covered channel to be constructed and 48th Street to be relocated from McDowell Road to Indian School Road. Public meetings have been held to obtain community input on the channel as it relates to development of park amenities. Development of the final design and preparation of construction plans and specifications continues.

**Plan 6:** Staff continued their coordination with the Bureau of Reclamation and other Plan 6 entities and signed the Modified Roosevelt Dam Operating Agreement which outlines the additional storage space set aside for flood control and water conservation purposes. The dam is being raised 77 feet to increase the flood control space and water supply (conservation) space 557,000 acre-feet and 255,000 acre-feet, respectively, and to ensure the structural integrity of the dam. The District has contributed approximately \$10 million towards the modification effort. The Corps of Engineers is under contract with the Bureau to develop a flood control operations plan to guide decisions regarding when and how releases will be made to minimize downstream flood damages. New hydrology for the Salt-Gila Rivers also will be developed by the Corps of Engineers for use by the District in redelineating the 100-year floodplain downstream of Granite Reef Diversion Dam.

**Salt-Gila Watercourse Master Plan:** The Executive Committee met in September and again in March to approve a master planning approach for the Salt-Gila Rivers between Granite Reef Dam and Painted Rock Reservoir. The planning effort is aimed at developing a coordinated approach to regulating and developing the floodplain to minimize negative impacts and incompatible land uses. At the September meeting the committee selected a "Moderate" planning approach from a list of five planning alternatives developed by a consultant under contract to the District. In the March meeting, however, an alternative approach was presented which changed the planning focus from a "watercourse master plan" to a "land use master plan" to be developed by the ten land use jurisdictions along the study area. The change was made because many committee members believed the watercourse master plan as outlined in the Moderate approach was too costly, too comprehensive, would take too long to accomplish, and would have non-land use jurisdictions involved in its management. Under the new approach, the master planning effort will be guided by the Maricopa Association of Governments with technical support provided by jurisdictions without authority to regulate land use, such as the District. The planning effort is going forward as the Salt-Gila Task Force.

**Salt River Channelization - McClintock Drive to Price Road:** An intergovernmental agreement with ADOT and the City of Tempe has been negotiated for continuation of 100-year channel improvements from McClintock Drive east to Price Road. The project will protect light industrial and commercial developments and multiple landfill sites which are within an EPA-designated Federal Superfund site. Completion of these improvements will provide a minimum of 100-year protection along the Salt River through Tempe.

**Upper Indian Bend Wash Regional Drainage and Flood Control Plan:** Coordination continues with the Cities of Phoenix and Scottsdale and other appropriate agencies involved in planning Northeast Phoenix-Scottsdale area regional drainage facilities. Included in the planning are the Pima Road Channel along Pima Road between Jomax and Bell Roads, Rawhide Wash Channel Improvements between Jomax and Pinnacle Peak Roads, and the Reata Pass Channel works between Pinnacle Peak and Beardsley Roads. All three of these projects are included in Scottsdale's Desert Greenbelt plan.

## Capital Improvement Program

Highlights include:

**ACDC Completion:** The 16.5 mile channel was dedicated in ceremonies held October 8, 1993. A monument was unveiled and the channel was "christened" with pails of water by members of the District's Board of Directors (Supervisors), Advisory Board, several Valley mayors and the Los Angeles District Engineer for the U.S. Army Corps of Engineers. In May, the District received special recognition along with the Corps for work performed on Reach 4. The recognition came from the American Public Works Association (APWA) in ceremonies held at the project site to honor SundtCorp as APWA Contractor of the Year.

**Colter Channel Groundbreaking:** Channel excavation for the 14,000-foot earthen channel got underway in December following formal groundbreaking ceremonies. Located 1/4-mile north of Camelback Road between Litchfield Road and the Agua Fria River, the channel will intercept 100-year storm flows from the north and convey them to the Agua Fria River. The project coincided with improvements being made to Dysart Road by the Maricopa County Department of Transportation (MCDOT). The channel will reduce construction costs associated with planned improvements to Camelback Road and for this reason MCDOT cost-shared in the channel construction.



Ed King of the District's Board of Directors (far left with shovel) joins other dignitaries in groundbreaking ceremonies for the Colter Channel.

**New River Channelization:** Environmental permitting challenges and delays caused by the January 1993 flood event were successfully overcome, culminating in the completion this year of the New River Channelization project between Olive Avenue and Bethany Home Road. More stringent 404 permitting requirements resulted in \$1 million being expended on efforts to mitigate impacts to riparian habitat. The project was seeded with native grasses and a 20-acre site located adjacent to the channel was planted with trees and shrubs. Three locations within the channel bottom were suitable for the establishment of wetlands where cottonwoods, willows and cattails were planted. Off-site mitigation included the planting of 3,200 cottonwood and mesquite trees on a 32-acre parcel at the confluence of the Agua Fria and Gila Rivers.

**East Fork Cave Creek ADMP:** The District reimbursed the City of Phoenix \$3.54 million for expenditures associated with construction of channel improvements and basins making up the East Fork Cave Creek Area Drainage Master Plan. The project includes five basins, four laterals, and channelization of East Fork Cave Creek between Union Hills Drive and Beardsley Road. The channel improvements and three of the five basins are complete. The remaining basins are under construction and design of the laterals is underway.

**Sossaman Channel Improvements:** Improvements to an existing drainage channel maintained by the District east of Sossaman Road and south of Southern Avenue got underway in June. The easily-eroded earthen channel is being lined with concrete to improve its capacity and reduce maintenance costs. A detention basin is also being excavated which will reduce peak flows by capturing the high volume flows and draining them slowly back into the channel.

**Casandro Wash Dam and Outlet:** A consultant has been selected for the design of a 30-foot-high earthen dam to be built across Casandro Wash in Wickenburg for the purpose of protecting 98 downstream property owners located in the floodplain. District engineers have undertaken the design of an outlet to be constructed downstream of the dam to reduce the floodplain even further and provide a storm drain system for the local streets.

**Beardsley Road Regional Drainage System:** Staff successfully negotiated an agreement with ADOT and the City of Phoenix for the design and construction of a channel and basins along Beardsley Road from 7th Avenue to 23rd Avenue. The project will protect 1,100 homes and commercial buildings by intercepting stormwater flows and diverting them to an existing ADOT drainage system.

**Northern/Orangewood Storm Drain:** An intergovernmental agreement with the cities of Glendale and Peoria was approved in April for the design and construction of a 10-year storm drain and two detention basins in the vicinity of the Orangewood and Northern Avenue alignments from 67th Avenue to New River. The project will benefit nine square miles of existing development in Glendale, Peoria and unincorporated Maricopa County and provide an outlet for future municipal storm drains and ADOT's Grand Avenue project.



The District took painstaking efforts to preserve riparian areas in the bottom of New River during construction of channel improvements.

**Cactus Road Storm Drain:** Design has been completed for a 10-year storm drain along the Cactus Road alignment from 67th Avenue to the Outer Loop following approval in April of a cost-sharing agreement with the cities of Glendale and Peoria. The project will benefit a 3.5-square-mile area in those communities.

**Dysart Drain Improvement Project:** Design efforts and right-of-way acquisitions were initiated for planned improvements to the Dysart Drain flood control channel in the vicinity of Luke Air Force Base. The improvements to the existing channel and construction of a detention basin will provide 100-year flood protection to the air base.

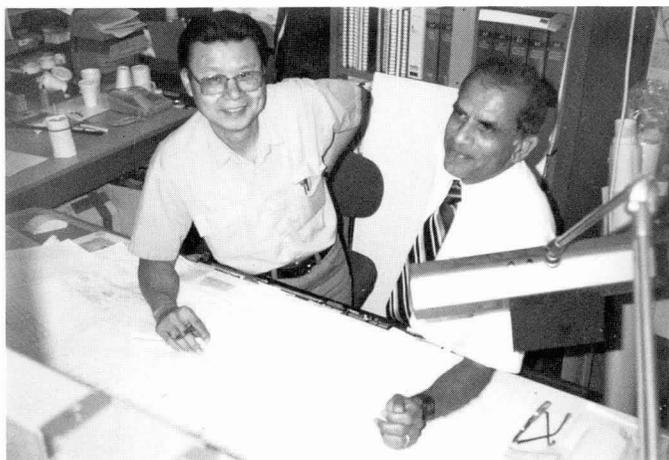
**Rittenhouse Channel Improvements:** Final design is underway for a six-mile floodway paralleling Rittenhouse Road from the Queen Creek School east of Ellsworth Road to the East Maricopa Floodway. The project will provide 100-year flood protection to the school and reduce the floodplain caused by ponding.

**University Drive Road and Drainage Improvements:** Construction began in February on a joint project with MCDOT to improve University Drive between Higley and Power Roads and provide flood protection for portions of east Mesa and the County island containing Dreamland Villa Estates. The project involves excavation of detention basins along the north side of University Drive and placement of a large storm drain beneath the road.

**Salt River Channelization west of McClintock Drive:** Channelization of the Salt River west of McClintock Drive was completed this past year, providing 100-year flood protection to parts of Tempe and enabling the construction of the Red Mountain Freeway and Tempe's Rio Salado development.

**Scatter Wash Channelization:** Right-of-way acquisition and design was completed and a construction contract was awarded for channelization of Scatter Wash between 40th and 43rd Avenues. The project ties together previous channelization work and will result in uninterrupted bank protection from 35th Avenue downstream to the Skunk Creek confluence.

**Cactus Road Flood Control System:** An intergovernmental agreement with Scottsdale was signed and construction is 90% complete on portions of a storm drain and channel project to protect approximately 300 residences in a one-square-mile area below Cactus Road between 62nd Street and Scottsdale Road.



Shon Wu (L) of the GIS section reviews plan drawings with Civil Engineer Kumar Hanumaiah.



Stormwater Drainage Branch Manager Steven Tucker discusses drainage issues with citizens attending a landfill siting public hearing.

## Other Planning and CIP-Related Activities:

**Engineering Review:** Staff from the Engineering Design and Review Branch worked on 23 in-house projects involving engineering design and drafting of construction plans. Staff also reviewed the design calculations and construction plans for 31 projects produced by consulting engineering firms under contract to the District. Some of the larger projects reviewed were: Old Cross Cut Canal Reconstruction, New River Channelization, Dysart Drain Improvements, Cactus Road Storm Drain, and the Beardsley Road Storm Drain.

In addition, the Stormwater Drainage Branch participated in public hearings held in February to obtain public input on potential landfill sites in the Southeast Valley. Staff answered questions about drainage issues associated with the proposed landfill sites.

**Construction Inspection:** The Construction and Operations Division oversaw the construction of \$18 million in capital improvements this past year, including construction of the Colter Channel and Sossaman/Guadalupe Box Culvert and Extensions, channelization of New River from Olive Avenue to Bethany Home Road, bank plating of downstream portions of the East Maricopa Floodway and temporary repairs to the Dysart Drain.

**Hydrologic Analysis:** Sixty-eight proposed developments and projects within the County were reviewed by the Watershed Management Branch to ensure that none of the projects conflicted with District flood control structures. Hydrologic information associated with the developments were used to update hydrologic models of the affected watersheds. In addition, three hydrologic studies were completed in-house.

**Property Acquisition:** Over \$13 million was expended last year in the acquisition of various land rights involving 3,000 acres, 254 parcels and the relocation of 34 families and three businesses. The property acquisition program encompasses activities performed by the Land Management Division and includes land and easement purchases, appraisal reports and reviews, and the provision of relocation benefits.

Most noteworthy among the property acquisition program's accomplishments was the successful resolution of three long-standing condemnation cases.

The Jones (water company) case dated back some five years and went to trial after plaintiffs refused several offers to purchase their flowage easements along the Agua Fria River for \$165,000. The easements were needed to ensure adequate channel capacity for additional flood waters diverted to the Agua Fria River from the northern metropolitan drainage area by the Phoenix and Vicinity (including New River) Flood Control Project. The plaintiffs had requested \$400,000 for their easements, even though the appraised value was only \$120,000. A jury sided with the District and awarded the plaintiffs the appraised value.

## Acquisition Activity Summary (Preliminary and Unaudited) FY 1993-94

PROJECT	LAND TRANS.	COST	% ACQUIRED TO DATE
ACDC	14	\$ 653,515	100%
Agua Fria Channel	8	3,301,875	100%
Colter Channel	6	653,515	100%
Casandro Wash	21	312,500	5%
Dysart Drain	5	335,975	17%
New River/ Skunk Creek	5	2,010,010	94%
Northern/ Orangewood Drain	3	2,191,400	100%
Old Cross Cut Canal	3	560,000	75%
Skunk Creek Improvements	49	21,000	99%
Rain/Streambed Gauges	20	—	—
Trilby Wash- McMicken Dam	15	212,160	100%
University Drain	2	97,238	100%
White Tanks #3	3	1,000	75%
White Tanks #4	7	674,525	100%
10th Street Wash	53	26,500	88%
10th Street Basins	29	1,630,276	94%
Other/Misc.	11	170,100	100%
Contract Costs		918,863	
<b>TOTALS</b>	254	\$13,772,137	

The Barkley-Estes case dates back seven years and involved a trial held in Yavapai County after the District condemned flowage easements along the Agua Fria River owned by business partners who planned to mine the area. The Yavapai County jury decided against the District, awarding the plaintiffs \$2 million, which, after interest, would have amounted to twice that amount. The Yavapai verdict was overturned on appeal and sent back to Superior Court for retrial. Before it was retried, however, a negotiated settlement with the plaintiffs was agreed to by the plaintiffs for \$900,000.

The Wilden-Red River case involving the need for flowage easements at the confluence of New River and the Agua Fria River was settled by purchasing the property outright. The purchase is expected to save the District millions of dollars in additional easement costs.

This is because costly easements would have been necessary for parcels of property which can now be protected by constructing a levee on the Wilden property that will remove the adjacent property from the floodplain.

**Damage Assessments Performed:** Repair estimates totaling \$15 million were developed for the 1,000-foot Salt-Gila Clearing and Pilot Channel Project between 91st Avenue and Gillespie Dam, damaged by flooding in January 1993. Restoration of the clearing project is eligible for federal funding assistance through FEMA. A Damage Survey Report (DSR) was completed and submitted to FEMA for approval. Federal guidelines permit use of the funds for projects unrelated to the clearing project, prompting staff to investigate the possibility of accomplishing other flood control work with the money. Meanwhile, a study of the clearing project will be undertaken to determine its effectiveness and identify possible alternative programs to reduce flood damages along the lower Salt and Gila Rivers. Any plans for restoration of the existing project need to address new requirements for Section 404 permits.

**GIS Capabilities Featured:** District Geographic Information Systems (GIS) capabilities were featured at the "Arizona First Annual GIS Conference" held in Scottsdale in August, 1993. Staff explained the District's use of GIS software to identify geographic and topographical features along a 39-mile stretch of the Salt River. The District's mapping was used by local and state agencies to target cleanup efforts during the Great Salt River Cleanup, a volunteer effort to remove landfill material washed into the river in January 1993.

The District was host to about 100 people from around the state who gathered in Phoenix for the Spring Conference of the Arizona ARC/INFO Users Group. The association of GIS practitioners discussed "real world" applications of GIS technology and heard presentations on its various uses. District staff gave presentations on how GIS is used by the District's Hydrology, Engineering, and Land Management Divisions, including a demonstration on tracking drainage complaints using GIS.



This non-descript piece of property along the Agua Fria River at Camelback Road was the subject of a lengthy condemnation case finally settled this year.

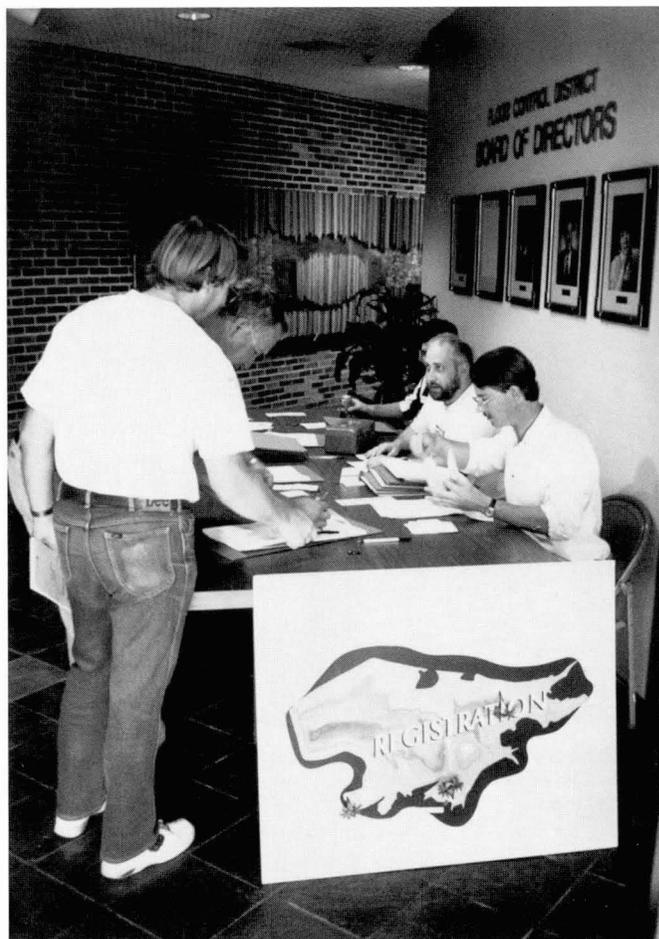
District GIS capabilities were also highlighted at a day-long professional development workshop held at the District in March and sponsored by the Arizona Planning Association (APA). About 60 planners and GIS users from across Arizona attended presentations about GIS applications large and small, with hands-on training provided thanks to a battery of District computers specially installed to support the workshop. The APA presented the District with its 1993 Special Recognition Award for development of the Great Salt River Cleanup GIS application.

**Governor's Flood Symposium:** Staff assisted in planning the Governor's Flood Symposium held in Tempe in November. The two-day event enabled local, state and federal emergency response agencies to learn more about each other and their respective responsibilities during a flood emergency. The symposium was attended by 130 people and included a panel discussion about flood control issues facilitated by the District's Chief Engineer and General Manager.

**Rio Salado Reconnaissance Study:** Staff are participating with the U.S. Army Corps of Engineers and the cities of Tempe and Phoenix on a Corps study of water resources along the Salt and Gila Rivers between Tempe and the Agua Fria River confluence. The study will identify problems and opportunities associated with flood control, water quality, recreation and riparian habitat restoration.

**Tri-City Landfill Repairs:** Technical review and assistance was provided to the U.S. Army Corps of Engineers and the Salt River Pima-Maricopa Indian Community during the design and construction of soil cement protection measures along the Tri-City Landfill. Portions of the landfill eroded into the Salt River during heavy flows in 1992 and 1993. The landfill is now protected from the 100-year flood.

**Participation on Riparian Area Advisory Committee:** Staff participated with state and federal agencies in evaluating existing riparian management programs and regulations on-going throughout the state. An interim report was submitted to the Governor which inventoried existing conditions and identified future options for preserving, protecting and restoring riparian areas.



Eric Feldman and Steve Bruffy of the GIS section register participants at the District-hosted Arizona ARC/INFO Users Group Spring Conference.

## Awards and Recognition

### National Association of Counties (NACo)

Four District programs merited Achievement Awards from the National Association of Counties (NACo) this past year. Headquartered in Washington, D.C., NACo encourages counties to enhance services through innovation. The District's winning programs were:

**Aesthetics and Landscaping Policy:** In concert with strategic planning efforts, Planner Anne Blech, with input from Revegetation Ecologist Betty Dickens and Property Management Branch Chief Ken Johnson, developed a new policy to incorporate landscaping and aesthetic structural elements in the design and construction of flood control projects. The policy encourages public input in the decision-making process and allows for water conservation and the use of native plants.

**Notice of Flood Hazard Determination Program:** Floodplain Representative Ron Nevitt instituted this program encouraging full disclosure of a property's flood hazard potential. The program involves recording flood hazard information in a property's chain of title so it cannot be overlooked. This helps assure that flood hazard potential is accounted for when a home is used as collateral for a loan, when a mortgage is being refinanced, or when a change in ownership occurs.

**Capital Improvement Program Project Prioritization Procedure:** This administrative procedure streamlines project development by providing defined criteria by which the flood control needs of 25 municipalities and the unincorporated county are ranked. Planner Dave Meinhart generated this method as recommended by TQM team efforts to solve problems identified during District strategic planning efforts.

**Mapping the Great Salt River Cleanup:** The District's Geographic Information System (GIS) capability led the mapping and property access functions essential to the success of the Great Salt River Cleanup, a large-scale community action project. Anne Blech and GIS Supervisor Marta Dent, coordinating with Land Management Specialist Chris Franklin, and assisted by Engineering Drafting Specialist Annabel Montoya-Cooper, utilized the District's technology in this rapidly executed planning project. This support enhanced safety, logistics, transportation, communication and public relations activities for the multi-agency task force coordinating 19,000 volunteers.



NACo award winning staff included, from left to right, Ron Nevitt, Anne Blech, Chris Franklin, Betty Dickens, Annabel Montoya-Cooper and Ken Johnson.

---

## American Public Works Association (APWA)

On May 20th, the APWA presented SundtCorp with the "Contractor of the Year Award" for their work on the Arizona Canal Diversion Channel - Reach 4. Ceremonies attended by Governor Fife Symington and District 2 Supervisor John Katsenes were held at the project site near 20th Street and Maryland Avenue in Phoenix. As the local sponsor, the District received special recognition along with the U.S. Army Corps of Engineers for their successful supervision of the project. SundtCorp was also recognized last year by the Associated Builders and Contractors for "Excellence in Construction" for ACDC Reach 4.

## Association of State Floodplain Managers (ASFPM)

The originator of a District program that encourages full disclosure of a property's flood hazard potential was recognized in May by ASFPM. Ron Nevitt, a Floodplain representative and 12-year District employee, received the Larry R. Johnston Memorial Award which recognizes individuals responsible for outstanding local floodplain management programs or activities.

## Arizona Planning Association (APA)

The District was honored with a "Special Recognition Award" by the APA at their annual conference held in Prescott September 15-17, 1993. The award was given for the District's role in providing mapping and data support for the Great Salt River Cleanup. The volunteer cleanup effort was organized after debris from an upstream landfill washed into the Salt River in January, 1993. The District provided a set of computer-generated base maps, at various scales, to planners and technicians who formulated the details for the cleanup. The District also took on the task of identifying the owners of properties in the target area and notifying them of possible encroachments by volunteers and heavy equipment.

## Arizona Consulting Engineers Association (ACEA)

The District, City of Tempe and CRSS Civil Engineers, Inc. received an Award of Substantial Merit from ACEA for the design of a massive roller compacted concrete drop structure located at the confluence of Indian Bend Wash and the Salt River. The award recognized CRSS for the technical value exhibited by their design of the 36-foot-wide drop structure built to protect the wash and numerous bridge piers associated with construction of the Red Mountain Freeway. The District and City of Tempe cost-shared in the design of the drop structure which was built by Pulice Construction under contract to the Arizona Department of Transportation.



NACo winners Marta Dent and Dave Meinhart.

## Arizona Department of Environmental Quality (ADEQ)

The District's Environmental Branch received the Arizona Pollution Prevention Leadership Enhancement Award from ADEQ for development of an "Erosion Control Manual" to aid communities in meeting Environmental Protection Agency rules to protect stormwater runoff from pollutants. Realizing the difficulties associated with complying with the new regulations, the District formed a task force of public and private sector representatives, and with the assistance of Camp, Dresser & McKee Consultants, developed a manual of practices to formulate site-specific plans to meet the federal requirements to protect stormwater runoff from construction sites.

## Employee of the Quarter

In its second year, this program is administered by a selection committee with representatives from the District's six divisions. Nominations are submitted to the committee for consideration and winners are announced each quarter. Nominees are evaluated on their professionalism, productivity, customer service attitude, teamwork and initiative. Recipients this past year were:

- **Shanna Yager**, Floodplain Representative, for the quarter July through September, 1993.
- **Laurence Spanulescu**, Construction Inspector, for the quarter October to December, 1993.
- **Danny Baker**, Records Clerk, for the quarter January to March, 1994.
- **Jim Phipps**, Public Information Coordinator, for the quarter April to June, 1994.

## Certification and Professional Registration

### Level II NICET Certification

(National Institute of Certified Engineering Technicians)

**Paul DiPierro**  
**Leon Haney**  
**Jan Staedicke**

### Level III NICET Certification

**Bill Poppe**  
**Fred Fuller**  
**Shewa Shivaswamy**  
**Jon Hughes**  
**Laurence Spanulescu**

### Civil Engineering Technologist Certification

**Chuck Feuquay**

### Engineer in Training Certification

**Afshin Ahouraiyan**

### Registered Professional Engineer

**Kofi Awumah**  
**Raju Shah**

## Continuing Education Achievements

### Bachelor's Degree

**Gwen Loving** - Business Management, ASU

### Master's Degree

**Bill Knight** - Environmental Resources, ASU

**Roland Wass** - Civil Engineering (Environmental), ASU

### Arizona Governmental Training Service (AGTS)

Manager's Academy

**Michael Cuneo**  
**Joe Young**  
**Chuck Brokschmidt**  
**Chuck Feuquay**  
**Ben Ganados**  
**Ken Johnson**  
**Mike Ramirez**

Supervisor's Academy

**Michael Cuneo**  
**Linda Hannan**  
**Lovetta Henry**  
**Alex Munro**  
**Joe Young**  
**Tom Carroll**  
**Ken Johnson**  
**Greg Long**  
**Fred McArthur**  
**Dave Meinhart**  
**Bob Naud, Jr.**  
**John Palmieri**  
**Brit Purifoy**  
**Ray Warriner**  
**Kathy Thiessen**

*In Fond Memory  
of our Colleague and Friend*

**ERV McLUTY**

*A dedicated servant of the people of Maricopa County, having performed his duties with integrity and dedication for sixteen years as a faithful and respected employee of the Flood Control District of Maricopa County*

**February 7, 1978 to June 5, 1994**

*His contributions to the District shall live on in the memories of those who had the privilege of working with him.*

---

## Building Renovation

The Solid Waste Management Department took up residence at the Flood Control District in February. The Department is leasing 3,365 square feet of office space located on the second floor. Solid Waste Management previously resided at the Department of Transportation, but overcrowding necessitated their move to the District which had additional space. The move required the construction of three new hard-walled offices and the relocation of Accounting and Contracting staffs. In conjunction with the move, changes to the District's Flood ALERT room and conference area were made. The work and meeting areas were expanded to accommodate additional work stations for monitoring rain and stream gauges and to provide more space for maps and additional personnel needed during flood emergencies.

Also undertaken at about the same time were building modifications to insure compliance with federal laws associated with the Americans with Disabilities Act (ADA). The 1992 Act requires employers to make their facilities or programs accessible to the disabled.

While many of the ADA requirements were accommodated during construction of the building, some renovations had to be made. Light switches in some areas were lowered to provide access to persons in wheel chairs and ceiling lights were installed in places where light fixtures previously protruded from partitions. In addition, a handicapped parking space large enough to handle a van was added to the parking lot. Still to be completed is the addition of new signs to conform with height, size and braille requirements and modifications to exterior doors that are too heavy or cumbersome for disabled persons to open. ■



Worker builds new wall in expanded Flood ALERT Room

# Statement of Revenues, Expenditures, and Changes in Fund Balance

Budgeted and Actual for the Fiscal Year 1993/1994

Preliminary and unaudited. Amounts are rounded to nearest thousand.

	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
<b>REVENUES</b>			
FLOOD CONTROL TAX	\$36,326,000	\$35,386,000	(\$ 940,000)
LOCAL PARTICIPATION	2,663,000	3,463,000	800,000
RENTAL INCOME	138,000	142,000	4,000
INTEREST INCOME	1,000,000	881,000	( 119,000)
OTHER LAND INCOME	1,219,000	861,000	( 358,000)
MISCELLANEOUS	94,000	411,000	317,000
<b>TOTAL REVENUE</b>	<b>41,440,000</b>	<b>41,144,000</b>	<b>( 296,000)</b>
<b>EXPENDITURES</b>			
PERSONNEL SERVICES	7,493,000	7,867,000	( 374,000)
SUPPLIES AND SERVICES			
PROFESSIONAL SERVICES	4,587,000	2,849,000	1,738,000
MAINTENANCE SUPPLIES & SERVICES	2,460,000	2,236,000	224,000
INTERNAL SERVICES	2,348,000	2,764,000	( 416,000)
EDUCATION AND TRAVEL	271,000	120,000	151,000
OTHER SUPPLIES AND SERVICES	693,000	753,000	( 60,000)
<b>TOTAL</b>	<b>10,359,000</b>	<b>8,722,000</b>	<b>1,637,000</b>
<b>CAPITAL OUTLAY</b>			
PERSONNEL SERVICES	2,221,000	984,000	1,237,000
REAL ESTATE	7,726,000	14,304,000	( 6,578,000)
ENGINEERING	3,379,000	2,829,000	550,000
CONSTRUCTION	22,915,000	17,556,000	5,359,000
VEHICLES AND EQUIPMENT	2,373,000	1,744,000	629,000
<b>TOTAL</b>	<b>38,614,000</b>	<b>37,417,000</b>	<b>1,197,000</b>
<b>TOTAL EXPENDITURES</b>	<b>56,466,000</b>	<b>54,006,000</b>	<b>2,460,000</b>
EXCESS OF REVENUES OVER (UNDER)	(15,026,000)	(12,862,000)	2,164,000
FUND BALANCE JULY 1, 1993	30,901,000	30,901,000	
PROJECT RESERVE	3,675,000	5,839,000	2,164,000
RESERVE FOR UNANTICIPATED REPAIRS	200,000	200,000	
FIRST QUARTER 1994/95 OPERATING FUNDS	12,000,000	12,000,000	
<b>FUND BALANCE JUNE 30, 1994</b>	<b>\$15,875,000</b>	<b>\$18,039,000</b>	<b>\$2,164,000</b>

## Area Drainage Master Studies - Expenditures

Fiscal Year Ending June 30, 1994

Preliminary and unaudited. Amounts are rounded to nearest thousand.

DESCRIPTION	ADMINISTRATION	HYDROLOGY	NPDES	ENGINEERING	TOTAL
SALT/GILA MASTER PLAN	\$ 24,000	\$ 8,000	\$	\$ 493,000	\$ 525,000
WICKENBURG	25,000	1,000	2,000	14,000	42,000
NEW RIVER	3,000	1,000			4,000
WHITE TANKS/AGUA FRIA	16,000	2,000	1,000	176,000	195,000
ARIZONA CANAL DIVERSION CHANNEL	49,000	7,000	2,000	58,000	116,000
MARYVALE	16,000	1,000		324,000	341,000
METRO	1,000	1,000			2,000
FOOTHILLS	5,000				5,000
GILA DRAIN FLOODWAY	3,000			5,000	8,000
FOUNTAIN HILLS				3,000	3,000
THREE OTHERS UNDER \$1,000 each	1,000	1,000			2,000
<b>TOTAL ADMS</b>	<b>\$143,000</b>	<b>\$22,000</b>	<b>\$5,000</b>	<b>1,073,000</b>	<b>\$1,243,000</b>

## Capital Improvement Projects - Expenditures

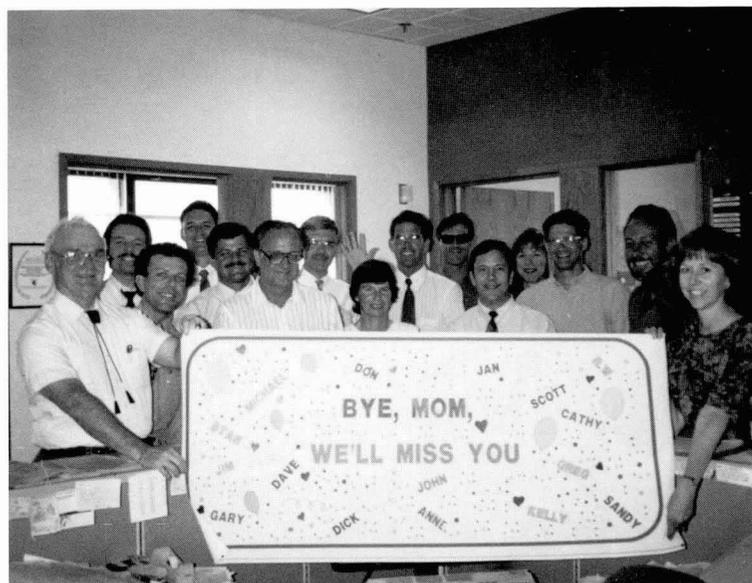
Fiscal Year Ending June 30, 1994

Preliminary and unaudited. Amounts are rounded to nearest thousand.

<u>PROJECT</u>	<u>ENGINEERING</u>	<u>LAND</u>	<u>RELOCATION &amp; CONSTRUCTION</u>	<u>WAGES</u>	<u>TOTAL</u>
FCD FACILITY	\$	\$	\$ 126,000	\$ 6,000	\$ 132,000
STORMWATER MONITORING			21,000		21,000
BEST MANAGEMENT PRACTICE			67,000	26,000	93,000
FLOOD WARNING			268,000	9,000	277,000
OLD CROSS CUT CANAL	406,000	586,000	29,000	46,000	1,067,000
SALT/GILA CONTROL WORKS		28,000		9,000	37,000
SOSSAMAN CHANNEL	55,000	7,000	42,000	21,000	125,000
PRICE DRAIN			17,000	1,000	18,000
LAVEEN ADMP	56,000	170,000		7,000	233,000
ACDC	3,000	739,000	151,000	82,000	975,000
PVSP			1,109,000	4,000	1,113,000
EAST MARICOPA FLOODWAY		1,000	390,000	18,000	409,000
RIVER CHANNEL		5,000	3,754,000	31,000	3,790,000
McMICKEN DAM OUTLET		287,000	9,000	12,000	308,000
WICKENBURG ADMP	202,000	326,000	1,000	26,000	555,000
ADOBE DAM		10,000	2,000	28,000	40,000
SKUNK CREEK	4,000	45,000		24,000	73,000
NEW RIVER				1,000	1,000
SKUNK CREEK/NEW RIVER	504,000	3,605,000	4,028,000	152,000	8,289,000
AGUA FRIA	35,000	1,969,000	2,000	33,000	2,039,000
UNIVERSITY DRAIN	88,000	115,000	721,000	19,000	943,000
GLENDALE/PEORIA ADMP	8,000	2,214,000	744,000	51,000	3,017,000
71st AVE. CHANNEL IMPROVE				3,000	3,000
EAST FORK CAVE CREEK	235,000	74,000	3,396,000	39,000	3,744,000
WHITE TANKS ADMP	545,000	1,781,000	1,745,000	203,000	4,274,000
QUEEN CREEK ADMP	156,000	83,000		29,000	268,000
ACDC ADMP	272,000	1,801,000	1,000	97,000	2,171,000
SCATTER WASH	0		932,000	5,000	937,000
UIBW ADMP	260,000	458,000	1,000	2,000	721,000
<b>TOTALS</b>	<b>\$2,829,000</b>	<b>\$14,304,000</b>	<b>\$17,556,000</b>	<b>\$984,000</b>	<b>\$35,673,000</b>



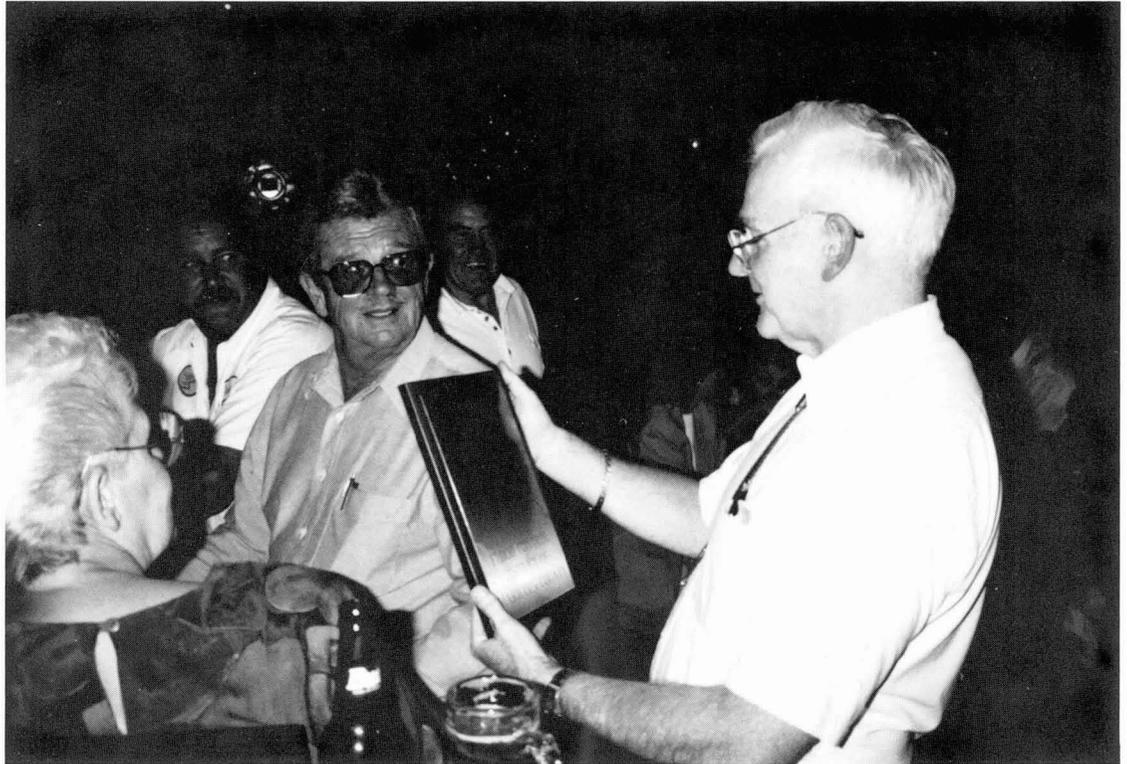
Land Management Specialist Hedy Hall dresses up as a clown and entertains children at the Environmental Management and Transportation Agency picnic held November 6, 1993 at Estrella Mountain Regional Park.



Planning staff send farewell wishes to the Department's Administrative Assistant, Joy Ketchum, who retired this year.



Accounting Technician Alex Munro and Administrative Assistant Heather Zozaya do their Flintstones impression at the annual Halloween bash.



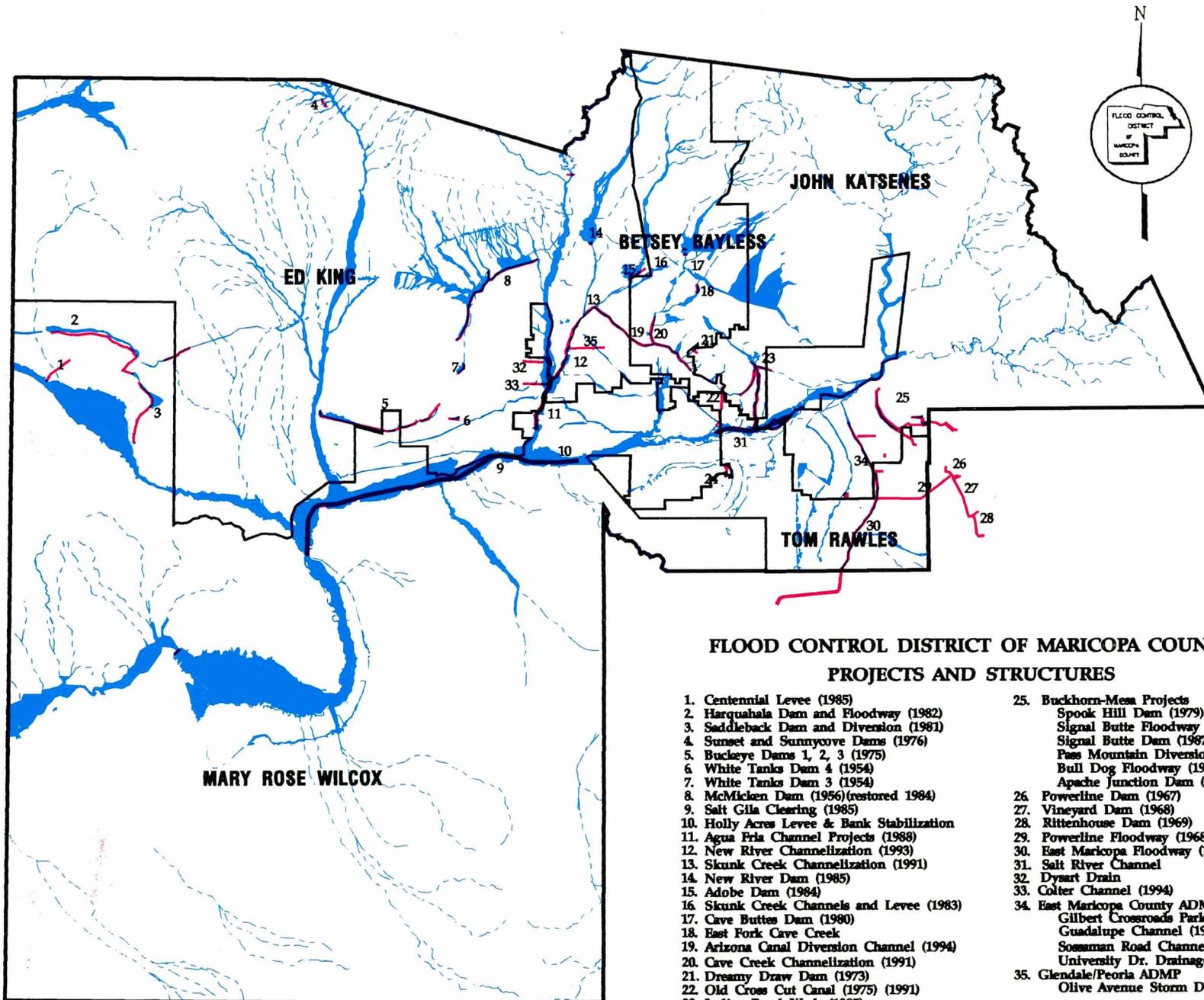
Deputy Chief Engineer Stan Smith presents the retiring Joe Lavin of the Construction and Operations Division with a plaque during a happy hour farewell party.



17-year District employee Larry Wong poses with Linda Young, who left the District after 20 years to work for the Human Resources Department.



GIS Supervisor Marta Dent paints faces at the District's Spring Fling Picnic, held April 30, 1994, at Papago Park.



**FLOOD CONTROL DISTRICT OF MARICOPA COUNTY  
PROJECTS AND STRUCTURES**

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Centennial Levee (1985)</li> <li>2. Harquahala Dam and Floodway (1982)</li> <li>3. Saddleback Dam and Diversion (1981)</li> <li>4. Sunset and Sunnycove Dams (1976)</li> <li>5. Buckeye Dams 1, 2, 3 (1975)</li> <li>6. White Tanks Dam 4 (1954)</li> <li>7. White Tanks Dam 3 (1954)</li> <li>8. McMicken Dam (1956)(restored 1984)</li> <li>9. Salt Gila Clearing (1985)</li> <li>10. Holly Acres Levee &amp; Bank Stabilization</li> <li>11. Agua Fria Channel Projects (1988)</li> <li>12. New River Channelization (1993)</li> <li>13. Skunk Creek Channelization (1991)</li> <li>14. New River Dam (1985)</li> <li>15. Adobe Dam (1984)</li> <li>16. Skunk Creek Channels and Levee (1983)</li> <li>17. Cave Buttes Dam (1980)</li> <li>18. East Fork Cave Creek</li> <li>19. Arizona Canal Diversion Channel (1994)</li> <li>20. Cave Creek Channelization (1991)</li> <li>21. Dreamy Draw Dam (1973)</li> <li>22. Old Cross Cut Canal (1975) (1991)</li> <li>23. Indian Bend Wash (1985)</li> <li>24. Guadalupe Dam (1975)</li> </ol> | <ol style="list-style-type: none"> <li>25. Buckhorn-Mesa Projects               <ul style="list-style-type: none"> <li>Spook Hill Dam (1979)</li> <li>Signal Butte Floodway (1984)</li> <li>Signal Butte Dam (1987)</li> <li>Pass Mountain Diversion (1987)</li> <li>Bull Dog Floodway (1988)</li> <li>Apache Junction Dam (1988)</li> </ul> </li> <li>26. Powerline Dam (1967)</li> <li>27. Vineyard Dam (1968)</li> <li>28. Rittenhouse Dam (1969)</li> <li>29. Powerline Floodway (1968)</li> <li>30. East Maricopa Floodway (1989)</li> <li>31. Salt River Channel</li> <li>32. Dysart Drain</li> <li>33. Colter Channel (1994)</li> <li>34. East Maricopa County ADMP               <ul style="list-style-type: none"> <li>Gilbert Crossroads Park Basin (1992)</li> <li>Guadalupe Channel (1993)</li> <li>Sossaman Road Channel</li> <li>University Dr. Drainage Improvements</li> </ul> </li> <li>35. Glendale/Peoria ADMP               <ul style="list-style-type: none"> <li>Olive Avenue Storm Drain (1992)</li> </ul> </li> </ol> |
|---|---|

Delineated  
100-year  
Floodplain

Flood Control  
Structures

Supervisory  
District  
Boundaries