Newspaper Articles 1993-1991 &

Photographs – 1989 Chuichu, AZ Breached Structures, 1993 Hassayampa River Flood Damage, Waddell Dam 1980

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Arizona Geological Survey
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The Arizona Floods of January and February 1993

P. Kyle House
Arizona Geological Survey

OVERVIEW

In January and February 1993, widespread flooding damaged homes, businesses, crops, roads, bridges, and many other facilities in Arizona. The total damage in the State may exceed $50 million. The floods revealed both strengths and weaknesses in flood-control measures statewide and prodded geologists, hydrologists, and engineers with unprecedented opportunities for flood-related research.

These floods resulted from unusually large amounts of precipitation generated by persistent, anomalous, atmospheric circulation patterns involving complex interactions between "warm" storms of subtropical origin and "cold" storms of polar origin. Abnormally high sea-surface temperatures in the eastern equatorial Pacific Ocean, which were associated with the El Niño phenomenon, enhanced the anomalous circulation patterns that ultimately produced 3 months of abnormally high precipitation throughout most of Arizona. The high rainfall and snowfall amounts generated the largest floods on record for many rivers in the State (Table 1).

From early December through late February, atmospheric circulation patterns over the Pacific Ocean and the western United States carried approximately 16 storms through parts of Arizona. The spatial and temporal characteristics of these storms resulted in widespread flooding. The following factors were critical in producing the floods: (1) basin-wide soil saturation; (2) storage of water in snowpack; (3) release of water from storage due to rain on snowpack; (4) long periods of low- to moderate-intensity rainfall over large areas; and (5) short periods of very intense rainfall over small areas.

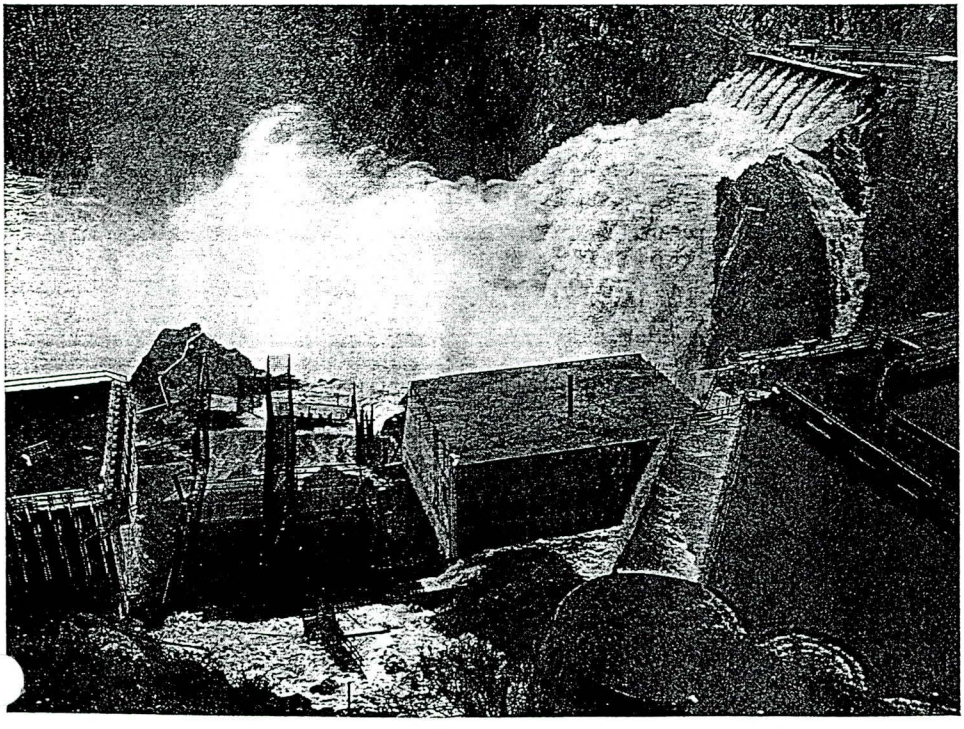

Figure 1. Close-up of the Roosevelt Dam spillway on January 19. The combined discharge of the Salt River over the spillway and coffer dam (foreground) was approximately 34,000 cubic feet per second (cfs) at the time the photograph was taken. This value is associated with the highest recorded level of Roosevelt Lake. The flooded area in the foreground is the construction site of a new spillway. Photo courtesy of the U.S. Bureau of Reclamation.

GENERAL STORM CHRONOLOGY

December

A series of wet storms that passed through Arizona in December set the stage for later flooding. December began with a Pacific storm that dropped more than 2 inches of rain in Tucson over a 3-day period. Similar amounts fell in Flagstaff and Phoenix. By the second week of December, a second storm moved through and dropped more than an inch in Phoenix and lesser amounts in Flagstaff and Tucson. Two additional storms affected Arizona during the next 2 weeks. Each of these first four storms was associated with a southern extension of the Pacific storm track that most frequently affects the

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ALSO IN THIS ISSUE

FLOODS continued from page 1

Pacific Northwest. The storms were relatively cold and dropped snow in areas above about 6,000 feet. Consequently, they saturated the lower portions of watersheds and increased the snowpack in higher areas.

Conditions in the atmosphere changed considerably during the last week of December. Storms entrained in the Pacific storm track began to interact vigorously with disturbances in the subtropical jet stream, which was farther north than usual because of El Niño. Moisture from the subtropical jet stream had influenced previous storms, but its effect increased dramatically in late December and through most of January. By late December, a high-pressure ridge began to develop over the Gulf of Alaska, and a strong low-pressure trough intensified off the western coast of North America. The last storm of December was enhanced significantly by these circumstances. It was steered down the western coast, gathered moisture from the subtropical jet stream, and passed directly through Arizona. Phoenix and Tucson received 0.89 and 0.72 inches of rain, respectively, whereas areas at higher elevations in Arizona received significantly more (e.g., Flagstaff, 2.16 inches; Miami, 2.37 inches). Because of the influence of the subtropical jet stream, the storm was relatively warm and raised the snow level above 8,500 feet. The storm saturated watersheds at all elevations and increased base flow in streams throughout much of the State, making flooding imminent.

January

During the first 3 weeks of January, the atmospheric circulation over the Pacific Ocean and the western United States provided a continuous supply of rain and snow to Arizona. Furthermore, the dynamic interplay between the Pacific storm track and the subtropical jet stream maximized the potential for flooding by spacing the warm and cold storms, thus allowing water stored in the snowpack to be released by subsequent rainfall. A profound example of this occurred at the end of the first week in January. The late December storm that primed the watersheds was followed by a colder storm that built up the snowpack above 6,000 feet.

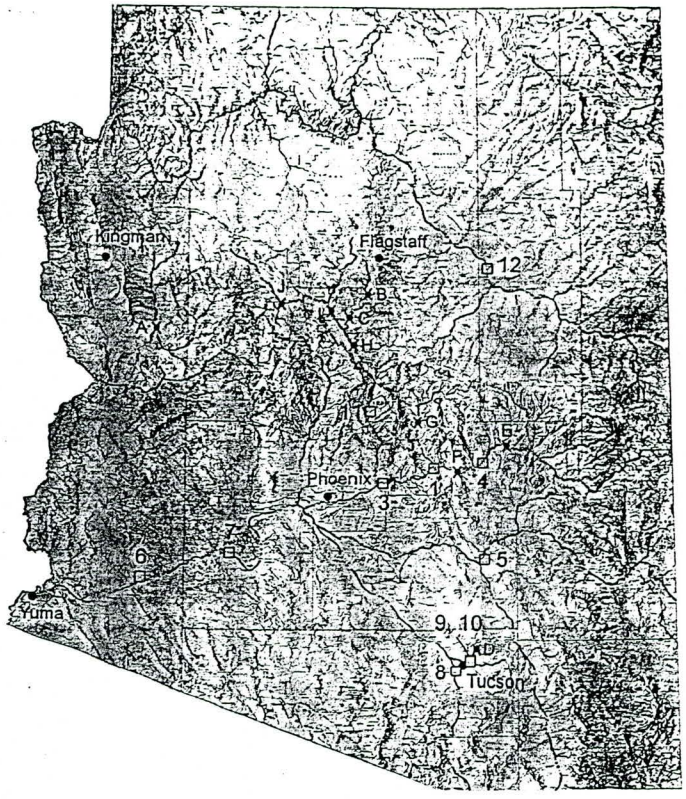


Figure 2. Major streams, approximate sites of Figures 1 through 12, and locations of lettered stream gages listed in Table 1.

Three days later, a massive storm with subtropical air and moisture entered the State, pushed the snow level back above 8,000 feet, and dropped large quantities of rainfall over much of Arizona for 3 days. Some of this rainfall was intense. From January 6 to 9, Tucson received 2.16 inches, Phoenix received 2.01 inches, Flagstaff received 2.88 inches, and Kingman received 3.88 inches of rainfall. This storm generated record and near-record floods statewide (Table 1).

From January 9 through 19, snow levels remained above 7,000 feet, and three more storms passed through Arizona. The third storm resulted in major flooding on the Santa Cruz River north of Tucson, and increased flooding on the Gila River. The passage of this storm marked the onset of a relatively dry period for the State and the beginning of the end of serious flooding in southern Arizona, except along the Gila River.

Table 1. Record floods in Arizona during the winter of 1993. Locations of gages are identified by letter on Figure 2. Discharge estimates for 1993 were supplied by the U.S. Geological Survey and are considered preliminary and subject to revision.

	Site	Drainage Area (mi^2)	Largest Measured Discharges (cfs) Winter 93	Date	Previous	Date
A)	Big Sandy River near Wikieup	2,742	65,600	2/9/93	38,500	2/20/80
B)	Oak Creek at Sedona	233	28,500	2/19/93	9,460	11/30/82
C)	Oak Creek near Cornville	355	38,900	2/20/93	26,400	2/19/80
D)	Sabino Creek near Tucson	36	10,820	1/8/93	7,730	9/6/70
E)	Salt River near Chrysotile	2,849	76,600	1/8/93	74,000	1/16/16
F)	Salt River near Roosevelt	4,306	144,000	1/8/93	117,000	3/14/41
G)	Tonto Creek above Gun Creek	675	61,600	1/8/93	61,400	2/15/80
H)	Verde River near Camp Verde	5,010	105,000	2/20/93	97,000	3/3/38
I)	Verde River near Clarkdale	3,503	63,140	2/20/93	50,600	2/21/20
J)	Verde River near Paulden	2,507	20,800	2/20/93	15,700	2/20/80

February

At the end of January and through most of February, portions of north-central and northwestern Arizona were affected by small disturbances in the jet stream and by the southern extensions of fronts moving through the western United States. From February 8 to 10, parts of northwestern Arizona received more than 4 inches of rain. On February 9, the Big Sandy River near Wikieup had its largest recorded flood.

Another storm from February 14 to 16 brought rain to low elevations statewide and snow to areas above 6,000 feet. Two small disturbances on Feb-

ruary 19 and 20 brought intense rainfall to north-central and northwestern Arizona (5 inches in Flagstaff) and pushed the snow level back up to 8,000 feet. These final storms caused flooding in the Flagstaff area and generated record floods on Oak Creek and the upper portions of the Verde River. Portions of communities in the Verde River floodplain in ntral Arizona received significant amounts of damage om the February floods.

SUMMARY

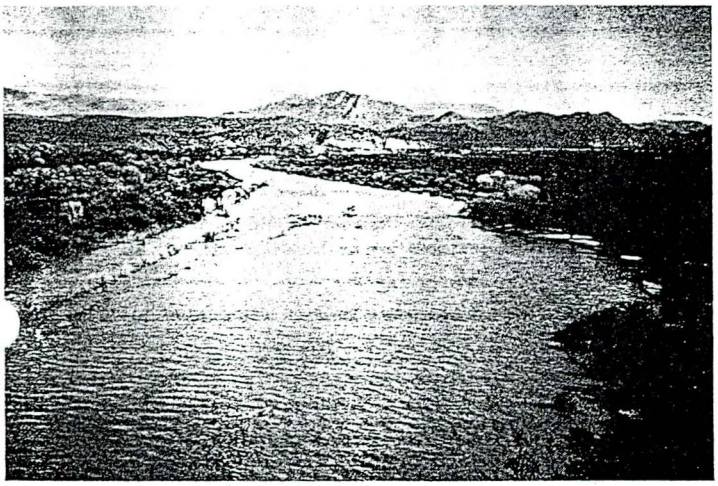
The most remarkable aspect of the January-February 1993 flooding in Arizona was its scale: it involved many flood events that were extremely large in volume, extent, and absolute magnitude. Almost every physiographic region in the State was affected, which is a rare circumstance. It is much more common for only relatively small portions of Arizona to be affected by large, synchronous episodes of flooding. The winter floods of 1993 attest to the significance of the unusual and persistent characteristics of the atmospheric circulation patterns that produced them. Understanding the frequency of these patterns is critical to understanding the frequency of the related floods.

Although many unfortunate consequences resulted from the floods in Arizona this winter, floods should not be characterized as solely destructive phenomena to be controlled and abated. They should also be understood for what they are: natural, intrinsic components of the physical environment. The 1993 floods offered enormous research potential. Engineers are reconsidering flood-control alternatives and improvements, hydrologists now have a remarkable data set for analyzing flood rainfall-runoff relationships, geologists have an unprecedented opportunity to study the effect of extreme floods on the landscape, and some property owners have a chance to reconsider the risks of living on the floodplain.

SELECTED REFERENCES

National Oceanic and Atmospheric Administration and National Weather Service, 1993, Daily weather maps for December, January, and February.

Office of the State Climatologist, 1993, Arizona climate summary: Arizona State University, Department of Geography, v. 19, nos. 7, 8, and 9.



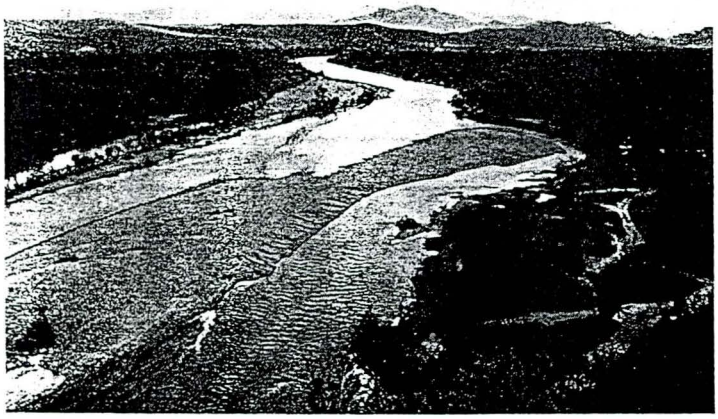
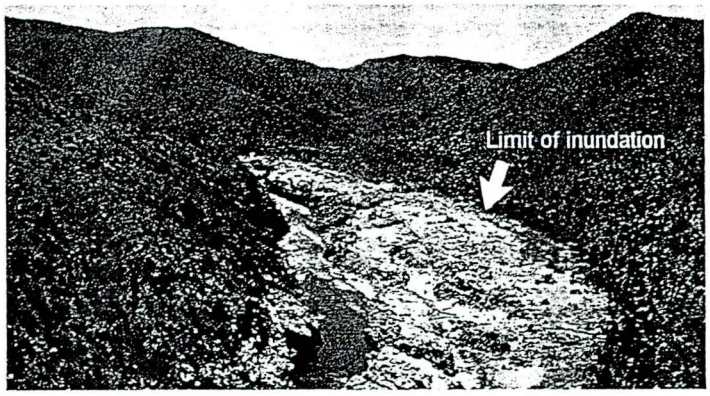


Figure 3 (a and b). Salt River below Stewart Mountain Dam. The first photograph was taken on January 20 following a peak discharge of 41,000 fs. The second photograph of approximately the same site was taken on March 10. The peak discharge through this reach of the Salt River was significantly attenuated by storage upstream in Saguaro, Canyon, Apache, and Roosevelt Lakes. Photos by P. Kyle House, Arizona Geological Survey.



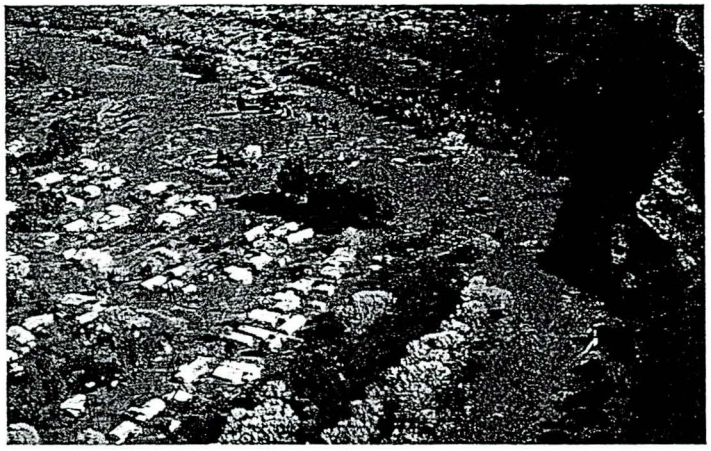


Figure 4 (top). View of the Salt River in Jump Off Canyon above Roosevelt Lake. A flood discharge of approximately 144,000 cfs passed through this reach on January 8. The flood removed all vegetation, soil, and weathered bedrock from the canyon walls and from the bedrock bench on the right bank. The flow depth exceeded 40 feet at this site. Photo by P. Kyle House, Arizona Geological Survey.

Figure 5 (bottom). Aerial view of the Winkelman Flats in Winkelman, showing inundation by the Gila River below Coolidge Dam. This photograph was taken on January 20. The peak discharge on the Gila River 20 miles downstream at Kelvin reached 74,200 cfs on the afternoon of January 19. Photo by Victor R. Baker, University of Arizona.

Figure 6 (above). Flooded agricultural land along the lower Gila River. This photograph was taken on March 3. This flood resulted from unprecedented releases (peak discharge: 25,920 cfs) from Painted Rock Reservoir. Photo © 1993 Peter L. Kresan, University of Arizona.

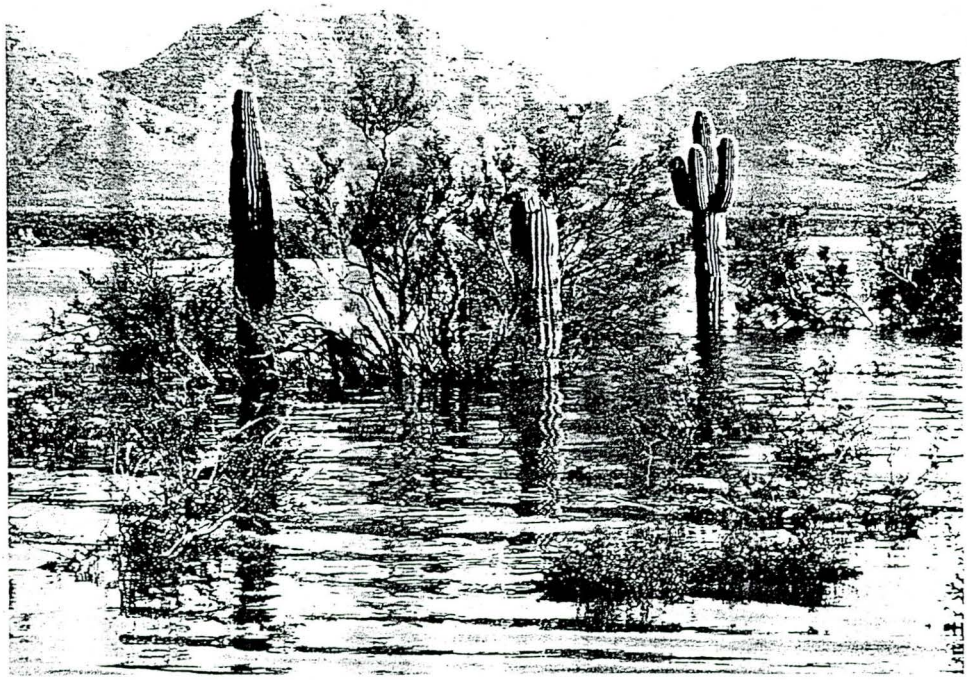


Figure 7 (right). Native Sonoran Desert vegetation flooded along the margins of Painted Rock Reservoir in southwestern Arizona. This reservoir, fed by the Gila River, filled to a capacity of 2.8 million acre-feet for the first time since its completion in 1961. Photo taken on March 16 by Steven J. Skotnicki, Arizona Geological Survey.

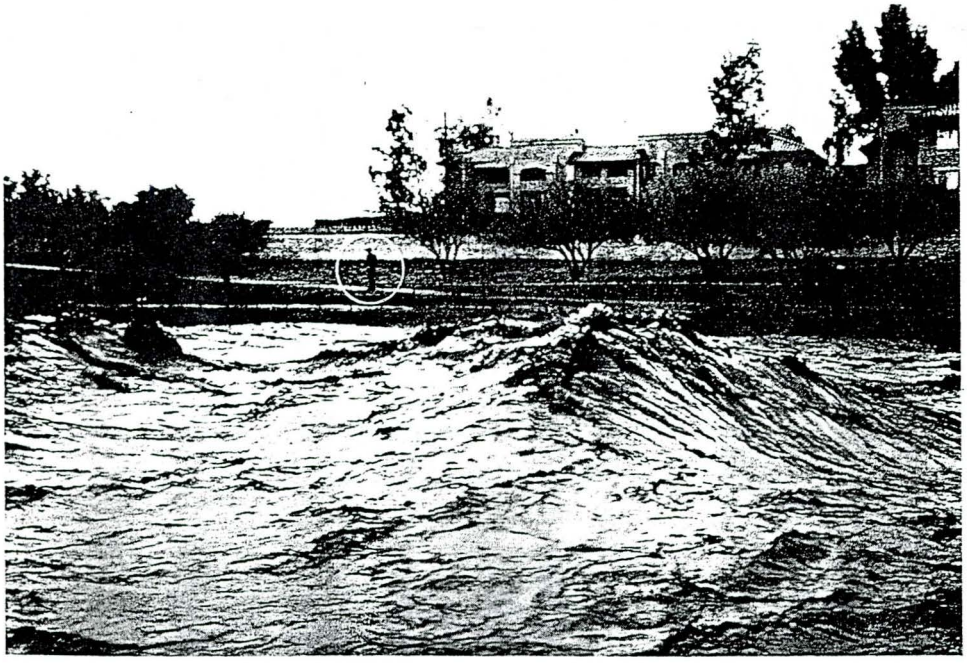


Figure 8 (above). Large standing waves on the Santa Cruz River near downtown Tucson. This photograph was taken on January 19 at approximately 9:30 a.m. The peak discharge in this reach was between 25,000 and 35,000 cfs that morning. Photo by P. Kyle House, Arizona Geological Survey.

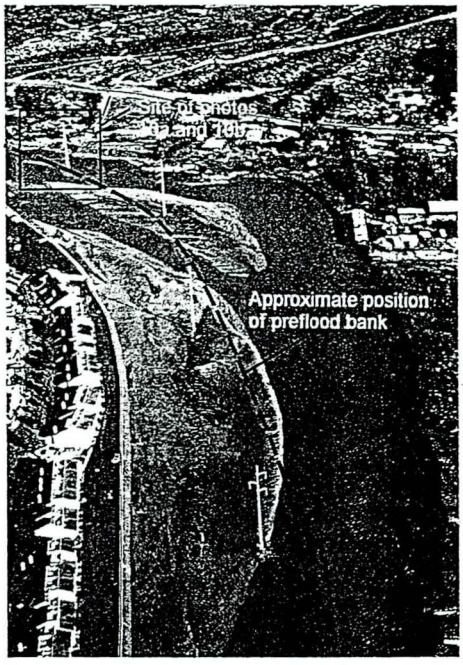
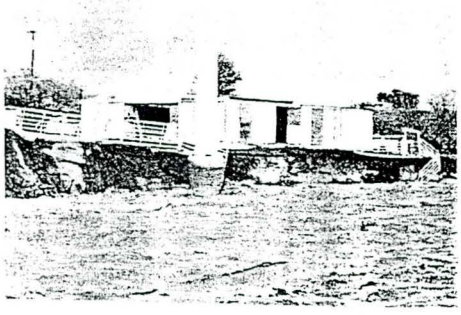


Figure 9 (above). Severe bank erosion along Rillito Creek near N. Country Club Blvd., Tucson. This photograph was taken on January 20, 12 days after the peak discharge. Line on photo shows former position of bank. Photo by Victor R. Baker, University of Arizona.



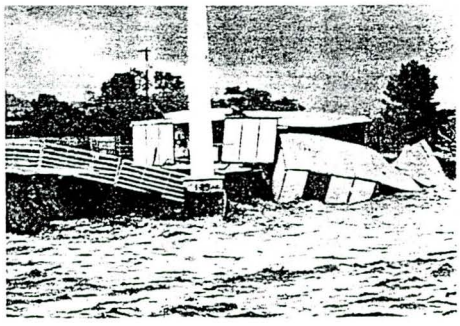


Figure 10 (a and b, left). Sequential photographs of site within Figure 9 showing horse stables being destroyed by bank erosion along Rillito Creek near N. Country Club Blvd., Tucson. The photos were taken at 11:33 a.m. and 11:50 a.m. on January 8. The peak discharge on Rillito Creek was between 20,000 and 30,000 cfs earlier that morning. Photos by H. Wesley Peirce, Arizona Geological Survey.

ACKNOWLEDGMENTS

Thanks to Chris Smith, Frank Brewsaugh, and Greg Pope of the U.S. Geological Survey for providing preliminary flood-discharge estimates; Cliff Schlueter and Bill Rohwer of the U.S. Bureau of Reclamation for providing dam-release data and photographs; Charlie Ester of the Salt River Project for providing flood-discharge estimates and dam-release data; and Terri Miller of the Arizona Department of Water Resources for providing preliminary flood-damage estimates.

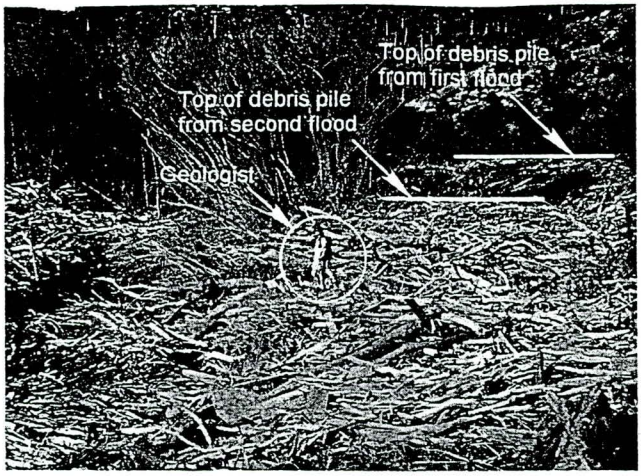


Figure 11. Massive pile of flood debris on the lower Verde River above Horseshoe Reservoir. This photograph, taken on April 10, shows two levels of debris that correspond to the peak discharges of January 8 (127,000 cfs) and February 20 (111,000 cfs). Note arrow pointing to person for scale. Photo by Philip A. Pearthree, Arizona Geological Survey.

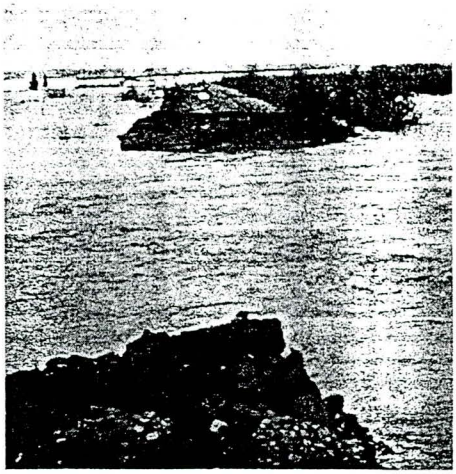


Figure 12. Breach in an artificial levee on the Little Colorado River near Winslow on January 7. The breach was closed on January 14 before another series of storms caused flooding that came within 2 feet of the crest of the repaired levee. Photo by Chuck Williams, Navajo County Flood Control District.

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Slaff, Steven, 1993, Gravity and magnetic surveys at Brady earth fissure, Picacho Basin, Pinal County, Arizona: Open-File Report 93-1a, 29 p., scale 1:24,000. $7.00

Brady fissure is an active earth fissure that trends roughly north-south 0.6 mile west of the Tucson Aqueduct of the Central Arizona Project. The fissure, which has approximately doubled its length during the past 12 years, is currently more than 1 mile long, up to 10 feet wide, and up to 10 feet deep. If it continues to lengthen, it could damage the Tucson Aqueduct.

The principal goal of the project was to determine whether the location of Brady fissure is controlled by subsurface geologic structure, such as a pediment edge or buried, inactive normal fault. The results indicate that this could be the case, but further investigation is required to verify the interpretations. Rather than a single normal fault, the fissure's position may be controlled by the location of a group of subparallel, buried inactive faults. The results of the study and their interpretations are summarized in this report.

Slaff, Steven, 1993, Gravity and magnetic surveys at Brady earth fissure, Picacho Basin, Pinal County, Arizona: Raw data: Open-File Report 93-1b, 15 p. $2.50

This computer printout includes the raw data obtained during the geophysical surveys described in Open-File Report 93-1a.

Duncan, J.T., and Spencer, J.E., 1993, The AZGS core repository: Open-File Report 93-2, 29 p. $4.50

See description under "AZGS Core Repository Reorganized," which is printed on pages 11 and 12.

Huckleberry, Gary, 1993, Surficial geology of the middle Gila River area, north-central Pinal County, Arizona: Open-File Report 93-3, 52 p., 5 sheets, scale 1:24,000. $16.50

Recent developments in geologic dating techniques and increased understanding of weathering processes have improved geologists' ability to distinguish and map unconsolidated sediments into genetic and temporal units. The need for surficial geologic mapping in Arizona has risen along with concerns about ground-water management, environmental protection, and geologic hazards, such as flooding, land subsidence, and earth fissures. Five alluvial-fan surfaces and 12 stream-terrace surfaces have been identified in the middle Gila River area. These surfaces are the product of alternating erosion and deposition by the river and its tributaries from the late Pliocene to the present. The youngest surfaces may still be aggrading and are subject to flooding about every 100 years. This project was funded by the COGEOMAP program.

Pearthree, P.A., 1993, Geologic and geomorphic setting of the Verde River from Sullivan Lake to Horseshoe Reservoir: Open-File Report 93-4, 25 p., 5 sheets, scale 1:24,000. $20.00

The Verde River is one of the primary perennial streams in Arizona. The free-flowing reach of the river, which extends from Sullivan Lake to Horseshoe Reservoir, supports diverse riparian environments and provides habitats

Ken Gray 921-9121

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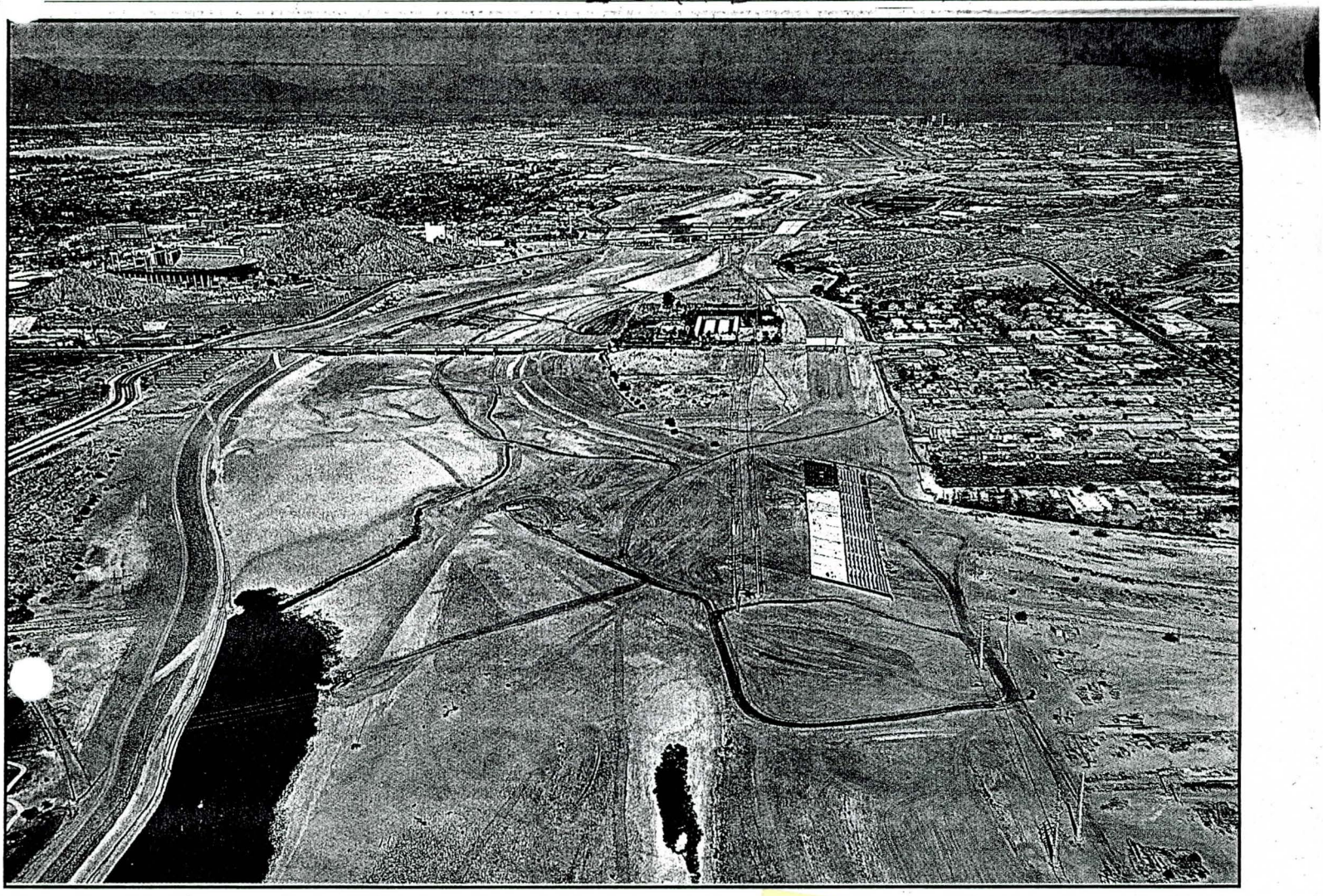
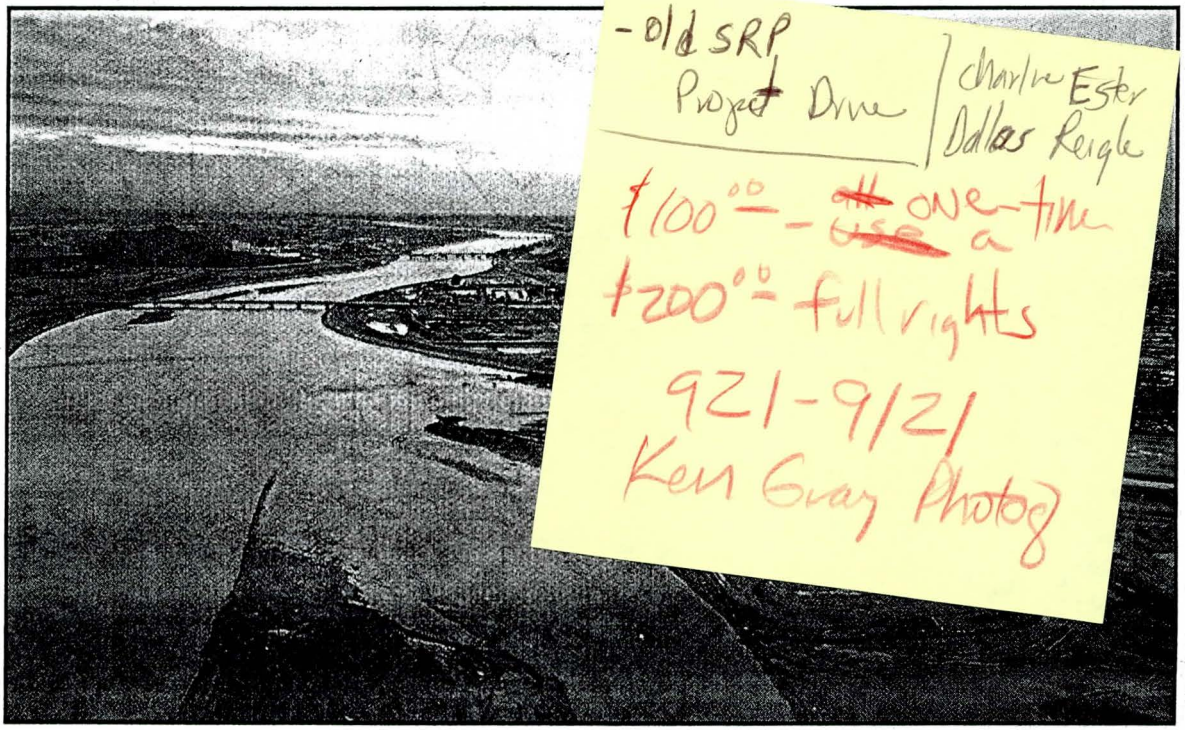
Indian Bend Wash - DMDM shots



Work will be completed this year on a mile long, $11.8 million project between Indian Bend Wash and McClintock Drive on Loop 202. Pulice Construction, Phoenix, is constructing an eight span, prestressed concrete girder bridge across the wash for the Red Mountain Freeway (ABOVE) *and preparing the roadway between Scottsdale Road and McClintock Drive for final paving, work that will be completed under a separate contract scheduled for award in September. The paving, signing and lighting project, at an estimated cost of $11.5 million, involves completion of I- 202 between Priest Dri s current terminus, and cClintock Drive, where the freeway will be elevated over the Salt River on mile long bridges which are now under construction. Work on the Indian Bend Wash project was slowed at the beginning of the year as a result of flooding* (RIGHT).



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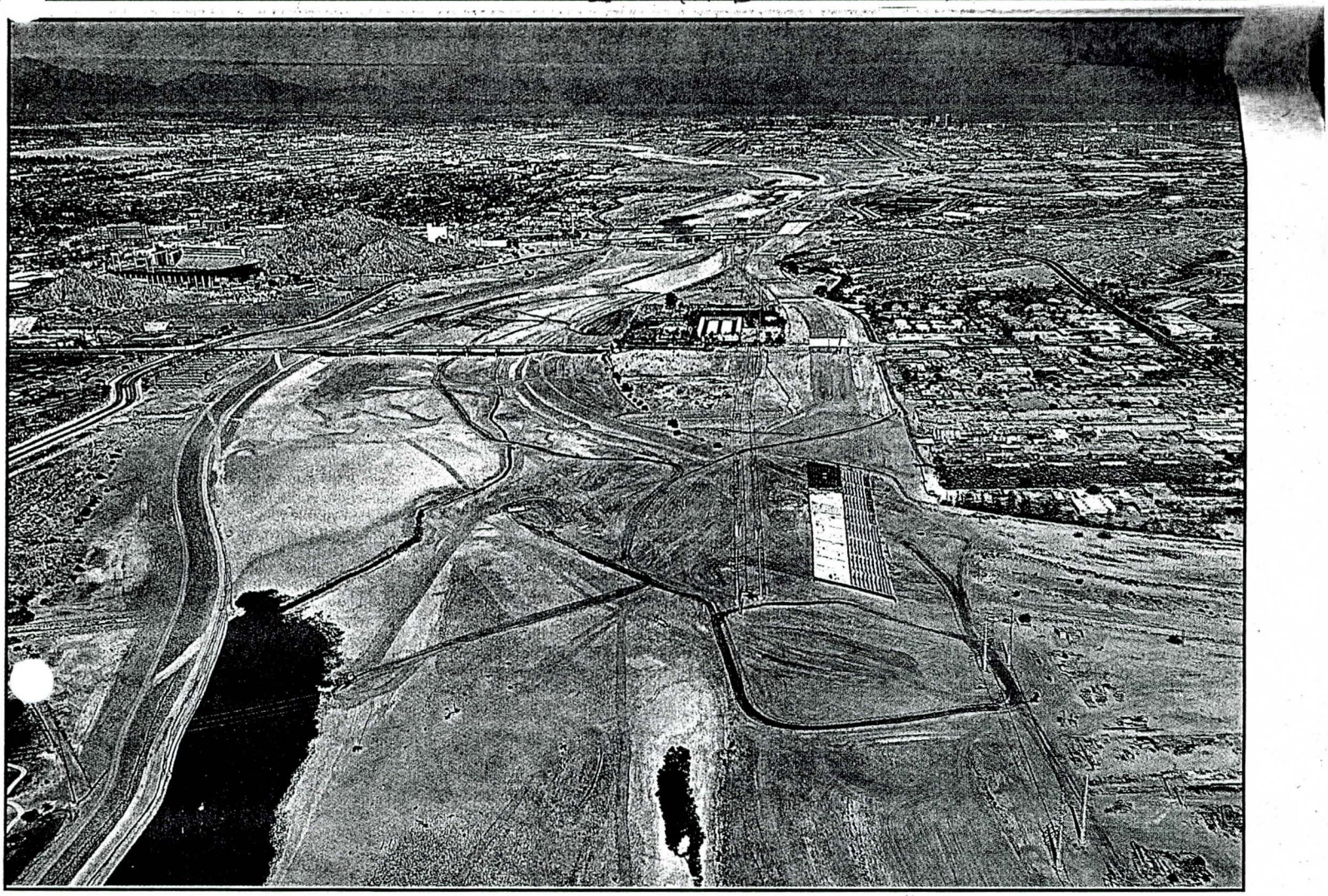

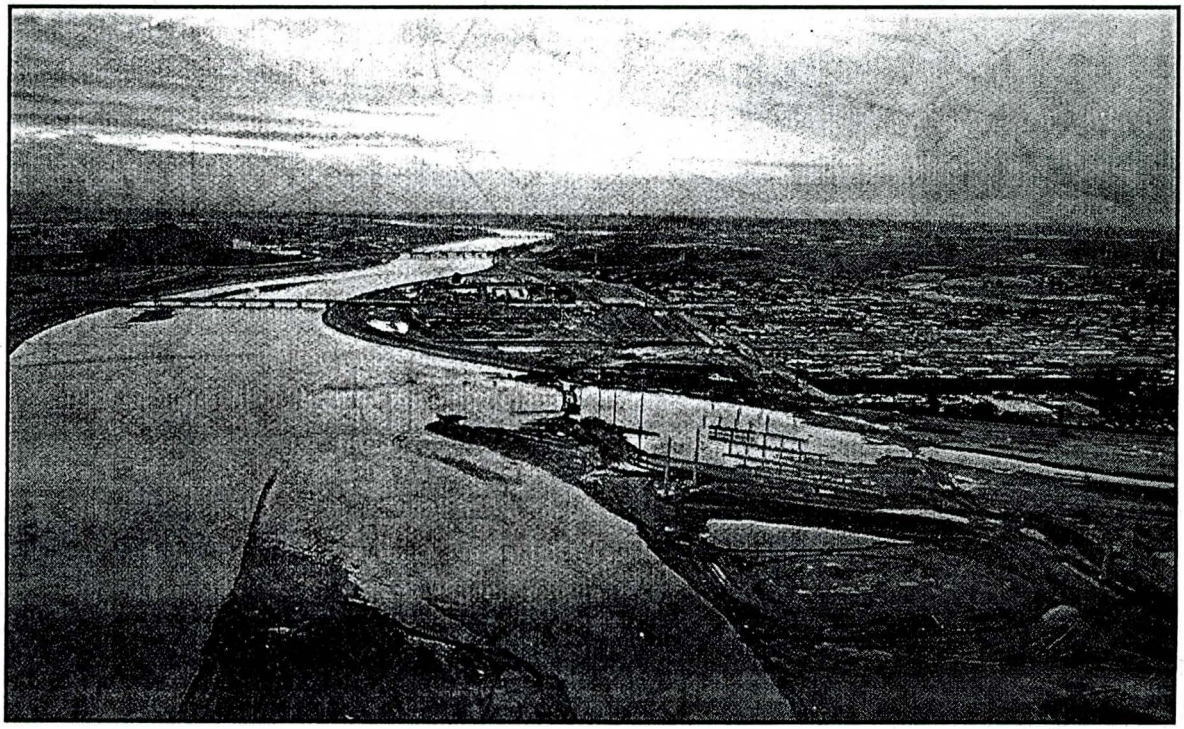

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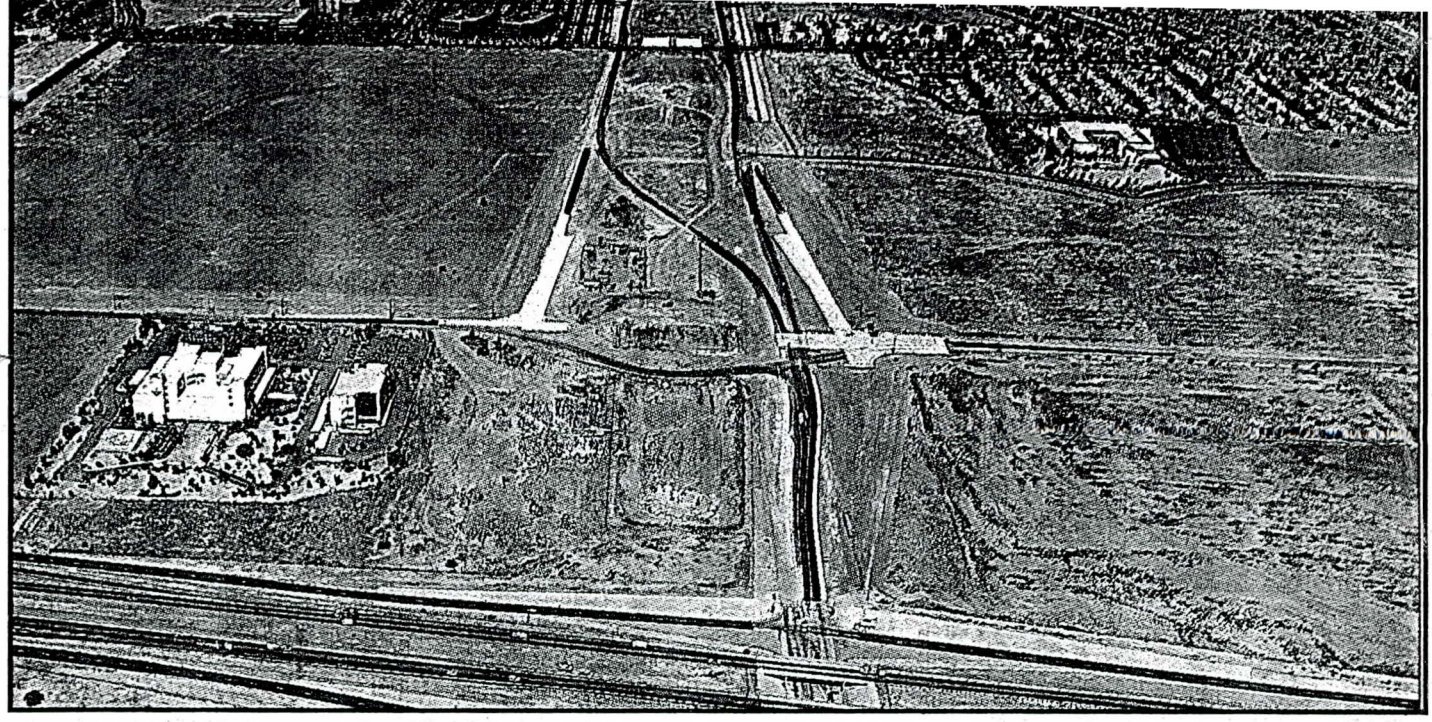

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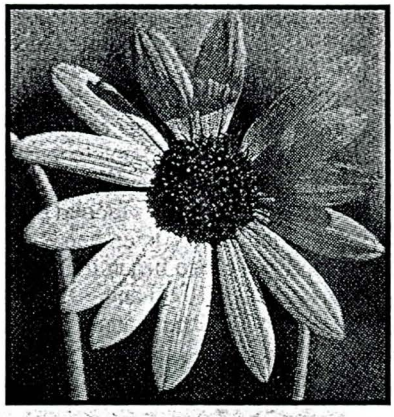

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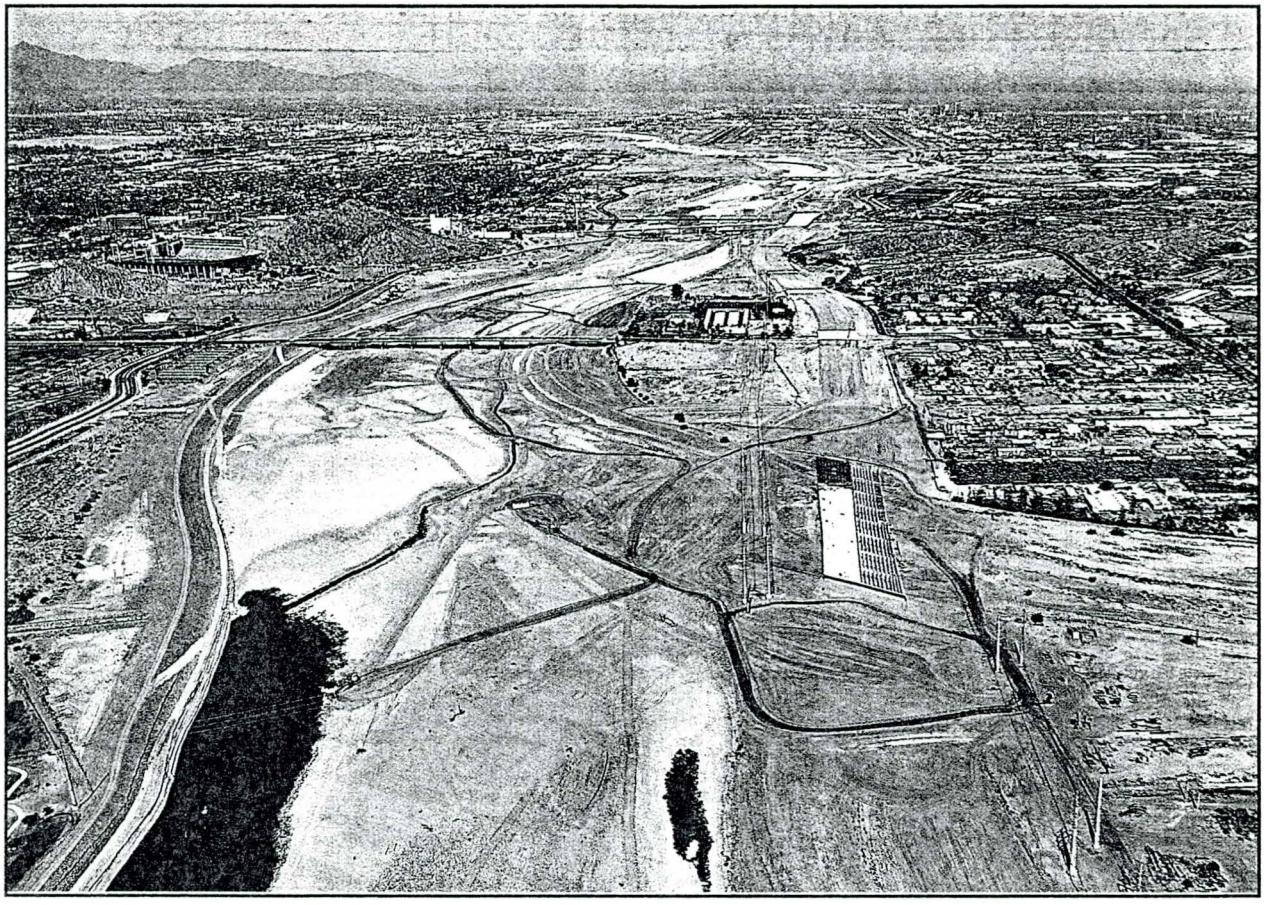

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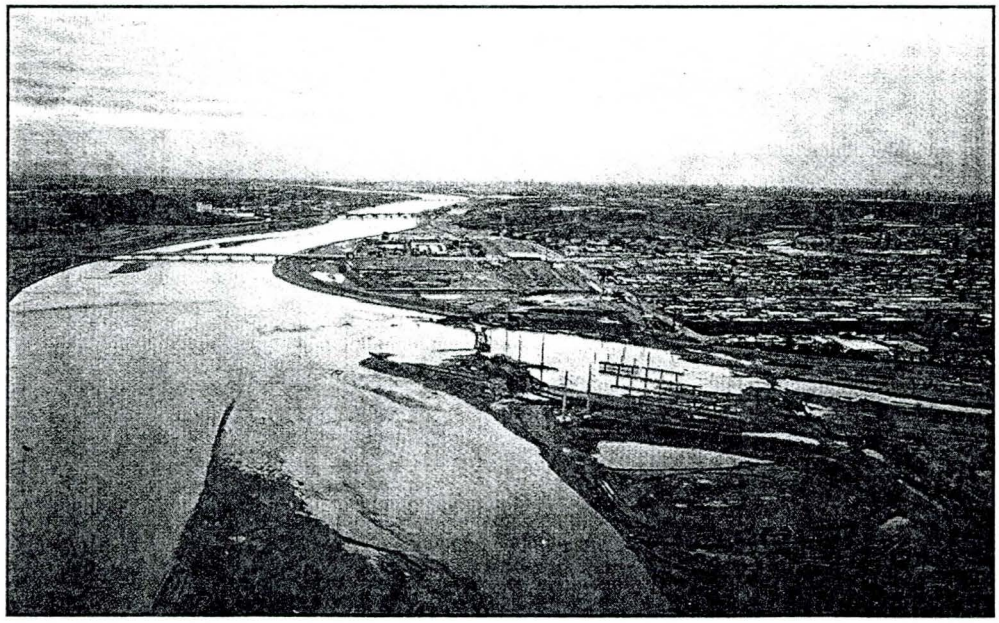

to begin by fall '96 at an estimated cost of $20 million.

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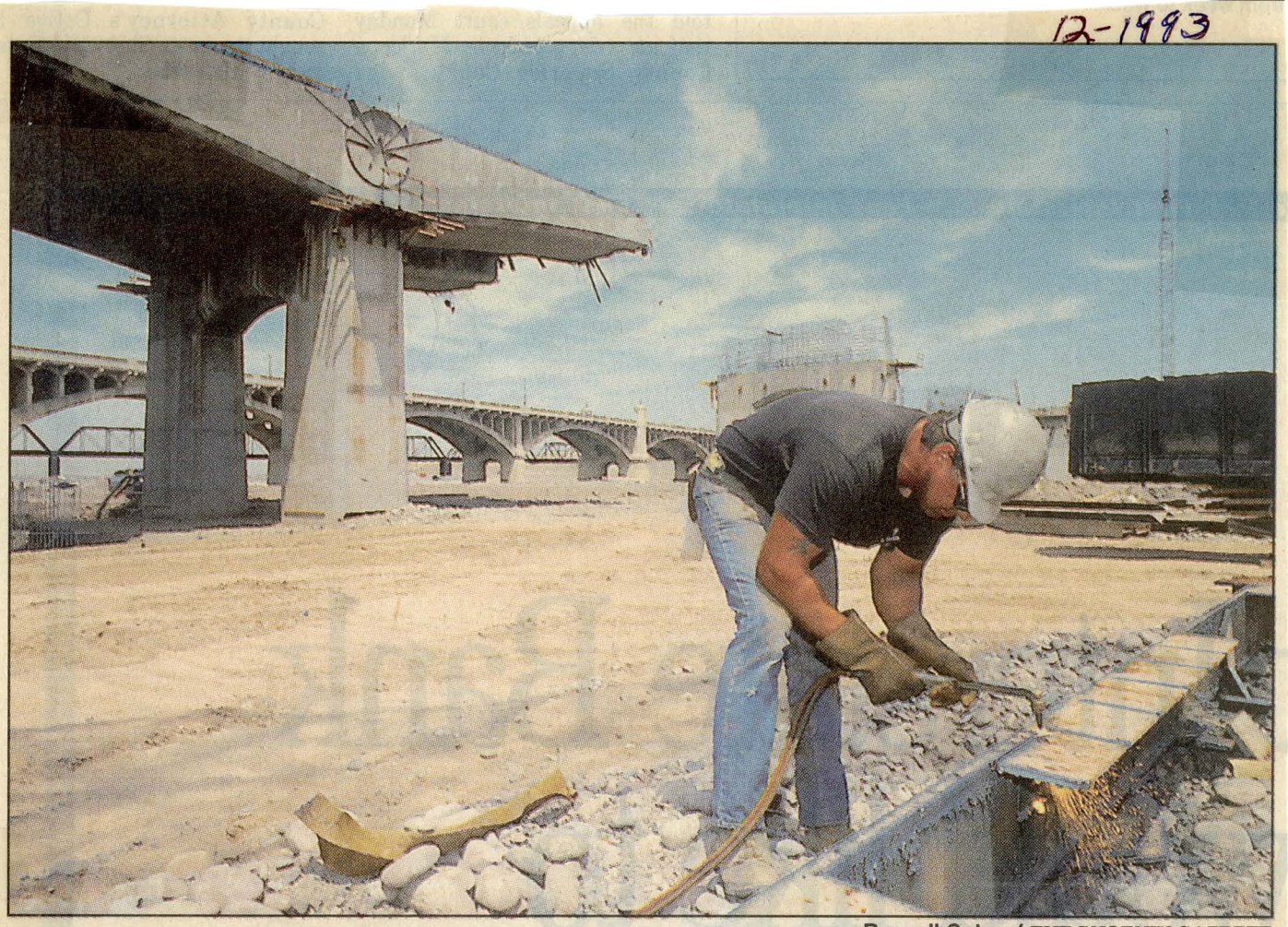

Russell Gates / THE PHOENIX GAZETTE

Rich Loehr works on a steel beam to shore up Tempe's new Mill Avenue Bridge. Flooding early this year destroyed much of the $6.8 million structure, which now is expected to be completed by Dec. 31.

Nature's costly fury

Arizonans will pay for floods for years

By Mike Padgett
THE PHOENIX GAZETTE

For the Salt River Project, 1993 will go down as a banner year for water — so much of it flowed through the Valley that it could have filled the area's six reservoirs. Twice.

For farmers and rural communities in western Arizona inundated by floodwater, 1993 will best be remembered as an economic nightmare that forced many of them into bankruptcy.

And for Valley residents, 1993 will go down as one of the wettest — and oddest — weather years on record. The rains and ensuing floods tore apart a landfill and a half-built bridge at Mill Avenue in a spectacular display of nature's power.

"December was wet. Then January came and we got a deluge," said Barry Pierce, meteorologist with the Phoenix office of the National Weather Service.

January was the wettest in Valley history, with 5.22 inches. The Valley has had 8.65 inches of precipitation this year. The average annual rainfall is about 7.5 inches.

Floodwaters from the rains are still being felt by about 200 farms in the Gila River Valley in western Arizona. Many owners say they are leaving farming because the floods forced them into bankruptcy.

"It may well be the death knell for some of those little communities along that river," said Ken Evans, president of the Arizona Farm Bureau.

Evans said the preliminary estimate of damages to homes, farms, bridges and irrigation districts in Yuma County is $100 million.

Some of the farms along the Gila River still are underwater, which is preventing a more thorough estimate of damage, said Clyde Gould, manager of the Wellton-Mohawk Irrigation and Drainage District.

Evans said the farms flooded out of production will reduce the state's economic output by $250 million over the next two or three years.

The decline of farming is the worst news possible for a region known as "the vegetable bowl of the world in the winter months," Evans said.

Arizona residents not directly hurt by the floodwaters still can expect a hit in the pocketbook. Flood damage in Yuma County could mean higher prices the next few seasons for lettuce, cauliflower and other produce.

The farmers who stay say they plan to repair their farms,

> "It (floodwater) may well be the death knell for some of those little communities along that river."
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> **Ken Evans**
> Arizona Farm Bureau president

restore the Gila River to its flood-control channel and lower the water table by pumping groundwater so flood-borne salts can be washed away, Evans said.

"We're looking at probably three to five years to get some of those soils back in their pre-flood, highly productive conditions," Evans said.

The flooding was sparked when abnormally high runoff from winter and spring storms began filling SRP's six reservoirs on the Salt and Verde rivers to overflowing.

That forced SRP to open the dams' spillways to let the heavy runoff flow from one lake to the next, until the water flowed over the Salt's Granite Reef Diversion Dam north of Mesa.

The water releases, which reached 124,000 cubic feet per second, lasted from Dec. 29 to June 3, said Scott Harelson, an SRP spokesman.

In that time, about 4.1 million acre-feet of water — double the capacity of the six reservoirs — flowed down the Salt and into the Gila River just west of Phoenix.

Those floodwaters filled the Painted Rock Reservoir west of Gila Bend to overflowing, an event that had not occurred since the dam's construction in 1960. At one time, water flowed from the dam's outlet and over its spillway at a combined rate of 26,000 cfs.

The previous high was 5,060 cfs in 1980. Water still was flowing from Painted Rock at 5,000 cfs on Monday.

In the Valley, the flooding Salt tore into the Tri-City Landfill and scattered enough garbage to fill 3,500 trucks.

The flooding also caused about $1.3 million damage to the new Mill Avenue Bridge in Tempe. The $6.8 million bridge, originally set for completion by July 1, now should be open for traffic by Dec. 31, said Rod Whitt, Tempe construction engineering supervisor.

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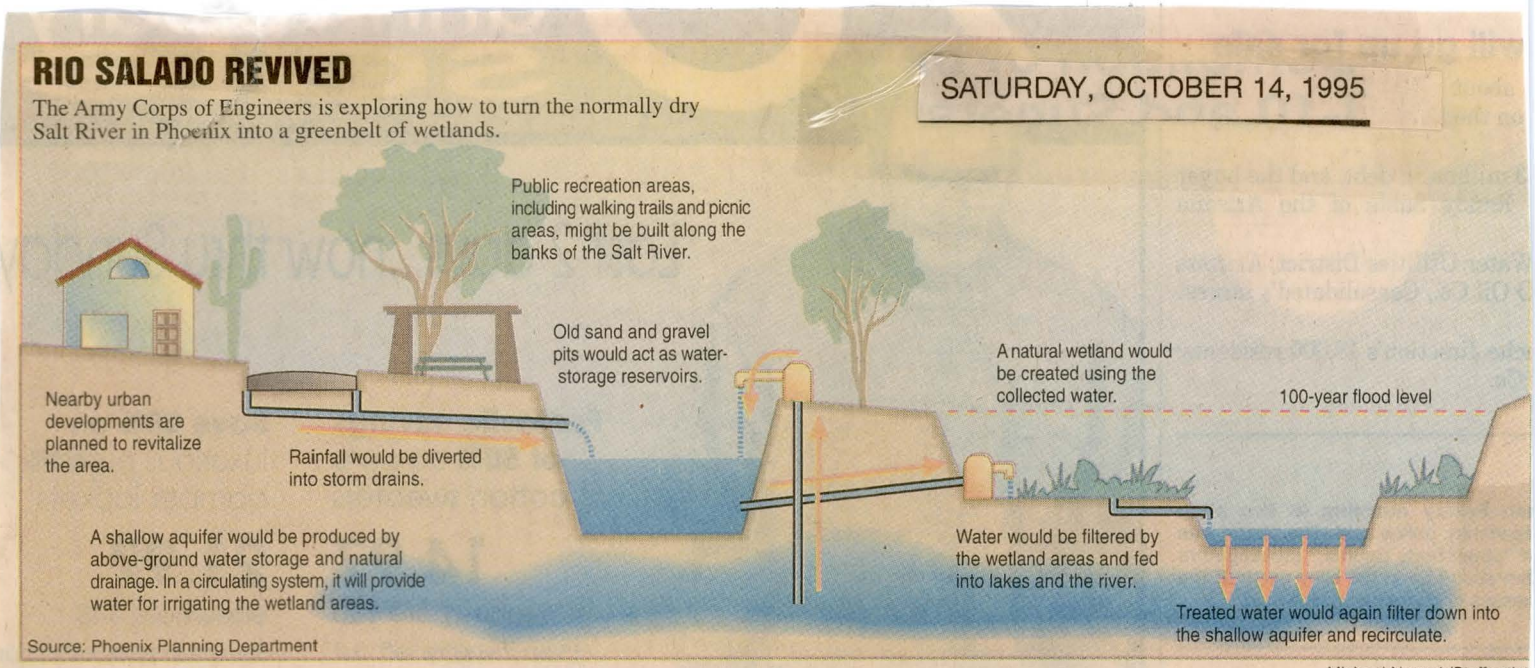

Michael Novack/Staff artist

Rio Salado plan revived

Funds available for Phoenix work, backers say

By Tom Spratt
Staff writer

It will take help from the U.S. Army and an act of Congress.

But by the turn of the century, fish could be swimming year-round again in the Salt River through Phoenix. Plants could be flourishing along the riverbanks.

Long-suffering advocates of the Rio Salado Project, a 30-year-old plan to turn the Salt River area into a greenbelt, believe there's finally money to give the barren riverbed a makeover. For generations, it has been a wasteland of garbage, discarded tires and pesticide pollution.

Now, "it looks like everything's going to work," Peter Atonna, deputy Phoenix planning director, said Friday.

Even the river's sand-and-gravel companies are upbeat.

"There is a wonderful potential here to make South Central (Avenue) the gateway to Phoenix," said Roy Stegall, consultant for the Arizona Rock Products Association.

Tempe is already about to start its own Rio Salado Project, but it is short of money to build a wildlife habitat.

Phoenix has never been able to get its own plans off the ground. A big setback came in 1987, when voters refused to pay for a $2.6 billion project that would have built 28 miles of parks from 51st Avenue in Phoenix to Granite Reef Dam in Mesa.

Enter the U.S. Army Corps of Engineers.

Spurred by the Clinton administration's interest in wildlife preservation, the corps wants to turn urban portions of the river into a fish and wildlife habitat. Federal money that used to be spent on flood control is now available for resurrecting rivers, said Joe Dixon, chief of the corps' planning office in Phoenix.

If Valley leaders play their cards right, the money and resources should be available to beautify the river, even if the results may fall short of everyone's dreams, Dixon said.

Such optimism was shared by others who attended an all-day Rio Salado symposium Friday in Phoenix sponsored by Arizona State University's College of Architecture and Environmental Design.

The corps finished a preliminary study in May and is negotiating with Phoenix and Tempe on a more detailed, $2 million analysis of whether the plan would work.

Dixon said the results were far from final, but

See ■RIO, Page B3

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> Arizona Rock Products Association

RIO

From B1

encouraging.

The first phase of Phoenix's project would cost about $35 million. It would cover the 5-mile stretch between 19th Avenue and the Interstate 10 bridge across the Salt River.

So far, nobody knows exactly what the restored river would look like.

One vision is of a ribbon of green, with bicycle paths and pedestrian walkways meandering among cottonweed trees, creeks and ponds. Other plans call for tennis courts and soccer fields on the banks of the river. More-ambitious proponents of development would build restaurants and office complexes near the banks.

The corps is already chipping in $3.5 million to help Tempe build a 16-foot dam for the city's proposed Town Lake on the Salt River. The 2-mile-long lake, to be completed in 1997, is the centerpiece of Tempe's Rio Salado development.

Tempe also is planning a wildlife habitat east of the lake. Although the city has obtained most of the money it needs for the river park, it would need additional money for the nature habitat.

Under the Water Resources Act, the federal government would pay 75 percent of the cost of such projects, with cities footing the bill for the rest.

For Phoenix and Tempe to receive the federal money, the corps must finish its study, conclude that the project can be done, and seek federal funding. Then the cities would have to wait for congressional approval.

Atonna said Valley authorities are confident that the Rio Salado Project is exactly what Congress had in mind when it passed the Water Resources Act.

Others who attended the symposium agreed that the project can be done, but warned of problems, including polluted groundwater.

Anyone who wants to build a park along the river will have to work closely with sand-and-gravel companies, which have extensive operations in the Salt River.

Mesa
COMMUNITY

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THE PHOENIX GAZETTE
THE ARIZONA REPUBLIC

Smaller cities want Phoenix's help

Say bailout could hurt flood district

By Mary Jo Pitzl and Edythe Jensen
Staff writers

Phoenix wants to bail out of the county's flood-control district.

Officials from two East Valley cities say that could hurt projects important to development in Queen Creek, around Williams Gateway Airport and east of Mesa.

"Most of the land on the north side of the railroad tracks has some degree of flooding. After a heavy rain, our high school and junior high are flooded," Queen Creek Town Manager Cynthia Seelhammer said.

"Once upon a time, our tax money helped Phoenix. Now it's their turn to help the East Valley. Flood control crosses jurisdictional boundaries and absolutely must be done by a regional government like the county," she said.

In Tempe, the district contributed $13.5 million to the channelization of the Salt River between Mill Avenue and McClintock Drive, the site of the Rio Salado development, reducing the city's share of the project to $1.3 million.

The district also paid to cover up and landscape the Gila Drain, a series of once-open canals running through south Tempe and out of the city toward the Gila River.

"We're very supportive of the district," said Steve Nielsen, Rio Salado project manager.

Stan Smith, interim general manager of the county's flood-control office, said it would hurt the district if cities pull out. Phoenix alone contributes almost half of the district's budget.

And if cities each run their own flood-control projects, Smith warned, there could be problems with regional planning.

Seelhammer and Mesa engineer Peter Knudson said future county flood-control projects are critical to industrial development around the former Williams Air Force Base because that area is prone to flooding.

The future industrial sites are in Mesa, Queen Creek and the unincorpo-

See **FLOOD**, Page 3

Completion of tunnel carries price

Would rob $36 million from general f[illegible]d

By Bob Petrie
Staff writer

From Page 1

rated areas of Maricopa County.

"Major flood-control projects have been completed elsewhere, but much more needs to be done in the east Valley," Knudson said.

Phoenix Councilwoman Thelda Williams complains that the city is getting short shrift from the Maricopa County Flood Control District.

"We just have too many projects hanging for too long," she said.

The Crosscut Canal in east Phoenix isn't finished. Projects in northeast Phoenix are languishing. Overall, Phoenix has more than $200 million of unmet flood-control needs, a recent city study concluded.

There are rumblings of discontent elsewhere.

In Scottsdale, city officials complain they're always at the end of the line when it comes to flood-control plans.

Fueling the cities' exasperation this year is how the county used money earmarked for flood control to balance the county's budget.

The flood-control debate started again last month when a Phoenix City Council subcommittee voted unanimously to ask the Legislature to remove Phoenix from the flood-control district.

Members want an independent district that would serve Phoenix.

The county flood control district collects 33 cents per $100 of assessed valuation from county property owners.

Phoenix tried to get similar legislation earlier this year, but backed off after county officials promised they would not cut the flood-control budget.

Williams and other Phoenix council members are angry that the county then juggled its tax rates, less money goes into flood-control coffers and more goes into the county general fund.

They say that will mean less money for flood-control projects.

Phoenix Councilman Craig Tribken said the flood-control district doesn't help the city.

The county tends to do large-scale projects at the growing edges of the Valley that don't curb flooding in pockets of the central city.

At 24th Street and Camelback, he said, "I've got 10 homes that flood twice a year."

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Scottsdale has similar complaints.

Steve Hogan, the city's general transportation manager, estimated Scottsdale gets $11 to $14 back in flood-control projects for every $100 that city residents kick in.

"If we ran our own show, we'd have the ability to take care of our own needs," he said.

That's fine with Tom Rawles, chairman of the county board of supervisors. Unlike county staff, he has no objections if cities want to go their own way. However, they would also have to pick up the tab for maintaining flood-control projects already built on their turf.

Now that bigger, regional flood-control needs have mostly been taken care of, Rawles said it's time for the county to bow out: "I want to get out of the business."

Rawles spokeswoman Manjula Vaz said the chairman isn't speaking for the entire board, which is still "studying regional issues."

Reporter Bob Petrie contributed to this article.

Breached Structures November 16, 1989

Chuichu, Arizona Area

(South of Casa Grande & I-8/ East of Eloy & I-10)

Hassayampa River rest area south of Wickenburg.

New construction wiped out by 1993 flows.

Arrows indicate high water mark.

January 1993

LOWER LAKE
PLEASANT

2-17-80

WADDELL DAM &
LAKE PLEASANT
2-17-80

WADDELL DAM

2-17-80

WADDELL DAM

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WADDELL DAM &
LAKE PLEASANT
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Sunny Cove FRS in Wickenburg July 20, 2015