



**DESERT - SOUTHWEST CHAPTER**  
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## **A NEW SOLUTION AND USE FOR TUCSON FLOODWATERS**

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An interdisciplinary team of faculty members and graduate students at the University of Arizona is currently participating in a study which could prove to be of great importance to planners in the arid Southwest. This research is being supported by the Office of Water Resources Research of the U.S. Department of the Interior. The study team for three years has been involved in data collection and analysis leading to the development of a flood control and recreation planning model for stream channels in urban regions in the desert Southwest. What are the implications of this study for professional planners?

Each year intensive summer rainstorms result in widespread flooding in urban areas such as was experienced in Scottsdale, Arizona this past summer. The traditional Arizona and New Mexico approaches to this problem have been the application of liberal doses of hindsight. After the flood waters have subsided, the government concerned calls upon the city or county engineer to resolve the problems by channelization of the wash and/or construction of a concrete liner. Costs to both the public and private sectors from this method are exorbitant and partial solutions often result. The purpose of the model developed by the University team is to provide an alternative flood control solution which will effect a cost savings over current methods, while at the same time utilizing flood runoff, stream channels and adjacent lands for recreational purposes.

## BASINS TO FORM RESIDENTIAL LAKES

The urbanization of desert areas increases the normal volume of runoff from rainfall about five times. In the existing cities of the Southwest the street system is a primary carrier of this urban storm runoff. These two factors interact during a storm to form wave crests in the washes, resulting in severe erosion and flooding. The model proposes to minimize this cresting by diverting a portion of the runoff into off-channel basins. Part of the water trapped in these catch basins would be retained for recreation and irrigation purposes; the remainder would be released slowly back into the stream channel during and after the termination of the storm, which greatly aids in groundwater recharge.

Four small watersheds in the Tucson area were selected for this study because they were typical of the varied land-use and ownership patterns found in the Southwest. Within them are found industrial, commercial, established residential, emerging residential, and undeveloped lands. The study areas encompass both high income residential areas and a portion of the Tucson Model Cities area. The topography within these watersheds varies from basin lands to mountainous areas. Thus, the study team is approaching the problem by examining the man-related as well as natural elements within each of the watersheds.

Anklam Watershed is one of the four watersheds being studied. The stream channels bisect the entire region and, if developed into linear parks, could be used as a means to connect urban recreation systems. Small off-channel basins would be located within the large park sites, thus forming highly desirable lakes for recreational purposes.

## INTERDISCIPLINARY EFFORT IN STUDY

The study team represents a true interdisciplinary effort. Graduate students, teaching faculty, and professional researchers comprise the bulk of the staff. They represent expertise in the fields of hydrology, civil engineering, law, natural resource recreation planning and economics, watershed management, landscape architecture, and urban planning.

The team examines each watershed for amount, frequency, intensity, and duration of rainfall, peak flows and volumes of runoff; the quality of the runoff water; and the proper techniques for diverting, storing and treating the water. Also, in conjunction with this rainfall collection and processing, a water-based linear park planning model applicable to urbanized areas in the southwestern region was devised. Included in this model are site designs, legal implications, economic analysis and other planning considerations. This systems approach to model design provides for park and recreation uses such as camping, intensive day use, picnicking, bicycling, hiking, and the visual amenities of open space.

The end product of this on-going project at the University in Tucson will be a model for flood control and recreation planning, which can be readily utilized by southwestern planners. It will provide a means for augmenting current tools such as flood plain zoning and open space purchase techniques, and may result in more effective and efficient utilization of that traditional planning headache--

the urban wash. In the long run, it may even prove to an answer to the rising costs of flood control in urban areas.

The participating faculty and staff of the University is vitally interested in the opinions/comments/criticisms of southwestern planners regarding the applicability and usefulness of the flood control and recreation model to the solution of local problems. The Water Resources Research Center, one of the coordinating Departments, welcomes visits from you whenever you are in the vicinity of Tucson. The Center is located on the University campus, Room 102 of the Old Psychology Building.

(Sol Resnick is the director of the Water Resources Research Center; Kenneth DeCook is an associate hydrologist with the center; Robert C. Johnson and Jerry Swanson are graduate students in Watershed Management and Urban Planning respectively - both are employees of the center.)