

## Tucson's Casa del Agua

### Introduction

The City of Tucson is supporting a program to address water problems in the greater Tucson area. A portion of this program, administered by the University of Arizona's Office of Arid Lands Studies, is to study residential water use and to design a practical, water-efficient demonstration house.

The University of Arizona has designed a retrofit of an existing house located at 4366 Stanley Place near Oracle and Wetmore roads in Tucson. The actual reconstruction is being performed in cooperation with the Southern Arizona Home Builders Association (SAHBA), Estes Company, Miller Homes, Tucson Water and the Southern Arizona Water Resources Association (SAWARA).

The primary goal of the demonstration house, called "Casa del Agua," is to make it open and available to educate the public about water and energy issues and to demonstrate alternative water and energy conservation methods. A secondary goal of the Casa del Agua is to evaluate the system's cost, practicality, performance, effectiveness and public appeal.

### Water Conservation System

The reconstruction for the Casa del Agua's water conservation system will comprise architectural modifications, relandscaping, and other retrofits to accommodate rain harvesting, and greywater reuse.

### Architecture

Architectural modifications will include the construction of a greenhouse, which will provide passive solar heating for the rest of the house. A garage will be made into a family room, and an open patio will be roofed and screened. The extended roof area will increase the rain catchment surface for water harvesting. Water saving devices, shower heads and low-water using toilets, also will be installed.

### Landscaping

The landscaping plan will incorporate drought-resistant plants, planters, a food garden and a drip irrigation system. Extensive brick paving will be sloped so that it directs rainfall to vegetated areas. Vines will be used on sunny sides of the house to provide shade.

### Water Harvesting

The roof will be used to collect rainwater, which is estimated to be an average of 15,500 gallons each year. This collected water will be stored in a cistern that will be connected to a pump that will supply water to the toilets, hose bibs and drip irrigation lines. This will provide approximately one-third of the outdoor irrigation and toilet flushing needs of a three-person household.

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## Requirements for Annual Pumpage and Water Use Reports

Annual reports for groundwater pumped or received in the state's four Active Management Areas (AMAs) and in the Douglas and Joseph City Irrigation Non-expansion Areas are now required by Arizona's Department of Water Resources.

Individuals must measure and report all groundwater withdrawals from wells that pump more than 35 gallons per minute. Power records for wells are required as part of the report so pumpage figures can be verified.

Well owners in AMAs must include a fee of \$.50 per acre-foot of withdrawn groundwater with the report. All money collected from this withdrawal fee will go into the state's general fund to help offset the costs of administering and enforcing the groundwater code.

Individuals who do not own a well, but who receive groundwater from a neighbor or irrigation district must file an annual report but are not required to pay the withdrawal fee. For more information write: Department of Water Resources, 99 East Virginia, Phoenix, Arizona 85004.

## Agua Fria and Verde Watersheds Adjudication

All water users in the Verde and Agua Fria Watersheds must file a claim in the water rights adjudication by August 1, 1985.

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## Casa del Agua (cont'd)

### Greywater System

The greywater system, which probably will be the most costly and experimental part of the demonstration, will provide two-thirds of the water needed for outdoor irrigation and toilet flushing. This will require a modification of the house drain, waste and vent system. Greywater will come from the washing machine, one side of the kitchen sink, the lavatories, tub and shower. The toilet waste line and garbage disposal will be rerouted directly to the municipal sewer. The existing house drain system will direct the greywater into a series of concrete treatment tanks. The treated water will then flow by gravity to the storage cistern where it can be pumped back through the same distribution system used for the rainwater.

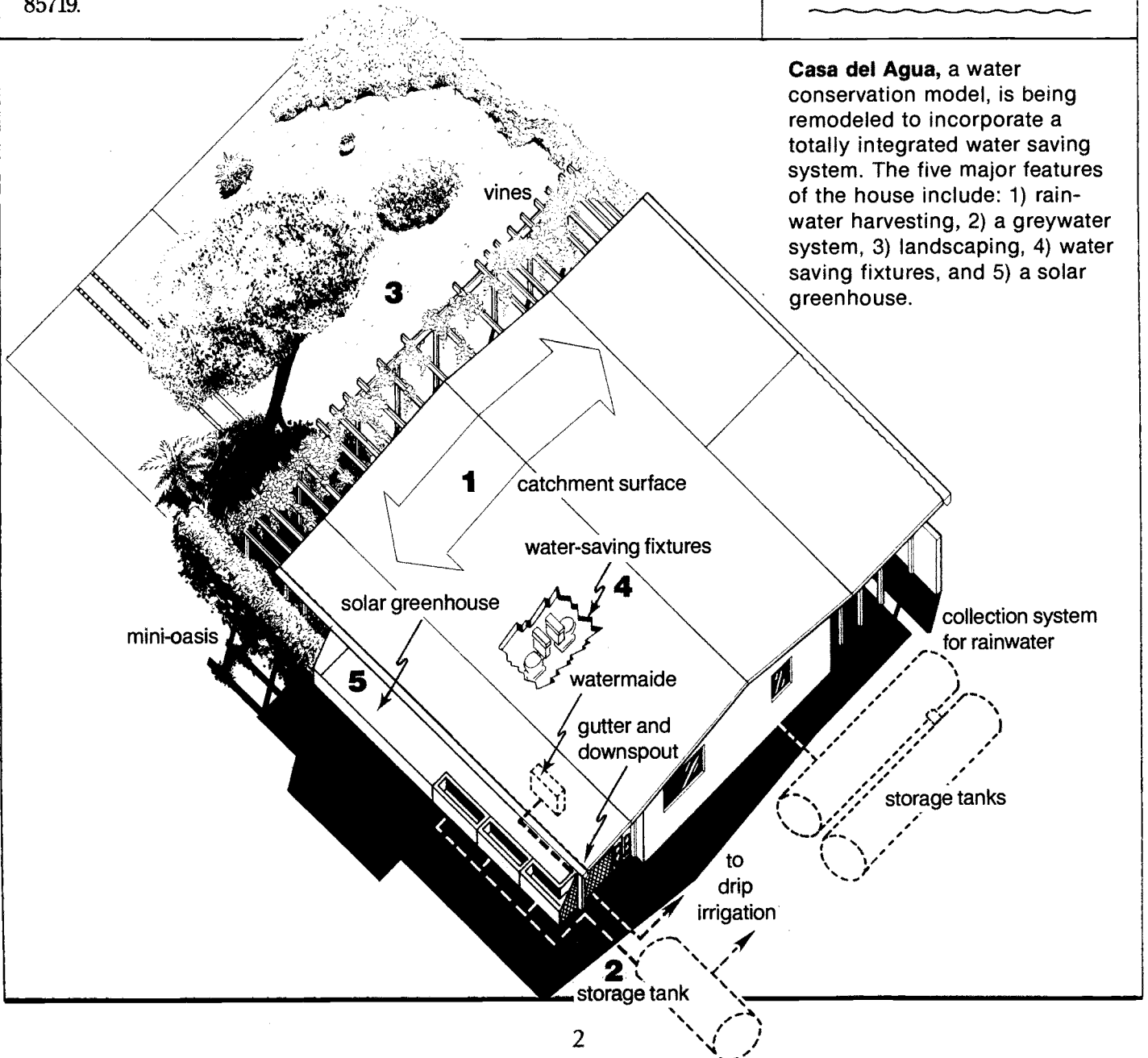
Casa del Agua is scheduled to be open to the public in late September. For more information about the Casa del Agua see the report *Water Harvesting and Reuse: Designing an Urban Residential Demonstration* (see "Publications" this issue), or write to the University of Arizona's Office of Arid Lands Studies, College of Agriculture, 845 North Park Avenue, Tucson, Arizona 85719.

## Watersheds Adjudication (cont'd)

An adjudication of water rights is a court determination of all rights to use water from a river system or watershed. The purpose of this adjudication is to confirm and assign all entitlements to withdraw or store water for "beneficial use."

The adjudication is being conducted by Arizona's Superior Court in Maricopa County. Residents in the Agua Fria and Verde watersheds may call the Department of Water Resources' toll-free number if there are any questions about the adjudication. The toll-free telephone number is 1-800-352-8488.

**Casa del Agua**, a water conservation model, is being remodeled to incorporate a totally integrated water saving system. The five major features of the house include: 1) rainwater harvesting, 2) a greywater system, 3) landscaping, 4) water saving fixtures, and 5) a solar greenhouse.



## UA Traveling Centennial Exhibit

The University of Arizona's traveling centennial exhibit, *Arizona Spirit*, will visit every Arizona county this year. Part of the exhibit is devoted to water use within the state.

The College of Agriculture's contribution has been to develop exhibits that address water conservation in agriculture, explaining current technologies like drip irrigation and laser leveling, and future technologies that use low-water-using crops and remote sensing. Another portion of the exhibit is devoted to urban water conservation technologies for using rooftop runoff, greywater and low-water-using landscaping. The *Arizona Spirit* will be featured at the State and various county fairs throughout the year.

## Arizona Hydrological Society Meeting

The Arizona Hydrological Society invites your participation in its monthly meetings, which are held on the first Tuesday of each month. A recent meeting featured Barbara Jordan who discussed water conservation in the Phoenix area.

For more information on the Society and its activities, write: David L. Kirchner, Water Resources Associates Inc., 3033 North 44th Streets, Suite 228, Phoenix, Arizona 85018.

## WRRC Appoints New Director

William B. Lord has been appointed director of the University of Arizona's Water Resources Research Center (WRRC).

Lord is a natural resource economist and currently is president of W. B. Lord and Associates of Denver, a corporation that provides research and consulting services in natural resources and environmental policy analysis, planning, impact assessment and engineering. Lord's appointment as director will begin in July.

## Publications

### *NGWIC Newsletter*

The National Ground Water Information Center (NGWIC) has announced the publication of a newsletter formulated for distribution to NGWIC database subscribers. The newsletter will address pertinent questions regarding database searching techniques and improving communications. It also will highlight new publications.

For information contact: National Ground Water Information Center, National Water Well Association, 500 West Wilson Road, Worthington, Ohio 43085; telephone (614) 846-9355.

### *A Sense of Water*

*A Sense of Water*, teaching materials developed by the Southern Arizona Water Resources Association (SAWARA), is now available for distribution. The publication provides teaching activities that focus on the water situation in southern Arizona. This includes water supply, water augmentation, conservation techniques, and Arizona's water conservation laws. This publication was made possible through grants from the Gannett Foundation, the City of Tucson and Tucson Unified School District. These books will be distributed by SAWARA through the school districts in Pima County.

For information contact: Southern Arizona Water Resources Association, 465 West St. Mary's Road, Suite 100, Tucson, Arizona 85705; telephone (602) 624-9000.

*Water Harvesting and Reuse: Designing an Urban Residential Demonstration and Water Harvesting Agrisystem: An Alternative to Groundwater Use in the Avra Valley Area, Arizona.* These documents describe activities of the University of Arizona's Office of Arid Lands Studies in support of a water conservation research program in the greater Tucson area. *Water Harvesting and Reuse* describes the

design of an urban residential demonstration house; *Water Harvesting Agrisystem* describes a water harvesting agrisystem that has been developed on abandoned farmland in Avra Valley.

Copies of these documents are available from: Publications, Office of Arid Lands Studies, College of Agriculture, University of Arizona, 845 North Park Avenue, Tucson, Arizona 85719; telephone (602) 621-7897.

### *Arizona Water Information Directory*

The University of Arizona's Cooperative Extension Service recently released the first edition of the *Arizona Water Information Directory*. The Directory, compiled by K. James DeCook, includes descriptions of agencies that provide information on water in Arizona. A comprehensive keyword index also lists the type of information (data, maps, printed materials) provided by agencies in each category.

Copies of the Directory are available for \$10 per copy from: Agricultural Communications, College of Agriculture, University of Arizona, Tucson, Arizona 85721, telephone (602) 621-7178; or from any of the County Cooperative Extension Service offices.

### *Primer on Well Water Sampling for Volatile Organic Compounds*

This document, by Patrick W. Holden, was prepared by the University of Arizona's Water Resources Research Center under a research grant from the U.S. Department of the Interior. The Primer is intended to introduce the topic of sampling of volatile organic compounds in groundwater and establishing sampling programs.

Copies may be obtained from: Librarian, Water Resources Research Center, University of Arizona, Tucson, Arizona 85721; telephone (602) 621-7607.

## Conferences

### AWRA Conference and Symposium

The American Water Resources Association (AWRA) will hold its twenty-first annual water resources conference in Tucson, Arizona, August 11-16, 1985. Meetings will be held at the Sheraton Tucson El Conquistador Resort.

The conference, "Water Demand—Sharing a Limited Resource," will address the following topics: strategic planning contributions to water resources problems, identification, development and management of new sources of water, optimizing water allocation, the impact of water rights on water use, conjunctive use of surface and groundwater, cost sharing policy, and economic aspects of water use.

The symposium, "Groundwater Contamination and Reclamation," will be held in conjunction with the conference. Symposium papers will address the following topics: groundwater quality monitoring, case histories of groundwater pollution and aquifer restoration, legal aspects of groundwater contamination and cleanup, public perception of groundwater pollution, limitations of ground-

water reclamation projects, regulatory approaches to protecting groundwater, economics of aquifer restoration, and aquifer protection versus restoration.

For more information write to the general chairman, Nathan Buras, University of Arizona, Department of Hydrology and Water Resources, Tucson, Arizona 85721, or telephone (602) 621-5082.

### Artificial Recharge Symposium

The University of Arizona's Water Resources Research Center, the U.S. Department of Agriculture's Water Conservation Laboratory and the Salt River Project will host the Second Symposium on Artificial Recharge in Arizona, May 2-3, 1985. The Symposium will take place at the Fiesta Inn in Tempe, Arizona.

Technical sessions will address the following topics: technical and environmental aspects of recharge; legal and institutional aspects of recharge; economic and financing aspects of recharge; and case studies of Arizona recharge projects.

For more information contact: L. G. Wilson or Floyd Marsh, Water Resources Research Center, University of Arizona, Tucson, Arizona 85721; telephone (602) 621-7608 or 621-1009.

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Please address your news items or comments to any of the editors

Bill Allen, Arizona State Land Department, 1624 West Adams, Phoenix, Arizona 85007.  
(602) 255-4629.

Phil Briggs, Arizona Department of Water Resources, 99 East Virginia, Phoenix, Arizona 85004.  
(602) 257-1557.

Ken Foster, Office of Arid Lands Studies, University of Arizona, Tucson, Arizona 85719. (602) 621-1955.

Susan Keith, Arizona Department of Health Services, Water Quality Control, 1740 West Adams, Phoenix, Arizona 85007. (602) 257-2350.

L. Gray Wilson, Water Resources Research Center, University of Arizona, Tucson, Arizona 85721.  
(602) 621-7608.