

# **VERDE RIVER CORRIDOR PROJECT**

## **EXECUTIVE SUMMARY**

### ***Introduction***

The Verde River corridor is one of Arizona's most important resources, both in its richness and in its usefulness. It provides innumerable benefits to the state's economy, its residents' quality of life, and the natural, cultural, and scenic environment. The Verde is known for its beauty and diversity of landscape, its opportunities for recreation, the bounty of its water and riparian lands for fish and wildlife populations as well as for human communities, and for the link it provides with the past and the path it opens to the future.

There is widespread concern that the attributes which make the Verde and its tributaries special are being increasingly threatened. Many area residents feel the overall quality of the Verde and its corridor lands have deteriorated in recent years. Most desert rivers in the Southwest have been so drastically altered that they are liabilities instead of assets to the communities through which they flow.

The population of the Verde Valley, and the state as a whole, is growing at a phenomenal rate. In 1980 the combined population of the Verde Valley area totaled 16,865 people. By 1990 it had nearly doubled to 31,805 people. In that same ten-year period, Arizona saw an increase of one million people—from 2.7 million to 3.7 million.

The Verde Valley is fortunate. The communities along the Verde River still enjoy a clean, flowing river, lush riparian vegetation, healthy wildlife populations, a quality of life, beautiful scenery, and a favorable economic atmosphere. But the demands on the river and its resources are increasing daily.

Because of the rapidly expanding population, the Verde Valley residents are concerned about the future of the Verde River. If there is no coordinated planning that considers both the human and environmental needs of the Verde River, the river and its resources, and subsequently the Verde Valley residents' quality of life, will suffer. Other issues of concern to the residents include water quality and quantity, erosion and loss of riparian habitat, private property and recreation access conflicts, commercial uses, confusing regulations and inconsistent management along the corridor, and open space.

In order to take a closer look at the issues facing the Verde, and to develop recommendations and a plan of action for dealing with them, local residents and organizations, with assistance from the Arizona State Parks Board and Arizona Department of Commerce, established the Verde River Corridor Project. It is a grassroots effort initiated by community leaders and individuals who saw a need for coordinated planning and management along the Verde River corridor.

### ***Background***

The Verde River Corridor Project (VRCP) began in the fall of 1989 as a locally directed effort with the goals of examining all the uses and values of the river corridor, agreeing on a common vision, and developing a plan of action that could be supported by the public and managing agencies alike.

From the initial meetings, it was clear that local citizens had a strong concern about issues affecting the Verde and a strong desire to become more involved in decision-making about the river. Local Verde Valley officials appointed people to a steering committee composed of a cross-section of the population. The twenty-six member steering committee was formed to direct the project.

Located in central Arizona, the VRCP study area covers the middle stretch of the Verde River which extends approximately 55 to 60 river miles, from Tapco, which is north of Clarkdale, to Beasley Flat, which is south of Camp Verde. The project participants also wanted the upper headwaters from Sullivan Lake downstream to Tapco considered because of its direct impact upon the corridor. A corridor width that included the 100-year floodplain was chosen.

Land ownership is extremely varied in the Verde Valley with much of it in private hands. Three incorporated communities, Clarkdale, Cottonwood, and Camp Verde, are located within the corridor as are several unincorporated communities under the jurisdiction of Yavapai County. The upper and lower stretches of the Verde outside the designated study area are primarily Forest Service land with some private inholdings.

The ultimate goal has not been to change the character of the corridor, but to conserve the river and its related resources in a way that is balanced with growth and economic vitality. The term "corridor" is not meant to be a designation of acquisition and protection like the six-mile Verde River Greenway now being planned by the Arizona State Parks Board. Rather, it refers to the general study area chosen because of its complex land ownership patterns, its natural, cultural, and scenic values, and the high level of uses and conflicts.

### ***Process***

At the beginning of the VRCP, the Steering Committee and other participants spent considerable time exploring possible visions for the future of the Verde River and its corridor lands. Together they developed the following vision and mission statement.

### **Overall Vision of the Verde River Corridor Project**

*The Verde River corridor is an invaluable resource to the people of the Verde Valley and to the State of Arizona. It is an integral part of life in the Verde Valley affecting each resident, landowner, business, and tourist in some way. Planning for its wise use, protection, and enhancement of the Verde River and its associated natural, cultural, scenic, agricultural, economic, and recreational resources should be a priority for everyone.*

### **Mission**

*Identify and recognize all uses of the Verde River corridor, encourage protection of the Verde River and its natural and cultural resources, and promote coordinated decision-making for the continued enjoyment and use of the Verde River by future generations.*

The Steering Committee was committed to extensive citizen-based participation in all phases of the plan's development so that the final plan would be wholly produced by members of the community in which it would be implemented and thus have a broad base of support. The VRCP involved a six-step process: (1) assessing the special resource values of the Verde, (2) identifying the issues of greatest concern to area residents, (3) ensuring a broad cross-section of the community participated in or contributed to the VRCP, (4) setting goals based on the identified issues and resources, (5) considering alternatives for resolving the identified issues, and (6) developing a final set of recommendations and a plan of action.

The planning process used for this project is multi-objective river corridor planning, so called for its all-encompassing scope looking at a wide variety of issues, including economic, social, cultural, legal, recreational, and environmental, that affect the Verde River and its corridor lands. This process acknowledges two simple yet essential ideas about river management: (1) no public action can replace wise use of a river by those living along it, and (2) effective river management cannot succeed without local consensus and support.

One of the earliest tasks involved identifying the key issues facing the Verde River. Several public meetings were held and questionnaires sent out soliciting comments from as many people as possible. A booth was set up during the annual Verde River Days event to inform the public and gather additional comments.

After reviewing the hundreds of concerns identified, most issues were combined into five main categories: private property, economics/commercial uses, land conservation, recreation, and water. Five subcommittees were formed to explore each of these issues and consider possible actions for resolving identified problems. A Technical Advisory Committee composed of agency and organization designees was also established to provide technical expertise and assistance to the citizen-directed VRCP. A large mailing list of nearly 500 residents, landowners, groups, and agencies was developed to keep interested people informed of the group's meetings and progress.

Arizona State Parks, through a grant from the State Lake Improvement Fund approved by the Arizona Outdoor Recreation Coordinating Commission, worked with local, state and federal agencies to develop a resource inventory, maps, aerial photography, and land ownership and floodplain information for use by the committees. Two related studies were conducted by two state universities that provided excellent information to the VRCP. The University of Arizona conducted a public opinion survey of local residents, and Arizona State University conducted a Visual Resource Assessment of the Verde River corridor.

The five subcommittees met between November 1989 and April 1991, researching, discussing and setting priorities and recommendations for consideration by the Steering Committee. The Steering Committee met regularly to hear the subcommittees' progress, provide direction, and to explore the many sides of complex issues. Several special open forums were held for the benefit

of the committees and the general public to hear and comment on some of the most controversial issues.

Many other agencies and groups turned to the VRCP, recognizing it as an effective vehicle to reach the Verde Valley residents concerning their programs and plans and solicit public comments. This cooperative aspect worked both ways, opening up lines of communication between local residents and state and federal agencies. An important aspect of the project was to bring local people together to begin thinking and talking about the future of the Verde Valley, and to agree on ways to deal with some of the problems affecting the river.

### ***Action Plan***

The purpose of the VRCP has been to develop a workable strategy for the use, management, and protection of the river corridor that incorporates the views of its many users and supporters, residents, agencies, and elected officials. The recommendations are meant as suggestions—as a starting point. These recommendations, in many instances, piggy-back on existing community efforts, recognizing and supporting the local actions.

No one group is responsible for the implementation of all the recommendations. These actions will require a concerted effort by many individuals, groups, and agencies. As each recommended action is begun or completed, we move closer to our vision for the Verde.

The **Action Plan** for the Verde River Corridor Project is composed of:

- Overall Vision and Mission
- Guiding Principles
- Top Ten Priority Actions
- 140 Subcommittee Recommendations
- Major Goals of the Five Subcommittees
- Accomplishments achieved as a direct result of the VRCP Process
- Ongoing efforts of other individuals, groups, and agencies

Toward the end of the planning process, VRCP participants further defined their vision and created the guiding principles to provide direction when developing approaches to resolving river issues. These principles represent the diversity of issues and opinions that were the heart of the Verde River Corridor Project. They should serve as guidelines during implementation of the recommendations and plan of action.

It is not the intent of the VRCP to create another level of bureaucracy, or make sweeping changes in existing laws, regulations, or policies. The communities of the Verde Valley do an

admirable job of trying to accommodate the uses and needs of their residents. The VRCP does see a need for a more comprehensive coordination effort between the incorporated communities and unincorporated county areas, and between the public, special interest groups, and agencies.

The region is experiencing tremendous growth which will impact every facet of the valley, requiring some level of change in management, general plans, zoning, and ordinances. The VRCP encourages the county and communities to coordinate these changes so that there is consistency in management and regulation along the corridor.

## **GUIDING PRINCIPLES**

### **Private Property**

As Americans, we hold dear the right to own property. Many laws and policies exist which are designed to protect the private property owner. There are also regulations and ordinances designed for the safety, health, and welfare of others and for the conservation of the land and its resources. Personal stewardship is one of the best forms of land protection.

***• Rights of private property ownership to the land shall be respected in all river- related management decisions.***

### **Economic Development**

Commercial utilization of the water and other resources of the Verde River corridor is an integral part of life in the Verde Valley. The natural resources associated with a river are valuable assets to the economic health and quality of life of adjacent communities and their residents. Wise use and planning can ensure that current and future populations enjoy the many benefits of these resources.

***• Economic development of the river corridor shall be balanced with conservation and maintenance of the natural, cultural, and scenic values of the Verde River corridor.***

### **Water**

Water is a precious commodity in an arid environment. To enjoy both year-round flows and clean, unpolluted water in a free-flowing river at one's doorstep is an absolute treasure. The management of the water resources in the Verde Valley is a complicated task requiring continuing study. As supplies and technology for storage and reuse of water develop and change, there may be a need to consider a reordering of priorities to optimize water usage allocations among the competing demands.

***• Maintenance of the natural instream flows adequate for identified needs and uses, and improvement of water quality of the Verde River and its major tributaries shall be a priority. Identified needs and uses include the natural ecosystem, fish and wildlife, recreation, agriculture, and commercial and domestic use.***

## **Resource Protection**

The natural and cultural resources of the Verde River corridor constitute an important contribution to the natural diversity and quality of life in the Verde Valley and in the nation. There are several national monuments and wilderness areas located along the Verde River and its tributaries. The Verde's riparian corridor is renowned throughout the United States as one of the last remaining extensive stands of cottonwood-willow gallery forest. Committed to the preservation of this unique ecological resource, the State of Arizona has established the Verde River Greenway to assist in this goal.

***• Protection, enhancement, and restoration of the natural resources along the Verde River corridor shall be a priority.***

***• Preservation and protection of the cultural resources of the Verde River corridor shall be a priority.***

## **Recreation**

The free-flowing waters of the Verde have offered swimming, fishing, boating, hiking, and other water-related recreational opportunities for many years. Now, this appreciation for these privileges is becoming more apparent as the population base broadens and more people are exposed to the benefits of the river and all it has to offer. Arizonans are privileged to enjoy an incredible diversity of recreation opportunities. With this privilege comes responsibility—to other recreationists, to landowners, and to the land itself.

***• Providing recreation opportunities and ensuring the availability of appropriate managed public access along the Verde River corridor shall be a priority.***

***• Informing the public of river-related recreation opportunities, access, and personal responsibilities shall be a priority.***

## **Education**

Education about the environment and our role in it can take many forms—from formal programs, to nature walks, to books and pamphlets, to simply experiencing the wonders of nature through the eyes of a child. Environmental education should be ongoing throughout one's life. In order to participate in planning efforts and help make informed decisions regarding the Verde River and its management, the general public, businesses and government representatives need to recognize that the Verde River corridor is a special natural and cultural resource and a tremendous amenity not found in very many communities.

***• Promotion of a greater awareness, understanding, appreciation, respect, and responsibility toward the Verde River and its resources, in order to instill personal and community responsibility, shall be a priority.***

## **Planned Growth**

The Verde Valley is a vital, growing region attracting many businesses and industries as well as new residents. Planned growth is essential to the economic and environmental health of the region. Making decisions for the Verde Valley is everyone's responsibility.

***• Encouragement of coordinated land use policies which, while accommodating growth, are compatible with natural, aesthetic, rural, recreational, and cultural values shall be a priority.***

### **Coordinated Management**

There are many agencies and organizations that control and regulate the resources of the Verde River corridor. In many instances, these entities do not communicate regularly with each other, causing considerable confusion and duplication of efforts. The general public encounters obstacles in trying to understand the many policies and laws and in attempting to effectively participate in planning or management decisions.

***• Development of a strategy for the coordinated management, conservation and use of the corridor, emphasizing a shared responsibility for management between landowners, private organizations, recreationists, and appropriate levels of government shall be a priority.***

***• Establishment of an ongoing Verde River corridor organization to help implement the recommendations outlined in this process and to continue to function in the interest of conserving the Verde River and its resources shall be a priority.***

Throughout the year and a half long project, the five subcommittees developed over 140 recommendations that included issues and action-oriented strategies. From these recommendations a series of major goals for the priority issues were identified by each of the subcommittees.

### ***Major Goals of the Five Subcommittees***

#### **Economics and Commercial Uses**

It is obvious that rivers, trails, and open space connecting natural, cultural, and recreational areas increase the aesthetic an

Many of the issues that faced this subcommittee spanned across all the subcommittees; so while there may have been issues involving recreation, private property, land conservation, or water quality, this subcommittee focused on the economic aspects of each issue. The four primary issues addressed were sand and gravel mining, agriculture, housing developments and zoning, and benefits of the river corridor to the local economy. The major goals identified by the subcommittee are:

***• Utilize the river corridor and its cultural and natural resource values to promote tourism and as a quality of life incentive to attract tourists, new businesses, and new residents.***

- Make provisions for the sand and gravel industry to function in the Verde Valley while protecting the river corridor values.
- Promote the retention of agricultural uses and open lands along the Verde River corridor while protecting corridor values and resources.
- Maintain and/or increase open space along the Verde River corridor while accommodating for planned growth.

## **Land Conservation**

The Verde River corridor contains natural, cultural, and scenic resources of state and national significance. The cottonwood-willow riparian community type that thrives along the Verde is considered the most threatened forest community in North America, and the riparian area found along the Verde River corridor is one of only five remaining extensive stands in Arizona. The Verde is also home to over 50 threatened, endangered, and sensitive species of fish, wildlife, and plants. Many of these resources have come under increasing pressure from uncontrolled recreational use, pollution, inappropriate use, and development. As growth continues in the Verde Valley, some of these resources are being degraded and, in some instances, lost.

Many diverse issues were grouped under the heading of "land conservation," such as riparian habitat, fish and wildlife protection, cultural resources, flooding and erosion, scenic values, land use and development concerns, land ethics and education, and land protection strategies. Several studies and informative forums were undertaken throughout the project to investigate these issues. The results of those studies are now being finalized and evaluated, which will provide an excellent baseline to begin working on the subcommittee's recommendations; their major goals are outlined below:

- Protect, enhance and restore the riparian ecosystems along the Verde River corridor.
- Preserve and protect the prehistoric, historic, and archaeological resources of the Verde River corridor.
- Reduce the negative impacts of flooding and erosion.
- Protect, maintain and enhance the scenic qualities that the Verde River and its riparian corridor contribute to the area.
- Develop a greater recognition, understanding, appreciation, respect, and responsibility toward the Verde River and its resources.
- Promote public awareness of the Verde as a special natural resource and encourage public support for proper use of the river and its contiguous lands.
- Protect the environmentally sensitive areas of the Verde River Basin that are in need of protective management.

- Support public involvement in ongoing land use planning efforts and promote incorporation of considerations for the human and environmental needs of the Verde Valley.

## **Private Property**

The issues surrounding the rights, responsibilities, and opportunities of landowners touched every subcommittee. The priority issues identified by the Private Property Subcommittee included river access conflicts, trespassing, littering, law enforcement, landowner's liability, rights and responsibilities of landowners and recreationists, and zoning regulations. Though many Verde Valley residents purchased their riverfront properties to escape the urban problems of overcrowding, noise, pollution, crime, and the stress of urban living, some are now finding that the quiet country lifestyle is rapidly changing. Communities are expanding, more riverfront homes are being built, roads and bridges are planned, recreationists are crossing private property to access the river corridor, and pollutants are seeping into the river and underground water supply.

The population of the Verde Valley has nearly doubled over the last decade, and the growth projections for the future indicate the trend will continue. Without coordinated planning, the resulting changes to the communities, demands on the water supply and other resources, and overuse of the Verde River will result in negative changes to the Verde Valley's quality of life. Therefore, the subcommittee wanted to understand the various laws that affect private property owners and, as a result, one of the first tasks accomplished by the Private Property Subcommittee was the development of a publication, "A Summary of Rights and Duties of Private Property Ownership along the Verde River Corridor." The subcommittee's other major goals are:

- Ensure that the rights of private property owners are a priority issue in all river-related management decisions.
- Maximize private property owner participation in discussing and resolving corridor conflicts.
- Increase public awareness of private property rights and wishes.
- Identify benefits and/or liabilities to property owners of providing access to the Verde River corridor.
- Implement a plan to inform private property owners of rights, responsibilities, and opportunities.
- Identify what entity(s) have management and enforcement responsibilities over corridor lands and resources.
- Encourage private landowners to allow public access to the river corridor across their property while protecting their rights and wishes.
- Formalize the coordinating function of groups like the VRCP to ensure landowner and interagency communication and consistency on plans and decisions for the river corridor.

## **Recreation**

The Verde Valley is a favorite destination for many Arizona recreationists. The year-round flowing river and its tributaries with their lush green vegetation, steep-walled canyons, and broad floodplains offer recreational opportunities such as fishing, canoeing, kayaking, tubing, swimming, hiking, hunting, horseback riding, mountain biking, bird watching, history and nature study, photography, painting, picnicking, camping, backpacking, train riding, sightseeing, and just relaxing. The river supports a year-round warm water fishery for catfish and smallmouth bass and is now stocked by the Arizona Game & Fish Department with rainbow trout during the cooler winter months. The verdant riparian habitat along the Verde River supports many species of wildlife and offers an excellent place to observe bird and animal species not found elsewhere in the Verde Valley, such the river otter, beaver, bald eagle, ducks and geese, and the graceful great blue heron.

Recreational use of the Verde has increased in recent years, and the trend is expected to continue. As a result, a major concern about recreational use has been access to the river. Existing access points are overtaxed; where access points involve private land, trespassing and littering are concerns. At public access points, better monitoring and maintenance of facilities are issues. The first task completed by the Recreation Subcommittee was a recreational assessment of existing activities, access areas, and concerns along the corridor. The second task was to inform the public of the recreational opportunities and public access sites along the river corridor, so a public river access brochure was published in cooperation with local entities. Several participants may continue their cooperative efforts to monitor and help coordinate developments along the river with federal, state, county, and community agencies that affect the Verde River. The subcommittee identified the following major goals:

- Ensure adequate public access to the Verde River corridor by identifying and planning for needed access points.
- Develop a formal assessment of existing recreational activities along the Verde River corridor and identify areas of conflict.
- Develop a plan for distribution of information regarding recreational opportunities along the Verde River corridor.
- Promote improved river user behavior and cooperation by increasing public and river user behavior education, awareness, and involvement.
- Minimize conflicts between recreational uses and with private property owners.
- Minimize environmental impacts to the river corridor when planning and developing recreation access sites and facilities.

## **Water**

Increasing demands for water by agriculture, mining, industry, and cities have taken their toll on Arizona's streams and wetlands, and the Verde River is one of the only remaining perennial desert rivers in the state. However, threats to the flows of the Verde River could loom in the future—water exchanges and transfers, inefficient irrigation practices, increased groundwater pumping, and proposed residential and commercial development requirements. Likewise, the water quality of the Verde could be jeopardized by sewage and urban runoff, toxic wastes, sediment eroded from overgrazed rangeland, chemical runoff from irrigation, leaching from mine tailings, and non-permitted sand and gravel mining processes. To complicate the situation the pool of users and agencies that affect or are affected by the quantity and the quality of the river flows is enormous and diverse.

The subcommittee discovered a clear policy need to balance competing uses to protect the river flows and riparian areas and a clear management need for a framework for comprehensive communication and coordination between various water management authorities and the Verde Valley communities. The Water Subcommittee made information gathering and dissemination a top priority, and public forums and presentations were provided on several water issues. The major goals recommended by the subcommittee follow:

- Protect, and potentially even enhance or restore, the instream flows in the river, and the habitats and recreation and other uses that depend on those flows.
- Improve the water quality where problems exist and to prevent further pollution of the waters of the Verde River.
- Investigate and evaluate the potential for a local existing organization or a coalition of agency and community representatives to consider water supply, water use, water management, and water planning activities for the Verde Valley as a region and to coordinate activities with other local, state, federal, and tribal agencies, and various water use groups.

The Steering Committee reached consensus on the over 140 different recommendations developed from the five subcommittees. As part of the Action Plan, the numerous recommendations provide a good foundation for pragmatic local initiatives in developing management strategies for the Verde River. However, logistically every recommendation could not be handled at once.

To begin an effective implementation process, it was necessary to prioritize the list of recommendations and determine which actions were most needed and appropriate for immediate application in the corridor. The Steering Committee identified the following top ten priority actions:

### **Top Ten Priority Actions**

1) **Conduct** a landowner survey to determine who may be interested in participating in accomplishing the goals of the Verde River Corridor Project.

2) **Establish** a permanent river corridor group made up of existing community leaders, landowners, individuals, organizations, and agencies to continue the coordination and problem solving begun by the Verde River Corridor Project.

3) **Identify** and pursue sources for assistance and funding.

- Request that Arizona State Parks and Game & Fish hold an informational workshop on the Arizona Heritage Fund in the Verde Valley.

4) **Distribute** the reports and recommendations from the Verde River Corridor Project; take advantage of the public opportunity at Verde River Days.

- Final Report and Recommendations and Summary Publication

- Public River Access Brochure

- Summary Report of Private Property Rights & Responsibilities

- Recreation Assessment

- Visual Resource Assessment

5) **Participate** in the development of the Arizona State Parks' Verde River Greenway Master Plan by serving on the planning team.

6) **Facilitate** riverfront landowner and river user workshops to inform people of their rights, responsibilities, and opportunities and encourage active participation in the planning process.

7) **Develop** an identifying river corridor logo and implement its use in signing public river access sites and informational materials about the river corridor.

- A logo contest conducted as part of Verde River Days is suggested; an alternate suggestion is to use the VRCP great blue heron as the logo.

8) **Work** with cooperative groups to submit grant proposals for local parks, access sites, trails, habitat protection and enhancement, cultural resources, and environmental education to Arizona Heritage Fund, State Lake Improvement Fund, and Land & Water Conservation Fund.

9) **Initiate** a river corridor management strategy after current environmental assessments and reports of the Verde River are completed (VRCP, Verde NRCD, EPA ADID, ASPB Greenway, etc.).

10) **Support** ongoing efforts to manage and conserve the Verde River Corridor.

It is a positive outlook enhanced by the enthusiastic participation and support exhibited during the VRCP. In the past, there has been a recognized lack of information and coordination between

individuals, groups, and agencies on some issues that affect the river corridor. The VRCP was formed to bring together these people to facilitate discussion and decision-making.

The formation of a recognized coalition of those already established groups that now deal with the management and conservation of the river corridor has been identified as a priority recommended action as a result of this project. This permanent Verde River corridor "coordinating group" would oversee the implementation of the Action Plan and development of a coordinated river corridor management strategy. This coalition must include representatives of all interested groups and agencies, including landowners and members of the general public. The coalition should serve as an informational and educational force for the Verde Valley, letting people know about upcoming developments and changes. It should provide opportunities for the public to learn about and openly discuss the issues. It should also strive to reach a consensus whenever possible. It should open doors to coordinated, consistent management within the Verde River corridor.

One of the over-riding priorities of the VRCP has been the protection of private property rights. This concern has been included in all meetings, committee discussions, reports, and publications. The recommendations developed by the subcommittees include many references, suggestions, and action items intended to inform, involve, and protect the rights and responsibilities of all private landowners.

In catalyzing local action, the VRCP found that:

- 1) Citizens living along the river, and those using it, have invaluable expertise necessary for developing realistic expectations of what conservation of the Verde means, and
- 2) by understanding and embracing their role in the planning process, citizens will make legitimate, workable decisions about what can be accomplished.

The result of this planning process is a strategy for land and water management in and along the Verde River that is uniquely suited to its special qualities and the demands of the local communities.

The final report and plan of action, published in June 1991, highlights: the Verde River corridor's natural, cultural, commercial, and recreational values; current and future growth trends of the Verde Valley; overview of corridor problems; a summary of the VRCP process and committee work; recommendations and major findings, plan of action, supporting studies, summary of conservation and protection strategies, and management actions underway by various organizations.

As part of the VRCP, two stand-alone publications have also been printed as priority recommendations from the committees. There is a summary of private property rights and duties, and a public access brochure that describes the existing and planned river access sites available to the public. It is hoped that the final documents will provide a stimulus for further efforts to conserve the resources of this most precious of assets—*the Verde River*.

## **VERDE RIVER CORRIDOR PROJECT**

### **Steering Committee**

**Steve Andrews** AZ Flycasters Club, AZ Game & Fish  
**Jim Armer** Verde Valley Horsemen's Council  
**Bob Barker** Realtor/Forme Mayor of Camp Verde  
**Earl Bauer** Clarkdale Chamber of Commerce  
**Tom Bonomo** Prescott National Forest  
**Jim Bullard** Camp Verde Water System  
**Mike Burnett** Cottonwood Planning & Zoning Commission  
**Carlton Camp** Yavapai County Board of Supervisors  
**Jean Clark** Verde Valley Horsemen's Council  
**Jon Clow** Dead Horse Ranch State Park  
**Marsha Foutz** Friends of the Verde  
**Joan Gray** Northern Arizona Paddlers Club  
**Loft Hollamon** Well Driller  
**George Kovacovich** Rancher and Farmer  
**Anita MacFarlane** Northern Arizona Audubon Society  
**C. A. McDonald** Construction Contractor  
**Brian Mickelsen** City of Cottonwood Assistant Manager  
**Randall Miller** Environmental Education Center  
**Ron Moen** Mayor of Cottonwood and City Council  
**Marc Nielsen** Verde Village Property Owners Association  
**Tap Parsons** Camp Verde Town Council/former Mayor  
**John Petrosky** Verde Nursery  
**Pete Sesow** Cottonwood/Verde Valley Chamber of Commerce  
**Lester Hall** Superior Companies  
**Richard Thompson** Mayor of Clarkdale, Verde NRC  
**Charles Wright** Verde Valley Horsemen's Council

The Verde River Corridor Project Steering Committee and subcommittees were assisted in their work by:

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- Peggy Tabor, Project Planner, Arizona State Parks
- Facilitation of special meetings and open forums was provided by Peggy Fiandaca and Diane Prindeville, Arizona Department of Commerce.

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Or contact the local Planning Departments or Chambers of Commerce within the Verde Valley, or the Verde Natural Resource Conservation District.

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## **INTRODUCTION**

### **THE VERDE**

Water. Clean, flowing water. It is our lifeblood.

We tend to take water and our surroundings for granted. The Verde River with its year-round water has always been here for us. The tall cottonwood trees and lush undergrowth have always lined the banks. Hawks and eagles still fly overhead, herons and ducks wade in the shallows, beaver and raccoon scramble along the edges, and fish swim in the rapids and lurk in the deep pools.

People have always been attracted to the river. Rivers make good transportation corridors for boats, railroads, and cars. Recreationists come to fish, hunt, canoe, swim, camp, hike, ride, and bird watch. People build their homes along the banks or on hills overlooking the scenic waterways. The serene beauty of a river view provides the essence of human contemplation and rejuvenation. The rich, fertile soils make excellent cropland and pastures. The floodplains and streambeds are a source of sand and gravel necessary for the homes, businesses, and roads required by the people who choose to live in the Verde Valley.

The first human inhabitants of the Verde Valley migrated to this region for many of the same reasons we came here. Pleasing climate, attractive and diverse landscape, plentiful food and water, ample materials for building homes and communities, and close proximity to nearby desert and mountain resources are all drawing cards.

There has been considerable speculation about the disappearance of the prehistoric populations that once thrived in the Verde Valley. Although no one actually knows why the early inhabitants left the area around 1400 A. D., speculations include severe drought or other catastrophic environmental disaster, epidemics, constant warfare and raids by other tribes, and insufficient food supply and/or environmental degradation by too large a population base.

Currently, the Verde Valley is home to about 30,000 people. Even with all our modern technology, we are having trouble keeping our air, land, and water clean and unpolluted. Historians have estimated that several hundred years ago, there were over 35,000 Indians that lived in the valley. They had no sewage systems, monitored landfills, water quality controls, or modern medical treatments for typhoid, dysentery, hepatitis, and other hazards that could decimate populations. Could environmental pollution and subsequent health and safety factors have contributed to their demise or emigration (King, 1991)?

In recent times, many of Arizona's rivers have been taken for granted by the communities that developed next to them. Without much thought to the future, people diverted and pumped water, built dams or channelized the river, cut down trees for homes, fuel, and cropland, mined the sand and gravel, poured chemicals and waste downriver, and recreated without responsibility.

The result of this overuse without any long-range planning has been a dry, dusty, riverbed with no green vegetation, no fish or wildlife, no tourist or recreation attraction, and substantially

reduced economic potential. For examples look to Tucson and the Santa Cruz River, and the Phoenix metropolitan area and the Salt, Gila, and Agua Fria Rivers. These cities are now spending millions of dollars trying to clean up, enhance, and restore these areas. Many other communities are facing potentially serious problems with regard to loss of adjacent river values, including Holbrook and Winslow along the Little Colorado River, Sierra Vista and Benson along the San Pedro River, Prescott along Granite Creek, and the communities along the upper Gila and San Francisco Rivers. Without proper planning, Arizona is in danger of losing enormous economic, aesthetic, and environmental benefits associated with flowing rivers and riparian areas.

The Verde Valley is fortunate. The communities along the Verde River still enjoy a clean flowing river, lush riparian vegetation, healthy wildlife populations, a quality of life, beautiful scenery, and economic attraction that can't be beat. But the demands on the river and its resources are increasing daily.

The population of the Verde Valley and the state as a whole is growing at a phenomenal rate. In 1980 the combined population of the general Verde Valley area totalled 16,865 people. By 1990 it had nearly doubled to 31,805 people (ADES, 1990). The Town of Camp Verde experienced the largest growth—from 1,125 to 6,450. In that same ten-year period, Arizona saw an increase of one million people—from 2.7 to 3.7 million (ADES, 1990). The Southwest is currently experiencing a new spurt of growth. In the past year, Arizona, the nation's 24th most populous state, jumped from 35th to 7th in creating jobs (Johnson, 1991). In most parts of the country, people follow jobs. In the desert region, with its stunning beauty and sunshine that accommodates outdoor recreation over 300 days a year, people often move first and find a job later. How many people can the Verde Valley accommodate and still maintain its quality of life?

We are becoming a more mobile civilization, and technology is enabling us to do more and go more places than before. Improvements in timber harvesting, agricultural practices, and mineral extraction techniques enable companies to move into remote areas and profitably utilize resources that were once too difficult and costly to take. New innovations in vehicles and recreational equipment, both motorized and manual, allow more and more people access to the backcountry. These increasing uses of our natural resources are a testament to human ingenuity, but the cumulative impacts are beginning to take their toll. Can we use our technological advances to reduce our impacts to the world we live in?

Water pollution and sedimentation of the river are affecting developments and opportunities. Water quality regulations prohibit certain uses if water standards are not met. Previous land operations in the area, such as mining operations near Jerome and Clarkdale, have polluted lands and water and thus have complicated development and recreation opportunities. Increased scouring due to upstream uses is thought to be the primary cause of the structural instability of the Bridgeport Bridge, resulting in traffic closures of the bridge during high flows. How is it possible to provide for commercial use of the river resources and still protect the natural, scenic, and cultural values important to us all?

New developments along the river and disgruntled landowners tired of litter and vandalism have closed down traditional river access points. More people are finding it difficult to get to the river,

and when they do find an access point they often find new fences and "no trespassing" signs that limit where they can go and what they can do. There are many landowners and businessmen who don't mind courteous recreationists using their riverfront lands, but many of these same people are now closing their gates because of increased liability risks. How do you protect private property owners' rights and still provide the public adequate access to the river?

Sometimes there are similar but competing uses which can raise controversy and divide communities. The recent furor over trails, specifically off-highway vehicle trails on National Forest lands, has brought out adjacent landowners, environmentalists, and other recreationists to debate the merits of this activity on public lands. While most people agree that multiple use of public lands is a fair and logical theory, in practice, this concept can break down when the lands are being designated for actual uses. How is it possible to fairly accommodate every desired use on a finite parcel of land, or should it even be attempted? If not, how can it be decided which uses to allow and which to turn down?

After asking all these questions, we hope that you have a better understanding of the task that faced the participants of the Verde River Corridor Project.

## BACKGROUND

The Verde River is one of Arizona's most important resources, both in its richness and in its usefulness. It provides innumerable benefits to the state's economy, its residents' quality of life, and the natural, scenic, and cultural environment. The Verde is known for its beauty and diversity of landscape, its opportunities for recreation, the bounty of its water and riparian lands for fish and wildlife populations as well as for human communities, and for the link it provides with the past and the path it opens to the future.

There is widespread concern, however, that the attributes which make the Verde and its tributaries special are being increasingly threatened. Many area residents feel the overall quality of the Verde and its corridor lands have deteriorated in recent years. Most desert rivers in the Southwest have been so drastically altered that they are liabilities instead of assets to the communities through which they flow. In order to take a closer look at the issues facing the Verde, and to develop recommendations and a plan of action for dealing with them, local residents and organizations, with assistance from the Arizona State Parks and Arizona Department of Commerce, established the Verde River Corridor Project.

In the fall of 1989, the Verde River Corridor Project (VRCP) was initiated as a locally directed effort with the goals of examining all uses and values of the river corridor, agreeing on a vision, and developing a plan of action that could be supported by the public and managing agencies alike. Local town representatives of the Verde Valley appointed people to a steering committee composed of a cross section of the population. The steering committee was formed to direct the project and five subcommittees were established to tackle specific issues.

Local, state, and federal agencies and organizations established a technical advisory committee to assist the steering committee and subcommittees. A large mailing list of nearly 500 local residents, riverfront property owners, groups, and agencies was developed to keep interested

people informed. The local newspapers and radio stations cooperated with news releases of meetings and open forums, and published frequent updates of the VRCP's progress and decisions.

Located in central Arizona, the VRCP study area covers the stretch of the Verde River from Tapco to Beasley Flat ([Figure 1](#)) which is approximately 55 to 60 river miles. Tapco is an old power generating station located along the river upstream of Clarkdale. Beasley Flat is a popular river access point located on a broad mesa downstream of Camp Verde. The project participants also wanted the upper headwaters from Sullivan Lake downstream to Tapco considered because of its direct impact upon the corridor. A corridor width that included the 100-year floodplain was chosen for the VRCP study area with the understanding that it could be modified if inventory data indicated it was needed.

Land ownership within the the VRCP study area is extremely varied. Much of the land is in private ownership. Three incorporated communities, Clarkdale, Cottonwood, and Camp Verde, are located within the corridor as are several unincorporated communities under the jurisdiction of Yavapai County. The area also includes scattered federal parcels managed by the Forest Service and National Park Service, limited Arizona State Land State Trust and State Park lands, and three separate parcels owned by the Camp Verde Yavapai-Apache Indian Tribe.

The upper and lower stretches of the Verde outside the designated corridor, approximately 130 river miles, are primarily Forest Service lands with some private inholdings. Forest management plans have already been completed for these areas, and these plans were considered during this process. The 39.5 mile stretch of river immediately below Beasley Flat has been designated by Congress as Arizona's only National Wild & Scenic River.

Some community members wanted the entire Verde River Basin to be included within the scope of this project; others wanted specific sites within the corridor to be addressed in detail. These options would entail a much larger study or a second study, both of which are outside the scope of this project. However, resource uses and management actions that occur within the Verde Basin which could have impacts on the river corridor have been considered when developing recommendations. Also, several recommendations suggest or support detailed studies and efforts on specific areas, such as the Verde River Greenway and Tavasci Marsh (see Recommendations and Major Findings section).

## PURPOSE

The purpose of the VRCP is to develop a workable strategy for the use, management, and protection of the river that incorporates the views of its many users, residents, agencies, and elected officials. The recommendations contained within this report are meant as suggestions—as a starting point. These recommendations, in many instances, piggyback on existing community efforts, supporting the local actions. Some recommendations augment and strengthen existing policies and actions. No one group is responsible for the implementation of all the recommendations. These actions will require a concerted effort by many individuals, groups, and agencies.

The key to this process is establishing a consensus among the diverse river interests. This may sound ambitious given the wide range of topics that need to be addressed and the sheer size of the watershed. In many ways, it may be simpler to organize around a single river issue, such as stopping a new dam, protecting pastoral lands, or reducing chemical waste pollution.

The citizen-based VRCP will become a coordination and educational force in the community when there is cooperation between all the groups that use the river, not just those that have been traditionally concerned with use and management. An informed, involved public is a community's strongest asset. It is a worthy goal and one that the VRCP will strive to meet.

It is **not** the intent of the VRCP to create another level of bureaucracy, or to make sweeping changes in existing laws, regulations, or policies. The communities of the Verde Valley do an admirable job of trying to accommodate the uses and needs of their residents. The VRCP does see a need for a more comprehensive coordination effort between the incorporated communities and unincorporated county areas, and between the general public, special interest groups, and agencies. The region is experiencing tremendous growth that shows no sign of decreasing. This rapid growth will impact every facet of the valley, which may require some level of change in management, general plans, zoning, and ordinances. The VRCP encourages the county and communities to coordinate these new changes so that there is consistency in management and regulation along the river corridor.

The ultimate goal has not been to change the character of the corridor, but to conserve the river and its related resources in a way that is balanced with growth and economic vitality. The term "corridor" is not meant to be a designation of acquisition and protection like the six-mile Verde River Greenway now being planned by the Arizona State Parks Board. Rather it refers to the general study area chosen because of its complex land ownership patterns, economic, natural, scenic, and cultural values, and the high level of uses and conflicts. The intent of the VRCP is to study the corridor, its values, uses, issues of concern and needs, and to work with all interested parties to create a plan of action for the future management of the river corridor ([Figure 2](#)).

One of the overriding priorities of the VRCP has been the protection of private property rights. This concern has been included in all meetings, committee discussions, reports, and publications. The recommendations contained in this report include many references, suggestions, and action items intended to inform, involve, and protect the rights and responsibilities of all landowners.

The Steering Committee has stated that the purpose of the VRCP is to:

*Identify and recognize all uses of the Verde River Corridor, encourage protection of the Verde River and its natural, scenic, and cultural resources, and promote coordinated decision-making for the continued enjoyment and use of the Verde River by future generations.*

The VRCP has examined the resources of the Verde River Corridor and the opportunities they present to the communities. This document describes the natural, scenic, cultural, commercial, and recreational values of the Verde River Corridor, and presents a plan of action oriented toward the overall enhancement of these riverine characteristics. It also includes current and future growth trends of the Verde Valley; overview of corridor problems; a summary of the

VRCP process and committee work; recommendations and major findings; supporting studies; summary of river conservation strategies; and a summary of other protection and management actions underway by various organizations.

## SUPPORT

The Verde River Corridor Project is a locally-directed planning project. It is a grassroots effort initiated by community leaders and individuals who saw a need for coordinated planning along the Verde River Corridor. Joining these local citizens are organizations, businesses, elected officials, and agencies, such as Arizona State Parks and Department of Commerce, who also saw the need for such an endeavor. This current planning process is not an "official" mandated project with permanent staff and unlimited funds. Rather, it is a loose coalition of individuals, groups, and agencies with a common interest in planning for the future of the Verde River and its resources.

However, there is a growing recognition in Arizona and across the nation of the need for river corridor planning. A recent Executive Order (91-6) signed by the Governor of Arizona states:

"The State Parks Board will continue its planning efforts of multi-objective river corridor planning. All appropriate state agencies are directed to cooperate in this task, as this program has far-reaching benefits to the State of Arizona." (Sec. 11)

One of the best explanations in favor of river corridor planning was spoken by Congressman Joseph M. McDade of Pennsylvania. The following paragraphs were taken from the 1990 Congressional Record:

Any community currently taking an action in a river corridor must deal with a bewildering multitude of Federal agencies and regulations. There is no unified approach or contact for advice and assistance, no assurance that the technical information provided is state-of-the-art data, and no defined formula which aids communities in a reasoned participatory decision-making process.

The importance and complexity of river values clearly warrants a carefully considered and well-reasoned balance among the competing users. In order to achieve balance, future river efforts must recognize all legitimate beneficial public uses, encourage decisions which result in the maximum public benefit, and, most importantly, encourage consensus building and input from all interests and at all stages of the decision-making process.

What public laws and regulations sometimes fail to recognize is that river values and uses are quite broad. The spectrum of interest stretches from preservation of rivers in their natural state to multiple use, which historically and practically, has been the most acceptable use throughout history.

While advocating a policy which recognizes and balances conservation needs with high quality economic uses seems logical, achieving the goal is often difficult for communities.

The legislation I am introducing today was drafted to recognize and promote a wide variety of river uses—recreation, fishing, wildlife habitat, and economic revitalization. It also is designed to help local communities control sources of pollution, reduce flood and stormwater losses, and preserve the historical and heritage values of their rivers and waterfronts. Most importantly, the bill is intended to make Government more responsive to the State and local communities it serves through a combination of matching grants, technical assistance, and interagency cooperation.

There is considerable support and enthusiasm for river corridor planning. Many states and communities have successfully implemented plans within their own river corridors. This planning process has proven to be a productive, well thought out approach to problem identification and resolution. The VRCP is Arizona's first attempt at multi-objective river corridor planning. The high level of concern, interest, and enthusiasm of the local communities, the incredible diversity of natural, cultural, and scenic resources of the Verde River Corridor, and the potential challenges and opportunities within the corridor make the Verde River a natural choice for Arizona's first corridor planning project. All who joined together to create the VRCP did so with the hope that it would serve as a model for other Arizona communities with adjacent river systems.

## VISION

During the beginning of the VRCP, the Steering Committee and other participants spent considerable time exploring possible visions for the future of the Verde River and its corridor lands. Together they developed the following vision statement:

*The Verde River Corridor is an invaluable resource to the people of the Verde Valley and to the State of Arizona. It is an integral part of life in the Verde Valley affecting each resident, business, and tourist in some way. Planning for the wise use, protection, and enhancement of the Verde River and its associated natural, cultural, scenic, agricultural, economic, and recreational resources should be a priority for everyone.*

Toward the end of the planning process, VRCP participants further defined their vision for the future of the Verde River Corridor. The guiding principles described in the Recommendations and Major Findings section admirably express that vision. It is a positive outlook enhanced by the enthusiastic participation and support exhibited during the Verde River Corridor Project. The guiding principles include strong statements of direction regarding the following issues:

- **Private Property**
- **Economic Development**
- **Water**
- **Resource Protection**
- **Recreation**

- **Education**
- **Planned Growth**
- **Coordinated Management**

In the past, there has been a recognized lack of information and coordination between individuals, groups, and agencies on some issues that affect the river corridor. The VRCP was formed to bring together these people, organizations, and agencies to facilitate discussion and decision-making.

The formation of a recognized coalition of those already established groups that now deal with the management and conservation of the river corridor has been identified as a priority recommended action as a result of this project. This coalition must include representatives of all interested groups and agencies, including landowners and members of the general public. All members must be willing to talk with each other and consider all sides of an issue.

The coalition should serve as an informational and educational force for the Verde Valley, letting people know about upcoming developments and changes. It should provide opportunities for the public to learn and openly discuss the issues. It should also strive to reach a consensus whenever possible. It should open the doors to coordinated, consistent management within the Verde River Corridor.

## **THE VERDE RIVER BASIN**

### **BACKGROUND**

The Verde River is one of Arizona's most valued natural treasures. Walking along its tree-shaded banks listening to the rush of water flowing by is like a step back into yesteryear. After visiting dewatered, denuded rivers such as the lower segments of the Salt, Gila, and Santa Cruz Rivers, the Verde is a breath of fresh air. The water is sweet, the air is filled with birds of all descriptions, the banks are protected by lush stands of cottonwood and willow trees, and fish and wildlife thrive in and along the year-round river.

The natural values that still exist within the Verde River Corridor are simply outstanding. It is easy to take these resources for granted until one looks at the loss of rivers and riparian areas statewide and realizes that the Verde could easily go the way of Arizona's other desert rivers if nothing is done to prevent it.

The Verde River is the principal north-south river system of central Arizona. The Verde and its tributaries drain a basin that encompasses 6,646 square miles and includes portions of Yavapai, Coconino, and Gila counties. Originating at the confluence of the Big Chino Wash and Williamson Valley Wash north of Prescott, the Verde flows through steep canyons and the broad Verde Valley before terminating at its confluence with the Salt River, east of Phoenix (ADEQ, 1988).

The Rio Verde, which means "Green River" in Spanish, is an obvious referral to the lush ribbon of trees, bushes, and grasses, called riparian vegetation, that thrives along the river's edge. This impressive river is one of Arizona's major perennial desert watercourses, supporting many diverse lifeforms, with humans the dominant user.

Explorers traveling through the arid Southwest were impressed that anything could manage to survive the hostile desert environment that covers much of Arizona. While many plant and animal species have adapted nicely to the rigors of desert living with no need for open water, most animal species, including humans, require a regular source of open water. This means that most life in Arizona depends on the state's rivers, streams, lakes, and wetlands for their survival.

Prehistoric Indians centered their families and villages along rivers as evidenced by the magnificent ruins at Tuzigoot and Montezuma Castle National Monuments. Early Spanish, European, and American colonists also located their forts, farms, and communities along the region's rivers. Later, the mining and agriculture interests relied on the rivers to build their industries. Towns sprang up around these early settlements forming the communities we know today. The river and its resources are still the basis for these communities, providing water for homes, farms, livestock, businesses, and recreationists, and riverine land for agriculture, sand and gravel, homes, and parks and open space.

This settlement process and importance of readily available water is no different than any other state in the union, except for the degree of the river's importance. While rivers are important resources in all areas of the country, there is a disproportionate contribution of rivers and their riparian areas to the support of life in arid regions. In Arizona, less than 0.5 percent of its land is classed as an aquatic environment, namely, rivers, streams, lakes, and wetlands (SCORP, 1989a). Rainfall is unreliable and scanty at best, ranging from 3-12 inches a year in most desert areas. Several years may pass with absolutely no rain received in an area. This sporadic nature results in intermittent and ephemeral streams. Perennial or year-round streams are at a high premium.

The Verde River is considered a desert stream even though much of its watershed begins in the surrounding mountains. Arizona's desert streams, including the Verde, face a serious peril. To enable humans to live and thrive in a desert environment, the desert rivers have been substantially altered by dams, channelization, riprapping, soil cement, land conversions, water diversions, and groundwater pumping. These alterations have had economic and safety benefits, but they also come at a high price to the natural environment. Many streams which once flowed year-round now only flow after heavy rains or when water is released from upstream dams. In most cases, the riparian vegetation that grows along watercourses has been substantially reduced and changed, creating a critical loss of habitat for wildlife.

As flows are lost, the trees and shrubs die and fish and wildlife can no longer thrive. The river and its associated riparian areas can no longer function as a healthy river system-- purifying water, recharging groundwater tables, and slowing floodwaters. While some commercial uses are made available by the dying river, others are lost. Any value for tourism, recreation, or scenery is substantially diminished.

The Verde is one major desert stream that still is free flowing and substantially unchanged in its upper reaches, making it extremely important to humans and wildlife and the natural systems that depend on it. Much of the Verde River contains unique, scarce, and irreplaceable resources, and therefore, it is not considered feasible to mitigate impacts of substantial development or change (USDI FWS, 1989).

## **NATURAL VALUES**

### **Climate**

The Verde Valley is located in central Arizona in the northeast portion of Yavapai County. Approximately 100 miles north of Phoenix, the Verde watershed through the Verde Valley is classified as semi-desert with an average annual precipitation of just over 12 inches. However, topography strongly influences rainfall within the Verde watershed; the highest points receive over 20 inches of precipitation a year (Averitt, et al, 1991). All of Arizona falls under the Southwestern or Arizona climatic pattern, which is a bi-seasonal regime characterized by winter precipitation, spring drought, summer precipitation, and fall drought (Lowe, 1964). Prevailing winds are from the southwest.

Elevations in the Verde Valley range from 3,512 feet at Clarkdale to 3,300 feet at Cottonwood to 3,133 feet at Camp Verde. The surrounding mountains, such as Mingus Mountain, Woodchute Mountain, and the nearby Mogollon Rim, rise above the valley to an elevation of 7,500 feet or greater. These surrounding mountains and the Verde River itself contribute to the region's moderate temperatures throughout the year. The flow of cool air off the mountain ranges causes a 30 to 40 F decrease in nighttime temperatures. Temperatures during the winter months are typically 50 to 60 F during the day, with evening temperatures falling to 20 to 30 F. Summer daytime temperatures often reach 100 F, cooling during the evening to 50 to 80 F (ADOC, 1989)

### **Geology**

#### *Landforms*

The Verde Valley lies in the mountainous Central Mountains Province of Arizona. This region forms a diagonal band across the mid-portion of the state ([Figure 3](#)). The Central Mountains Province is considered the transition zone between the block-faulted Basin and Range deserts of southern and western Arizona and the uplifted Colorado Plateau in the northern portion of the state. The Central Highlands shares some characteristics of both these physiographic provinces, but is characterized primarily by mountains of moderate elevations and deep, steep-walled canyons.

Geologic time is often difficult to comprehend, especially when one tries to grasp the scope of millions of years. Exposed rocks have been found in the surrounding mountains that can be dated about 2 billion years ago. About 60 million years ago, an ancestral Verde River began its southeastward route through the formations now known as the Mogollon Rim and the mountains of central Arizona.

The lava that caps the Black Hills south of the Verde Valley flowed over 15 million years ago (Chronic, 1986). Faulting, uplifting, and erosion continued until an interesting sedimentary formation was created in a large lake in late Pliocene time. This distinctive soft, white limestone that is the Verde Lakes formation was formed about 8 million years ago. The lake formed as a result of the lava flow that dammed the Verde River south of where Camp Verde is now located. The lake was about 15 miles wide by 35 miles long. In time, the river eroded the lava dam and the limestone deposits became the present ground surface. Both Montezuma Castle and Well are in the Verde Lake limestone.

The limestone and salt formations now exposed on the valley hillsides were deposited during this period. These ancient lake beds are a wealth of information containing fossil remains of mastodons, horses, turtles, and shellfish. Tracks can be found of camels, cats, and tapirs (Chronic, 1986). Through natural erosional processes continuing today, the Verde River and its tributaries are still exposing more of this region's geologic history.

Initially, the Verde River meandered across the flat valley floor. As it slowly cut downward through the old lake bed sediments, its curves became more and more deeply entrenched. Eventually the river took a shortcut through one loop leaving its former channel an oxbow lake, which is now known as Peck's Lake (Chronic, 1986).

Two artificial topographic features found along the corridor are very distinct. The mill tailings and tailings pond, both linked to past mining operations at the Clarkdale smelter, are very noticeable. The mill tailings, or slag dump, rise nearly 80 feet from the riverbed forming a distinct black slag mound devoid of vegetation (Averitt, et al, 1991). Southwest of Tuzigoot National Monument, and 200 to 300 yards northeast of the river, lie the tailings pond where iron pyrate was disposed of from the smelter. This 65 acre area is characterized by a sediment, red rust in color, which supports very little plant life (Averitt, et al, 1991).

The diversity of the geologic formations of the Verde Valley region includes a broad range of rocks and minerals. Notable formations include the Verde Formation (consisting of limestone, sand, gravel, and clays), basalt, Redwall and Martin limestone and sandstone, Coconino sandstone, Kaibab limestone, and Supai Formation. The permeable nature of sedimentary rocks makes them important sources of groundwater; much of the base flow for the perennial streams in the Verde Basin is maintained by discharge of groundwater from these units. The upper reaches of the basin, on the Mogollon Rim, are primarily Tertiary-aged volcanic basalt flows and ash-fall tufts (Averitt, et al, 1991).

### *Soils*

The Verde River begins perennial flow just downstream from Sullivan Lake in a vertical walled canyon of volcanic rock with moderate gradient. As it proceeds downstream, the surrounding terrain becomes hilly and the river alternately flows through meadows, where the stream bottom is predominantly sandy, and narrow steep canyons with large bluffs, where the stream bottom is predominantly cobble. Downstream from Perkinsville, the riverbed widens in some areas and gravel bars are formed, particularly where side canyons join the mainstem and leave areas of alluvium. Below Sycamore Canyon, the floodplain narrows and the river overall cuts through a

fairly steep walled canyon. Just above Tapco, the canyon widens and there are areas of river-washed gravel and sand deposits.

The river corridor soils are primarily alluvial in nature, classed as riverwash and as terrace deposits. Riverwash consists of poorly sorted, fine to coarse gravel. The terrace deposits border the wide channel of the river and may be 5 to 10 feet high. These deposits consist of a mixture of unconsolidated but finely stratified clay, silt, sand, and gravel. Both the riverwash and terrace deposits are very permeable and form a good table aquifer (Lehner, 1958). Historically, these areas were important for agricultural purposes.

In the Verde Valley downstream to Camp Verde, the floodplain becomes quite broad, the river becomes wider and more meandering, and the stream bottom composition contains more gravel and cobble that form large bars at low flows. The white limestone cliffs adjacent to the river stand out in stark contrast to the red sandstone and limestone in the area. From Camp Verde to Brown Springs, the river bottom is predominantly bedrock material, and the river flows through narrow canyons characterized by a series of wide bends and abrupt drops in slope.

Below Brown Springs, the river passes through large bluff-type mountains, alternating between gentle slopes and steep cliffs on the sides of the river. The river bottom is predominantly cobble and gravel with many large gravel bars exposed at low flows.

The section of the Verde River that the Corridor Project encompasses includes three upland soil associations: the Continental-Whitlock-Cave association, the Retriever-Courthouse association, and the Rockland-Lehmans-House Mountain association.

Of the three associations, the one that borders the most of the Verde River in the corridor area is the Continental-Whitlock-Cave association that extends from Clarkdale southeast to the confluence of the Verde River and West Clear Creek. This association is comprised of fine-textured to moderately coarse soils with very low organic matter content and some layers of cemented lime, which range from shallow to deep. It is located in slopes from zero to 30 percent, and elevations range from 2,000 to 3,500 feet.

The principle uses found on these soils are seasonal grazing, wildlife habitat, and mining. Forage production, however, is low because of limited rainfall, high evaporation, and rapid water runoff.

Radiating outward from and surrounding the Continental-Whitlock-Cave association is the Retriever-Courthouse association. The corridor section of the Verde River passes through this association in the area of the Oak Creek and Verde River confluence. The Retriever-Courthouse association consists of shallow to moderately deep medium textured, gravelly calcareous soils on limestone bedrock and rock outcrops. The slopes in this association range from two to 40 percent, and the elevations range from 3,000 to 4,000 feet.

Rangeland and wildlife habitat are the main uses on the Retriever-Courthouse association areas. Because of limited rainfall and shallow soil, forage production is low.

The next most widespread soil association in the Verde River Corridor is the Rockland-Lehmans-House Mountain association, which the Verde River passes through between the Sycamore Creek confluence and Clarkdale to the southeast. This association is characterized by rock outcrops, shallow gravelly to stoney soils that are medium to fine in texture. The soils lay on andesite and basalt bedrock, which form the hills and mountains of the area. The slope of the hills and mountains range from 15 to 60 percent at elevations from 2,000 to 4,000 feet.

The main uses on the Rockland-Lehmans-House association are seasonal grazing, wildlife habitat, and mining of copper and some gold and silver. Forage production ranges from low to medium on this association due to low rainfall and high runoff.

## **The Verde Watershed**

Water, H<sub>2</sub>O, is such a simple, natural molecule. But there is nothing simple about water when you add humans to the equation. How much water is enough--for who--for what? To be classed "good water quality" depends on the use of the water, such as drinking, swimming, or irrigating crops. Everyone can use the water in a river, can't they, or does someone own all that water? There are no simple answers.

### *Water Quantity*

Beginning in north central Arizona, the Verde River flows southeast for nearly 200 miles until it joins with the Salt River northeast of Phoenix ([Figure 4](#)). Some say the headwaters begin at Mt. Floyd near Seligman; the federally designated headwaters begin in Chino Valley at Sullivan Lake at the confluence of the Big Chino Wash and Williamson Valley Wash north of Prescott. The headwaters begin at an elevation of 4,348 feet and fall 3,008 feet to the river's mouth at the confluence with the Salt River.

The Verde River Basin is part of the Central Highlands water province, the smallest of the three water provinces in the state. The Central Highlands contains only 15 percent of the land area in the state, but over 50 percent of the state's streamflow originates in this province (Arizona Water Commission, 1975). There are many high altitude mountain ranges within the Verde Basin. These high altitude zones provide much of the water for streams in the Verde Basin, in the form of direct runoff into stream channels and as groundwater recharge of aquifers.

The watershed of the Verde is in both private and public ownership. The primary land managing entity is the Forest Service (FS) which administers the Prescott, Coconino, Kaibab, and Tonto National Forests. The drainage basin for the Verde covers 6,646 square miles with the major sources of water consisting of winter snows, summer rains, and spring flows. There are eight major perennial tributaries to the Verde: Sycamore Creek, Oak Creek, Beaver Creek, West Clear Creek, East Verde River, Fossil Creek, Wet Bottom Creek, and Tangle Creek. It is estimated that the average annual yield of water is 464, 253 acre feet. The Arizona Game & Fish Department lists 15 lakes in this basin totalling 3,269 acres (ADEQ, 1988).

Historically, surface water diversion was necessary for nearly all economic activities to thrive, but it did not occur in a legitimate and orderly manner under the provisions for the riparian water

law doctrine that was used in the eastern United States. The riparian doctrine prohibited diversion and mandated that, in times of shortage, all riparian landowners would share equally whatever water was available. What was needed was a water law doctrine that would allow non-riparian landowners to divert water to lands not adjoining the stream channel to bring the water to mineralized areas or to croplands, while also establishing a priority system of uses and users so that in times of drought, conflict could be avoided.

In 1864 the first Territorial Legislature responded by declaring the rivers, streams, and creeks of flowing waters to be public and to be used for the purposes of mining and agriculture. The Arizona Territorial Supreme Court further institutionalized the predominant water and resource values of the nineteenth century when, in 1888, it rejected the riparian doctrine in favor of the doctrine of prior appropriation (SCORP, 1989a).

This court decision came just prior to the most severe flood and drought episodes the new Arizona residents had ever faced. These climatic events occurred at a time when overgrazing was rampant, and irrigated agriculture and mining were in full force. Large riparian trees were harvested everywhere for building materials, fuelwood, and to build railroads which had reached Arizona by 1880. The flood and drought sequence exacerbated the cumulative effect of these intensive land use practices, and consequently triggered a major episode of severe arroyo cutting and stream channelization (SCORP, 1989a).

Surface water in the Verde is still used for irrigation and for recreation, while groundwater is the principal source of water for both public and domestic uses. Surface runoff can and does impact groundwater portions of the hydrologic cycle in some areas. According to Owen-Joyce and Bell "large scale groundwater development would ultimately decrease the low-flow surface outflow from the basin." Within the Verde Valley, the regional aquifer is made up of river alluvium, Verde Formation and the underlying basalt flows, Supai Formation, and Redwall limestone (Owen-Joyce and Bell, 1983).

As was mentioned earlier, the Verde River's perennial flow begins at Del Rio Springs in Chino Valley. A small dam holds the spring's discharge forming Sullivan Lake which provides water for livestock. The river is frequently dry for a few miles downstream where it drops down into a narrow and highly scenic canyon. One of the Verde's major tributaries, Sycamore Canyon, enters the Verde about 35 miles southeast of Sullivan Lake. Most of Sycamore Creek is a federally designated wilderness area. Tapco, the VRCP's starting point, is located just a few miles downstream from Sycamore Canyon.

The Verde flows essentially undammed for 125 miles until it reaches Horseshoe Dam, about 58 miles northeast of Phoenix. A second dam, Bartlett Dam, is located below Horseshoe. Bartlett and Horseshoe Dams collect and store the water of the Verde for downstream agricultural and domestic uses. These dams also created two storage reservoirs that have become popular recreational resources. Salt River Project has major water rights on the Verde and manages these dams controlling the downstream releases. Twenty communities are located within the Verde River Basin and make use of the many amenities provided by the Verde and its tributaries (USDA FS, 1990).

The flows on the Verde River are extremely variable. The following Table 1 points out this variability. In response to seasonal precipitation patterns, discharge is usually highest following intense summer storms and lowest in late spring. Diversions also substantially influence downstream flows, with late spring and early summer diversions for irrigation resulting in the lowest flows. It should be noted that the highest flow ever recorded for the Verde is over 100,000 cubic feet per second (cfs) (USDA FS, 1990).

**Table 1. USGS Gauge Records for the Verde River**

<b>Gauge</b>	<b>Camp Verde Gauge</b>	<b>Tangle Creek</b>
Minimum recorded flow	13 cfs	48 cfs
Mean annual flow	378 cfs (6 yr. period)	546 cfs
Peak mean daily flow recorded	27,800 cfs (thru 1978)	94,800 cfs
Maximum flow recorded	55,000 cfs	112,000 cfs
Date of maximum flow	12/19/78	2/15/80

(Source: USDA FS, 1990, Verde Wild and Scenic River Draft Implementation Plan)

The average discharge at the gauging station at Clarkdale is approximately 196 cfs. The historical record reports a high of 51,000 cfs in 1921, with a minimum of 55 cfs in the same year. For 1988, the four highest discharge events were recorded at 8,800, 5,000, 4,900, and 2,600 cfs (USDA FS, 1990).

The Verde River Corridor lies in the Verde Valley groundwater basin. This is a regional aquifer delineated by the Black Hills to the west and by the Mormon Mountain anticline to the east (Twenter and Metzger, 1963). Groundwater discharge from the regional aquifer maintains the perennial surface water flow in the Verde River as well as in its tributaries (Owen-Joyce and Bell, 1983).

Groundwater flow is discharged to springs and streams and is also intercepted by local wells pumped for public and domestic use. Part of this groundwater reaching the surface is lost, due to soil and surface runoff, evaporation, transpiration from vegetation, and diversion for irrigation. The depth of the aquifer varies from the sand surface in the riverbed to 1,279 feet below the surface (Levings and Mann, 1978).

The Verde River Corridor contains numerous agricultural and domestic diversions. Water is drawn from the river by direct diversion and wells. It is partially consumed in agriculture and

domestic uses, yet a portion of what is diverted is also returned to the river though delayed by routing through irrigation systems. The dirt irrigation ditches also return water to the river via percolation.

Northern Arizona communities including Prescott, Pine, Payson, Camp Verde Yavapai- Apache Indian Tribe, Camp Verde, and Cottonwood have been granted a share of Colorado River water from the Central Arizona Project (CAP). Salt River Project (SRP) currently claims all unappropriated Verde River water. Some of the communities have expressed an interest in exchanging their CAP allocation to SRP for Verde River water. This could result in additional water being removed directly from the upper and middle Verde River or from its tributaries.

A water balance model was developed by the Environmental Defense Fund to describe quantitatively the current and future water use and supply situations in the upper Verde River basin. This approach balances demand for water with available supply. An estimate of the potential amount of water available from savings through conservation and reallocation can be made by examining water use efficiencies and other variables in the system. The water balance uses information on water supply and demand from 1985 as the baseline cases, and then compares this case to current projections for future water supply and demand in the year 2025. Alternative scenarios for the future are developed using different assumptions about municipal and agricultural demands, levels of conservation, surface water exports, and groundwater mining (EDF, 1989).

If growth occurs in the Verde Valley and Prescott areas as anticipated and all increases in water demand are met, the model predicts that by 2025 instream flows in the Verde River could be reduced by up to 21,000 acre-feet per year (EDF, 1989). (see Other Protective and Management Actions section)

The biggest current threats to flows in the Verde River are from proposed water exchanges that would allow upstream diversion and accelerated ground water pumping within the basin. In an attempt to protect the unique values associated with the Verde River, the Tonto, Prescott, and Coconino National Forests have applied for "instream flow" water rights with the Arizona Department of Water Resources (ADWR). One application begins at Beasley Flat for 25 cfs and increases to 100 cfs at Tangle Creek (USDA FS, 1990). If approved, this application will help ensure that adequate flows are maintained in the river to protect many water dependent resource values such as fish and wildlife.

The process of determining the location and validity of water rights in the Verde Basin is currently taking place as part of the Gila River Adjudication. It is a very large, complex legal process that will take many years to complete.

Natural wetlands in Arizona have been substantially reduced in the last 100 years as a direct result of human developments and uses. The Verde River Corridor harbors two important marshlands that have been altered, but still retain vestiges of their former character and value. Peck's Lake and Tavasci Marsh, both located in the Clarkdale/Cottonwood area, are owned by the Phelps Dodge Corporation. Peck's Lake is one of Arizona's few remaining oxbow lakes. Water levels have changed substantially in the last 100 years as a result of a low dam and a water

diversion channel on the Verde River. Tavaschi Marsh, a spring-fed marsh downstream from Peck's lake, is another unique natural wetland, which is presently drained by a ditch (see Other Protection/Management Actions section).

### *Water Quality*

In general, groundwater from the regional aquifer is suitable for most uses. Water derived from the Verde Formation may exceed the drinking water standards for dissolved solids, sulfate, and some minor elements (Owen-Joyce and Bell, 1983). The Arizona Department of Environmental Quality (ADEQ) has assessed 780 miles of stream reaches in the Verde Basin. Of this total, only 71 miles met or exceeded state water quality standards, and 675 miles were in partial attainment of state standards. The most widespread water quality problem in the basin is elevated sediment/turbidity levels attributed to erosion occurring on lands impacted by grazing, recreation, construction, agriculture, hydrologic/habitat modification, mining, urban runoff, and land disposal (ADEQ, 1988).

A recent biological assessment of the Verde River was made by ADEQ. This assessment used aquatic macroinvertebrates as biological indicators of water quality (ADEQ, 1990). Three sites along the Verde River, one near its headwaters at Paulden, another at Clarkdale, and the third at Beasley Flat, were chosen for study of the effects of non-point source pollution (cattle grazing, irrigation, urban runoff) and point source pollution (sand and gravel mining) on the macroinvertebrate populations.

These sites were sampled during the spring (April) and summer (July) of 1990. A loss of sensitive organisms was seen at Beasley Flat, the site farthest downstream from the reference site at Paulden, which most likely received the greatest quantity of non-point source pollution (ADEQ, 1990). The Arizona Biological Integrity Grading System grade was determined for Clarkdale and Beasley Flat as they compared to the control site at Paulden for both spring and summer flows. A grading system of A to C is used in which A represents sites with least degradation with regard to water quality. The grade of A was determined for Clarkdale during spring and summer and for Beasley Flat during the spring. A grade of B was determined for Beasley Flat during the summer. This investigation concluded that the surface water biological condition at Clarkdale was non-impaired, while at Beasley Flat it was moderately impaired during the summer (ADEQ, 1990).

In addition to this study, information from a Non-Point Discharge Elimination System (NPDES) Compliance Evaluation Inspection Report to the Phelps Dodge Corporation, revealed contamination of the Verde River from a seep 200 to 300 yards (183 to 274 m) away from their tailings disposal ponds. Examination of samples of this contamination in 1989 found concentrations of sulfate (from ore mined at the United Verde Mine) of 20,500mg/L and 25,000mg/L. Magnesium concentrations were found to be 300 times greater than that found upstream of the seeps in the Verde River. Discharges from inactive mine tunnels, tailings, and dumps also cause impacts to the Bitter Creek watershed (Averitt et al, 1990).

The Town of Clarkdale discharges its wastewater from its treatment plant onto the Phelps Dodge tailings for both effluent disposal and dust control. "Oxidation of sulfide minerals in the presence

of aerated water causes the formation of sulfate and hydrogen ions. This causes acidification of the water and increases its ability to leach metals. This acidification would serve to dissolve the Verde limestone facie under the tailings and promote subsurface transport of water around Peck's Lake and the tailings area (Averitt et al, 1990).

The development and operation of the Camp Verde Sewer System has contributed to the reduction of seepage of the Town of Camp Verde's effluent into the water course. As other communities within the Verde watershed bring their sewer systems on line within the coming years, a further reduction of effluent seepage into the water course will occur (USDA FS, 1990).

The existing rock product mining within the floodplain of the Verde River Corridor is suspected to be a cause of increased siltation of the waters of the Verde River. The Prescott National Forest is currently exploring the opportunities for and the feasibility of extracting rock products from lands other than those in the Verde River, especially upstream of the Verde Wild & Scenic River Area. This movement of activity out of the flood channel should reduce siltation, improve water quality, and improve riparian vegetation (USDA FS, 1990).

The Forest Service manages the entire Verde watershed and undertakes watershed improvement projects where deteriorated soil or hydrological conditions create a threat to water quality and other river values. One of the Verde's major tributaries, Oak Creek, was designated as a Unique Water of Recreational and Ecological Significance in 1985 by the State Water Quality Control Council. This is a protective state designation to maintain high water quality for designated streams.

The Environmental Protection Agency (EPA) has established both primary and secondary national guidelines and regulations for the quality of water provided by public water systems. The Verde River supplies high quality water, low in total dissolved solids, for agricultural water and potable purposes. Because of the desirable attributes of this watershed, a high level of protection and priority is essential (ADEQ, 1989). A good source for information concerning the specific water quality in the Verde River Corridor is the Arizona Department of Environmental Quality.

The U.S. Geological Survey (USGS) collects water quality samples from four gauging stations in the corridor (Table 2). These stations are part of the National Stream Quality Accounting Network (Tangle Creek gauging station) and are sampled on a monthly basis. The purpose of the USGS stations are to monitor changes in the watershed. The maximum flows usually occur in the spring and winter months. The minimum flows are recorded during the dry summer months.

**Table 2. USGS Gauge Records for the Verde River (USDA FS, 1982)**

<b>Station</b>	<b>Year</b>	<b>Maximum cfs</b>	<b>Minimum cfs</b>	<b>Average cfs</b>
Paulden	1963 to 1982	8,080	15	35.7
Clarkdale	1915 to 1921	50,600	55	187

and 1965 to 1982

bel. Camp Verde	1971 to 1982	41,000	13	378
Tangle Creek	1945 to 1982	91,400	61	489

### *Floodplains*

Floodplains are the alluvial lands adjacent to a river which periodically experience flooding. Floodplains in the river corridor are comprised of the floodway, floodway fringe, and those areas encompassing expected 100- and 500-year floods. A 100-year flood is an event which is expected to be equalled or exceeded once on the average during any 100-year period. Similarly, a 500-year flood is expected to occur once in any 500-year period. These findings are based on standard hydrologic and hydraulic study methods. These flood events have been selected by the Federal Emergency Management Agency (FEMA) as having special significance for floodplain management and for establishing insurance rates (Averitt et al., 1990). However, a 100-year flood could occur several times in one year given the right circumstances.

According to the FEMA definition, the floodway includes the channel of the river plus any additional land areas that must be kept free of encroachment in order that the 100-year flood waters may be carried without substantial increases in flood heights. Encroachment such as artificial fill would reduce the flood-carrying capacity of the river, increase its flood heights and increase the flood hazards in areas beyond the encroachment itself (Averitt et al., 1990).

The floodway fringe includes the area between the floodway and the boundary of the 100-year flood. Minimum standards set by FEMA limit increases in flood heights (due to encroachment) to one foot (0.30m), provided that hazardous velocities are not produced. In the case of the Verde River, however, hazardous velocities would be expected to occur with excessive encroachment. Therefore, it was necessary to limit the specified water-surface elevation increases to less than one foot (0.30m). The floodway fringe is essentially that portion of the floodplain that could be completely obstructed without increasing the water surface elevation of the 100-year flood more than one foot (0.30m) at any point (Averitt et al., 1990).

Floodplains ([Figure 5](#)) are an important consideration in any river corridor planning endeavor. These natural systems are necessary for overflow during flooding, and help to recharge the river's flows. They contain the upper terraces of a river and support many types of riparian vegetation. Certain types of riparian vegetation, such as cottonwoods and mesquite bosques, have adapted to periodic flooding and require it to stay healthy and regenerate. If the floodplain has been substantially altered to allow for development, the functions of a floodplain may be drastically reduced. Often levees are constructed in the floodplain to protect the development that has been allowed to occur along rivers, further reducing the floodplain's ability to function naturally. Floodplain management entities should consider these natural functions and values of floodplains when determining what actions to take for economic and safety purposes.

Most of the Verde River floodplain areas are undeveloped. The extremely well-delineated river channel and floodplain areas are the likely reason for the lack of past development in these

hazardous areas. Historic records of major floods indicate that many of these flows resulted in relatively little damage to property.

## **Riparian Areas**

In 1991, the State of Arizona approved a definition of "riparian areas" as a result of Executive Order 91-6. The definition, developed by the Governor's Riparian Habitat Task Force, defines riparian areas as:

"the aquatic or terrestrial ecosystems that are associated with bodies of water such as streams, lakes, and wetlands, or are dependent on the existence of perennial or ephemeral surface or subsurface water drainage."

The Task Force also approved a set of minimum measurements that further define riparian areas and assist in data collection. The final report details to various state agencies specific tasks regarding riparian inventory, planning, management, and legislation.

Riparian vegetation has never been very abundant in Arizona. Figures vary, but riparian habitat historically comprised approximately three percent of the 68,801,036 acres which make up Arizona (Ohmart, 1982). Presently, only 101,793 acres of the native cottonwood-willow forests and mesquite bosques remain comprising 0.15 percent of the total acreage of Arizona (USDI FWS, 1989). Cottonwood-willow forest communities are the rarest forest communities in North America and mesquite bosques are listed as the fourth rarest (TANC, 1987).

It has been estimated that Arizona has lost or has had altered from 90 to 95 percent of its native riparian areas along the state's *major desert streams*, such as the Colorado, Gila, Santa Cruz, and lower Salt Rivers (USDI FWS, 1989; SCORP, 1989a). As those figures indicate, desert riparian areas are very limited in Arizona and the remaining areas are of extreme importance to the continued maintenance of fish and wildlife resources.

The riparian vegetation along the Verde River is still in a relatively natural state. The magnificent stands of cottonwood-willow riparian gallery forest, located in the heart of the Verde Valley, are considered globally endangered communities, which means they are found in fewer than twenty places in the world. Only five extensive stands of this rare forest type remain in Arizona; one is the riparian forest along the Verde River Corridor.

In 1986, a landmark act was initiated for the State of Arizona when the legislature appropriated \$2 million to Arizona State Parks Board to acquire riparian areas along the Verde River to protect this threatened ecosystem. The result is the six-mile Verde River Greenway between Clarkdale and Cottonwood that is currently undergoing master planning by the Arizona State Parks Board. Additional wetlands and riparian lands within the Greenway may be protected through the recently passed citizen's initiative, the Arizona Heritage Fund.

Much of the state's mid to high elevation riparian areas are still in pretty good shape, but demands and pressure are increasing at an extreme rate. Many of the Verde's tributaries, such as Oak Creek, Beaver Creek, and West Clear Creek fall into this category. As a critical component

of Arizona's desert biosystem, these surface waters deserve special attention by state and local policy makers and by the public at large.

Arizona's riparian areas are frequently referred to "those as thin ribbons of green along watercourses." Interior riparian deciduous forests are a diverse community made up of winter deciduous trees. The distribution of these relict forests reflects a contraction of the formerly widespread community of Early Tertiary mixed mesophytic forest, which require a moderate quantity of water. Throughout the second half of the Tertiary period, dry climates expanded over southwestern North America, with corresponding retreats of moisture-dependent forests. These riparian forests have retreated to moist pockets where the warm temperate (ancient) climate persists (Minckley and Brown, 1982).

Fremont Cottonwood (*Populus fremontii*) and Goodding Willow (*Salix gooddingii*) are the most frequent native trees along the riparian corridor. These trees are typically found and reach their best development in the alluvial sands, clays, and gravel of the floodplains. Cottonwood-willow associations are believed to be maintained and dependent upon periodic spring floods. They are mainly disseminated by seeds which depend upon receding flood waters to provide a suitable environment for germination (Minckley and Brown, 1982).

Salt cedar (*Tamarix pentandra*), naturalized from Eurasia, is another common tree along the river corridor. It has invaded many riparian zones in Arizona. Salt cedar has a longer period of seed production (March through October) than either the cottonwood or the willow and many colonize seed beds similar to those used by native trees. Summer flooding may actually enhance this species. Salt cedar can continue to germinate during this time, while summer runoff is of little importance to the regeneration of cottonwoods or willows (Minckley and Brown, 1982).

In his study of the riparian habitats along the Verde River, Brock (1987) found several additional trees growing along the stretch of river from Tapco to Bridgeport. Arizona walnut (*Juglans major*), netleaf hackberry (*Celtis reticulata*), box elder (*Acer negundo*), velvet mesquite (*Prosopis velutina*), desert willow (*Chilopsis linearis*), and Tree of Heaven (*Ailanthus altissima*) occurred, but with less frequency than the cottonwood, willow, or salt cedar.

Tree of Heaven, another introduced species, has become widespread in some areas. There is a large stand of this species along the river, west of Dead Horse Ranch State Park. Tree of Heaven produces numerous vegetative shoots from underground tissues and grows rapidly. Brock's study of the riparian area between Tapco to Bridgeport found that Tree of Heaven had the highest relative density values (the ratio of individuals of a species to total individuals of all species) of any tree (Brock, 1987).

The tallest trees encountered along the Verde River, were a "park-like stand of mature Fremont cottonwood trees at the Tapco site" (Brock, 1987, p. 58). Near the mill tailings (within the Greenway) was the site with the greatest average canopy cover, 149 percent, indicating overlap in tree canopy cover (Brock, 1987).

In the riparian habitat along the Verde River, shrubs form a minor component. The most common shrub was seep willow (*Baccharis salicifolia*). A prevalent species along the quieter

bends of the river is the cattail (*Typha sp.*). The herbaceous layer was dominated by grasses with a few herbaceous broadleaf plants (Brock, 1987). Bermuda grass (*Cynodon dactylon*), sweet clover (*Melilotus sp.*) and cocklebur (*Xanthium saccharatum*), a common weed of cultivated fields, were among the plants observed at one site along the river, growing in wet, alluvial soil. These are all non-native plants, originating outside of North America and introduced to the region.

Peck's Lake and Tavaschi Marsh possess some emergent vegetation such as cattails and bulrush (*Scirpus sp.*) which grow along the edges of the water bodies and many extend several meters from the edge of the shore into the water. Numerous small, semi-aquatic plants typically form understories within the marsh communities along the banks of the Verde River (Minckley and Brown, 1982).

Southeast of Tuzigoot National Monument, there is a large mesquite grove. Mesquite bosques (an Hispanic term for small forests) were numerous in Arizona a century ago, before the rivers were dammed and the groundwater was pumped. Their diminishing numbers can be attributed to the aggressive clearing off the land for agriculture, pasture land, timber, and fuel.

The riparian zone near the headwaters is characterized by a shrub community dominated by seep willow. Velvet ash, Goodding willow, Arizona ash, Arizona walnut, Utah juniper, velvet mesquite, salt cedar, and desert willow are the dominant trees. Downstream, Utah juniper becomes scarce and Fremont cottonwood and Arizona sycamore become more common.

Dead Horse Ranch State Park and the Verde River Greenway, located near Cottonwood, support the largest contiguous stand of mature cottonwood trees on the Verde River. The vegetation changes downstream from Camp Verde and on toward Beasley Flat with younger trees and annual grasses dominating. There are large bosques of velvet mesquite with occasional large sycamore and cottonwood trees.

### *Benefits of Riparian Areas*

Riparian systems are an indicator of the health of a watershed. The Verde River's riparian areas benefit the animal and human residents of the Verde Valley in a number of ways. Riparian areas provide several valuable functions and services which are provided free of charge by Mother Nature. We do not have the technology to replace many of these functions, or, if we do, the replacement costs are very high.

Riparian habitat along the Verde River has a critical role in providing habitat for fish species. The trees help shade part of the river, which keeps water temperatures reduced and helps the water hold more oxygen so the fish can breathe. This shade is especially important in the summer months when the flows in the Verde are at their lowest and a rise in water temperatures occurs easily when the the water volume is low. Overhanging and bank vegetation, plus tree limbs and trunks which fall in the river, provide places for small fish to hide from larger fish. Other benefits include:

- Riparian areas provide homes for one of the largest assemblages of wildlife species in the United States, including several threatened and endangered and rare species.
- Riparian areas form natural floodways that convey floodwaters from upstream to downstream points. Riparian vegetation is adapted to the changing or dynamic flows of a stream. It is an indicator of where past floods have occurred.
- Riparian areas store water during high flows and slowly release this water to downstream areas, which lowers flood peak flows.
- Riparian areas reduce flood flows and the speed of flowing water, which in turn, reduces erosion and cause floodwaters to reduce the quantity of sediment they may be carrying.
- Riparian areas are an important source of ground and surface water, especially with the urban growth in the Verde Valley and its threatened surface and groundwater supplies.
- Riparian areas contribute significantly to the improvement of water quality by removing excess nutrients and other contaminants.
- Riparian areas are of archaeological and historical interest. Former settlements such as Tuzigoot and the significance of the City of Cottonwood's name are two examples.
- Riparian areas provide educational opportunities for scientific studies and nature observation.
- Riparian areas serve as recreation sites for fishing, hunting, picnicking, camping, hiking, horseback riding, and observing wildlife.
- Riparian areas are areas of great diversity and beauty and provide open space for recreational and visual enjoyment.

Both quality and quantity of water for riparian habitats are being threatened in the corridor. Contamination from solid waste dumping and the non-point pollution of the Verde River from the tailings ponds adjacent to Tuzigoot National Monument are a major concern. Air pollution was such a problem earlier in this century that vegetation growth was actually found to have been limited (Averitt et al., 1990).

Human encroachment has also disturbed the riparian areas through industrial use, farming, recreation, and settlement in the areas most valuable to wildlife. Day recreation use alone, by users such as anglers and water enthusiasts, has left much of the soil adjacent to the river barren of vegetation affecting wildlife habitats. Unrestricted road use on both sides of the Verde River has also caused disturbances and areas of rutted, muddy roads (Averitt et al., 1990).

The rapid urbanization of the state has resulted in increased demands on the Verde River watershed. The aquatic and riparian environments are facing degradation due to detrimental management practices from urban construction, mining operations, and livestock grazing, and from uncontrolled recreation activities. The resulting soil erosion, sedimentation, and turbidity

increase water pollution. As these industries and the regulatory agencies work toward solutions, it is hoped that the situation will improve.

## **Wildlife**

Wetlands and riparian areas typically have high densities and great diversity of wildlife. The Arizona Game & Fish Department (AGFD) has designated the habitat of the Verde River a "Wildlife Resource Category 1." Habitats in this category are "of the highest value to Arizona wildlife species, and are unique and/or irreplaceable on a statewide or eco-region basis" (AGFD, 1991). The presence or suspected presence of 30 threatened, endangered, or special interest wildlife species is sufficient to support the unique status of the upper Verde. The wildlife habitat value of the Verde River results in significant economic, recreational, and aesthetic value.

The riparian habitats in the Verde River Corridor are a major resource for supporting life in the area. The riparian community and the river itself provide niches for over 60 percent of the vertebrates that inhabit the land surrounding the Verde River Corridor. For example, 255 of the 383 vertebrates known to exist on the Prescott National Forest can be found along the river and its immediate environs. Many of these animals reproduce and complete their entire life cycles in the same community. Others use the river for reproduction or feeding. Still others use the unique riparian zone as a highway for travel from summer to winter areas (USDA FS, 1982).

The riparian habitats along the Verde River constitute an important resource for raptors, songbirds, small mammals, reptiles, and amphibians. Over 200 different species of birds make their homes in the Verde Valley (USDA FS, 1989). The river corridor is well known as a migratory nesting area for hundreds of waterfowl.

The cottonwood/willow, sycamore, and other riparian habitats are especially valuable for the maintenance of the common black hawk, zone-tailed hawk, Cooper's hawk, osprey, bald eagle, and other birds of prey. In addition, riparian dependent songbirds such as yellow-billed cuckoo, vermilion flycatcher, willow flycatcher, black phoebe, Bell's vireo, yellow warbler, and summer tanager, all benefit from the well-structured riparian habitats which currently exist along the upper Verde River system. At least 50 percent of the bird species that nest in the cottonwood trees of the Verde Valley are exclusively dependent on this riparian habitat.

There are many waterfowl and shorebirds that also rely on the Verde River Corridor for their survival including belted kingfisher, snipe, sandpiper, common merganser, great blue heron, green heron, Canada goose, common loon, teal, mallard, and many other species of ducks.

The riparian and aquatic habitats support many amphibians and reptiles, such as Woodhouse's toad, Arizona toad, lowland leopard frog, canyon tree frog, Mexican garter snake, black-necked garter snake, wandering garter snake, narrow-headed garter snake, Clark's spiny lizard, tree lizard, Arizona alligator lizard, California kingsnake, Sonoran mountain kingsnake, and Sonoran mud turtle. The non-native soft-shelled turtle is also found in the Verde River.

The Verde River is an excellent place to observe wildlife. There are many wildlife species present that are found only near water and riparian areas, such as beaver, raccoon, muskrat, and

river otter. Most other native desert and woodland species gravitate to the river for water, food, shelter, or travel routes. Some of the mammals one can expect to see include: mule deer, white-tailed deer, javelina, an occasional bighorn sheep in the lower stretches, black bear, bobcat, mountain lion, coyote, grey fox, ringtail cat, three species of skunks, Arizona gray squirrel, and a host of bats, mice, pocket gophers, chipmunks, and wood rats.

## **Fish**

The Verde River is rare among streams and rivers of Arizona in that it still maintains a strong native fish community in its headwaters (USDI FWS, 1989). In Arizona, only Aravaipa Canyon is known to sustain more species of native fish. It has high value for the existing native fish community and for recovery of fish listed as threatened or endangered or which are candidates for Federal listing.

The six native species present are longfin dace, desert (or Gila Mountain) sucker, Sonora (or Gila) sucker, roundtail chub, speckled dace, and the federally listed threatened spikedace. Introduced species such as red shiner, mosquitofish, yellow bullhead, carp, channel catfish, trout, and smallmouth bass are present. There are 25 species of fish known or suspected to occur in the river. Of these, 14 are big enough to be caught on a hook and line (USDA FS, 1989).

In the headwaters, native species dominate most habitats with the exception of the backwaters. Below Perkinsville, the dominance of native species begins to decline and by Tapco the non-native fish predominate. Spikedace are essentially absent below Sycamore Creek and speckled dace, longfin dace, and roundtail chub become scarce below the upper end of the Verde Valley.

Flathead catfish are presently replacing channel catfish in the Verde River. In other southwestern rivers, the red shiner appears to be replacing native minnows, including the spikedace, within a relatively short time frame after the shiner's introduction to the area. Although the red shiner became established in the upper Verde River in the mid-1950s, the spikedace still exists and appears able to maintain a coexistence with the shiner in the area.

The AGFD is beginning to stock the middle Verde River with trout in the winter months. The headwaters of the East Verde River are maintained as a put-and-take trout fishery with rainbow trout being the most common, but with brook trout also present.

## **Sensitive Species**

Most Southwestern riparian areas harbor a large percentage of sensitive species, a testament to the important role these wet areas play in supporting fish and wildlife species. These areas must not be only maintained, they must be maintained in a healthy state. Of recent concern to many Southwestern biologists are the disturbing reports that many species of frogs, both common and uncommon, are rapidly disappearing from rivers and streams. Amphibians are the "miner's canaries" of the natural world. Because amphibian skins are more permeable than our own, toxins in the air and water can effect whole populations (TNC, 1991). The cause of decline is not yet known, but monitoring water and air quality is a top priority.

Table 3 lists 46 sensitive plant and animal species that are known to exist along the Verde River and its tributaries. It should not be considered a complete list of sensitive species. There needs to be additional survey work for sensitive plant and animal species. The list does show, however, that the Verde and its riparian lands are critical to the survival of many rare and threatened species.

**Table 3. VERDE RIVER SENSITIVE SPECIES LIST**

State	Common Name	Comments	Scientific Name	Federal Status	
<b>FISH</b>					
	Spikedace		<i>Meda fulgida</i>	LT/FS	
ST		Proposed Critical Habitat: Verde River from Sullivan Dam to below Sycamore Creek			
	Colorado squawfish		<i>Ptychocheilus lucius</i>	LE/FS	
SE		Reintroduced from Perkinsville to Childs/experimental population			
	Gila trout		<i>Oncorhynchus gilae</i>	LE/FS	
SE		Exists in Gap Creek/Verde tributary			
	Woundfin		<i>Plagopterus argentissimus</i>	LE/FS	
SE		Extirpated/planned reintroduction in lower Verde			
	Razorback sucker		<i>Xyrauchen texanus</i>	PC1/FS	
SE		Reintroduced from Paulden to Childs-experimental population/Fed listing pending			
	Roundtail chub		<i>Gila robusta</i>	PC2/FS	
ST		Native fish species			
	Loach minnow		<i>Tiaroga cobitus</i>	LT	
ST		Extirpated in Verde/possible reintroduction			
	Longfin dace		<i>Agosia chrysogaster</i>		Nat
	Desert sucker		<i>Panoswas clarki</i>		Nat
	Sonora sucker		<i>Catostomus insignis</i>		Nat
	Speckled dace		<i>Rhinichthys osculus</i>	FS	Nat
<b>BIRDS</b>					
	Bald eagle		<i>Haliaeetus leucocephalus</i>	LE/FS	
SE		Verde is essential habitat for nesting and wintering for bald eagles			
	Peregrine falcon		<i>Falco peregrinus</i>	LE/FS	
SC					
	Southwest (willow) flycatcher		<i>Empidonax trailii</i>		
SE					
	Osprey		<i>Pandion haliaetus</i>	FS	
ST		Verde is foraging area for osprey			
	Yellow-billed cuckoo (West.)		<i>Coccyzus americanus</i>	FS	
ST					
	Common black hawk		<i>Buteogallus anthracinus</i>		
FS		SC			
	Belted kingfisher		<i>Ceryle alcyon</i>	FS	
SC					
	Zone-tailed hawk		<i>Buteo albonotatus</i>	FS	
	Black-crowned night heron		<i>Nycticorax nycticorax</i>	FS	

**MAMMALS**

Red bat	<i>Lasiurus borealis</i>	FS
SC		
Camp Verde cotton rat	<i>Sigmodon arizonae arizonae</i>	
SX	Considered extinct, last known from 1935	
River otter	<i>Lutra canadensis sonorae</i>	FC/FS
SE	Louisiana subspecies reintroduced in 1983-	

85-

**REPTILES & AMPHIBIANS**

Yavapai (low.) leopard frog	<i>Rana yavapaiensis</i>	FC
SC	<i>R. pipiens</i> also occurs on tributaries	
Arizona Southwestern toad	<i>Bufo microscaphus</i>	FC2
Mexican garter snake	<i>Thamnophis eques</i>	FC2
SC		
Narrow-headed garter snake	<i>Thamnophis rufipunctatus</i>	FC2
SC		
Arizona mountain kingsnake	<i>Lampropeltis pyromelana</i>	
FS		
Gila monster	<i>Heloderm suspectum</i>	FS
Desert tortoise	<i>Gopherus agassizii orxerbates</i>	FS

**PLANTS**

Arizona cliffrose	<i>Cowania (=Purshia) subintegra</i>	LE/FS
Arizona agave	<i>Agave arizonica</i>	LE/FS
AZ-P		
	<i>Agave toumeyana v. bella</i>	FC3
	<i>Amsonia palmeri</i>	FC3
	<i>Erigeron lobatus</i>	FC3
Pringle fleabane	<i>Erigeron anachna</i>	FC2/FS
	<i>Pectis rusbyi</i>	FC3
	<i>Echeveria collomae</i>	FS
	<i>Echeveria orpentii</i>	FS
	<i>Astrolagus lentiginous mariapae</i>	
FC3		
	<i>Fraxinus anomala var. lowellii</i>	FC3
Ripley wild buckwheat	<i>Eriogonun ripleyi</i>	FC2/FS
Apache wild buckwheat	<i>Eriogonun capillare</i>	FC2/FS
Arizona bugbane	<i>Cimicifuga arizonica</i>	FC1/FS
	<i>Graptopetalurusbyi</i>	FC3
	<i>Salvia dorrii var. mearnsii</i>	FC3/FS

Fou

Federal Status: LE=listed endangered; LT=listed threatened; PC or  
FC=candidate; FS=Forest Service Sensitive Species  
State Status: SE=endangered; ST=threatened; SC=candidate; SX=extinct in AZ;  
AZ-P=state protected plant

Three wildlife species listed under the Federal Endangered Species Act of 1973, as amended, presently occur near or in the Verde River. The bald eagle and peregrine falcon, both designated endangered species, nest on the cliffs and trees along the river, and the spikedace, a threatened native fish species, lives in the upper Verde River. The Verde River from Sullivan Dam downstream to just below the mouth of Sycamore Canyon has been proposed as Critical Habitat for the spikedace. Another federally listed fish species, the Gila trout, lives in Gap Creek, a Verde tributary. There are also several other rare fish species that are being reintroduced into the Verde as experimental populations. Two endangered plant species, Arizona cliffrose and Arizona agave, occur along the corridor.

The AGFD maintains a list of Threatened Native Wildlife which recognizes four categories of species: extinct, endangered, threatened, and candidate. There are sixteen species on this state list which occur naturally along the Verde River (four additional listed species are reintroductions). Of the species found along the Verde River Corridor, the bald eagle, Southwestern river otter, Gila trout, and willow flycatcher are listed by AGFD as endangered, the spikedace, roundtail chub, osprey, and yellow-billed cuckoo are listed as threatened, and the common black hawk, peregrine falcon, belted kingfisher, Mexican garter snake, narrow-headed garter snake, lowland leopard frog, and red bat are listed as candidates. The Camp Verde cotton rat is listed by the state as extinct. It has not been seen in its only known locality near Camp Verde since 1932.

Several state and federally listed fish species thought to occur historically in the Verde River are now being reintroduced. The razorback sucker is an Arizona endangered species and a federal proposed species and has been reintroduced throughout the upper Verde River from Paulden to Childs. The Colorado squawfish, an endangered species on both the Federal and state lists, has been reintroduced into the Verde as an experimental population in the area from Perkinsville to Childs. Other extirpated fish species, the woundfin and loach minnow, are being studied for reintroduction in the lower and upper Verde River, respectively.

It is not known for certain whether the southwestern river otter, an Arizona endangered species, still exists in the upper Verde River, but it probably has been extirpated (no longer occurs in that locale). However, from 1983 to 1985 a similar but non-native subspecies, the Louisiana river otter, was introduced into the Verde and has survived and reproduced. Many landowners and recreationists have reported sightings of these agile, endearing acrobats of the river.

Five bald eagle nesting territories are known to exist on the Verde River above Horseshoe Dam. Immature and wintering bald eagles also frequent the area. The entire Verde River and one-quarter mile on both sides has been identified as essential habitat for bald eagles. The bald eagle is listed as an endangered species on both the state and federal lists. Bald eagles nesting north of Arizona use the river for wintering, and a local population of bald eagles use it for nesting and rearing young during the spring and summer.

Historically, there were several species known to depend on the riparian and aquatic habitats of the Verde, but are now believed to be extirpated (except for the experimental populations), including the Colorado squawfish, loach minnow, woundfin, and razorback sucker. Tavasci Marsh reportedly supported many wetland bird species such as the wood stork, Virginia rail, and sora rail. With proper management, it is hoped that many of these species can continue to be returned to their historic habitats (see Other Protection/Management Actions section). Coordination is in progress between the FS and AGFD on the reintroduction and/or maintenance of viable razorback sucker, river otter, woundfin, loach minnow, squawfish, and spikedace populations (USDA FS, 1990).

## **CULTURAL VALUES**

### **Background**

The rich historic and archaeological resources of the Verde Valley are of importance not only to local special interest groups but also to the general population of the local communities and the entire state. These resources provide a tangible cultural link to the past and attract many visitors and new residents to the valley.

Only limited surveys have been conducted along the Verde River Corridor and tributaries; however, information gained from the recorded sites shows the area to contain outstandingly remarkable historic and cultural values. Many of the sites are considered to be geographically significant and also represent an important era in the development of the Southwest. Further investigation is expected to reveal many sites of National Register significance (Arizona Rivers Coalition, 1991).

The Coconino National Forest Archaeologist, Peter J. Pilles, Jr., (USDA FS, 1980) describes these probable sites as pueblos of forty or more rooms, small cave dwellings, irrigation canals, bluff-top forts and overlooks, and pit house villages. Confirmed prehistoric sites from the Southern Sinagua and Yavapai cultures can be found all along the Verde Valley. Considerable significance is attributed to the Verde Valley ruins because they represent central population segments and show the focus of man's occupation there, between 1300 and 1425, to be along the river.

Important sites that have been found throughout the VRCP study area include: 1) a source of argillite, a prehistoric Southwest trade commodity, between Perkinsville and Sycamore Canyon; 2) a cave site near Perkinsville that was probably occupied between B.C. 3000 and A.D. 1450; 3) a Hohokam pithouse village and irrigation canals near Perkinsville; 4) a possible Hohokam pit house village with a ball court near Tapco; 5) a hill-top fort near Sycamore Canyon; and 6) several large pueblos dating to the Tuzigoot phase. According to Pilles, "Many of these sites are important individually, as representing prehistoric 'towns' that controlled an area and a number of people, and collectively, as representing a prehistoric economic and political system that had relationships with other parts of the Southwest."

The following is a brief historical account of the Verde Valley Corridor area.

## **History**

### *Prehistoric*

#### Before A.D. 1

A small quantity of artifacts identified along the Verde River and at least five possible temporary camp sites identified near Perkinsville indicate the presence of prehistoric Indians here previous to A.D. 1. In addition, several hundred Archaic (A.D. 8000 to A.D. 1) projectile points, Cochise-, San Jose-, and Amargosa-style projectile points, basin metates, various side and end scrapers, and faceted one-handed manos are among the documented remains that have been discovered in the Verde Valley area. However, too little concrete evidence has been found to determine the true nature of the occupation and utilization of the land during this ancient period.

## A.D. 1 to A.D. 800

Likewise, for this period, sufficient evidence has not been found to draw strong conclusions about the life-styles of these ancient inhabitants. However, two small pit houses have been excavated that may relate to this period. It has been speculated that these houses were occupied for a long duration due to their relatively large, bell-shaped storage pits, plastered floors, and formal hearths. The emergence of pottery, and a change in type of metate and manos used indicates a switch from a hunting and gathering society to a more agriculture-based culture during this period.

## A.D. 800 to A.D. 1425

According to archaeologists, two peoples inhabited the Verde Valley during this period. Remains indicate that the Hohokam Indians arrived in the Verde Valley sometime after A.D. 700 from the Salt River Valley. They built shallow pit houses, ball courts, mounds, and what are thought to be communal structures, and they irrigated their fields by building canals to divert water from the Verde River. The Hohokam also utilized natural resources of the Verde Valley such as argillite, salt, and possibly copper during this time. Around this same period, relatives of the Sinagua Indians built earth lodges in the nearby foothills, used dry-farming techniques, and hunted the game in the hills. They also made stone tools and developed the arts of making pottery and weaving baskets.

Around A.D. 1100, the Sinagua Indians adopted pueblo cultural traits and began to build masonry dwellings out in the open or in caves beneath overhanging cliffs. About the same time, they became irrigation-farmers and apparently either drove out or absorbed the Hohokam culture. Members of this pueblo culture occupied Tuzigoot, a pueblo located near present-day Clarkdale on the east bank of the Verde River. Tuzigoot means "crooked water" or "crooked lake." It is a Tonto Apache name given to Peck's Lake, an oxbow lake that was formed when the course of Verde River was changed by being blocked by the ridge on which Tuzigoot sits.

Tuzigoot was inhabited by the Sinagua from before A.D. 1125 to 1400, and it was situated in an uncommonly rich riparian environment. They grew corn, beans, squash, native plants, and, possibly, even cotton. They were also active traders, and they traded their agricultural produce, woven cloth, and pottery to other groups in the Hopi, Chavez Pass, and Winslow areas. When many people moved to be near the Verde River during the severe drought from A.D. 1215 to 1299, the original 15 or 20 rooms of the Tuzigoot pueblo were increased to 92. Tuzigoot flourished for over a hundred years to a population high of 450 before it was inexplicably abandoned. Supposed reasons for the desertion have included epidemics, raids by nomadic Yavapai Indians, or possibly too large of a population for the available food supply. No one knows for sure why they left. In 1933-34 the ruin was excavated, and it became a valued national monument in 1939.

Besides pueblos, the Sinagua lived in large, multi-story masonry structures that were built into the walls of cliffs with an overhanging ledge to provide shelter from the elements and enemy attacks. These structures are called cliff dwellings, and a fine example of one is Montezuma Castle, which is located at the bend of Beaver Creek, a few miles from its junction with the

Verde River. Montezuma Castle was named as such by its discoverer because of the resemblance to the Aztec emperor's architecture, but there is no connection. The impressive dwelling contains 20 rooms, stands five stories high, and once housed about 50 people. The entire monument area includes 22 archaeological sites and was once home for 300 people. Montezuma Castle became a national monument in 1906.

### A.D. 1425 to A.D. 1865

The Verde River area was inhabited mainly by the northeastern subgroup of the Yavapai and Tonto Apache Indians sometime after 1425. Before 1860, there were also some Navajo in the Upper and Middle Verde area. Necessities for life were abundant in the Verde Valley for these early inhabitants who relied mostly on a nomadic hunting and gathering life-style. The valley offered comfortable climate, fresh and abundant water, lush vegetation, wildlife, building materials, clays, ores, and salt. The astute comprehension of the natural environment by local bands allowed them to move from area to area as they followed the cycles of ripening wild plants for food. The agave and the yucca were two of the more important native plants that were utilized by the Yavapai and the Tonto Apache in this way. Because of the migratory nature of these tribes, their shelter was generally in the form of caves, when available, and temporary structures made of branches and animal hides. The fine basketry crafted by the women was used for carrying and storing goods and was traded to other tribes.

### *Historic*

#### European Explorers, Trappers, and Mountain Men

During the sixteenth century two different explorers claimed the lands around the area now known as Jerome in the name of the Spanish Crown. In 1593 Antonio de Espejo and his Spanish conquistadors were guided to the Verde Valley on a silver prospecting expedition by Pueblo Indians. Later, in 1598, Marcos Farfan de los Godos and a group of Spaniards were guided by Hopi Indians on a mining expedition. The last European explorer to pass through the Verde Valley for the next 200 years was Don Juan de Onate in 1604.

From 1825 to 1830 various European and American trappers and mountain men came through the Verde Valley, including a teenaged Kitt Carson. The next known white men to visit the area were settlers from Prescott in 1865.

#### 1865 to 1900--Pioneer Settlers and the U.S. Army

##### Camp Verde

Many of the same things that attracted the early Indians to this area also enticed the first Anglo settlers, especially the abundance of fresh water. In addition to the Verde River, four other perennial streams graced the Verde Valley — Sycamore, Oak, Beaver, and Clear Creeks. This abundant water supply may be why, in January of 1865, nine men came to the Verde Valley from Prescott, Arizona's Territorial Capitol, in search of an area suitable for a farming community. After finding a site near the confluence of Clear Creek and the Verde River, they

returned to Prescott and gathered a group of 19 to return and establish farms and the first permanent settlement there. This was the first and only permanent Anglo settlement in the north part of the Arizona Territory. The settlers proceeded to build a crude dam and divert water to irrigate crops in order to provide supplies for Prescott and nearby Fort Whipple. Their crops included garden greens, melons, beans, corn, potatoes, wheat, and barley. Although nine of the original 19 men had returned to Prescott, by May of 1865 the outpost had grown to seventeen men, three women, and three or four children.

Conflict arose because the site the settlers had chosen was a hunting and gathering area of the Yavapai and Tonto Indians, and raids by the Apache Indians ensued. The settlement was first attacked in May of 1865, and 18 men were sent from Fort Whipple to set up protection for the settlers and serve as an army outpost against the Apaches. The army troops arrived on August 27, 1865, and were under the command of Lieutenant Antonio Abeyta of the 1st Cavalry, New Mexico Volunteers.

Camp Lincoln, the army outpost, was established on January 4, 1866, about a mile north of the present Camp Verde at the confluence of the Verde River and Beaver Creek, with a contingent of 123 infantry of the 1st Arizona Volunteers. Lack of equipment and supplies, poor pay, and deteriorating health caused the garrison to dwindle to two officers and four privates by August of 1866. In September of 1866, however, 39 regular army troops of the 14th infantry arrived, and another company arrived in April of 1867.

There were several Fort or Camp Lincoln's in the country at the time, leading to confusion, so on November 23, 1868, orders called for the post name to be changed to Camp Verde. Eventually the site was determined to be unsuitable and was never completed because it was moved to its present location in the spring of 1871. On April 5, 1879, the name was ordered changed again — this time to Fort Verde. By 1890 the civilian population of the Verde Valley was over 700 and no longer needed military protection. The military was asked to leave, and Fort Verde was ordered abandoned on April 10, 1890.

In February, 1895, the military reservation was opened to homesteaders, and the Fort Verde buildings were sold at public auction in August, 1899. Four of the original 22 buildings remain at Fort Verde which is now a State Historical Park, and the Town of Camp Verde incorporated in 1986.

### Cottonwood

By 1873 an 800 square mile area near what is now Cottonwood was used as a reservation to keep the Apache Indians that were captured by the army men at Fort Verde. These Indians constructed ditches for irrigation and cultivated the land to produce corn, potatoes, squash, and melons there until February, 1875. At that time the Rio Verde Indian Agency was closed, and about 1400 Indians were transferred to the San Carlos Indian Reservation near Globe. Due to the harsh weather, difficult terrain, and inadequate food nearly 100 died en route. After the Indians were taken to San Carlos, the settlers took advantage of the abundant water and the rich bottomlands in the Verde Valley to expand their production of wild hay, grains, and farm produce on the irrigated land. These goods were also used to supply Fort Whipple, Prescott, Jerome, and Fort

Verde until it was abandoned April 25, 1891. Most of the farming operations also included cattle raising which entailed summer camps for them above the Mogollon Rim mountains. Cottonwood takes its name from a circle of 16 big cottonwood trees by the Verde River where the cattlemen and ranchers from Oak Creek, Camp Verde, and the mountains set up their overnight camps during this time.

In the late 1870s and early 1880s the settlers of this area had to travel a full days roundtrip to gather their mail and supplies from Fort Verde. When the first post office was finally established there in 1885 the settlement naturally was formally called Cottonwood. A general store was attached to the post office, and a "building boom" followed. Unfortunately, the buildings were quickly erected and mostly made of wood, and rounds of fires and rebuilding occurred until around 1925 when buildings were built more durably. There were other hardships endured early on in the Verde Valley . Although the mossy pools of the Verde River and the lush rainwater-filled grasses held bounty for hunters, cattlemen, and ranchers, they were also a rich breeding ground for mosquitoes. Many deaths resulted during this period from malaria spread by the mosquitoes.

Although Cottonwood was established as a farm settlement during this period of the late 1870s, it blossomed into a town during World War I, from 1915 to 1917, between the two smelter towns of Clarkdale and Clemenceau. Cottonwood was incorporated in 1960.

### 1875 to the Present--Railroads, Miners, and Ranchers

#### Jerome

A dramatic succession of events began in 1876 that would forever change the Verde River area. In 1876 prospectors rediscovered a rich prehistoric copper mine near present day Jerome. There were no roads yet on Mingus Mountain to the mine, so pack mule across rugged terrain was the only available means of transportation.

In order for the copper ore deposits to be developed, a better means of transport would have to be developed, and it was— in 1882 the Atlantic and Pacific Railroad stretched across northern Arizona. In the following year an organization called the United Verde Copper Company purchased the claims of the prospectors who had discovered the ore. Jerome takes its name from the secretary and manager of this company, Eugene Jerome. The railroad connection to Prescott was completed by 1886, so then the mule teams had only to haul ore 26 miles to reach the railroad in Prescott. However, a sudden drop in copper prices in 1891 rendered the expense of the mule team transportation of the ore for even 26 miles prohibitive. Mining was the cause of the economic boom and life of Jerome, and if it was to continue more railroads had to be built. In 1895 the "crookedest line in the world," with 186 curves, was built to link Jerome and present-day Chino Valley by means of a narrow gauge railroad. It was called the United Verde and Pacific Railroad.

The mining camp of Jerome became a prosperous wild west boomtown of 15,000 people with many business buildings and fine homes. At one time the net income was reported to be one million dollars per month. The town, situated on the side of a steep mountain, was not without

problems, however. It burned down and was rebuilt three times between 1897 and 1899, and many buildings were damaged by surface ground slippage due to the underground mining. Jerome was incorporated in 1899. James S. "Rawhide Jimmy" Douglas began development of the Little Daisy Mine in 1912, and by 1916 there were two prosperous mines in Jerome. By 1938 the copper production had peaked, and the depression had hit, so the Little Daisy was shut down. Phelps Dodge took over the United Verde in 1935, but due to the decline in copper prices Jerome became a large ghost city after the closure of Phelps Dodge Mine in 1953.

Today, Jerome's economic base lies in recreation and tourism. The town of Jerome was named a National Historic Landmark by the U.S. Department of the Interior in 1967, and the Jerome State Historic Park is located there.

### Clarkdale

A larger smelting plant became necessary as the United Verde Copper Company expanded its Jerome operations, and a site was found about five miles away on the Verde River. A new plant was built, and a new Verde Valley Railroad was built in 1911 to make the connection between it and the Ashfork-Prescott Railroad line. In 1915 the Verde Tunnel and the Smelter Railroad were built to carry the copper ore down the mountain to the new smelter. A new community developed in the Verde Valley to provide residential and business facilities for the employees of the new United Verde Copper Company smelter, and it was to become Clarkdale.

In the same year that Arizona became a state, 1912, the company town of Clarkdale was founded. It emerged as a model community with the assistance of the United Verde Copper Company, which was owned by Senator William A. Clark of Montana. The progressive community boasted the fabulous Clark Memorial Clubhouse that housed an auditorium, gymnasium, bowling alleys, men's and women's lounges, a library, and a swimming pool. The townspeople enjoyed fine schools, churches, golf and tennis facilities, wide paved streets, electric lights, and a sewer system.

From 1935 to 1954, the United Verde properties were owned and operated by Phelps Dodge Corporation, but in 1952 the Jerome mine ores were exhausted and the smelter closed. In the years to follow the company residential and business properties became privately owned through sales to individuals. Clarkdale was incorporated in 1957.

### The Verde Valley

When the railroad arrived in the Arizona Territory in 1882, it set off the mining boom. It also set off a cattle industry boom. Suddenly the western cattle ranges were linked to major markets for beef such as Chicago and San Francisco, and huge herds of cattle roamed the area to meet the demand. There were no range management practices at that time, and the range became overgrazed; grasses and wild hay were depleted, and the once spongy ground was trampled to solid ground. The drought of the early 1880s then reduced the overgrazed range to barren, useless topsoil; and the heavy rains of the late 1880s washed the topsoil into the Verde and Salt Rivers. The drought and the floods reduced the vegetation along the Verde River, cut the river channel deeper, and washed the mosquito larvae away. The valley was at least finally rid of the

plague of malaria. By the early 1900s large herds of cattle could no longer survive on the sparse grass that remained, and the last large herds from the Verde Valley were shipped out of Flagstaff by the O.K. Cattle Company.

The railroads of the late 1800s and the resulting mining and cattle industry booms in the Verde Valley have left reminders of the colorful and prosperous bygone days. A glimpse of the old abandoned railroad beds or the mining town of Jerome clinging to the side of a mountain, a view of the neat rows of once company-owned houses and business buildings that lead to the Clark Memorial Clubhouse, or a stroll through Fort Verde can easily arouse a sense of the activity, excitement, and richness that once blossomed there.

### **State and Federal Recognition**

The historic mining community of Clarkdale enjoys one of the Verde Valley's more impressive local properties listed on the National Register of Historic Places, the Clark Memorial Clubhouse. The Clubhouse has special meaning to the Verde River Corridor Project because many of the VRCP meetings were held there through the generosity of the Town of Clarkdale and the employees and townspeople who made it available, convenient, and comfortable for the participants. In 1926, the Clark Memorial Clubhouse was built with a \$100,000 bequest made by the late U.S. Senator and multimillionaire William A. Clark from Montana, owner of the United Verde Copper Company in Jerome, founder of Clarkdale, and one of the wealthiest men in the American West at the time. The facility was dedicated "in appreciation of the loyalty of his employees during the past forty years." Since the employees lived in relative isolation, Clark strove to provide them with facilities typically enjoyed in the metropolitan areas from which many came. The amenities included a gymnasium, an auditorium, a swimming pool, a men's lounge, a women's lounge, a library, a kitchen, bowling lanes, a soda fountain, and a billiard room. Furnishings and the swimming pool were provided by an additional \$50,000 bequest from the family of the late Senator. The building holds significance as a regional variation of Spanish Colonial Revival architecture, as the primary social center for Clarkdale throughout the building's history, and as an example of the philanthropy of a major industrialist.

Relatively little formal assessment has been done in the Verde Valley area considering the wealth of ancient sites. Several private interests, however, are currently working with special interest groups and agencies such as the Forest Service, Yavapai County, the State Historic Preservation Office (SHPO), and Tribal governments to identify and preserve irreplaceable prehistoric and historic archaeological and cultural resources. SHPO, for example, coordinates the Arizona Site Steward Program. The program is sponsored by the public land managers of Arizona and tribal governments and provides training of volunteer members by SHPO and the Archaeology Advisory Commission. The primary objective of the program is prevention of archaeological site vandalism and destruction through site monitoring.

The two most visible examples of past local archaeological preservation through the National Park Service are the Sinaguan ruins of Tuzigoot and Montezuma Castle, both now National Monuments. Spectacularly perched atop a hill, the partially restored pueblo of Tuzigoot overlooks the Verde River just east of Clarkdale. The two-story monument had a ground floor base of 77 rooms which were entered via ladders through openings in the roofs. The Tuzigoot

pueblo has been formally preserved since 1939. Montezuma Castle and Montezuma's Well, two other impressive Sinaguan sites, have been preserved as a National Monument since 1906. Montezuma Castle is an example of the cliff dwelling style village; the nearby Montezuma's Well is a unique lake formed by a limestone sinkhole, fed by springs and surrounded by lush vegetation. The monument, though parts are badly deteriorated, still provides an impressive cultural experience for visitors.

One example of a current preservation effort of a rich cultural resource is the Sugarloaf Ruin near Cornville. The Archaeological Conservancy, a national non-profit preservation organization based in Santa Fe, has signed a one year option to purchase the ruin and has launched a statewide fundraising program to raise \$110,000 to purchase, stabilize, and fence the property, and to establish a stewardship fund for the future maintenance and management of the preserve. The site will eventually be dedicated as a permanent archaeological preserve and will be managed under a 100-year management plan that will be cooperatively developed by archaeologists, Native Americans, and local citizens. The fourteenth century Sinaguan ruin contains at least 54 rooms surrounding a plaza that sits atop a five hundred foot hill overlooking lower Oak Creek. It is the largest pueblo in the Oak Creek chain of pueblos, and its size and hilltop location suggest that it was the dominant political and trading center. It is considered by National Forest Archaeologist Peter Pilles to be one of the most important Tuzigoot Phase sites in the Verde Valley. Sugarloaf was listed in 1990 as one of the top ten historic properties in Arizona worthy of preservation by the Arizona Preservation Foundation. To date, the Archaeological Conservancy has established two other Sinagua preserves in the Verde Valley—Oak Creek Pueblo, two miles south of Sugarloaf, and the Thoeny Ruin in the town of Lake Montezuma.

The rich cultural legacy of the Verde Valley offers many unique opportunities to protect important historical experiences for future generations. Robert Munson, the Architectural Historian of the State Historic Preservation Office, suggests a worthy example in regards to Fort Verde State Historic Park:

#### Sight Lines at Fort Verde

Fort Verde State Historic Park preserves the finest assemblage of Indian Wars period architecture remaining in the state of Arizona. This fact alone makes the park important to the interpretation and understanding of a portion of Arizona's history. There is one element of this site that is not immediately obvious and often overlooked even though it is usually integral to every visitor's experience of the site. This feature is the fact that not only are the 1870s Officers Quarters preserved intact, but the historic setting and background have not changed since the 1880s. A visitor standing on the parade ground looking at Officers Row sees not just some old buildings, but the entire aspect of the fort as it appeared 110 years ago as far as the horizon. In an era when most historic structures are submerged by surrounding modern intrusions (the Alamo is a classic example), Officers Row still looks the way it did in 1880. There is one house behind the Commanding Officer's House, but this is hidden from most angles and hopefully will be torn down in the future. All other modern construction behind Officers Row is hidden from view by being down off the bluff on the floodplain below. The cliffs and hills on the far side of the Verde River have never suffered any modern intrusion or impact. Thus the historic sight lines from the parade ground are uniquely perfectly preserved. Part of this preservation stems from the fact that

the land east of the river is government property. However, as the Verde Valley is expecting phenomenal growth in the next decade, the bluffs and hills east of Fort Verde will become prime targets for developers. The first house or road built on this land will destroy the unique historic background of Fort Verde's Officers Row. I would therefore suggest that a concerted effort be made to negotiate an agreement with the government landholders to preserve this land from ANY development. As the Verde Valley fills up with houses a tract of pristine land will have great recreational value, and why not have that pristine land serve double value by preserving Fort Verde's historic appearance. There is one other reason to hold this land out from development: there are some major archaeological sites on this land.

Robert W. Munson, SHPO Architectural Historian

Other options that are available include matching grant funds from the Department of the Interior which are available through the State Historic Preservation Office for qualified in- depth cultural surveys. For example, the Yavapai-Prescott Indian Tribe is presently using the program to identify and document the significance to the community of the prehistoric and historic resources of an area near Prescott in order to preserve its historic cultural resources and to increase local interest and awareness in preservation.

The National Register of Historic Places was established by the Historic Sites Act of 1935 and expanded by the National Historic Preservation Act of 1966, as amended in 1980. The National Register is the official federal listing of prehistoric and historic properties worthy of preservation; it serves both as a planning tool and as a means for recognition and protection of buildings, sites, and districts that are of special significance to a community. Listing of a building, site, or district affords a certain prestige which can enhance the value of property and raise community awareness and pride. The Arizona State Historic Preservation Act of 1982 has established a similar stewardship and management program for state recognition of historically, architecturally, or culturally significant sites, structures, or buildings. Several properties in the Verde Valley have taken advantage of these programs, and many more are eligible. The following is a list of some of the local cultural resource treasures.

### **Archaeological Resources**

Hatalacva Ruins

Montezuma Castle and Montezuma's Well National Monument

Oak Creek Pueblo

Sugarloaf Ruin

Thoeny Ruin

Tuzigoot National Monument

*(Other ruins have been identified in the Verde Valley, but locations are not disclosed in order to protect them.)*

**Historic Resources** (formally recognized through State and/or Federal Historic Inventory)

Beaver Creek Ranger Station

Broadway Bridge (Clarkdale Bridge, Bitter Creek Bridge)

Camp Lincoln (1866-70)

Camp Verde Boarding House, Jail, William Head House, and Kirkwood Adobe

Clark Memorial Clubhouse (NR)

Clarkdale Homesite

Clear Creek Church (NR)

Cottonwood Townsite Multiple Resource Area (NR)

First Settlement Site (Ruin of original settlers' fort), Verde Valley Settlement, Lower Verde Settlement

Fort Verde State Historic Park (NR)

Fossil Creek Bridge (NR)

Grief Hill Road

Howard Byron Wingfield Home

Jerome National Historic Landmark (town)

Jerome State Historic Park

Lothian House

Love/Frey House

Marksbury Home

Perkinsville Bridge (Walnut Creek Bridge)

Residence on Finney Flat Road

Robert Wingfield House (NR)

Wales Arnold Ranch (Flower Pot Ranch)

*(Several other potentially eligible structures also exist)*

*(NR) designates National Register of Historic Places*

### **Local Trails of Historic Interest**

General Crook Trail

Lime-Kiln Road Trail and Historic Lime Kiln

Overland Road Trail

Palatkwapi Trail

## **COMMERCIAL VALUES**

### **Community Development, Tourism, and Retirement**

Many of the natural elements that have attracted people to the Verde Valley since the time of ancient Indian inhabitants are still attracting newcomers today. The Verde Valley is rich in majestic views, vibrant riparian environments, sweet air, and pleasant climate. Add to that the friendly people, the abundant recreation opportunities, and the ruins and artifacts of its rich and colorful history, and it is no wonder that considerable population growth is predicted. To keep pace with the rapid population growth the Verde Valley is experiencing, some current businesses are expanding, several new shopping centers are being built, and new businesses and industries are springing up.

The following table traces the population growth from 1980 to 1990 and charts the predicted growth to 2020. Most of the towns, cities, and communities are expected to more than double in population over the next thirty years, which indicates a need for careful planning now.

The Verde Valley communities, in general, support quality growth. In particular, they support smaller companies that are sensitive to the needs of the community and the environment. The City of Cottonwood has instituted a formal program, the Industrial Development Authority (IDA), to attract, develop, and rehabilitate certain types of manufacturing, industrial, and commercial businesses which bring economic development and jobs to Cottonwood and the area. The IDA may provide incentives such as tax- exempt financing for projects that fall within its limits of responsibility. Yavapai County has a similar program for unincorporated areas in the Verde Valley.

The Verde Valley has become a popular retirement location; retirees provide a valued contribution to the communities' vitality as well as economy. For example, two-thirds of the Verde Village residents are retired, so much of the town's income is derived from savings withdrawals, stock dividends, retirement benefits, and social security payments. In addition, some retirees who are former corporate executives receive compensation for consulting services. Twenty-six percent of the Cottonwood population is over 65.

Tourism is also a major factor in the valley's economy. Cottonwood's employment structure is 65 percent based in retail trade and services. Camp Verde, likewise, has 55.3 percent of its employment based in retail trade and services; Clarkdale lists 50.0 percent (ADOC, 1989). Because of the many historic, scenic, and recreation opportunities that are available in the valley, there are significant opportunities for development of lodging, restaurant, other specialty businesses catering to tourists.

According to the figures presented in Table 5, there was a 43.5 percent increase in overall visits to these historic and scenic recreational attractions from 1980 to 1988. If this trend continues, the Verde Valley can expect significant economic impacts from tourism in the future.

Several recently developed enterprises add a rich diversity to the economic and cultural climate of the Verde Valley, such as the Arizona Central Railroad scenic excursions that showcase the Verde Valley natural and historical environment, the Rainbow American Dream Ranch and Historical Park for self sufficiency of mentally handicapped adults, and Captain Harry's recreational and educational boat tours on the Verde River. The railroad excursions have been more successful than expected, drawing thousands of visitors to the Verde Valley. Most likely, new restaurants and shops will open to cater to these visitors before and after their excursion trips.

Part of the attraction of the Verde Valley is its accessibility. Four public-use airports service the Cottonwood-Sedona area. The Cottonwood Airport is a full-service airport with paved taxiway, lighted runway, and parking tie-down areas; it provides car rental, aircraft rental, parts and supplies. Interstate 17 and connecting routes Interstate 40 and Interstate 10 provide ample north-south and east-west vehicular access to the Verde Valley for private and commercial needs. Interstate 17, the main north-south route that extends through Phoenix to the south and Flagstaff to the north, passes through the heart of the valley and crosses the Verde River. In addition, the valley is well-served by various trucking and transport companies, and express couriers, as well as rail and bus transportation.

While there are several outlying growing communities nearby such as Verde Village, Cornville, Page Springs, McGuireville, Rimrock, Lake Montezuma, Bridgeport, Jerome, and Sedona, the three largest incorporated cities or towns within the Verde River Corridor Project area are Camp Verde, Cottonwood, and Clarkdale.

### *Camp Verde*

The oldest community and the largest of the incorporated entities of the Verde River Corridor is the Town of Camp Verde. Arizona Public Service (APS) has estimated the 1990 population of

Camp Verde plus the unincorporated surrounding areas to be 11,783, and the projection in the year 2000 to be 15,245. Camp Verde's employment structure is based most strongly in services, construction, and retail trade. The area's major employers, however, also include ranching and light industry. The several national and state historical attractions such as Fort Verde State Park, Montezuma Castle National Monument, and Montezuma Well, in addition to the wide array of recreational opportunities such as canoeing, photography, horseback riding, hiking, camping, fishing, and hunting, attract both tourists and retirees to area. The nearby National Wild and Scenic River and the fifteen wilderness areas in the Verde basin entice adventurous types to visit (ADOC, 1989).

### *Cottonwood*

The next largest city in the Verde River Corridor is Cottonwood, which was incorporated in 1960. APS predicted the city and surrounding unincorporated area to be 10,993 as of 1990, and predicts a population of 14,804 by the year 2000. Cottonwood provides a trading center for the Verde Valley, so the employment structure is based heavily in retail trade, services, and public administration. Other valued employers such as General Semiconductor Industries, Inc. and the Marcus J. Lawrence Hospital add to the diverse economic base. Retired persons, recreationists, and tourists also play a substantial role in the economic environment of Cottonwood. Cottonwood offers access to ancient Indian ruins such as Tuzigoot National Monument, the spectacular ghost town of Jerome, and the popular Dead Horse Ranch State Park. Recreation opportunities exist throughout the city and surrounding area for bicycling, horseback riding, fishing, walking, photography, canoeing, and wildlife and bird viewing (ADOC, 1989).

### *Clarkdale*

Clarkdale is the third and oldest incorporated city in the Verde River Corridor, having incorporated in 1957. According to APS the 1990 population of Clarkdale and surrounding unincorporated areas is 4,166, which will increase to 5,466 by 2010. Clarkdale probably has the most diverse economic base of the three. The employment structure relies heavily on services, retail trade, manufacturing, and transportation/communication/public utilities. Seventy small to large-size companies are centered in Clarkdale, including C.T.I., a trucking firm which is headquartered there. Custom Manufacturing and Arizona Instrument are also important industries to the town. The historic "model town" of Clarkdale offers special attraction to many tourists, as do historical remains of Tuzigoot National Monument, the Arizona Central Railroad scenic tours, Peck's Lake, and mining operations. Recreational opportunities also abound for birdwatching, canoeing, Sycamore Canyon Wilderness hiking, rockhounding, hunting, and fishing (ADOC, 1989).

These Verde Valley communities were originally dependent upon agriculture, mining, and especially the Verde River. Today, the Verde River still provides the precious connecting thread of life, and recreation, tourism, retail and service industries, and light industry and manufacturing also provide new opportunities for employment. The array of fine community facilities and amenities contribute to the quality of life. The Verde Valley has developed quality schools, medical facilities, shopping centers, restaurants, resorts, public libraries and parks, newspapers, and radio stations. The communities exude friendliness and enthusiasm, and the civic leaders

encourage new business. The local citizens proudly show off the communities' attributes by organizing many events throughout the year.

### **Annual Events in the Verde Valley**

*Governor's Cup Rallye* - Each year the Governor's Cup Rallye begins in Prescott. Antique cars travel through Cottonwood where costumes are judged, proceed on to Flagstaff, and end up at the Grand Canyon where final activities are held. Approximately 70 antique cars are involved in this activity.

*Verde Valley Concert Association* - Six concerts are performed annually in Cottonwood featuring opera, classical, jazz, and chamber music.

*Jazz on the Rocks* - Continuous jazz music is performed outdoors among the splendor of the Red Rocks of Sedona in September each year.

*4th of July in Clarkdale* - 10K run, pancake breakfast in the park, parade, food, and fireworks highlight this event.

*Made in Clarkdale* - Showing and sales by professional artists living or working in Clarkdale - Clarkdale Memorial Clubhouse.

*Fort Verde Days* - An historical event is held each year in Camp Verde To commemorate the Fort Verde area. Activities include a parade, art show, and many other events.

*St. Patrick's Day Parade* - The annual St. Patrick's Day Parade features the "wearing of the green" each year in Sedona.

*Verde Valley Fair* - Each year during the last weekend in April, the Verde Valley Fair is held. This four-day event features displays of the arts, 4-H projects, FHA exhibits, a rodeo, and many other exciting events.

*Bluegrass Festival* - Jerome's Bluegrass Festival draws many spectators.

*Jerome Home Show* - Each year in May, six to eight historic homes are opened to the public in Jerome.

*Sedona Arts Center* - Various art shows are held throughout the year. The Theater wing presents three plays per season.

*Southwest Theater Company* - Presents three shows each summer in Sedona.

*Phoenix Symphony* - Sedona.

*Cottonwood's Christmas Parade* - An annual Christmas event held in Cottonwood.

*Verde River Days* - held at Dead Horse Ranch State Park in Cottonwood. A day of exhibits focusing on the environment and the Verde River. Entertainment, food, displays, and demonstrations.

*The Greater Cottonwood Aeroplane and Auto Show* - An event held in May each year in Cottonwood featuring approximately 90 antique autos and airplanes at the Cottonwood Airport.

(Source: A Business and Economic Profile of Cottonwood and the Verde Valley, 1991)

## **Agriculture and Mining**

Agriculture and mining together make up about 9.3 percent of Camp Verde's employment structure, 4.2 percent of Clarkdale's employment structure, and 0.4 percent of Cottonwood's employment structure (ADOC, 1989).

Geology and climate have played a major role in molding the demographics and lifestyles enjoyed in the Verde Valley historically and today. "Not only does the region's physiography strongly influence the region's aridity and precipitation traits, these landforms shape the run-off and river patterns and provide the alluvium which enhances further the Verde Valley's other attractive features (Foust, Byrkit, and Avery, 1991). Furthermore, these features supported two of the primary activities that caused settlement by man in the Verde Valley—agriculture and mining.

### *Agriculture*

While archaeologists have evidence that the Hohokam established farms and built canals to divert water from the river to irrigate fields in the Verde Valley as far back as 700 A.D., scholars argue that the first agriculture there took place as long as 10,000 years ago. By the twelfth century the Sinaguan pueblo communities of Tuzigoot and Montezuma Castle were established, and irrigated agriculture was significant to the inhabitants' way of life. Though native agave remained an important staple, they raised beans, squash, corn, and probably, cotton. Later, in the sixteenth century, the Yavapai and Tonto Apache tribes, though traditionally nomadic hunter-gatherers, also raised crops for food.

Finally, in the late 1800s, the initial establishment of Anglo settlers in the Verde Valley was due to the need to find a suitable place to grow crops to supply Fort Whipple and Prescott. The Verde Valley proved very suitable, especially when they built a crude dam and diverted water to irrigate their crops. Soon after, cattlemen came to the valley during the great cattle boom that resulted from the burgeoning country's demand for beef. The lush marshes, tall verdant grasses, mossy pools, and semi-tropical climate created the perfect environment to raise cattle, and people flocked to the Verde Valley to take advantage of the cattle boom. The carrying capacity of the land was soon surpassed due to all the cattle, sheep, and horses that grazed the open range. The grasses were decimated and the once-spongy soils were pounded solid, causing erosion and added runoff into the river. The character of the Verde River was forever changed from mossy pools and grassy marshes to a deep channel. A serious drought hit the valley in the 1880s followed by a weather change and heavy rains that washed millions of tons of topsoil away. The

cattle market had collapsed by 1890, and many of the ranchers began to grow fruit, vegetables, grains, and alfalfa for personal use and to sell locally.

Today, agriculture is not a dominant contributor to the valley's overall economic base; it occurs primarily in the Cornville, Page Springs, and Camp Verde areas along perennial streams or the Verde River and on irrigated land (Coyner, 1991). Farming and ranching still contribute largely, however, to the cultural identity of the Verde Valley and do provide some employment. Bermuda, alfalfa, and other mixed perennial grasses are cultivated, harvested, and sometimes sold locally or used for pasture. Canteloup, watermelon, sweet corn, and other fruits and vegetables are grown for self-use or sold locally (Nevitt, Young, 1991).

Cattle are grazed today on private lands and Forest Service or State Trust leased lands in the Verde Valley. Floodplain soils are naturally high in nutrients, and riparian vegetation has been cleared to make room, so alfalfa, grasses, and grains are available for livestock forage. Certain wetlands can produce hay crops, and some riparian areas can sustain grazing under properly managed conditions. Though farming practices in Arizona have often adversely affected riparian and wetlands environments by such means as changing water table and salinity levels, affecting erosion, and converting acres of riparian vegetation into farmland, there is encouraging news. Changes are occurring in livestock and rangeland management that reflect a more coordinated and integrated approach, an approach that considers resource values such as wildlife habitat and recreational uses (USDA, 1979). Methods such as fencing certain riparian environments until the system can recover, dividing grazing allotments into numerous pastures so cattle can be concentrated into specific areas at different times of the year, and providing alternate water sources for livestock away from riparian zones are resulting in improved range and habitat conditions (SCORP, 1988).

The open spaces afforded by well-managed agricultural lands are at risk in the Verde Valley; more and more of the land is being developed as farmers become hard-pressed to satisfy increasing tax burdens. While planned development is necessary to provide for desirable orderly growth, much of the rural attraction to visitors, retirees, and newcomers could be destroyed if prudent attention is not given.

### *Mining*

Mining, likewise, has a prehistoric basis in the Verde Valley. The Hohokam, who irrigated fields for agriculture, also utilized mineral resources of the Verde Valley such as argillite, salt, and possibly copper during this time. When prospectors rediscovered a rich prehistoric copper mine near present day Jerome in 1876, the stage was set for explosive population growth and urbanization of the Verde Valley. Roads and railroads were constructed to move the ore, Jerome burgeoned into a boomtown, and Clarkdale was born to house the smelter and company personnel.

Economic vitality, however, was not the only effect of the mines. "Copper mining, although limited specifically to only a few areas, has had a significant impact on the visual quality of the landscape with large excavations, slag deposits, and tailing ponds left as irreversible

modifications. Copper mining was one of the first stimuli for the urban development of the Verde Valley within the past 100 years..." (Whitmore, Cook, and Steiner, 1991).

More recently, sand and gravel extraction and cement production have dominated the mining activities in the Verde Valley. The natural formation of high quality sand and gravel deposits in the river beds and floodplains of the Verde River provide the basis for the local rock products industry. The deposits are readily available, economical to mine, and close to markets.

"Transportation is a major factor in the delivered price of sand and gravel and related products. Because of the high cost of transportation, sand and gravel is invariably produced and sold in local markets. Assuming a typical transportation cost factor of 15 cents per additional ton-mile for sand and gravel and 50 cents per cubic yard per mile for ready-mix concrete, Arizona consumers will pay an additional \$733.3 million if production sites average only five miles greater distance from delivery points during the 1990-2000 decade" (ARPA, 1989).

The increasing demands for sand and gravel products are a direct result of increasing population and the corresponding construction of buildings, homes, and roads. A typical 1,600 square foot house requires 100 tons of sand and gravel for driveway, foundation, floors, fences, and walls; each mile of urban freeway requires 400,000 tons of sand and gravel for pavement, pipes, drains, bridges, walls, and overpasses; and a typical metropolitan airport requires 1.3 million tons of aggregates. It is no wonder that the Arizona Rock Products Association (ARPA) projects that if the average 11 tons per capita consumption over the past five years remains constant, Arizona's demand for sand and gravel from 1990 to 2000 will be 512.9 million tons (ARPA, 1989).

According to ARPA the primary construction uses for sand and gravel are:

Concrete aggregate for construction (buildings, 20%

highways, dams, and airports)

Road and base coverings 17%

Asphaltic concrete aggregate 10%

Construction fill 9%

Concrete products (blocks, bricks, and pipes) 2%

Plaster and gunnite sands 2%

All other uses such as railroad ballast and roofing

materials 40%

According to a recent ASU study, Verde River Corridor Environmental Planning Recommendations (1991), the rock products industry contributes to the economy of the Verde Valley in several ways, including:

- Jobs
- Increased tax base
- Increased channel capacity
- Reduction of potential for overbank flooding
- Partial runoff storage
- Minor, local groundwater recharge
- Potential for wildlife habitats

Taxes paid statewide by sand and gravel mining and ready-mix concrete firms are a significant contribution in themselves, totalling \$49.7 million in 1988, as follows (ARPA, 1989):

Sales taxes \$27.7 million

Personal income taxes 5.5 million

Corporate taxes 2.8 million

Personal property taxes 1.7 million

Real property taxes 2.0 million

Fuel taxes 1.7 million

Tonnage taxes 1.5 million

Federal use taxes 0.8 million

Vehicle license fees 1.8 million

Unemployment tax 4.2 million

Furthermore, the statewide impact on Arizona's economy through employment and payroll by the rock products industry is considerable. There are 1,407 sand and gravel mining workers in Arizona, each of which supports an additional 73 jobs in the construction sector of the economy. In 1988 the sand and gravel mining and related construction industry payroll exceeded \$2.3 billion (ARPA, 1989).

One vivid example of local mining industry impact is the Glen Canyon Dam, near Page, which was built with cement from the Phoenix Cement Company of Clarkdale. In fact, the process used the plant's total production for about three years. The company, which is owned by the Salt River

Pima Indian Community, maintains a 2,000-acre site and is one of only two portland cement plants in Arizona. An approximate 100-year supply of limestone, volcanic rock and dolomite are estimated to exist though about a million tons are extracted each year (ADOC, 1989).

According to ARPA, there are four main steps in sand and gravel mining:

- 1) Site clearing of the land
- 2) Mining or extracting the materials
- 3) Processing the materials (crushing, washing, blending)
- 4) Reclamation of the site \*

\*Eighty percent of respondents to a survey of ARPA members have developed reclamation plans for mined sites upon depletion of sand and gravel reserves.

## **RECREATIONAL VALUES**

### **Activities and Opportunities**

Arizona offers a geography, climate, and natural and cultural diversity unparalleled by any other state. It is not surprising then that a multitude of outdoor recreation opportunities abound in which citizens and visitors participate (SCORP, 1989c). People recreate year-round in Arizona, enjoying the diversity of landscapes and resource challenges. Pursuit of recreational activities benefits emotional health as well as physical well being. People participate to experience nature, for health and fitness, and for socialization with friends and family.

In Arizona, nothing attracts recreationists like water. Every year, more than a million Arizonans and out-of-town visitors flock to the state's waters to boat, float, fish, hunt, hike, wade, picnic, relax, play, and, in the summer, to escape from the heat (SCORP, 1989a). There are a startling variety of stream and riparian resource types that support a wide range of recreation activities. River corridors within a community can provide quality accessible recreation opportunities in one's own backyard.

The Verde River Corridor is located in the Central Highlands Province in central Arizona which contains the most valuable recreational lands in the state. This mountainous region includes many scenic areas such as Oak Creek Canyon, the Mogollon Rim country, and the White Mountains. The Verde Valley, situated under the western edge of the Mogollon Rim and in the shadow of Mingus Mountain, is the gateway to a wealth of recreational opportunities.

The Verde River Corridor provides opportunities for many recreational activities, such as:

- hiking - walking

- horseback riding - mountain biking
- fishing - hunting
- camping - picnicking
- canoeing - kayaking
- rafting - tubing
- swimming - water play
- bird watching - wildlife observation
- nature study - cultural/historic study
- photography - painting/sketching
- sightseeing - off-highway vehicle use
- relaxation - and many others

According to the 1989 SCORP Participation Study, Yavapai County residents indicated a participation rate of 97 percent in outdoor recreation. Hiking was rated as the most important activity. Fishing was the second most important. Other popular activities included walking for pleasure, sightseeing, visiting historic sites, picnicking, and visiting a park or playground. It is interesting to note that participation in water-based activities, such as canoeing, fishing, and swimming in a natural setting, is increasing.

There are many more types of recreational activities currently being pursued in the Verde Valley. Not all activities require the river and its corridor lands; examples of ones that do not include hang gliding, jeep tours, and rock climbing. These activities and others can benefit by the views of the river and its lush green vegetation. The pleasure and experience of most recreational activities can be enhanced by the proximity of flowing water and riparian areas.

Mid to high elevation perennial rivers such as Oak Creek, Sycamore Creek, Wet Beaver Creek, West Clear Creek, Fossil Creek, Verde River, and East Verde River are popular hiking and bird watching attractions. Several streams in the area are stocked regularly with trout by the Arizona Game & Fish Department. It has just been in the last few years that AGFD has stocked rainbow trout in the Verde River. An excellent place to fish for trout is in the Verde River Greenway, beginning at Tuzigoot Bridge and continuing downstream for six miles to Bridgeport Bridge. Trout in this river segment are stocked only in the winter months. Trout are also stocked in the lagoon at Dead Horse Ranch State Park, situated along the river near the City of Cottonwood. Page Springs Fish Hatchery, located on lower Oak Creek, is managed by AGFD and supplies much of the trout for the region's streams. The facility is open to the public and is an excellent stop for visitors.

Trout fishing, a cold water sport, is a rarity in Arizona and the demand for fishing opportunities is increasing. The majority of streams that can accommodate this activity are located in the Central Highlands. Other streams provide opportunities for warm water fishing. The Verde River also supports many other sport fish species such as channel catfish, smallmouth bass, yellow bullhead, black crappie, green sunfish, and carp. Lake Superior, a man-made lake resulting from sand and gravel operations in the Verde River, has been made available to local anglers and recreationists by Superior Companies. This sand and gravel company, as well as others in the area, has initiated discussions with local and state agencies and local sportmen's groups to study ways to rehabilitate abandoned mining sites to enhance recreation and environmental values.

The lower Verde, outside the VRCP boundaries, is regulated by two dams that create two popular recreational lakes, Horseshoe Reservoir and Bartlett Reservoir. The lakes provide recreationists with opportunities to water ski, fish, scuba, jet ski, sail, windsurf, canoe, motorboat, and swim.

Water-based recreation has always been extremely popular in the arid Southwest. As the lakes become more crowded, people are turning to the rivers and streams to pursue their recreational activities. Low water boating is gaining in popularity as recreationists seek new sports and areas. Rivers that were previously considered unboatable are now being canoed, kayaked and rafted in great numbers. Canoeing is reported to be the second fastest growing participation sport in America (Harrison, 1988). Nationally, an increase of 57 percent in participation was observed between 1980 and 1986 compared to a 17 percent increase between 1966 and 1980. In 1986, 19 million Americans canoed (SCORP, 1989a).

The Verde River provides excellent river boating opportunities, especially for canoers, kayakers, tubers, and rafters. This river is available to boaters when most of the country is locked in by freezing weather. Different segments of the river offer different experiences, from whitewater to placid, slow-moving waters. Increasing demand for boating trips along the Verde provides outfitters and guides a rural river business opportunity. There are several local businesses that cater to those people interested in renting canoes, joining a guided raft trip, or chartering a river barge for a party on the Verde. Many of these small businesses tailor their services to fit most any personal need, including providing shuttle service, meals, and environmental/cultural studies, offering fully catered or participatory excursions, and offering varying trip lengths.

The only designated National Wild and Scenic River in Arizona is a 39.5 mile stretch of the lower Verde River. Designated by Congress in 1984, this Wild and Scenic River segment begins at Beasley Flat and continues through a rugged canyon gorge to the confluence with Red Creek. The first 14.5 miles are designated as "Scenic" and as the river enters the Mazatzal Wilderness Area the river is classified as "Wild." Many people come to the Verde to experience this desert river in a way only possible via canoe, kayak, or raft. The Forest Service released a draft implementation plan for the management of the Verde Wild and Scenic River in 1990. The river falls under the jurisdiction of three national forests, Coconino, Prescott, and Tonto.

A citizens' proposal of 40 river segments currently being studied lists two additional river segments of the Verde and four tributaries for consideration as National Wild and Scenic Rivers (see Other Protection and Management Actions section).

Oak Creek Canyon and the highway that follows the creek through the incredibly scenic canyon is an international attraction. Hundreds of thousands of people visit the area and stop at Slide Rock State Park each year. This natural chute along Oak Creek is the precursor to the artificial water parks so popular today. A second state park located along Oak Creek south of Sedona, the Red Rock Environmental Education Center, is scheduled to open in the winter of 1991. Many visitors continue their trip down through the Verde Valley, stopping at the many natural and cultural attractions found in the valley.

Two archaeological sites under the protective management of the National Park Service are located in the Verde Valley. Tuzigoot National Monument is situated atop a hill overlooking the Verde River between Clarkdale and Cottonwood. Montezuma Castle and Well can be found along Beaver Creek, a tributary that enters the Verde in Camp Verde. Also in Camp Verde is Ft. Verde State Historic Park, an 1800s military reservation managed by Arizona State Parks. A second State Park, Jerome State Historic Park, highlights the Douglas mansion in Jerome and focuses on the mining era of early Arizona. These national and state treasures attract a considerable number of visitors to the Valley providing wonderful glimpses back through time. There are also many other historic and prehistoric sites in the area that can provide fascinating opportunities to learn more about the region's history.

Hiking, backpacking, horseback riding, mountain biking, and off-highway vehicle opportunities can be found throughout the region, especially on the surrounding national forest lands. There are many backcountry trails and primitive campgrounds for the adventuresome. There are also fifteen Wilderness Areas within the Verde River Basin that provide opportunities for solitude and that "wilderness experience" desired by our country's increasingly urban populations. Some areas and trails are closed to certain types of use so it is wise to check with the Forest Service for restrictions.

The Forest Service has been working with local residents and special interest groups for the past year to plan for a system of trails on national forest lands. The concept was to close the public land to off-road vehicle (ORV) use (currently, one can drive anywhere on forest land except where posted), and designate certain trails and areas "open" to such use. Some local residents objected to designating any ORV or OHV (off-highway vehicle) areas or trails on national forest land, others objected to the amount of trail miles proposed for OHV use. ORV and OHV enthusiasts contend they have a right to use public lands and are willing to work with Forest Service to plan for the most appropriate areas. A solution is still being negotiated.

Many people, especially the residents who live along or near the river, enjoy walking and riding along the banks of the Verde and its tributaries. Established, managed trails along the river corridor are few and far between, however. There are no long distance trails along the river that are managed for public use. The Verde Valley Horsemen's Council is one group that has been studying the feasibility of a planned system of trails along the river corridor. Currently, people use the many undeveloped trails that criss-cross between private and public lands. Trail use on private land is at the acceptance/permission of the landowner. If the owner becomes discouraged with rudeness, noise, litter, and vandalism, he can close his land to further use. Respect for private property is being strongly encouraged.

There are scattered parcels of national forest land along the Verde River Corridor. Many of these parcels are currently being developed to accommodate limited river access and recreational activities such as boating, fishing, and picnicking. Some sites will allow camping. Table 6 lists the nine new sites being developed as a cooperative effort by the Prescott National Forest, City of Cottonwood, and Town of Camp Verde. Additional sites along the Verde are also being planned. The recreational river access sites are being funded through the State Lake Improvement Fund (SLIF) administered by the Arizona Outdoor Recreation Coordinating Commission (AORCC). A pamphlet on public river access sites has been published as part of the VRCP process and is now available to recreationists.

The Verde River Greenway, managed by Arizona State Parks, is currently planning for the protection and development of this unique riparian and recreational resource. A seven-mile trail has been planned for the Greenway to allow recreationists the opportunity to walk along the banks, enjoying the tree-canopied river and the multitude of wildlife species that live in the riparian community. Also planned are several river access points. The Greenway is currently managed as a special unit of Dead Horse Ranch State Park. This quiet state park offers campgrounds, restrooms, showers, picnic sites, group use areas, a fishing lagoon, river access, riverfront trails, and interpretive and environmental education programs. Additional campgrounds, trails, and an equestrian area are planned for the future.

There are a couple of city parks along the river. Riverfront Park in Cottonwood features several ballfields, play areas, picnic sites, trails, and river access, and eventually will have a wetland area for wildlife observation. White Bridge Park in Camp Verde is in the development stage. It is to be a riverfront park and will provide access to anglers and to boaters to "put in" and "take out." There are also several picnic sites planned.

Private campgrounds vary from the full-service accommodations at the Thousand Trails RV Park located along the river between Cottonwood and Camp Verde, to the "throw down" camping area located north of Clarkdale.

Peck's Lake, an old oxbow lake of the Verde owned by the Phelps Dodge Corporation, is available for limited public use. It is currently undergoing renovation. When it reopens, boats (8hp or less) and anglers will be allowed on the lake. There is a small picnic area at the lower end of the lake. A golf course borders one side of Peck's Lake. The lower end of Peck's Lake is quite marshy and is an excellent birdwatching site.

Tavasci Marsh, just to the south of the lake, is currently being restored to its original wetland state, under a cooperative agreement between the landowner, Phelps Dodge, and AGFD. Tavasci Marsh will be open to the public after restoration is completed. Nature study, bird watching, and hiking will be the main focus. There are many excellent bird watching areas along the Verde. One could expect to observe over 150 bird species in the Verde Valley; many species can only be found along rivers and riparian areas like the Verde River. In addition to birds, many people enjoy the opportunity to observe different kinds of wildlife. A river affords many such opportunities because of the diversity of species and large numbers of animals it attracts.

Some of the surprising recreational pursuits that have been gaining in popularity are ecotourism and environmental education trips. More people are spending their vacations whale watching, repairing wilderness trails, and assisting archaeologists on a dig. People enjoy spending time in the outdoors, but they also want to know more about the natural world around them. It is hoped that this trend continues.

Sightseeing has been one of America's top leisure pursuits for years. Scenic highways, such as 89A through Oak Creek Canyon, attract millions of people annually. A new form of sightseeing has recently become available in the Verde Valley. The Arizona Central Railroad has opened the Verde River Canyon Excursion Train. This historic railroad was originally built to carry ore from the mines to be processed. The trains still carry freight, but their main attraction is an incredibly scenic trip through the upper Verde River Canyon. The trains allow thousands of people to experience this rugged backcountry annually without the serious environmental impacts that new roads and facilities would cause.

The Verde River Corridor has recently been the focal point for several special events. Verde River Days is an annual event sponsored by the local communities and businesses. It is held each year in September at Dead Horse Ranch State Park and features river-related activities for children and adults, demonstrations, exhibits, educational sessions, entertainment, and of course, food. This event brings a greater awareness of the importance of the river to people's every day lives. It has been enthusiastically received by the public and is an excellent vehicle for building community spirit. Other special events and festivals that have centered around the river are triathlons, and canoe and mountain bike races.

## **Recreation Assessment**

The Verde River Corridor provides many diverse forms of recreation opportunities which can sometimes be in conflict. The natural beauty of the area is a mecca for outdoor recreationists seeking escape from the city. The area provides important habitat for large numbers of fish and wildlife species and supports a wide diversity of plant life and landscape scenery. The Verde Valley is well-known for its rich cultural heritage, both historic and prehistoric.

It is recognized that people will continue to be attracted to the Verde Valley, creating more demands on its finite resources. It is also recognized that private property owners may choose to limit access across their properties in the future. Sometimes there is competition for the same resource or parcel of land. Some of the activities are in direct conflict with each other, such as those individuals seeking solitude along the river and those who want to drive their motorized vehicles along the banks and through the river. Trail use by different activity types can also create conflicts. Often, anglers do not like to share the same stretch of river with swimmers.

The primary problems identified by the Recreation Subcommittee of the VRCP are:

- competing recreation uses
- conflicts between resource protection and recreation uses

- conflicts between landowners and recreationists
- decreasing access to river
- insufficient access and facilities to accommodate recreation uses

The Recreation Subcommittee researched and prepared a recreation assessment of the Verde River Corridor for the VRCP Steering Committee. The purpose of the report was to familiarize committee members with the wide variety of recreation activities associated with the Verde River as well as identify areas of conflict and concern and, finally, to provide some possible resolutions. River access and resource protection has been a primary concern of the Recreation Subcommittee. Recommended actions to address the identified issues and concerns were developed by the Recreation Subcommittee and can be found in the Recommendations and Major Findings section.

The assessment covered the corridor from Tapco to Beasley Flat and was divided into seven zones. Each zone was described by three subject areas: 1) general information about the zone, 2) specific information regarding present activities, and 3) concerns, suggestions, and actions defined by the Recreation Subcommittee. The activities specifically identified included fishing, swimming, off-road vehicle use, camping, picnicking, hiking, mountain biking, equestrian, birding and wildlife observation, boating/canoeing, and cultural/historical information.

Hunting and rock climbing were initially included, but later dropped for evaluation by the subcommittee as it was felt that hunting within the much of the corridor was inappropriate because of the close proximity to residences (for information, regulations, and suitable sites for hunting, contact the Arizona Game & Fish Department). Rock climbing was dropped because most appropriate sites were located outside the river corridor.

The following table summarizes some of the information gathered through the Recreation Assessment.

One of the most difficult obstacles to overcome will be supporting the large numbers of potential day users while preserving the natural state of the riparian areas. Human activity and environmental quality can coexist with adequate pro-active management. There are existing areas along the river corridor that have the carrying capacity for recreation activities. Areas encompassing important wildlife habitat and riparian ecosystems are more sensitive to the adverse human impacts from recreationists.

A well balanced planning approach should aim toward simultaneously maintaining the integrity of riparian areas and providing recreation areas for humans. The impacts can be positive with proper management. Unless people have a connection to the river, through recreational use or sightseeing, they may not consider it as significant and worthy of their support for efforts to protect it (Averitt, et al, 1991).

## **OVERVIEW OF CORRIDOR PROBLEMS**

### **BACKGROUND**

It has been difficult for some people to understand why there is a need for a comprehensive planning process for the Verde River Corridor. Water still flows in the river, people's wells are still pumping up clean water, the fishing is good, eagles soar overhead, and trees still shade the banks. What is the problem?

The Verde River is facing many significant problems today, and they are likely to worsen over time without a management framework oriented toward finding the best solutions. Local communities are addressing issues and problems as they arise, but frequently these actions only affect the land and water within a town's boundaries. Several key goals of the Steering Committee have been to identify the problems and needs of the entire river corridor, recommend a coordinated and consistent management strategy throughout the corridor, and begin the process of solving the problems. Another key goal of the Steering Committee has been that of informing and educating themselves, agency representatives, special interest groups, landowners, and the general public. Most of the problems on the river have been ongoing for years, but can be abated with proper attention and an informed, involved public.

Specifically, some of the main concerns include (not in priority order):

- Protection of private property rights—trespassing, littering, vandalism
- Water quantity—instream flow, water transfers, diversions
- Water quality—pollution, sedimentation, scouring
- Protection and enhancement of the riparian habitat—fish, wildlife, vegetation
- Public river access—recreational opportunities, maintenance, law enforcement
- Current sand and gravel mining practices and regulations
- Adequate information and education of the public and landowners about opportunities and responsibilities of river use
- Potential loss of cultural resources, agricultural lands, and open space along the river
- Insufficient information specific to the Verde River Corridor
- Providing for commercial uses of the corridor while protecting river values
- Maintaining and improving the quality of life

### **MAIN CONCERNS**

## **Private Property and Recreation Access Conflicts**

Throughout the planning process, the primary concern of many residents was the issue of private property rights. The riparian lands along the Verde River Corridor are largely privately owned. The main obvious public access points to the river are at Dead Horse Ranch State Park and a few undeveloped sites on National Forest lands. Trespassing presents concerns to landowners since legal access points are few and are generally unpublicized, and access to the river is sought by an increasing number of river users. There is little question that the river will remain a high demand recreational area, but there are outstanding questions regarding how, and how much, river access should be made available.

Trespassing in the river corridor takes on a variety of forms and causes several problems. Trespassing on residential property is only one type of problem. Unsanctioned uses of the river corridor such as driving vehicles off road can cause the loss of significant vegetative ground cover, erosion, sedimentation, and leave ugly scars which harm the aesthetic character of the riverine environment.

Littering in and along the river has taken on mammoth proportions in the past with thoughtless people dumping household and yard trash, old appliances, furniture, and car bodies. Anglers and other recreationists often leave evidence of their presence such as cans, bottles, food wrappers, and old fishing line. Riverfront owners and courteous recreationists bear the brunt of cleaning up after these thoughtless and disrespectful people. More and more landowners are closing their lands to general public use as a result of problems with trespassing, littering, vandalism, and liability issues. Yavapai County has taken a major step in resolving the littering problem. The County Public Works Department has initiated an enforcement and clean-up program that encourages citizens to report vandals and litterers and employs staff to educate offenders and enforce littering laws and regulations.

Increasing regulations, ordinances, and confusing permitting processes also top the list of landowner problems. Many landowners are requesting information about conservation easements and tax incentives regarding personal land stewardship actions and they have questions about the rights and responsibilities of riverfront owners. The laws and regulations can differ from one community to the next, and the unincorporated areas come under county regulations. This can result in inconsistent management along the river corridor.

## **Water**

Another issue of primary concern has been water quantity. The State of Arizona is currently conducting an adjudication process to determine who gets how much water. This process, which will take many years, is extremely complex because it must involve all branches of government, the courts, Indian tribes, and commercial and private water rights holders. It was considered beyond the scope of this project to tackle the water rights issue except in its role of providing information and opening up the lines of communication.

Meanwhile, towns are trying to make decisions regarding growth, Central Arizona Project water allocations, and applications under the 1980 Groundwater Management Act. Water farming and

water transfers have been a "hot" issue the past few years and the Verde River has figured into many different proposals.

Many people in the Verde Valley fear that there may not be any water left in the river for their use if other towns and interests obtain their allotments first. Also, more and more people are concerned about ensuring adequate flows in the river, called instream flows, to support fish and wildlife populations and their habitats, and for recreational activities.

In a 1989 report, the Fish & Wildlife Service calculated minimum instream flows for several stretches of the Verde River Corridor. Based on best available data, the flows needed to maintain the aquatic and riparian resources ranged from 13 cfs to 255 cfs depending on the stream segment and season. The recent water transfer proposals suggested for the upper Verde are projected to negatively impact the flow of water to the Verde Valley as well as the survival of endangered species found in the river (USDI FWS, 1989).

Other concerns voiced by Verde Valley residents regarding the use of water include the considerable amount of water used by irrigated fields for the relatively small economic return, inefficient ditch systems, increased pollutants in the return water to the river from the fields, and the general lack of support for water conservation efforts.

In 1980 Yavapai County requested that Arizona Department of Water Resources explore the possibility of constructing a flood control dam north of Clarkdale in the general vicinity of the Sycamore Creek/Verde River confluence. Preliminary information indicates that the construction of a dam at that location may not be feasible due to economics. Dams have substantial impacts and benefits that need to be thoroughly explored and weighed before decisions can be made.

Other potential waterpower and reservoir sites that have been explored in the past include: 1) Clarkdale reservoir site—a 240 foot high dam at Sec. 17, T17N, R3E; 2) Gittings waterpower site—a 200 foot high dam located at Sec. 28, T17N, R3E; 3) Camp Verde waterpower site—a 210 foot high dam located at Sec 1, T12N, R5E; and 4) Arizona Hydraulic Power Company waterpower project—a 165 foot high dam located at Sec. 30, T12N, R6E—containing a storage reservoir, diversion dam, two conduits, and three powerhouses (USDA FS, 1990). None of these projects are currently being considered, but all have been seriously proposed in the past.

## **Regulations and Management**

Many residents have expressed concerns about programs administered by state and federal agencies which promote recreational uses of the river without adequate provision for management (overcrowding, user conflicts, enforcement, and access). They are concerned about government regulations and policies which place restrictions on riverside land uses. There is also a fear that some government programs will exercise the right of eminent domain or condemnation to obtain lands or rights of way. Although this has happened in rare instances, it is an uncommon, expensive, and extremely unpopular method, and one not taken lightly by any governmental entity.

Other residents and organizations are concerned that existing regulations and laws are not stringent enough to protect the river and its riparian values. Some individuals worry that special interests and large corporations have too much say in planning and zoning decisions that benefit development interests at the expense of environmental values. These different perspectives must be discussed in public meetings so that all concerned individuals can contribute opinions and recommendations to the decision-makers.

### **Commercial Uses**

The mining of sand and gravel in the Verde River Corridor has been a controversial issue throughout the VRCP. Some residents would like to see all such activities outlawed. Others maintain it is their right and an economic benefit to the community to make use of the natural materials along the river.

The problem is complex. It is true that current mining practices have substantially altered the riverbed, with deep pits dug in the river channel, the course of the river diverted, and trees uprooted. These alterations can cause drastic changes both up and downstream: water quality can be negatively impacted and detrimental scouring and headcutting around river structures such as bridges can occur.

Sometimes streambed alterations may be modified or rehabilitated to benefit another use. One abandoned sand and gravel pit has been modified and put to excellent use by a commercial boat tour company. In some cases, the socio-economic benefits are an important consideration and may balance out the negative impacts. All residents of the Verde Valley rely on the products of the sand and gravel companies. These materials are the virtual building blocks for homes, building, roads, and bridges. An easy source of gravel in close proximity to the developing areas means inexpensive costs to the consumer and taxpayer. If companies are forced from the river without exploring alternatives, a new set of problems arise. This particular problem is impacted by federal regulations and laws and many solutions to this issue are beyond the control of local groups.

### **Open Space and Quality of Life**

One of the attractions of the Verde Valley is its "country flavor." The large stands of riparian forests, green pastoral lands, and agricultural fields provide a rural atmosphere and a visual escape from the large urban cities. But the Verde Valley is growing rapidly. People want to live in a rural setting, especially one that has many of the amenities of a large city but still has a high quality of life.

Some people would like to see the entire Verde River Corridor become a protected greenway with limited recreational access the only intrusion. Other people would like to develop the riverfront lands for uses such as residential housing, resorts, and commercial recreational facilities. As more people move to the area in search of a new life, demands for land goes up. Each year more and more acres of agricultural land and open space are sold for commercial and residential development. The day is fast approaching when the Verde Valley may be just another crowded, polluted urban city. Are there incentives that can be implemented to encourage these

open lands to be maintained? How much land should be protected as open space, parks, and greenways?

## THE NEXT STEP

The VRCP's mission has been to determine solutions to these problems in order to preserve the character of the Verde River Corridor and make it an attraction for residents and visitors alike. The Steering Committee addressed all of these problems in the corridor planning process and came to the realization that corridor management must begin with problem-solving: clear identification of the problem, exploration of all viable alternatives, and a recommendation for action.

The Steering Committee members are confident that the problems in the corridor can be resolved. The subcommittees developed many recommendations that specifically address each of the problems that, when implemented, will provide achievable solutions.

## Ten Most Frequent Concerns

The following are the ten most frequent concerns identified by the Verde Valley residents at the initial public meetings if the Verde River Corridor Project:

- Need for coordinated management of public lands
- Lessen impacts of sand & gravel operations mining on river corridor
- Maintain or improve water quantity and quality--stop future allocations and transfers
- Protect private property rights
- Restore and revegetate riparian areas and eroded streambanks
- Explore use of conservation easements to protect lands and provide access across private property
- Maintain, improve and increase public access to river for recreation uses
- Protect and enhance wildlife and its habitat
- Control generation and transportation of hazardous/polluting materials in/through area
- Explore funding sources for plan and its implementation

## **THE PROCESS**

### **BACKGROUND**

Concern for river conservation and protection in Arizona formally began in 1965, the year AORCC released Outdoor Recreation in Arizona, the first statewide outdoor recreation plan. The 1965 recreation study contained Arizona's first formal recommendation that portions of the state's streams be designated as natural rivers (SCORP, 1965). Between 1966 and 1988, resource management and regulatory agencies, private interest groups, and the State Legislature addressed a number of important stream and wetland conservation issues in Arizona (SCORP, 1989a).

In 1985, Governor Bruce Babbitt summed it up best when he said:

*"What is needed is the implementation of a comprehensive legislative mandate for the protection, conservation, and rehabilitation of riparian ecosystems. Previous efforts have addressed only pieces of the whole. Legislation must include all aspects of riparian systems and address all levels of involvement—federal, state, local, and private—to be effective (Johnson et al., 1985)."*

In 1989, the Arizona State Parks Board published the milestone Arizona Rivers, Streams, & Wetlands Study as part of the Statewide Comprehensive Outdoor Recreation Plan (SCORP). It contained a wealth of information about the ecological and economic importance of streams and riparian areas, documented threats to these resources, and identified strategies for their protection and management (Arizona Rivers Coalition, 1991), one of which was multi-objective river corridor planning. The 1989 SCORP recommendation stated:

*The State of Arizona should identify river areas where corridor planning may be beneficial and take the necessary steps to initiate such planning.*

The study goes on to describe what multi-objective river corridor planning is, which States have successfully implemented such planning efforts, and how Arizona could begin such an endeavor. The study suggested that possibly the most productive way for the state to establish a river corridor planning program would be to focus initially on one stream that could serve as a model for future projects. The study also developed a preliminary list of river corridors in Arizona that should be given consideration as priorities for future river corridor planning. The Verde River was at the top of the list.

### **Local Efforts**

There has been a variety of past efforts designed to plan for and protect the Verde River. The Forest Service, which manages much of the upper and lower Verde River, began its land management planning process in the late 1970s soliciting public opinion on how national forest lands, including the Verde River, should be managed. Public meetings and studies for designating wilderness areas, wild and scenic rivers, and trails have provided impetus for further discussions.

In the late 1980s the Verde Natural Resource Conservation District attempted a multi-group association to begin planning for the wise use of the Verde River, but the conflicting issues became too overwhelming to resolve through a volunteer effort. However, the Verde NRCD continued to pursue individual projects, such as the highly successful Verde Riparian Project (see Other Protection and Management Actions section).

Several communities have been working hard to enact and implement local policies and ordinances to manage and conserve the resources along the river corridor. The Town of Camp Verde has drafted a sand and gravel ordinance and has begun a water plan. Both state and county agencies have assisted communities in the preparation of general development plans.

Many individuals have worked tirelessly over the past decades to enhance the Verde River and its riparian corridor. Several groups have been formed with the intent of assisting riverfront landowners and residents in caring for the river and developing floodplain lands while enhancing the riverine values.

Members of the local communities joined together in 1989 to establish a new tradition, Verde River Days, which is designed to increase awareness and appreciation of the river and its importance to the Verde Valley and its people. The first annual event was held at Dead Horse Ranch State Park in September 1989 and was highly successful. Each year promises to be better than the last with more participation and enthusiasm from all sectors of the community.

Many other events have occurred in the Verde Valley sparking considerable public awareness and concern over the fate of the Verde River Corridor. Water, always a controversial topic, dominated the headlines when the issue of water transfers began. Several cities, agencies, and Indian tribes looked into a number of possibilities, such as exchanging Central Arizona Project allocations, pumping water out of the Verde, and pumping water out of an adjacent basin into the Verde to resolve individual problems. The potentials are still being studied. But all this interest in the Verde River's water roused the residents of the Verde Valley and spurred local action.

## **MULTI-OBJECTIVE RIVER CORRIDOR PLANNING**

During this period of time the Statewide Planning Division of Arizona State Parks began its first effort at a comprehensive planning endeavor called multi-objective river corridor planning. Corridor planning refers to initiatives by public and private interests to address problems and opportunities associated with a river and its riparian lands through the development of a broad-based plan.

The objective of corridor planning is to look at the river area as a whole and to devise meaningful strategies for conservation and wise use. This process acknowledges two simple yet essential ideas about river management:

- 1) no public action can replace wise use of a river by those living along it, and
- 2) effective river management cannot succeed without local consensus and support.

To be successful, this effort usually necessitates a cooperative planning process that addresses concerns held by a variety of interests including landowners, river users, management authorities, and the general public. Ultimately, the success of these efforts can be measured by the extent to which all affected interests are willing to support the proposed management concepts.

This type of planning effort began as a nationwide movement to look at the totality of rivers, not just at one aspect or use. Too often past river planning efforts have focused solely on one issue such as building a new dam, providing recreational facilities, or preserving a threatened species. For most rivers that pass through communities, single purpose planning is not feasible. All uses must be taken into consideration before decisions can be made. This is the goal of multi-objective river corridor planning.

When and if river corridor planning occurred in the past it was for a single purpose. All across the country we can no longer afford this luxury as the pressures mount from an ever increasing population and a multitude of rising demands on unique river flora and fauna. Historically, communities have looked to rivers for life; today a river must look to communities for its future survival. By caring and planning together the legacy of a quality riparian environment can still be given to future generations.

***Multi-Objective River Corridor Planning*** is the joining of public and private interests to discover and define the problems and opportunities associated with river resources and to seek agreement and decisions regarding them. The goal of this process is to recognize all of the valid public and private uses and to develop a plan that provides the most benefits to the community with the least adverse impacts on these significant river resource values.

Through corridor planning, community members can look at the river area as a whole and devise purposeful strategies for conservation and wise use. A successful corridor planning process requires commitment and a cooperative effort. It addresses concerns held by a variety of interests including landowners, river users, management authorities, the general public and, in addition, addresses the effects of these uses on the future quantity and quality of the water in the river. Such a process is intended to achieve a suitable balance among these economic, natural, cultural, agricultural, recreational, tourist, scenic, historic, and other similar values associated with rivers and their corridors.

A community based corridor planning project can shape the future of a river's resources through the use of these specific actions:

***Coordination:*** Find creative ways to coordinate existing programs at the federal, state, and local level to address the problem of overlapping jurisdictions and inconsistent agency actions; improve coordination/cooperation among federal, state, and local agencies, and private groups; establish public and private partnerships; develop the means to achieve balanced participation by all river corridor users.

***Education:*** Develop public awareness of identified river corridor values and their relationship to land uses to encourage active public participation in river planning efforts.

**Assistance:** Provide technical and financial assistance to local, state and federal governments and private groups and individuals to encourage the appropriate future uses of river corridors.

**Information:** Gather and make available information regarding river values, projects, case studies and other technical data to promote more comprehensive, objective decision-making and conflict avoidance between competing river uses.

**Legal:** Identify the appropriate means/agents to ensure adequate public access to river corridor land and water while considering property interests and ecological systems.

**Public Involvement:** Develop creative mechanisms to identify and develop river corridor constituencies and effectively involve the public as early as possible and continuously in the planning and decision-making process.

**Planning:** Ensure that planning for river corridors is coordinated between all levels of agencies and interests; address the full range of resources, problems, opportunities and river interests; use consistent systematic and objective approaches for planning; encourage environmentally sound conservation and resource management strategies; identify opportunities for economic and commercial development; and establish priorities for a range of uses.

**Policy:** Establish and encourage national, state and local policies and programs for river corridors to promote consistency and coordination and to encourage a balance between social/economic needs/issues while retaining or restoring resource values and reducing conflict.

**Resource Management:** Develop balanced planning and management which provides the opportunity for both conservation and development of the river resources, coordinated among all landowners and users, interest groups, and agencies.

This outline of the goals of multi-objective river corridor planning was developed from a series of six workshops held across the nation in 1989 to determine what priority actions Congress and the Federal Administration should take to help support local, state, and federal governments and private organizations in their river planning efforts (Multi-objective River Corridor Planning Workshops, 1989). Legislation has been submitted by Congressman John McDade from Pennsylvania with recommendations for policy development, a coordination body, demonstration projects, federal technical assistance, a National River Register, public involvement in future decision-making, and consideration of private property rights.

## **VERDE RIVER CORRIDOR PROJECT--THE PROCESS**

### **Beginning the Process**

In early 1989 the Arizona State Parks and Arizona Department of Commerce began discussions with local groups, elected officials, and agencies in the Verde Valley to explore the issues and concerns associated with the Verde River and its corridor lands. In September, several public meetings were held throughout the Verde Valley to see if the local communities would be willing to join together and begin a "multi-objective" river corridor planning effort for the Verde.

From the initial meetings, it was clear that local people had a strong concern about issues affecting the Verde and a strong desire to become more involved in decision-making about the river. The nearly three hundred people who attended these first meetings agreed to the project and to allowing Arizona State Parks and Arizona Department of Commerce to facilitate, but they wanted the decisions to come from the local residents. It was to be a citizen-directed project. The Project Planning Team developed a strategic planning process state ([Figure 6](#)) which was accepted by the group. At the same time, a process for involving a wide range of people, groups, and agencies was developed, with input from the public state ([Figure 7](#)).

One of the earliest tasks involved identifying the key issues facing the Verde River. The Project Planning Team held several public meetings and sent out questionnaires soliciting comments from as many people as possible. The team set up an exhibit on the planning project at the first annual Verde River Days and an additional thousand people had the opportunity to comment on issues of concern to them. At these initial meetings, held in September and October, 1989, an exhaustive list of river issues and concerns was recorded, and then grouped into major categories.

### **Major Issues Categories**

- Access Water
- Environmental Problems
- Land Management
- Flooding & Erosion
- Sand & Gravel Mining
- Private Property Rights
- Law Enforcement
- Pollution
- Special Area Designation
- Economics
- Recreation
- Zoning

### **Establishing the Committees**

At the same time, the Project Planning Team sent out letters to the Yavapai County Board of Supervisors and the mayors of the three main communities along the Verde River—Camp Verde, Cottonwood, and Clarkdale—asking them to submit names of interested people from their communities to serve on a steering committee. The three mayors and a county supervisor were included on the steering committee. To ensure representation from all interests, additional people were also asked to serve on the Steering Committee, which totalled 26 members.

Due to the size of the Steering Committee and the enormity of the planning process, five working subcommittees were established to explore each of these major issues and consider possible actions for resolving identified problems. Local residents and knowledgeable people were encouraged and invited to participate on the various subcommittees. The subcommittees include:

**- Economics & Commercial Uses**

**- Land Conservation**

**- Private Property**

**- Recreation**

**- Water**

To better utilize the expertise contained in the many local, state, and federal agencies, and private organizations not represented on the Steering Committee, a Technical Advisory Committee of over fifty people was established. Committee members were encouraged to contact these groups for specific information, past studies, concerns, and recommendations and solutions.

The Project Planning Team, which facilitated the VRCP, included staff members from Arizona State Parks and Arizona Department of Commerce. The Steering Committee, five subcommittees, Technical Advisory Committee, and Project Planning Team, as well as over 400 people on the VRCP mailing list, were considered the main participants of the Verde River Corridor Project (Figure 7).

The Steering Committee was committed to extensive citizen-based participation in all phases of the plan's development so that the final plan would be wholly produced by members of the community in which it would be implemented and would thus have a broad base of support. The VRCP involved a six-step process:

- 1) assessing the special resource values of the Verde;
- 2) identifying the issues of greatest concern to area residents;
- 3) ensuring a broad cross-section of the community participated in or contributed to the VRCP;
- 4) setting goals based on the identified issues and resources;

- 5) considering alternatives for resolving the identified issues; and
- 6) developing a final set of recommendations and a plan of action.

### **Gathering Resource Information**

Arizona State Parks, through a grant from the State Lake Improvement Fund, worked with the Arizona State Land Department to produce a series of GIS maps (geographic information system) of the Verde River Basin that highlighted existing information such as land ownership, county and municipal boundaries, roads and trails, watercourses, and vegetation.

State Parks also contracted with Yavapai County Flood Control District to create special flood maps showing the various flood designations in relationship to land ownership. The agency also arranged for new aerial photography so that the project would have the most up to date information available. Each subcommittee received sets of the different maps and resource materials for its own use and reference.

At the committees' recommendation, Arizona State Parks and the Department of Planning at Arizona State University conducted a resource inventory, site restoration analysis, and a visual assessment of the corridor. Also, the University of Arizona chose the Verde River to continue its long-term study of public opinion about the state's rivers and their resources. A survey was sent to a broad cross section of Verde Valley residents to determine their attitudes and concerns. Two other rivers had already been included in the study enabling a good comparison of community attitudes on river issues across the state (see Supporting Studies section).

### **Public Involvement**

Arizona State Parks published an informational brochure about the project and distributed it throughout the Verde Valley to inform the public of the corridor planning process and how they could be involved. Local newspapers and radio stations were committed to releasing meeting notices and progress reports of the planning process.

Each subcommittee met periodically between November 1989 and April 1991, researching, discussing, determining goals, objectives, and strategies, and setting priorities and recommendations for consideration by the Steering Committee. Many subcommittees scheduled field trips, special presentations by experts, and interagency and public workshops to learn more about the various issues. When the subcommittees finalized their recommendations, they were presented to the Steering Committee for discussion and approval.

Public participation efforts included the establishment of the twenty-six member steering committee and five working subcommittees comprised of approximately fifty other individuals. The Technical Advisory Committee included another fifty individuals representing various agencies and organizations. Many additional people did not belong to a particular committee, but attended and actively participated in the public meetings regularly.

Usually 50 to 75 people attended the public meetings. The special meetings attracted well over 125 people. Nearly 500 people asked to remain involved with project developments via the mailing list.

This consistent level of long-term public involvement, attendance, and commitment, especially in a relatively non-controversial planning process, is extremely rare in Arizona. It is proof of the enormous amount of grassroots support and interest in local planning and decision-making.

As the working subcommittees identified specific areas of concern, they scheduled special forums for some of the more problematic issues. These forums brought in a variety of experts representing the many sides of a particular issue. Forum structure consisted of knowledgeable presentations followed by a question and answer period for the public. Attendance at these forums confirmed the public's tremendous interest in these issues and their desire to have a say in the decision-making process.

The forums and special presentations included:

- Water Transfers and Exchanges Forum
- Sand and Gravel Mining Forum
- Clean Water Act—404 Permit Process
- EPA/FWS Advanced Identification Study
- Environmental Defense Fund Water Conservation Study
- Private Property Issues
- Recreation Assessment
- Visual Resource Assessment
- Hunting and Trapping
- Public Opinion Survey
- Salt River Project
- Dead Horse Ranch State Park Developments
- Arizona Water Resources Plan

Also, many other agencies and groups began to call in and request time before the Steering Committee to present their issues and proposals, recognizing that the VRCP was an excellent vehicle to reach the Verde Valley residents concerning their programs and plans and solicit

public comments. This cooperation was mutual, opening up lines of communication between local residents and state and federal agencies. An important aspect of the project was to bring local people together to begin thinking and talking about the future of the Verde Valley, and to agree on ways to deal with some of the problems affecting the river.

### **Committee Tasks**

The Steering Committee's general charge was to participate in and oversee the development of the VRCP (see appendix). After considerable discussion, the members agreed upon a general purpose and several goals to guide the process. The Steering Committee determined that the purpose of the VRCP was to:

*Identify and recognize all uses of the Verde River Corridor, encourage protection of the Verde River and its natural and cultural resources, and promote coordinated decision-making for the continued enjoyment and use of the Verde River by future generations.*

In addition several major goals for the project were set by the Steering Committee and the project participants early in the process:

- Achieve a balance of economic development and conservation practices
- Improve and maintain the riparian corridor and water quality and quantity
- Improve cooperative management of the land and water resources
- Develop education programs related to river resources and river use

When the Steering Committee was formed, each member received a loose leaf notebook to assist them through the project. The notebook contained names and addresses of committee members including the technical advisory committee, outlines of each of the committees' roles and responsibilities, a series of forms to record issues, goals, strategies, and actions as they progressed through the planning process, and an appendix of pertinent material. Additional sections for future correspondence, meeting summaries, and handouts to be added kept all VRCP materials organized and easy to reference.

As the planning process began, the members of the VRCP held fast to one fundamental belief: even though the Steering Committee and subcommittees would be dealing with controversial issues, they must always remember they had one common interest--*the Verde River*. However, rather than avoiding conflict, the committees had to work together with all groups and interests, even those they may have considered to be 'opponents.' Involving these diverse groups early in the process helped to address their concerns and may to help diffuse opposition in the future.

As each working subcommittee was formed, a member of the steering committee volunteered to chair each group and most other members chose to work on one or more subcommittees. The general charge of each subcommittee was to discuss and research issues, prioritize the feasible issues, develop alternative strategies to resolve those issues, seek public input, and propose

recommendations and a plan of action to the Steering Committee (see appendix). In every letter and news release that went out, the public was encouraged to attend all meetings and to participate in the work of the subcommittees.

In catalyzing local action, the VRCP found that:

- 1) citizens living along the river, and those using it, have invaluable expertise necessary for developing realistic expectations of what conservation of the Verde means, and
- 2) by understanding and embracing their role in the planning process, citizens will make legitimate, workable decisions about what can be accomplished.

The result of this planning process is a strategy for land and water management in and along the Verde River that is uniquely suited to its special qualities and the demands of the local communities.

## **RECOMMENDATIONS & MAJOR FINDINGS**

### **STEERING COMMITTEE**

The following pages describe the overall vision, mission, and guiding principles of the Verde River Corridor Project Steering Committee and outline the final recommendations and major findings of the five subcommittees.

The Steering Committee directed the overall project, providing the vision and broad-based perspectives needed to accomplish the goals of the VRCP. From November 1989 through May 1991, the Steering Committee met nearly once a month, discussing issues and strategies. The 26 members received and reviewed regular reports and a considerable amount of draft materials, including the strategies and recommendations developed by the subcommittees.

The Steering Committee was responsible for making the final decisions to approve the recommendations and plan of action. The guiding principles were developed near the end of the project after dozens of issues had been discussed, strategies explored, presentors listened to and questioned, and materials and data reviewed and evaluated. These principles represent the diversity of issues and opinions that were the heart of the Verde River Corridor Project. They should serve as guidelines during implementation of the recommendations and the plan of action.

### **Overall Vision of the Verde River Corridor Project**

*The Verde River Corridor is an invaluable resource to the people of the Verde Valley and to the State of Arizona. It is an integral part of life in the Verde Valley affecting each resident, landowner, business, and tourist in some way. Planning for the wise use, protection, and enhancement of the Verde River and its associated natural, cultural, scenic, agricultural, economic, and recreational resources should be a priority for everyone.*

## **Mission**

*Identify and recognize all uses of the Verde River Corridor, encourage protection of the Verde River and its natural and cultural resources, and promote coordinated decision-making for the continued enjoyment and use of the Verde River by future generations.*

## **Guiding Principles of the Verde River Corridor Project**

### **Private Property**

As Americans, we hold dear the right to own property. Many laws and policies exist which are designed to protect the private property owner. There are also regulations and ordinances designed for the safety, health, and welfare of others and for the conservation of the land and its resources. Personal stewardship is one of the best forms of land protection.

***• Rights of private property ownership to the land shall be respected in all river-related management decisions.***

### **Economic Development**

Commercial utilization of the water and other resources of the Verde River Corridor is an integral part of life in the Verde Valley. The natural resources associated with a river are valuable assets to the economic health and quality of life of adjacent communities and their residents. Wise use and planning can ensure that current and future populations enjoy the many benefits of these resources.

***• Economic development of the river corridor shall be balanced with conservation and maintenance of the natural, cultural, and scenic values of the Verde River Corridor.***

### **Water**

Water is a precious commodity in an arid environment. To enjoy both year-round flows and clean, unpolluted water in a free-flowing river at one's doorstep is an absolute treasure. The management of the water resources in the Verde Valley is a complicated task requiring continuing study. As supplies and technology for storage and reuse of water develop and change, there may be a need to consider a reordering of priorities to optimize water usage allocations among the competing demands.

***• Maintenance of the natural instream flows adequate for identified needs and uses, and improvement of water quality of the Verde River and its major tributaries shall be a priority. Identified needs and uses include the natural ecosystem, fish and wildlife, recreation, agriculture, and commercial and domestic use.***

### **Resource Protection**

The natural and cultural resources of the Verde River Corridor constitute an important contribution to the natural diversity and quality of life in the Verde Valley and in the nation. There are several national monuments and wilderness areas located along the Verde River and its tributaries. The Verde's riparian corridor is renowned throughout the United States as one of the last remaining extensive stands of cottonwood-willow gallery forest. Committed to the preservation of this unique ecological resource, the State of Arizona has established the Verde River Greenway to assist in this goal.

***• Protection, enhancement, and restoration of the natural resources along the Verde River Corridor shall be a priority.***

***• Preservation and protection of the cultural resources of the Verde River Corridor shall be a priority.***

### **Recreation**

The free-flowing waters of the Verde have offered swimming, fishing, boating, hiking, and other water-related recreational opportunities for many years. Now, this appreciation for these privileges is becoming more apparent as the population base broadens and more people are exposed to the benefits of the river and all it has to offer. Arizonans are privileged to enjoy an incredible diversity of recreation opportunities. With this privilege comes responsibility—to other recreationists, to landowners, and to the land itself.

***• Providing recreation opportunities and ensuring the availability of appropriate managed public access along the Verde River Corridor shall be a priority.***

***• Informing the public of river-related recreation opportunities, access, and personal responsibilities shall be a priority.***

### **Education**

Education about the environment and our role in it can take many forms—from formal programs, to nature walks, to books and pamphlets, to simply experiencing the wonders of nature through the eyes of a child. Environmental education should be ongoing throughout one's life. In order to participate in planning efforts and help make informed decisions regarding the Verde River and its management, the general public, businesses and government representatives need to recognize that the Verde River Corridor is a special natural and cultural resource and a tremendous amenity not found in very many communities.

***• Promotion of a greater awareness, understanding, appreciation, respect, and responsibility toward the Verde River and its resources, in order to instill personal and community responsibility, shall be a priority.***

### **Planned Growth**

The Verde Valley is a vital, growing region attracting many businesses and industries as well as new residents. Planned growth is essential to the economic and environmental health of the region. Making decisions for the Verde Valley is everyone's responsibility.

***• Encouragement of coordinated land use policies which, while accommodating growth, are compatible with natural, aesthetic, rural, recreational, and cultural values shall be a priority.***

### **Coordinated Management**

There are many agencies and organizations that control and regulate the resources of the Verde River Corridor. In many instances, these entities do not communicate regularly with each other, causing considerable confusion and duplication of efforts. The general public encounters obstacles in trying to understand the many policies and laws and in attempting to effectively participate in planning or management decisions.

***• Development of a strategy for the coordinated management, conservation and use of the corridor, emphasizing a shared responsibility for management between landowners, private organizations, recreationists, and appropriate levels of government shall be a priority.***

***• Establishment of an ongoing Verde River Corridor organization to help implement the recommendations outlined in this process and to continue to function in the interest of conserving the Verde River and its resources shall be a priority.***

The five subcommittees worked long and hard, meeting numerous times in between the public Steering Committee meetings. Many of the committee members toured, hiked, rode, canoed, and kayaked the river corridor to get a better understanding of the issues, concerns, and opportunities available along the Verde River Corridor. Committee members also talked with local community members and agency representatives, met with members of the Technical Advisory Committee, and wrote up their concerns and recommendations for presentation to the Steering Committee and general public.

Several committees requested information, resource data and inventories, maps, and other materials so that the strategies and recommendations could be based on current information. A few of the requested studies are just now being completed. Because of this, some of the following recommendations were written in general terms and will need to be re-evaluated after reviewing the completed studies.

The following recommendations and major findings show the complexity and depth of the issues with which these committees members dealt.

The five subcommittees, in alphabetical order, include:

**• ECONOMICS & COMMERCIAL USES**

**• LAND CONSERVATION**

- **PRIVATE PROPERTY**

- **RECREATION**

- **WATER**

### **Economics and Commercial Uses**

The Verde River, related wetlands, and surrounding natural areas are economically vital to the commerce and industries of communities of the Verde Valley. It is obvious that rivers, trails, and open spaces that connect natural, cultural, and recreational areas increase the aesthetic and recreational value of the surrounding communities. It may not be so obvious, however, that these resources provide significant economic contribution, too. Several studies have documented the attraction and expansion of businesses, creation of jobs, increased local tax revenues, and enhanced property values due to well-managed river corridor resources.

Water-based recreation is a major component of the Arizona tourist industry, which generates over five billion dollars of income annually and is the second largest source of income in Arizona. Recreational river boating and canoeing are popular outdoor activities that are rapidly increasing their numbers of participants. Trends suggest more family groups are participating, people are participating longer throughout their lifetimes, increased numbers of older people are participating, and increased skill and improved technology is increasing participation (Lime, 1984). The purchase of canoes, supplies, gas, and food for boating activities is considerable. For example, in 1988 Americans purchased approximately 90,000 canoes (Wilson, 1986).

Trail-related recreation includes walking for pleasure, jogging, hiking, bicycling, and horseback riding; and the number of participants is increasing phenomenally. Furthermore, those who participate in these activities can do so for a lifetime. Outdoor recreation comprises a large share of leisure, or free time; the money spent on outdoor recreation activities, likewise, accounts for a substantial portion of many people's discretionary spending. Bicycles, car carriers, special shoes, gloves, helmets, shorts, packs, and other specialized equipment are purchased at local businesses. In the Verde Valley, most outdoor recreation centers around the resources of the Verde River—fishing, birdwatching, photography, canoeing, pleasure walking, bicycling, horseback riding, hiking, and camping. As residents and tourists alike pursue these river-related activities, they spend money on food, gasoline, equipment, and supplies; and they visit local restaurants, businesses, concessions, events, and attractions. When tourists visit the Verde Valley they are bringing valuable outside dollars into the local economy, and this economic stimulation creates jobs and income for local residents.

Recreation related specifically to rivers, fish and wildlife, and trails has tremendous impact on local economies. Over 77 percent of the U. S. population participates in wildlife- related activities; in 1985 they spent \$55.7 billion dollars (USDI FWS, 1988). The popularity of fishing continues to increase; in 1988, 25.4 percent of the U. S. population were anglers, and they spent \$28 billion in the pursuit of fishing (USDA FS, 1989).

Ecotourism, in which the attractions are cultural as well as natural resources, is the new tourism phenomenon of the 1990s. Natural beauty is a very important element of ecotourism. Travellers are increasingly attracted to educational-oriented experiences provided by cultural and historic sites. The Verde Valley offers a rich array of historic experiences such as Tuzigoot, Montezuma's Castle, other cliff dwellings, and artifacts that remind visitors of the Hohokam, Sinagua, and more recently, the Yavapai Apache peoples. The Verde River has been essential to the survival and social well-being of Verde Valley residents since the beginnings of prehistoric settlement, and it continues to be critical to the quality of life here today. Many of Arizona's most significant historical and archaeological sites are located along the Verde River, and many travellers are drawn to visit them.

Agriculture and ranching have always been a vital part of the economy and lifestyle of the Verde Valley. Thousands of years previous to the arrival of the first settlers, the Hohokam people irrigated fields by building canals to divert water from the Verde River, and relatives of the Sinagua used dry-farming techniques. The first Anglo settlers arrived in search of an area suitable for a farming community in 1865. They built a crude dam to divert water for crop irrigation to provide supplies to Prescott and nearby Fort Whipple. Though agriculture and ranching no longer predominate the economic basis of the Verde Valley, they maintain a key cultural niche.

The early growth of the Verde Valley is synonymous with mining of copper, silver, and gold; witness the railroads and burgeoning communities in the late 1800s. Today, mining is more likely to mean sand and gravel operations, which have increased dramatically in line with exploding population growth and have significant economic impact to the Verde communities. Sand and gravel companies, state and federal agencies, and local organizations are working very hard together to support mining operations while protecting the natural resources of the river.

It is impossible to put a dollar value on the economic contribution of the Verde River and its related resources; it brings in dollars from recreation and tourism, it increases property values, it attracts new businesses, and it provides for industry and agriculture. All together, the Verde River provides quality of life, and that is immeasurable.

### **Economics and Commercial Uses Subcommittee**

Many of the issues that faced the Economics and Commercial Uses Subcommittee spanned across all the subcommittees; so while there may have been issues involving recreation, conservation, or water quality, this subcommittee has tried to focus on the economic aspects of each issue. Four primary issues were addressed: sand and gravel mining, agriculture, housing developments and zoning (land development), and benefits of the river corridor to the local economy.

The subcommittee wanted to maintain the economic viability of the sand and gravel industry and its contribution to the economic base and, at the same time, protect the natural resources of the Verde River. Because some conflicts and confusion surround the sand and gravel operations in the Verde River, cooperation is needed on the part of the sand and gravel industry, state and federal agencies, and local interests. As a first step, a public forum was held with experts and

local citizens to discuss the issue. Part of the confusion lies in the management and the permitting processes that are required to work in or near the river, and the committee recommends investigating and clarifying the process. One of the priority plan of action recommendations is to produce a concise brochure that explains the process, related laws, affected activities, and agency contacts. ADEQ is currently preparing a manual to clarify the wetlands and riparian areas permitting process that may fulfill this recommendation.

The quality of life inspired by the Verde River is recognized by the subcommittee as the basis of much of the economic viability of the Verde communities due to tourists, recreationists, and new businesses. Since the rural agricultural lifestyle, the cultural history, and the open natural areas all contribute to the quality of life that is enjoyed in the Verde Valley, priority was given to recommendations that support tax relief for agricultural lands, open space zoning and planning to preserve scenic and recreational areas, and preservation of historically and culturally valuable properties.

## **Economics and Commercial Uses Recommendations**

### **ISSUE: SAND AND GRAVEL MINING**

**GOAL:** Provide for the sand and gravel industry in the Verde Valley to function while protecting the river corridor values.

**STRATEGY:** Identify the respective responsibilities of each relevant agency as they pertain to the sand and gravel industry (i.e., Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (COE), Arizona Department of Environmental Quality (ADEQ), Yavapai County Flood Control District).

**STRATEGY:** Work together with the commercial and public agency interests to discover compatible and multiple uses of the river corridor and alternative sites for incompatible uses.

- Meet with agencies such as the Arizona Game & Fish Department (AGFD), Forest Service (FS), and the sand and gravel industries to determine compatible and multiple uses and alternative sites for incompatible uses.
- After reviewing EPA's completed Advance Identification (ADID) study, prepare a plan that establishes guidelines for appropriate multiple uses of the Verde River.

**STRATEGY:** Investigate the possibility of ADEQ assuming the administrative responsibilities of EPA in regulating the activities in the streambed of the Verde River and its tributaries.

- The VRCP Steering Committee should request the governmental entities of the Verde Valley to meet with the directors of ADEQ, COE, and EPA, Region 9, to address the issue of state jurisdiction over the administration of the Clean Water Act. State assumption requires a substantial, sustained funding commitment. Currently, the state (through Section 401) and EPA have veto power over permits issued by COE.

**STRATEGY:** Identify the proper agencies and the processes for obtaining permits, such as the COE 404 permit, to work in or near streams and rivers.

- Work with the Water Issues subcommittee and the involved agencies to compile the agencies, addresses, laws, procedures, and affected activities into one reference brochure.

## **ISSUE: AGRICULTURE**

**GOAL:** Promote the retention of open lands and agricultural uses along the Verde River Corridor while protecting corridor values and resources.

**STRATEGY:** Both the public and private sector should assist farmers in protecting their agricultural lands through mechanisms such as conservation easements, tax exemptions and/or reduction to encourage lands remaining as agricultural land. (As development occurs farmers are unable to pay the increasing tax burden and ultimately have to give up their land or sell to developers.)

- Investigate existing tax laws and assessment policies as they relate to agriculture and development and the potential for modification to them.
- Prepare a proposal to state, county, and local agencies based upon the findings to allow the assessment and tax structures to be more sympathetic toward this goal.
- Work with groups and agencies such as Soil Conservation Service (SCS), Environmental Defense Fund, local Natural Resource Conservation Districts, and irrigation districts to develop more efficient irrigation practices in order to maintain at least minimum instream flows for local fish, wildlife, and recreation requirements.
- Work with experts and agencies to explore and implement wise agricultural practices to improve water quality returning to the Verde River from fields.
- Explore the potential of purchasing conservation easements or development rights from interested agricultural landowners.

## **ISSUE: HOUSING DEVELOPMENTS & ZONING (LAND DEVELOPMENT)**

**GOAL:** Maintain and/or increase open space along the Verde River Corridor while accommodating for planned growth.

**STRATEGY:** Coordinate land use planning and zoning among Yavapai County and the cities along the river corridor.

- Amend land use plans to provide continuity among the various plans for the river corridor.
- Encourage Yavapai County Planning and Zoning to implement, and the cities to adopt, Open Space/Resource Conservation Zones to preserve scenic and recreational areas.

- Propose density transfer guidelines to the governing entities along the Verde River and encourage planned unit development which takes advantage of density transfer.

STRATEGY: Encourage local flood control agencies to review existing maps and update or correct obvious mapping errors.

- Work with Yavapai County, ADWR, and cities to update or correct mapping errors.

### **ISSUE: BENEFITS OF THE RIVER CORRIDOR TO THE LOCAL ECONOMY**

GOAL: Utilize the Verde River Corridor and its cultural, visual, and natural resource values to promote tourism and as a quality of life incentive to attract tourists, new businesses, and new residents.

STRATEGY: Encourage local Chambers of Commerce, municipalities, and businesses to highlight the river corridor and its amenities in their promotions.

- Continue to actively support special river-related events such as Verde River Days and Fort Verde Days.
- Conduct promotional activities which highlight the aesthetic and recreational opportunities along the corridor, such as photography, walking, canoeing, bird watching, and painting.

STRATEGY: Encourage physical connections between the river and other aspects of community life through the planning for contiguous open space corridors that link other opportunities such as trails, Old Town Cottonwood, historic settlements, riverfront businesses, parks, and residential developments.

- Ask the City of Cottonwood to plan and develop a pedestrian connection between Old Town Cottonwood and the Verde River Greenway system trails.
- Ask Arizona State Parks, through the Verde River Greenway Master Planning process, to coordinate facility development and open space connections with local community planning.
- Encourage Yavapai County and the cities and towns along the river to seek and utilize matching funds from the Land & Water Conservation Fund (LWCF) and Heritage Trust Fund to develop the river corridor as an outdoor recreation and tourism resource.

STRATEGY: Encourage local, private, and public owners of historically and culturally valuable properties to preserve, restore and enhance them as attributes of the Verde Valley.

- Develop a comprehensive historic context study for the Verde River Corridor.
- Work with the State Historic Preservation Office (SHPO), Arizona Historical Society, National Park Service (NPS), Forest Service, and local organizations to identify significant cultural resources.

- Encourage groups to apply to SHPO for survey and planning matching grant funds.
- Nominate appropriate properties to the National Register of Historic Places.
- Determine which areas are best suited to interpretive purposes and which should be avoided for preservation purposes. Institute protective measures and interpretive programs for appropriate sites (includes signage).
- Recommend that the study results generated from this process be made available to professional archaeologists, historians, cultural geographers, and planners so that further cultural resources research can be generated.

## **Land Conservation**

The Verde River Corridor contains natural, cultural, and scenic resources of state and national significance. The cottonwood-willow riparian community type that thrives along the Verde is considered the most threatened forest community in North America and the riparian area found along the Verde River Corridor is one of only five remaining extensive stands in Arizona.

The State of Arizona recognized the importance of this area and created the Verde River Greenway to protect as much of this riparian area as possible. This cottonwood-willow riparian gallery forest supports a disproportionate number of wildlife species compared to the small portion of land that it covers. The Verde is also home to over 50 threatened, endangered, and sensitive species of fish, wildlife, and plants.

The river segment just below the corridor has been designated by Congress as a National Wild & Scenic River because of its outstandingly remarkable values. The entire Verde Valley is rich in history and prehistory. There are two national monuments in the corridor protecting nationally significant prehistoric ruins. Five state parks can be found in the general area with four state parks located directly along the river and its tributaries. There are several city parks within the corridor. The scenic values of the Verde and its tributaries are known nationwide, especially recognizing Oak Creek Canyon/Red Rock Country, the Sycamore Canyon, Wet Beaver Creek, and West Clear Creek Wilderness areas, and the upper Verde River Canyon now gaining fame as a scenic excursion train tour.

Many of these resources have come under increasing pressure from uncontrolled recreational use, pollution, inappropriate use, and development. As growth continues in the Verde Valley, some of these resources are being degraded and, in some instances, lost. There is a need for programs that inform and educate all sectors of the community of the Verde's values and of the significance the river plays in each of our lives.

Many of the most significant natural areas along the Verde are in private ownership, and will require privately initiated protection strategies. Those landowners interested in protecting and enhancing the resource values of their properties can find assistance from local land trusts and conservation groups.

Interest in the Verde River Corridor comes from groups as diverse as recreational users, businessmen, and representatives from local industries. While the interests of these groups differ and sometimes conflict, there is an underlying consensus that the Verde River Corridor is a valuable resource to the State of Arizona, the Southwest region, and the nation, and that it demands careful management to conserve its unique qualities. In a recent news release from American Rivers, the national organization established to protect the nation's rivers, the Verde River was identified as one of the nation's top 15 threatened rivers, primarily from proposed water exchange plans.

There has been concern expressed that some of the issues of resource use and management that the residents of the Verde Valley are currently confronting may not be adequately addressed through the existing processes, and that deterioration of the unique resources of the corridor may result. Based on the values of these resources to the people of the valley and their commitment to maintaining these resources in the future, the local officials, residents and users of the Verde have indicated strong support for a concerted effort to conserve the river. The VRCP can be a balanced voice for these concerns.

### **Land Conservation Subcommittee**

The Land Conservation Subcommittee faced an enormous amount of issues requiring solutions. There were many diverse issues grouped under the heading of "land conservation," such as riparian habitat, fish and wildlife protection, cultural resources, flooding and erosion, scenic values, land use and development concerns, land ethics and education, and land protection strategies. As part of the brainstorming process, an excellent video was shown to all committee members demonstrating how the community of Boulder, Colorado executed their Action Plan for the Boulder Creek Corridor. It opened up a wide range of possibilities for the Verde.

Because of the complex environmental systems and interactions along the Verde, the committee determined that a resource inventory and assessment were needed. With the assistance of the Yavapai County Flood Control District, Arizona State University, and Arizona State Land Department, maps of both the Verde Basin and the corridor were created, showing the hydrology and floodplains, vegetation, slope, land use, and land ownership. Current aerial photographs were taken to provide the committee with up to date pictures of the river and its surrounding lands.

A contract was initiated with the Department of Planning at Arizona State University to gather information on the natural and scenic resources of the Verde River Corridor, and on areas needing restoration. A special Visual Resource Assessment was also conducted. Much of this work was accomplished in cooperation with the Verde Natural Resource Conservation District with assistance from Arizona Department of Environmental Quality.

EPA and FWS are conducting a resource inventory and evaluation of the biological resources of the Verde River Corridor to assist in its efforts to protect the nation's environment. The committee organized a special presentation for the VRCP and general public on EPA's Advanced Identification (ADID) project for the Verde River. Several other special presentations and open

forums were also organized in conjunction with the other subcommittees, including discussions on the sand and gravel issue, visual resource assessment, and water issues.

The Arizona Game & Fish Department, Arizona Department of Environmental Quality, Forest Service, and Fish & Wildlife Service have also conducted resource studies on portions of the Verde River providing invaluable information to the committee. The results of those studies are now being finalized and evaluated, which will provide an excellent baseline to begin working on the recommendations and action items outlined below. After reviewing and analyzing the completed studies, the committee may decide to develop more specific recommendations.

## **Land Conservation Recommendations**

### **ISSUE: RIPARIAN HABITAT**

**GOAL:** Protect, enhance and restore the riparian ecosystems along the Verde River Corridor.

**STRATEGY:** Develop or adopt an acceptable definition of "riparian" that meets the needs of the Verde River Corridor.

- The Steering Committee should adopt the accepted State of Arizona definition for "riparian area" developed by the Governor's Riparian Habitat Task Force.

**STRATEGY:** Develop a riparian habitat management strategy to maintain and enhance the resource and provide for fish and wildlife habitat.

- Review and catalog existing information on the Verde Basin as a whole and, specifically, on the Verde River Corridor's riparian systems. Determine suitability for use of this information in determining areas in need of protection or restoration.
- Work with the AGFD, FS, Arizona Riparian Council, private landowners, municipalities and other knowledgeable organizations in the development of a management strategy.
- Conduct a mapped inventory of existing riparian areas and their condition, using both existing information and field work (utilize information from the FWS/AGFD riparian mapping project, EPA Advance Identification, and the Verde NRCD Verde Riparian Project/ASU riparian reclamation study).
- Develop management objectives and implementation strategies for the protection, enhancement and restoration of important riparian systems along the Verde River Corridor (identify management source, funding, and technical support—consider additions to the County Open Space Zoning Overlay).
- Support efforts of the Verde NRCD Verde Riparian Project to revegetate needed areas along the Verde River Corridor and throughout the Verde Basin.

- Support protective management efforts of ASPB's Verde River Greenway and AGFD's Tavaschi Marsh area.

### **ISSUE: FLOODING AND EROSION**

GOAL: Reduce the negative impacts of flooding and erosion along the Verde River Corridor.

STRATEGY: Develop an understanding of the dynamics of flooding and erosion on the Verde River Corridor and its resources.

- Review and catalog existing information on flood control and erosion methods. Determine suitability for use by consideration of a combination of structural and non-structural programs to reduce flood damage and erosion while enhancing the values associated with flood plains.
- Review actual data for Verde River, photos, flow data, local documentation the effects of river channel modifications and discuss with specialists.

STRATEGY: Utilize flooding and erosion information in resource management.

- Work with the appropriate municipalities to ensure that the development of suitable lands be carried out in strict compliance with applicable FEMA regulations to minimize both future flood damage and liability.
- Identify areas that could benefit from stabilization or channel modification.
- Work with the Yavapai County Flood Control District to control flooding and reduce erosion while protecting the riparian systems that require periodic flooding to maintain themselves as dynamic ecosystems.

### **ISSUE: SCENIC VALUES**

GOAL: Protect, maintain and enhance the scenic qualities that the Verde River and its riparian corridor contribute to the Verde Valley.

STRATEGY: Develop a visual resource management strategy to maintain and enhance the enjoyment of the river.

- Conduct a visual resource inventory and assessment of the Verde River Corridor (under contract with ASU Dept. of Planning).
- Develop management objectives and implementation strategies to protect, maintain and enhance the scenic qualities of the Verde River (identify management source, funding, and technical support).

### **ISSUE: LAND ETHIC/EDUCATION**

GOAL: Develop a greater recognition, understanding, appreciation, respect, and responsibility toward the Verde River and its resources.

STRATEGY: Identify and expand existing educational programs and positive influences that impact people's opinions of the Verde River and its resources.

- Work with the Verde River Days Committee and other local groups to promote awareness of the importance of the Verde River. Continue and expand river awareness programs such as environmental awareness presentations, clean up days, and river celebrations.
- Work with government entities such as Arizona State Parks, Arizona Game & Fish Department and Tuzigoot National Monument to support public education efforts.
- Work with the Environmental Education Center to support its educational efforts and explore sources for additional funding.
- Publish and make available results of the Verde River Corridor Project.

STRATEGY: Help people understand that the Verde River is a finite, limited resource and that there is a "carrying capacity" that cannot be exceeded in terms of recreation and commercial use if current Corridor qualities and benefits are to be maintained.

- Work with relevant organizations and agencies to determine appropriate carrying capacities and levels of use for the Verde River Corridor.

## **ISSUE: CULTURAL RESOURCES**

GOAL: Preserve and protect the prehistoric, historic, and archaeological cultural resources of the Verde River Corridor.

STRATEGY: Develop a cultural resource management strategy for the Verde River Corridor.

- Review and catalog existing information to identify and evaluate resources known. Determine suitability for use.
- Contact the Forest Service, NPS, SHPO, Arizona Historical Society and local historical organizations for assistance in developing a management strategy.
- Conduct a cultural resources inventory for the Verde River Corridor (utilize existing information and specialists).
- Develop management objectives and implementation strategies for the protection and preservation of the cultural resources of the Verde River Corridor (identify management source, funding, technical support).

## **ISSUE: PROTECTION OF ENVIRONMENTALLY SENSITIVE AREAS**

**GOAL:** Protect the environmentally sensitive areas of the Verde Basin that are in need of protective management.

**STRATEGY:** Identify those sensitive areas that are important for threatened, endangered or sensitive species, and plant communities that contain unique or limited plant/animal populations or areas with high wildlife observation potential.

- Review and catalog existing information to identify and evaluate resources known. Determine suitability for use. Exact locations of sensitive species will not be publicized.
- Map out those areas in need of special protection. Work with knowledgeable individuals and agencies.
- Prepare strategies for the protection and management of those special areas (i.e. agency management/acquisition, conservation easements, cooperative agreements with landowners, etc.).

**STRATEGY:** Consider supporting special designation and/or management for areas that possess important resources or qualities.

- Work with agencies that manage or regulate lands and resources along the Verde River Corridor (and major tributaries) to explore special designations such as Wild & Scenic River, Scenic Area, Unique Waters, State Natural Areas, Critical Habitat, National Register of Historic Places, etc.

## **ISSUE: LAND USE**

**GOAL:** Support public involvement of ongoing land use planning efforts and promote incorporation of considerations for human and environmental needs of the Verde Valley. Enlist cooperative agencies in planning efforts.

**STRATEGY:** Conserve open space and protect natural, cultural, and scenic resources.

- The need for open space in the Verde River Corridor should be determined and standards developed for the amount, distribution and type of open space.
- Manage land conservation and development activities in a manner that accurately reflects the community's desires for a quality environment and a healthy economy and in a manner consistent with state environmental quality statutes, rules, standards and implementation plans.
- Explore existing and potential zoning designations to protect open space and natural, cultural and scenic resource values. Develop consistent riverfront corridor zoning ordinances and other land use regulations throughout the corridor.
- Restore abandoned sand and gravel extraction sites, considering natural, scenic, and recreation values.

STRATEGY: Conserve agricultural lands for open space and scenic qualities.

- Work with appropriate organizations to develop means to buffer agricultural lands from incompatible adjacent land uses.
- Work with appropriate organizations to develop incentives to retain lands as agricultural lands or as open space.
- Encourage local planning and zoning departments to give preference to requests to maintain zoning for agricultural lands and open space.

STRATEGY: Promote the practice of personal land stewardship to protect and conserve the natural and cultural resources of the Verde River Corridor.

- Work with the Verde NRC, The Nature Conservancy, Northern Arizona Trust Lands, and others to involve and educate cooperative landowners in effective land conservation and stewardship practices.
- Develop information on land conservation strategies (cooperative partnerships, conservation easements, land trusts, etc.) that can be utilized by individuals or private organizations.
- Through meetings, workshops, media, and correspondence, inform private property owners of the various land conservation options and opportunities available to them.

STRATEGY: Protect life and property from natural disasters and hazards.

- Support open storage, forestry, agriculture, recreation, and other non-hazardous, low density/open space usage of floodplain lands, consistent with the degree and frequency of flooding.

### **Private Property**

As Americans, we hold dear the right to own property. The protection of private property rights has been a cornerstone of the VRCP. The issues surrounding the rights of landowners have permeated every committee and issue. The priority issues identified included river access conflicts, trespassing, littering, law enforcement, landowner liability, health and safety, landowners rights and responsibilities, and zoning regulations.

Many Verde Valley residents purchased their riverfront properties to escape the urban problems of overcrowding, noise, pollution, crime, and the stress of living in the "fast lane." They chose a scenic, peaceful community primarily rural in nature, but with adequate big city amenities of stores, restaurants, banks, jobs and entertainment. Many of these landowners are now finding that this quiet country lifestyle is rapidly changing. The communities are expanding, more riverfront homes are being built, roads and bridges are planned, recreationists are crossing private property to access the river corridor, and pollutants are seeping into the river and underground water supply.

The population of the Verde Valley has nearly doubled over the last decade. The growth projections for the future indicate the trend will continue with many people predicting that the Verde Valley will be the third largest metropolitan area in Arizona by the year 2000 (see population table in Commercial Values section).

Unless we plan ahead for this growth and increased population, the changes to the communities, the demands on the water supply and other resources, and the overuse of the Verde River will result in negative changes to the Verde Valley's high quality of life. Also, as more people settle the rural areas and seek outdoor experiences, more laws and regulations are passed to ensure that all citizens' rights are protected, including the property owner and the general citizen. The increasing number of regulations can become confusing, even overwhelming.

### **Private Property Subcommittee**

The Private Property Subcommittee, in its efforts to develop recommendations to protect landowners rights, felt that it needed to understand the various state and federal, county, and local laws that affect private property rights. During this process, questions were raised regarding issues such as establishing conservation easements, development rights in floodplains, and potential liability of landowners if they allow people access to the river across their land.

One of the first tasks accomplished by the Private Property Subcommittee was the development of a publication entitled, "A Summary of Rights and Duties of Private Property Ownership along the Verde River Corridor." The report summarizes the most important and/or common laws, regulations, and ordinances of local, state, and federal agencies that affect private property rights and the casual user of the Verde River. A special question and answer session was held during one of the public meetings to address the issues covered in the report. This publication is part of the VRCP Action Plan.

At the request of longtime resident and rancher, Dave Perkins, a tour was scheduled for VRCP committee members to see parts of the river corridor and how it is used and managed by local ranchers. The issues discussed ranged from land use, conservation, property rights, and the future of the river. It was an extremely informative tour for all who attended, giving firsthand insight into some of the problems faced by landowners.

One of the priority recommendations of the subcommittee involves contacting every landowner along the Verde River Corridor, informing them of the VRCP's goals, and soliciting their opinions and willingness to participate in the VRCP's efforts to coordinate the management of the river. A workshop format is suggested for landowners interested in learning more about personal land stewardship methods, conservation easements, and personal property rights. The publication mentioned above would be available to those who participated in the workshop.

### **Private Property Recommendations**

#### **ISSUE: PRIVATE PROPERTY RIGHTS**

**GOAL:** Protect the rights of private property owners along the Verde River Corridor

STRATEGY: Ensure that the rights of private property owners are a priority issue in all river-related management decisions—locally, regionally, statewide, and nationally.

- Ensure that any acquisition of private land for public purposes is not through judicial or condemnation processes.
- Ensure that all involvement in providing public access or protection efforts by private property owners is voluntary.
- Ensure that landowners have input regarding land decisions concerning river access.
- Determine what policies, ordinances, regulations, and laws currently affect landowners.

GOAL: Increase agency and public awareness of private property rights and wishes.

STRATEGY: Identify the key problem areas of public river corridor use and management perceived by landowners.

- Work with landowners, agencies, and the public to understand and seek solutions to the identified problems and issues.

#### **ISSUE: LANDOWNER PARTICIPATION**

GOAL: Maximize private property owner participation in discussing and resolving corridor conflicts.

STRATEGY: Determine how landowners and the public are currently involved in the decision-making process.

- Seek a better public understanding of the laws and regulations governing ownership and rights to floodplain lands and streambeds.
- Seek a better understanding of the land use planning process and zoning regulations as they apply to private property owners.
- Inform landowners of all plans, proposals, developments, and decisions that could affect owners and their properties, and the river corridor.
- Encourage all agencies to seek public participation in all decisions that could affect the river corridor and private property rights.

STRATEGY: Determine which landowners would be interested in participating in a greenway protection program or recreational access program.

- Conduct a survey of all landowners along the river asking relevant questions about landowner attitudes regarding public use of riverfront lands and willingness to participate in land stewardship programs.
- Hold an invitational meeting with interested private landowners along the river to discuss feelings and options for stewardship, habitat protection, use, river access, and protection of personal rights and property.
- Encourage agencies and groups who deal with conservation easements and other land protection strategies to meet with interested landowners.

GOAL: Formalize the coordinating function of groups like the VRCP to ensure landowner and interagency communication and consistency on plans and decisions for the river corridor.

STRATEGY: Explore the feasibility of establishing an ongoing Verde River Corridor organization.

- Establish an ongoing Verde River Corridor group to work with local communities, municipalities, businesses, organizations, landowners, and state and federal agencies to ensure consideration of private property rights and wishes in all management decisions.
- Identify which agencies have jurisdiction over various corridor lands and resources. Identify who has responsibility for or can assist in providing law enforcement, vandalism, and litter control.
- Identify what entity(s) will have management and enforcement responsibilities for public access sites and private easement lands in the river corridor.

#### **ISSUE: LANDOWNER OPPORTUNITIES & STEWARDSHIP**

GOAL: Encourage private landowners to allow public access to the river corridor across their property while protecting their rights and wishes.

STRATEGY: Identify benefits and liabilities to property owners of providing access to the Verde River Corridor.

- Identify possible types of easements and agreements to be utilized by a property owner if he/she agrees to voluntarily provide public access to the corridor. Reversionary clauses should be included in property owner's agreement.
- Inform landowners of the provisions of the Arizona Recreational Liability law and of the protection it can provide private property owners.
- Inform landowners of sources for practical and technical assistance in land conservation techniques.

**GOAL:** Implement a plan to inform private property owners of their rights, responsibilities, and opportunities.

**STRATEGY:** Identify the various policies, ordinances, regulations, and laws that affect private property and landowner rights and responsibilities.

- Publish an understandable summary of the various policies, ordinances, regulations, and laws that affect private property and landowner rights (completed as part of the VRCP Action Plan).
- Inform landowners along the Verde River Corridor of their rights, responsibilities, and opportunities through informal meetings, public meetings, workshops, and correspondence.

## **Recreation**

The Verde River is a favored destination area for many recreational activities. This year-round flowing river and its tributaries with their lush green vegetation and combination of steep-walled canyons and broad floodplains offer recreational opportunities such as fishing, canoeing, kayaking, tubing, swimming, hiking, hunting, horseback riding, mountain biking, bird watching, exploration of history, nature study, photography, painting, picnicking, camping, backpacking, train riding, sightseeing, and just plain relaxing. Recreational pursuits on the river also provide diverse economic benefits to local communities.

One of the most popular recreation pursuits along the Verde is boating, specifically white water boating that can be found along Arizona's only National Wild & Scenic River segment. This 39.5 mile stretch of the Verde runs from Beasley Flat to Red Creek and was designated as Wild & Scenic by Congress in 1984. It is managed by the Forest Service which has just written the management plan for this unique area. This section contains the greatest concentration of rapids on the entire Verde River with an International Whitewater rating from Class I to III.

Other sections of the Verde are frequent destinations for those people wanting a less strenuous boating experience. As interest in the river develops, people are exploring the river with inflatable kayaks and canoes since these crafts can use the river at low flows; they effectively extend the river-running season. Canoeing is gaining in popularity as new materials are employed in the construction of canoes suitable to the rocky, low water levels common in the Verde River. Along the wider, deeper stretches, rowboats and a commercial tour boat make use of the river.

Aside from leisure boating and whitewater sports, the Verde River Corridor supports a year-round warm water fishery for catfish and smallmouth bass. The river is now being stocked by the Arizona Game & Fish Department with rainbow trout during the cooler winter months. Fishing from shore or a boat is a popular pastime for people.

The lush riparian habitat along the Verde River Corridor supports many species of wildlife. This makes the river an excellent place to bird watch and observe other animal species not found elsewhere in the Verde Valley. People especially enjoy seeing the animals that are drawn to the river, such as the river otter, beaver, bald eagle, ducks and geese, and the graceful great blue

heron. Most people spend much of their time by the river just walking along the banks, playing in the water, and sitting at the water's edge experiencing the beautiful scenery, the running water, and getting in touch with nature.

Recreational use of the Verde has increased in recent years and the trend is expected to continue. Whether or not increased usage is good or bad, and the extent to which the Verde can, or should, accommodate anglers, canoeists, hikers, and other recreationists continues to be sharply debated. There is a limit to the amount of recreational use the Verde can and should withstand. There is an increasing need for control over recreational use and river access. Riverfront owners have expressed concern over an increase in trespassing, late night partying, littering, and vandalism.

One of the most frequently mentioned concerns about recreational use has been access to the river. Because the river is heavily used, existing access points are rapidly being overtaxed. Where these access points involve private land, trespassing and littering was a frequently cited concern. At public access points, the concern was for better monitoring and maintenance of facilities.

There is also a growing conflict between the various recreational activities. Off-road vehicle use of the river corridor (and other areas in the Verde Valley) has been a subject of long debate. Competition between mountain bikers, horsemen, hikers, and bird watchers for use of favorite areas may also arise as more people crowd into the few available public areas.

### **Recreation Subcommittee**

The Recreation Subcommittee was formed to prioritize, study, and recommend solutions to the many issues of concern to both landowners and recreationists. This committee was a particularly active, motivated group. The first task identified was the completion of a recreational assessment of the existing activities, access areas, and concerns along the corridor. Knowledgeable local residents gathered the needed information, plotted the information on maps, and presented the assessment and recommendations to the Steering Committee.

The second task was to find a way to provide the public with information on the recreational opportunities and public access sites available along the river corridor. A public river access brochure has been developed in cooperation with the local managing entities and will be published as part of the VRCP Action Plan. A special question and answer session on hunting and trapping issues and law enforcement along the river corridor was organized as a recommendation from this subcommittee.

The Recreation Subcommittee has enjoyed enthusiastic participation from a diverse group of individuals, from canoeists to horsemen to bird watchers to concerned environmentalists. The subcommittee has addressed several important issues, yet in summarizing their efforts on the VRCP they wish to offer the following:

1. An issue of conflict has been identified involving public access and the effect that will have on the environment and wildlife. Our position is to attempt to control access by pointing river users to designated legal access areas thereby eliminating much of the random and often illegal access

points. Even legal access may have some adverse effect but by monitoring traffic in usage areas there is at least some control. Hopefully abuse to private property can be reduced by selective yet quality access points.

2. We support and recommend continued purchase of river property by federal and state agencies whenever and wherever possible and keep the land open to the public. We also encourage all municipalities with planning and zoning responsibilities along the river to be sensitive to environmental and visual impacts of future development and to keep the land open to the public.

3. Public awareness, education, and involvement issues, need to be continually addressed. The annual Verde River Days in September is proving to be informational and successful. Perhaps when new access points are developed and in place, civic groups and clubs could adopt sections of the river to beautify and keep them litter free. Possibly a classroom presentation by Arizona State Parks, Game & Fish and/or Forest Service for area schools could be funded and produced. Even better would be a cooperative program between agencies, the Verde Environmental Education Center, and local schools. There is a need to educate and inform on an ongoing basis.

4. Another significant concern is the "political" impact on the Verde. The number of agencies, associations, and private entities that have jurisdictional responsibilities as well as flow and mining claims is mind boggling. To contemplate the river as a victim can not be ignored. The future holds many questions for the Verde - from the ground water rights at the headwaters to a kitchen faucet in a Phoenix condominium. There are still the roots of a hundred year old cottonwood tree in Clarkdale fighting to survive. Politics, and not Mother Nature, might determine its future.

5. The work of all the subcommittees draws to a close with the completion of what we hope will be a valuable and worthwhile report. Several participants have discussed the possibility of continuing with some type of organization to monitor developments along the river. Such an organization could meet quarterly and be a means whereby federal, state, county, and community agencies with Verde River involvement might coordinate efforts and future planning for a harmonious Verde of the future.

## **Recreation Recommendations**

### **ISSUE: RECREATIONAL ACCESS**

**GOAL:** Develop a formal assessment of existing recreational activities along the Verde River Corridor and identify access points and areas of conflict. Also, identify future needs and problem areas.

**STRATEGY:** Work with agencies, groups, and individuals to develop an assessment of existing and potential recreational activities, access points, and areas of conflict between competing uses and with private property owners.

- Create a map depicting recreational activities, access, and land ownership by agency (completed as part of the VRCP Action Plan).

- Create a report to be distributed to the Steering Committee defining recreational activities and access presently available on the Verde River, areas of concern, and suggestions for resolution (completed as part of the VRCP Action Plan).

GOAL: Ensure adequate public access to the Verde River Corridor by identifying and planning for needed access points.

STRATEGY: Identify and plan for needed access points to be developed with the assistance of involved agencies, landowners, and interest groups.

- Support the planned development of nine new public recreation access sites along the corridor using State Lake Improvement Funds.
- Work with the public, local towns, Yavapai County, and state and federal agencies to identify the most suitable public access points. Analyze information when available and develop a plan regarding access issues and contact agencies for possible implementation.
- Work with local towns and Yavapai County to pursue funding assistance for additional river access sites through the State Lake Improvement Fund and Arizona Heritage Fund under Arizona State Parks.
- Develop and manage river access according to the compatibility of activities and their impact on the resources of the corridor. Restrict access where undesirable.
- Encourage the AGFD to provide additional fishing access sites if they expand their trout stocking program along the river corridor.
- Encourage Arizona State Parks to provide adequate access sites for public use of the Verde River Greenway.

#### **ISSUE: LACK OF INFORMATION ABOUT RECREATION OPPORTUNITIES**

GOAL: Develop a plan for distribution of information regarding recreational opportunities and access points along the Verde River Corridor.

STRATEGY: Identify the existing and planned recreational opportunities and public access sites.

- Publish information about the river corridor's recreational opportunities and public access sites and distribute it to the interested public (accomplished as part of the VRCP Action Plan).
- Keep local agencies, chambers of commerce, businesses, interest groups informed of recreational opportunities and public access sites.
- Encourage the Arizona Department of Transportation and other agencies to provide for recreational access to the river within the right of way next to all bridge crossings. Also, encourage agencies building new bridges over the river to incorporate appropriate graphics into

the bridge structures to enhance awareness of river values (similar to the "petroglyphs" on new highway structures).

**STRATEGY:** Through cooperative efforts, identify and plan for the development of informational materials about the Verde's recreational opportunities and public access sites.

- Work with local groups who provide opportunities for recreation along the corridor to coordinate and cooperate regarding the publication and distribution of information.
- Develop a coordinated river corridor access logo to be used on all corridor publications and informational and directional signs (along roads and along the river).
- Develop signs and publications that emphasize river safety and identify hazards. This information is especially needed for boaters and swimmers along the corridor.
- Explore potential to establish a local clearinghouse with information about current river conditions along the corridor (i.e., SRP maintains a phone line in Phoenix with a taped message about flow conditions).

**STRATEGY:** Through cooperative efforts, identify and plan for the research, gathering, and analysis of information about the Verde's recreational opportunities and public access sites.

- Work with agencies, universities and organizations to conduct an assessment of natural and cultural resource interpretive opportunities along the river corridor (signs, trails, sites, tours, publications, etc.).
- Work with agencies and universities to coordinate a long-term study on recreational use and trends of the Verde River Corridor.

## **ISSUE: PROBLEMS/CONFLICTS CONCERNING**

### **RECREATION USE**

**GOAL:** Minimize conflicts between recreational users and private property owners.

**STRATEGY:** Identify existing and potential conflicts between recreational users and private property owners and develop strategies to resolve the conflicts.

- Develop a plan for improved signage of public recreation areas and opportunities.
- Provide riverfront property owners with "No Trespassing" signs to be installed at needed points along the corridor.
- Work with agencies and businesses in the development of publications to include comments on appropriate behavior for recreationists when using private lands.

- Develop a plan to inform both recreationists and private property owners of their rights and responsibilities regarding public use of private property.
- Work with land managing agencies and law enforcement groups to educate the public, and when necessary, enforce use restrictions (i.e. activities that violate laws and policies regarding noise levels, littering, trespassing, erosion, seasonal restrictions, wildlife protection, personal privacy).
- Explore suitable types of buffers, fencing and barriers, if needed, between areas of recreational use of the corridor and private property.
- Explore the potential of making the existing water diversion structures into permanent structures (designed to include recreational boating) for safety reasons, economic benefits, and to enhance recreational boating.
- Encourage the sand and gravel industry to work cooperatively with interested groups to develop and reclaim previously mined sand and gravel sites for recreational sites.
- Encourage the local planning and zoning departments to stipulate dedicated public river access sites in all new riverfront developments.
- Encourage communication and cooperation between private landowners and associations and municipal governments regarding floodplain regulations and riverfront developments designed to enhance recreational use of corridor lands to avoid unsafe facilities.

GOAL: Minimize conflicts between the various recreational users.

STRATEGY: Identify existing and potential conflicts between the various recreational users along the corridor and develop strategies to resolve the conflicts.

- Work with agencies and businesses who plan and provide for the various recreational users to iron out existing and potential conflicts.

GOAL: Promote improved river user behavior and cooperation by increasing public and river user behavior education, awareness, and involvement.

STRATEGY: Identify strategies to improve river user behavior and cooperation.

- Directly involve recreational organizations and interested individuals in the planning and developing of recreational facilities and programs.
- Work with agencies and businesses to include comments on appropriate recreational behavior in relevant publications and signs. Encourage the creation of "positive" wording on brochures and signs.

**GOAL:** Minimize environmental impacts to the river corridor when planning and developing recreation access sites and facilities.

**STRATEGY:** Identify which developments and activities pose potential environmental problems such as lowered water quality, soil erosion or compaction, and habitat disturbance.

- Work with agencies such as the SCS, Forest Service, EPA, AGFD, and ADEQ to develop appropriate construction methods and encourage activities that do not negatively impact the environment.
- Work specifically with ADEQ on all corridor projects to determine the potential of the project to increase or decrease the water quality of the affected area.

## **Water**

Perennial streams and the extensive riparian forests that they support provide water for domestic needs, habitat for fish and wildlife, fertile soils and water for agriculture, water and forage for livestock, resources for industry, and they contribute to the visual quality of the valley.

Expanding demands for water by agriculture, mining, industry, and cities have taken their toll on all of Arizona's streams and wetlands, and the Verde River is one of the only remaining perennial desert rivers in Arizona. Both the quantity and quality of the flows of the Verde have been severely altered, and these changes constitute a major threat to future fish and wildlife, vegetation, and human needs of the river resources.

Riparian areas are now Arizona's most threatened natural communities, and the cottonwood-willow gallery forests, which once formed lush canopies along the state's desert river systems, are now the rarest forest type in North America. Furthermore, the supply and quality of these riparian resources continue to diminish, primarily from the loss of water to competing uses and from land use practices that destabilize riparian communities.

The healthy riparian ecosystem that performs irreplaceable functions relies upon a continuing flow of water in the Verde River. These riparian areas help regulate streamflow by storing heavy rainfall and releasing it slowly; they reduce the ferocity of floods and stabilize streambank erosion; they improve water quality by filtering and degrading pollutants; and they can help recharge groundwater supplies. Residents look to the Verde River and the related groundwater for clean water to drink, to maintain their lifestyle, and for water-based recreation such as fishing and canoeing.

A healthy riparian ecosystem maintains biological diversity by providing food and shelter to the majority of the birds, wildlife, and fish that exist in Arizona (see Natural Values section). In fact, several federal and state threatened and endangered species rely on the Verde's resources for their continued existence. Finally, efforts to protect or enhance land resources, recreational uses, private property values, and economic benefits will be unsuccessful if there is not adequate water in the river.

Threats to the instream flows of the Verde River could loom in the future—Central Arizona Project water exchanges, water transfers, inefficient irrigation practices, increased groundwater pumping, and to supply proposed major residential and commercial developments. Likewise, the water quality of the Verde could be jeopardized by sewage and urban runoff, toxic wastes, sediment eroded from overgrazed rangeland, chemical runoff from irrigation, leaching from mine tailings, and non-permitted sand and gravel mining processes. The pool of users and agencies that affect or are affected by the quantity and the quality of the river flows is enormous and diverse; it includes ditch companies, water companies, ADWR, SRP, BR, ADEQ, EPA, ASPB, AGFD, FS, and citizens. The list is endless; it is no wonder confusion exists.

A number of policy and management issues emerge from these resource demands. There is a clear policy need to balance competing uses and protect the Verde River flows and riparian areas; there is a clear management need for a framework for comprehensive communication and coordination between various water management authorities and the Verde Valley communities.

### **Water Subcommittee**

Water issues in Arizona—be it quantity, quality, or management—are now and always have been extremely complex. Attorneys, politicians, and regular people have fought over water here for over a hundred years. Therefore, the Water Subcommittee made information gathering and dissemination through meetings and public forums a number one priority.

Throughout the project, public forums and presentations were provided on water rights and transfers, incentive-based mechanisms for water conservation, ADWR's State Water Resources Plan, the role of SRP in the Verde Valley, and EPA's Advance Identification Study. A well-attended interagency meeting was held to discuss water issues that affect the Verde Valley, and a meeting was held between ADWR's representatives and local VRCP committee members to discuss communication and coordination between the agency and the local communities.

Several specific recommendations for coordination with state and federal agencies to study and address issues such as water quality, water transfers, and instream flows were proposed. The Water Subcommittee, along with the Economics & Commercial Uses Subcommittee, has recommended that a brochure be produced to explain the administering agencies, laws, procedures, and permits for working in or near the river.

The most difficult, and possibly the most important, issue this subcommittee addressed was that of a need for some type of regional/local water planning, management, and coordinating entity made up of a coalition of existing agency and community representatives. It was decided that a specific recommendation was beyond the scope of this project; however, the firm recommendation that the development of such an entity be studied and implemented is included along with several possible structures for it.

### **Water Recommendations**

#### **ISSUE: WATER QUANTITY**

GOAL : Protect, and potentially even enhance or restore, the Verde River instream flows and the habitats, ecosystems, and recreational and other uses that depend on those flows.

STRATEGY: Identify the extent to which present and projected flows support the desired kinds and intensities of uses of the river at desired locations and times and identify the changes in flow necessary to fully support those uses.

- Utilize the expertise of the Arizona Department of Water Resources, USGS, Salt River Project, CAP, Natural Resource Conservation Districts, irrigation districts, ditch companies, and local organizations to quantify and evaluate existing, projected, and desired flows.
- Involve public, semi-public agencies and private entities to identify existing and desired uses of the water of the Verde River (i.e. ADWR, USGS, Salt River Project, CAP, community and private domestic water companies, ditch companies, SCS, AGFD, BR, FWS, Environmental Defense Fund, Arizona Outdoor Recreation Coordinating Commission); specify existing and desired uses of the water of the Verde River both as to location, season and, perhaps, even time of day; include swimming, fishing, canoeing, aquatic biology, wildlife and riparian habitat, prevention of flood damage, livestock and wildlife watering, power generation, irrigation, human consumption, commercial and industrial water supply, etc.
- Form an informational library of documents relating to the water and related topics of the Verde River basin.
- Work with involved agencies and organizations to study and gather data to develop a water balance model for the Verde Valley area.
- Work with AGFD and ADWR to establish appropriate and/or minimum levels of instream flows to support fish and riparian habitat and recreational boating.
- Utilize existing documents such as the FWS final Coordination Act Report and Biological Opinion for the spinedace fish to provide guidance as to the appropriate level to protect environmental requirements.

STRATEGY: Actively identify and encourage individuals, organizations, and agencies that may be able to augment flows to actively pursue instream flow water rights in order to provide legal protection of existing flows.

- With assistance from ADWR, work with the FS, AGFD, and ASP to file for instream flow permits (FS has already filed for several).
- Work with the Nature Conservancy and other land protection groups to acquire riparian areas and water rights along the Verde River and file for instream flow permits for the Verde River (TNC has recently been granted one for preserving wildlife and recreational values in Ramsey Canyon).

- Support legislation that recognizes and clarifies an individual's right to water that he has conserved or salvaged. This creates incentives for individuals to manage and conserve water for local uses and instream flows by recognition of the individual's legal right to water that he has conserved.

- Establish a more widespread recognition of instream flows as a beneficial use; this may require legislative amendments. Currently, fish, wildlife, and recreation are legally recognized beneficial uses, but riparian vegetation is not.

STRATEGY: Acquire strategic senior water rights for transfer to instream flow uses. This would provide a direct and perpetual water right to the Verde River with a senior priority date.

- Solicit Verde Valley farmers, other landowners, and/or water rights holders that may be willing to sell a portion of their water rights for instream flows.

- Investigate sources of funds to acquire water rights, such as public funds, grants, and private funds and donation of water rights.

STRATEGY: Identify and clarify technically, legally, and economically feasible methods to manipulate instream flow (i.e. interbasin transfers, flow augmentation through pumping, basin land use controls, control of basin groundwater withdrawals and consumptive use, conjunctive use of groundwater and surface water, water conservation, basin-wide water reallocation, instream flow water rights, irrigation efficiencies, riparian community management, weather modification, and damming).

- Use information already developed as a basis of information (i.e. Riparian Habitat Task Force, ADWR Instream Flow Task Force, State Water Plan, USGS, SRP, BR/Fort McDowell Tribe settlement study).

- Collect information about existing programs and data through public and semi- public agencies and private entities to improve the locally available body of knowledge regarding legal, technical, and ecological issues surrounding instream flows in the Verde River (i.e. ADWR, USGS, SRP, Central Arizona Project, community and private domestic water suppliers, ditch companies, and the SCS).

- Provide both technical reporting and public forums on the methods to manipulate, manage, protect, and enhance instream flows.

STRATEGY: Identify and inform the community of the legal, technical, and environmental ramifications of water transfers, water rights, population growth, and industrial uses on the instream flow of the Verde River.

- Provide both technical reporting and public forums on the competing water demands of the Verde River as they relate to the instream flow issue.

**STRATEGY:** Actively pursue water conservation education and conservation programs for agricultural, municipal, and industrial uses in order to satisfy growth, local demand for water, and water for environmental purposes in a compatible manner.

- Investigate the effectiveness of conservation programs and water conservation ordinances.
- Identify appropriate water conservation strategies for the Verde Valley area to satisfy local water demands for growth and instream flow maintenance.
- Work with groups and agencies to develop water conservation programs (i.e. Environmental Defense Fund, The Nature Conservancy, Verde NRC, Yavapai County, SCS, ADWR, USFWS, USFS, AGFD, local communities, local water companies, irrigation districts, incorporated cities and towns, and AZ State Parks).

## **ISSUE: WATER QUALITY**

**GOAL:** Improve the water quality where problems exist and prevent further pollution of the waters of the Verde River.

**STRATEGY:** Identify the extent to which present and projected water quality supports the desired kinds and intensities of use of the river at desired locations and times and identify the changes in water quality necessary to fulfill those uses.

- Involve ADEQ, EPA, and USGS to take advantage of their expertise in setting quality standards and monitoring water quality.

**STRATEGY:** Identify and understand the technical, legal, and economic feasibility of techniques to manipulate instream water quality (i.e. flow augmentation, basin land use controls, point source discharge controls, non-point source pollution practices, stormwater runoff, disposal and storage of potential contaminants, wastewater disposal and treatment practices, floodplain use, damming, sediment and erosion control, and integration of different pollution control practices).

- Work with EPA, COE, ADEQ, and the rock products industry to develop workable solutions to sand and gravel operations' conflicts.
- Work with county and/or municipal agencies to consider land use controls, floodplain uses, etc. regarding municipal and storm runoff.
- Work with county and/or municipal agencies to consider septic tank problems as the population increases in the Verde Valley.
- Encourage county and/or municipal agencies to integrate city and regional wastewater treatment planning efforts in order to save money and avoid the need for numerous separate and costly plants.

- Investigate and encourage the use of effluent as an alternative to high quality water supplies in some sectors (e.g. turf, irrigation, industrial), and investigate the use of artificial wetlands as an appropriate form of wastewater treatment.
- Investigate the quality of shallow groundwater that may be affected either naturally or from infiltration of agricultural runoff and mixing with lower quality groundwater.
- Work with public land managers and private landowners to encourage management practices that reduce accelerated erosion and resulting sedimentation into the Verde River.
- Work with the Verde Riparian Project/Demonstration Project to highlight strategies to improve water quality and the role riparian vegetation plays in it.
- Work with the Economics and Commercial Uses Subcommittee to produce a brochure that summarizes the agencies, laws, and permitting processes that affect any projects or work in the streambed, streambanks, wetlands, or floodplain.

## **ISSUE: LOCAL WATER COORDINATION ORGANIZATION**

**GOAL:** Investigate and evaluate the potential for a local existing organization or a coalition of agency and community representatives to consider water supply, water use, water management, and water planning activities for the Verde Valley as a region and to coordinate activities with other local, state, federal and tribal agencies, and various water use groups.

**STRATEGY:** Develop criteria on what an appropriate local organization could be by considering accountability, representation of local interests (agencies, landowners, business, environment), technical assistance, and funding mechanisms.

- The County Board of Supervisors and/or Natural Resource Conservation Districts should study and propose an appropriate regional/local water coordination organization.

**STRATEGY:** Develop a description of tasks the organization could address, such as to act as a central repository for local water resources information; act as a local forum for decision-making regarding water resource uses on an ongoing basis; and have the ability to consider the competing uses and balances among the various water users in the region, including instream uses of the Verde River.

- Evaluate and choose an appropriate form or combination of forms of organizational structure to become the local water coordination organization through public consensus. Possible structures might include:

(1) Verde Natural Resources Conservation District (VNRCD): Could empower the existing VNRCD to act as the local information and decision-making body. The VNRCD already has the authority under the Arizona Revised Statutes to enter into agreements, accept funding, work with private landowners, etc. Considerations: community interest in electing VNRCD board members

would have to be generated; funding, expertise, authority to make a "water plan" for the region; authority to interact with towns, etc.

(2) New Active Management Area: Could consider creating a new AMA under the state Groundwater Management Act (GMA) or borrowing certain provisions from the GMA. The Act already provides authority to AMA's to develop a water management plan, regulate groundwater pumping, and augment non-water supplies. Considerations: There are regulations to comply with; it may be difficult to get local support for creating a new AMA; and the Verde Valley may not qualify for AMA status because of lack of groundwater overdraft problem.

(3) Special Districts (Flood Control District or Water Conservancy District): Could use existing authority of county flood control districts to develop a regional water plan. Flood Control Districts do not have to be based on counties, and they have the authority to tax and would have a funding source.

(4) Irrigation District: Investigate level of authority possible, taxing authority, and management authority under Arizona State enabling legislation. Consider possible conflicts with other water uses and organizations.

(5) Verde Valley Water Users Association (VWVUA): Could broaden the scope of this private organization. The Verde Valley Water Users' Association's primary and only focus has been to represent the interests of Verde Valley water users in the adjudication. Perhaps this organization could take on other issues as well. Its private nature is probably attractive to various local interests but may also present limitations regarding agreements with state agencies, authority, or funding. Currently, all work on VWVUA is voluntary and unpaid.

(6) Arizona State Water Resources Plan: Utilize assistance from Arizona Department of Water Resources to create a regional water plan designed to specifically meet the Verde Valley's unique needs.

- Link Verde Valley Town Governing Entities and Planning and Zoning Commissions for Cooperative Planning: Each town has authority for zoning decisions, wastewater treatment, taxes, etc. The Town of Camp Verde is embarking on developing a "water plan." If each town were to do a "water plan," then they could be synthesized to form a regional "water plan." Need to investigate this option more and contact the Arizona League of Cities and Towns in Phoenix for information on authorities of towns.

## **MAJOR GOALS OF THE FIVE SUBCOMMITTEES**

### **Economics & Commercial Uses**

- Utilize the river corridor and its cultural and natural resource values to promote tourism and as a quality of life incentive to attract tourists, new businesses and new residents.
- Make provisions for the sand and gravel industry to function in the Verde Valley while protecting the river corridor values.

- Promote the retention of agricultural uses and open lands along the Verde River Corridor while protecting corridor values and resources.
- Maintain and/or increase open space along the Verde River Corridor while accommodating for planned growth.

### **Land Conservation**

- Protect, enhance and restore the riparian ecosystems along the Verde River Corridor.
- Preserve and protect the prehistoric, historic, and archaeological resources of the Verde River Corridor.
- Reduce the negative impacts of flooding and erosion.
- Protect, maintain and enhance the scenic qualities that the Verde River and its riparian corridor contribute to the area.
- Develop a greater recognition, understanding, appreciation, respect, and responsibility toward the Verde River and its resources.
- Promote public awareness of the Verde as a special natural resource and encourage public support for proper use of the river and its contiguous lands.
- Protect the environmentally sensitive areas of the Verde River Basin that are in need of protective management.
- Support public involvement in ongoing land use planning efforts and promote incorporation of considerations for the human and environmental needs of the Verde Valley.

### **Private Property**

- Ensure that the rights of private property owners are a priority issue in all river- related management decisions.
- Maximize private property owner participation in discussing and resolving corridor conflicts.
- Increase public awareness of private property rights and wishes.
- Identify benefits and/or liabilities to property owners of providing access to the Verde River Corridor.
- Implement a plan to inform private property owners of rights, responsibilities, and opportunities.

- Identify what entity(s) have management and enforcement responsibilities over corridor lands and resources.
- Encourage private landowners to allow public access to the river corridor across their property while protecting their rights and wishes.
- Formalize the coordinating function of groups like the VRCP to ensure landowner and interagency communication and consistency on plans and decisions for the river corridor.

## **Recreation**

- Ensure adequate public access to the Verde River Corridor by identifying and planning for needed access points.
- Develop a formal assessment of existing recreational activities along the Verde River Corridor and identify areas of conflict.
- Develop a plan for distribution of information regarding recreational opportunities along the Verde River Corridor.
- Promote improved river user behavior and cooperation by increasing public and river user behavior education, awareness, and involvement.
- Minimize conflicts between recreational uses and with private property owners.
- Minimize environmental impacts to the river corridor when planning and developing recreation access sites and facilities.

## **Water**

- Protect, and potentially even enhance or restore, the instream flows in the river, and the habitats, recreation, and other uses that depend on those flows.
- Improve the water quality where problems exist and to prevent further pollution of the waters of the Verde River.
- Investigate and evaluate the potential for a local existing organization or a coalition of agency and community representatives to consider water supply, water use, water management, and water planning activities for the Verde Valley as a region and to coordinate activities with other local, state, federal, and tribal agencies, and various water use groups.

## **PLAN OF ACTION**

## **CONSERVATION STRATEGY**

This Action Plan, developed through the Verde River Corridor Project, shows how communities, private groups, individuals, and public agencies can work together to maintain and improve the river corridor. Landowners, farmers, industrial companies, recreationists, sportsmen groups, conservation organizations, and citizens that work along and use the river all have important roles to play in the future of the Verde.

Conservation and protection of the Verde River Corridor will require the coordination of all public and private interests along the river. The VRCP Action Plan can be the vehicle for bringing government agencies, private organizations, and local landowners together to work cooperatively on detailed strategies for the conservation of the river corridor. The protection and enhancement of the Verde will depend on taking full advantage of available expertise, influence, and resources. The result of this planning process is a strategy for land and water management in and along the Verde River that is uniquely suited to its special qualities and the demands of the local people and communities.

As stated earlier in this report, the purpose of the VRCP has been to develop a workable strategy for the use, management, and protection of the river corridor that incorporates the views of its many users and supporters, residents, agencies, and elected officials. The recommendations contained within this report are meant as suggestions—as a starting point. These recommendations, in many instances, piggyback on existing community efforts, recognizing and supporting the local actions.

No one group or individual is responsible for the implementation of all the recommendations. These actions will require a concerted effort by many individuals, groups, and agencies. Several of the actions are currently being implemented by groups and agencies. As each recommended action is begun or completed, we move closer to our vision for the Verde.

The key to this process is establishing a consensus among the diverse river interests. The ultimate goal has not been to change the character of the corridor, but to conserve the river and its resources in a way that is balanced with growth and economic vitality. The intent of the VRCP has been to study the river corridor—its values, uses, and issues of concern—and to work with all interested parties to create a plan of action for the future management of the Verde River Corridor.

The top concern of the people who participated in the initial meetings of the VRCP was the need for coordinated management of the land and water resources of the Verde River Corridor. Because of the many different ways the Verde River is used today, many local officials and landowners have recognized that there is a need to share responsibility for its future conservation and management. Local communities are addressing issues and problems as they arise, but frequently these actions only affect the land and water within a town's boundaries.

The major goals of the VRCP have been to identify the problems and needs of the entire river, recommend a coordinated and consistent management strategy throughout the corridor, and begin the process of solving the problems. Another key goal of the VRCP committee members has been that of informing and educating themselves, agency representatives, businessmen, special interest groups, landowners, and the general public. Most of the problems on the river

have been ongoing for years, but can be resolved with sufficient attention and an informed, involved public.

## **ACTION PLAN**

### **Priority Actions**

In the preceding section, we discussed the overall vision and guiding principles finalized by the Steering Committee. The guiding principles for the VRCP were created to provide direction when developing approaches to solving river issues. These guiding principles were generated from the many strategies, goals, and recommendations developed by the five working subcommittees.

The Steering Committee reached consensus on over 140 different recommendations developed from five different subcommittees. As part of the Action Plan, the subcommittee recommendations provide a good foundation for pragmatic local initiatives in developing management strategies for the Verde River. However, logistically every recommendation could not be handled at once. To begin an effective implementation process for the Steering Committee recommendations, it was necessary to prioritize the list of recommendations and determine which actions were most needed and appropriate for immediate application in the corridor.

The top priority recommendations were chosen based upon:

- ease or complexity of implementation
- benefit to community
- likelihood of success
- most appropriate for immediate implementation

At the May 29, 1991 Steering Committee meeting, the top ten priority actions were agreed upon and ranked (Table 8). Recommendations that were not selected as priority actions are not considered any less important to the Verde River and, hopefully, will soon be acted upon by interested individuals and groups.

### **Figure 10**

#### **TOP TEN PRIORITY ACTIONS**

- 1) **Conduct** a landowner survey to determine who may be interested in participating in accomplishing the goals of the Verde River Corridor Project.
- 2) **Establish** a permanent river corridor group made up of existing community leaders, landowners, individuals, organizations, and agencies to continue the coordination and problem solving begun by the Verde River Corridor Project.

3) **Identify** and pursue sources for assistance and funding.

- Request that Arizona State Parks and Game & Fish hold an informational workshop on the Arizona Heritage Fund in the Verde Valley.

4) **Distribute** the reports and recommendations from the Verde River Corridor Project; take advantage of the public opportunity at Verde River Days.

- Final Report and Recommendations and

Summary Publication

- Public River Access Brochure
- Summary Report of Private Property Rights & Responsibilities
- Recreation Assessment
- Visual Resource Assessment

5) **Participate** in the development of the Arizona State Parks' Verde River Greenway Master Plan by serving on the planning team.

6) **Facilitate** riverfront landowner and river user workshops to inform people of their rights, responsibilities, and opportunities and encourage active participation in the planning process.

7) **Develop** an identifying river corridor logo and implement its use in signing public river access sites and in informational materials about the river corridor.

- A logo contest conducted as part of Verde River Days is suggested; an alternate suggestion is to use the VRCP great blue heron as the logo.

8) **Work** with cooperative groups to submit grant proposals for local parks, access sites, trails, habitat protection and enhancement, cultural resources, and environmental education to Arizona Heritage Fund, State Lake Improvement Fund, and Land & Water Conservation Fund.

9) **Initiate** a river corridor management strategy after current environmental assessments and reports of the Verde River are completed (VRCP, Verde NRCD, EPA ADID, ASPB Greenway, etc.).

10) **Support** ongoing efforts to manage and conserve the Verde River Corridor.

The **Action Plan**, included in this section, is composed of:

- **Top 10 Priority Actions Recommended by the**

## **Steering Committee**

- **Summary Charts of 140 Subcommittee Recommendations**
- **Accomplishments Achieved as a Direct Result of the**

## **VRCP Process**

- **Ongoing Efforts of Other Groups and Agencies**

Action strategies will continue to be developed and modified for implementing the Steering Committee recommendations and new recommendations as they arise. Involving as many interests as possible is important to ensure that many people have a stake in the outcome. The strategies embraced throughout the VRCP and adopted by the Steering Committee and subcommittees are designed for the overall improvement of the natural, cultural, scenic, economic, and recreational resources of the Verde River. The plan sets in motion the potential for guided renewal and growth that will enhance the character of the region, and seeks to establish the corridor as a multiple-value amenity that serves the community and the environment.

Like most Arizona rivers, the Verde continues to feel the pressures of growth. As this project illustrates, the Verde River possesses unique natural, cultural, scenic, and recreational attributes. The recommendations contained in this corridor plan offer ways in which the important values of the river can be protected. However, the plan also offers ideas on how to continue residential growth in the corridor, but limit its impacts on the river.

In implementing the VRCP Action Plan it will be imperative to work openly and cooperatively with landowners and local officials. It is important to be aware that residential property owners in the corridor were drawn to the river by its beauty and tranquility. An emphasis throughout the corridor planning process has been landowner rights.

The VRCP is a citizen-based planning effort. The process has been ongoing for the past year and a half. It has involved literally hundreds of Verde Valley residents, landowners, businessmen, farmers, river users, recreationists, organizations, special interest groups, and agency representatives. It is a plan offered to the community by a variety of river-related interests. The goal of the Steering Committee is to have the corridor plan provide guidance concerning the future use and management of the Verde River Corridor. To be successful, the Action Plan will require the continued efforts of the Verde Valley communities and their citizens.

## **Immediate Recommendations**

### *Establishment of a Verde River Corridor "Coordinating Group"*

The Steering Committee recommends that a permanent Verde River Corridor "coordinating group" be formed, to oversee the implementation of the Action Plan and development of a coordinated river corridor management strategy. It has been suggested that an existing group,

such as the Verde NRC, be looked to in the beginning to keep momentum going at least until a broader constituency and/or coalition is in place. As an initial action, the existing group could work with local groups and businesses to distribute the VRCP materials to the citizens of the Verde Valley.

The Verde River flows through several communities, commercial and private land, Yavapai-Apache Indian Reservation, and is within the jurisdiction of several county, state, and federal agencies. Because of this complex land ownership and management pattern, the VRCP participants identified the need for greater coordination and cooperation between local, state, and federal agencies.

Consistency in management policies between the different levels of government was one of the primary concerns expressed by people throughout the VRCP. Participants also indicated support for stronger coordination among the town governments along the river, and expressed interest in the creation of an advisory committee or coalition composed of state and local officials, landowners, and other key members of riverfront communities to act as a forum for future cooperative efforts.

Piecemeal efforts to plan for segments of the river cannot address the issues that may affect the entire river, and a cooperative corridor management process is necessary. VRCP participants indicated their support for coordination of efforts by government agencies, private conservation groups, and landowners in the conservation of the Verde River Corridor. This coordination could help to ensure consistency in river management and use policies.

Although there is a strong interest in working with other levels of government and private organizations on conserving the resources of the Verde, there is even stronger support for maintaining local control in the future planning, management, and use of the river corridor. Any future conservation efforts will have to be based on the powers, rights, and capabilities of local governments and landowners.

The Steering Committee felt that future ongoing planning and management of the river corridor should use existing local and state programs and existing government agencies, rather than create new ones that might duplicate or be inconsistent with them. Although the ongoing planning and management of the Verde should remain in local hands, assistance from state and federal agencies and private conservation groups would be helpful. There was a realization that the future conservation of the Verde is a shared responsibility between all levels of government and the private sector.

Membership for the "coordinating group" should be broad-based and include representatives from each of the three incorporated towns and cities along the Verde, and key county, state, and federal agencies. Representatives from the major industries and interests such as agriculture, water users, and sand and gravel should be part of the group. Members of local home owners associations, unincorporated communities, conservation organizations, and recreation groups should also be represented on the group. To maintain continuity, it is suggested that a number of members from the existing Verde River Corridor Project be asked to serve on the group.

State and federal agencies should assist the coordinating group through existing financial and technical assistance programs, and should consult the coordinating group on proposed actions that could affect town governments or private landowners along the Verde River. A Verde Valley central clearinghouse or library of information about the Verde River Corridor was an original goal of the VRCP, and considerable materials, reports, and maps have been collected during the VRCP planning process. A decision needs to be made regarding where to house this information so that it can be made available to interested people and that new material can be accumulated.

There are two major reasons to continue the work of the VRCP by forming a permanent Verde River Corridor coordinating group. The first reason is to provide a focus for efforts by local governments, landowners, and private organizations to maintain and improve the river corridor. All of the recommendations in this plan would benefit from the strong local participation and leadership that the coordinating group could provide.

This cooperative approach also should improve the chances of the Verde Valley communities receiving assistance from state and federal agencies to implement both the actions in this plan and future river programs.

The second reason for creating a Verde River Corridor coordinating group would be to have a stronger voice in discussions on actions proposed by the county, state, or federal governments which have a direct bearing on river communities. Much of the distrust that local officials and landowners feel towards governmental agencies is often the result of the sense that local interests are not adequately considered in governmental actions.

The impact that local opinion and concern has on higher levels of government will be greatly increased if there is a unified, consistent position presented by local communities through a Verde River Corridor coordinating group. The coordinating group should seek the support and cooperation of state and federal agencies in its activities along the river. Agencies should make a similar effort to involve the coordinating group in discussions on actions proposed for the Verde area.

#### *Development of a Coordinated River Corridor Management Plan*

It is recommended that the local governments along the Verde River Corridor, in consultation with the Verde River Corridor Project Steering Committee and other groups, seek assistance through existing programs to develop a coordinated management plan for the river corridor. The purpose of the plan would be to establish a regional cooperative partnership between all levels of government and private groups and individuals to develop explicit and integrated policies for the future use and management of the Verde River Corridor.

Conservation for the entire Verde River Corridor will require the coordination of all of the public and private interests along the river, and the river corridor management plan can be the vehicle for bringing those government agencies, private organizations, and local landowners together to work cooperatively on detailed strategies for the conservation of the corridor. The protection and

enhancement of the Verde will depend on taking full advantage of available expertise, influence, and resources.

The resource characteristics and social and political climate of the Verde Valley require a new approach for the conservation of regional, state, and nationally significant values. The traditional approach to river corridor conservation, in which government acquisition and management of land are the primary techniques, is neither politically feasible nor financially practical. Wholesale acquisition would needlessly reduce the amount of land in private ownership and on local property tax roles.

Arizona State Parks is pursuing a combination of acquisition, donation, easements, and cooperative agreements to protect and manage a six-mile segment of the river, designated as the Verde River Greenway. The Arizona Game & Fish Department has successfully negotiated a cooperative agreement with Phelps Dodge Corporation to restore and manage the wetlands in the Tavasci Marsh and Packard Ranch areas while keeping the properties in private ownership. The Prescott National Forest has developed protection and management plans to maintain and improve the scattered parcels of river corridor land it administers. There are also several miles of river corridor land owned by Yavapai County, Camp Verde, Clarkdale, Cottonwood, and the Yavapai-Apache Indian Tribe. There still remains nearly 45 to 50 miles of river corridor lands primarily in private ownership.

The management plan for the Verde River Corridor should therefore rely primarily on initiatives and controls available to local governments and private landowners. As such, it is essential that the plan respond directly to local needs and concerns. The river corridor management plan should be tailored to local conditions. The communities and other management entities should work together through an advisory committee or other coalition. Because of the limited resources available to the towns, local officials must actively and aggressively seek financial assistance through existing state and federal programs (see Conservation Strategies section and Appendix).

There are three goals for the development of a coordinated river corridor management plan: 1) incorporate regional concerns, 2) collectively develop consistent policies to guide local decisions, and 3) establish regional priorities for implementation of plan. The following are strategies to consider when pursuing a management framework:

- Develop a pre-planning strategy
  - Establish an advisory committee, coalition, or other group
  - Develop sources for river management plan funding
  - Develop regional objectives
  - Conduct a river corridor inventory and assessment
- (or compile existing information)

- Conduct a landowner and local official survey
- Evaluate existing river management programs
- Develop the river corridor management plan
- Prepare a financial strategy

### *Resolution of General Support*

The Steering Committee recommends that the town councils of Clarkdale, Cottonwood, and Camp Verde, and the Yavapai County Board of Supervisors pass resolutions pledging their support for the general intent and concepts recommended through the Verde River Corridor Project.

It is not suggested that the town councils approve *every* recommendation made by the Steering Committee, rather that they endorse the **general intent and major concepts** outlined in the Action Plan. They should also agree to participate in future activities that pertain to the Verde River Corridor. In addition, each town should appoint a representative from the town council to the coordinating group.

Several members of the VRCP felt that governmental sponsorship and support would be important for the coordinating group to be successful. Funding to help implement this action program should be sought through state and federal grants and cooperative agreements whenever possible. Many agencies have already pledged their support and assistance in implementing specific actions recommended by the Steering Committee.

The following tables represent summaries of the over 140 recommendations developed by the five subcommittees and approved by the Steering Committee. The format highlights the priority issues identified by each subcommittee. Goals and actions for each issue outline committee strategies. The "who, how, and when" columns are beginning points to guide implementation. The groups and methods listed are not necessarily the only groups or methods that need to be considered, but they do provide some ideas.

The last four tables highlight some of the ongoing efforts of other agencies and groups and the accomplishments already achieved by the VRCP. These projects are included to demonstrate how much is already being accomplished by individuals and groups. Although the entire Action Plan may seem overwhelming and impossible to implement in its entirety, when tackled a little bit at a time, it is feasible.

## **SUPPORTING STUDIES**

### **PUBLIC OPINION SURVEY**

The Verde Valley's scenic, natural, and cultural/historic resources contribute, perhaps more than anything else, to the high quality of life in the valley. Moreover, they attract large numbers of tourists each year, who are major contributors to the local economy. In the face of rapid population growth and development in the valley, care must be taken to ensure an undiminished quality of life for all who live here, both now and in the future. This makes it essential that these critical resources be carefully protected and, where appropriate, carefully developed. Because public opinions and attitudes can have a strong impact on how development occurs, as well as on the extent to which these very important resources are protected in the process, this survey was conducted to determine how important local residents feel these resources are in the valley's future development plans.

In conjunction with the Verde River Corridor Project, in the Fall of 1990 Dr. Donovan D. Wilkin, Associate Professor, and researchers at the School of Renewable Natural Resources, University of Arizona, conducted a survey of Verde Valley residents to determine their feelings about growth and development and, in particular, about the role that scenic, natural, and cultural/historical resources play in such growth. Similar surveys have been conducted in the San Pedro River Valley and the Gila River Valley, and the results have just recently been compiled. Following is Dr. Wilkin's summary of the Verde Valley survey results.

Verde Valley residents do not seem to see any inconsistency in favoring growth on the one hand and protection of their natural resources on the other. Riverine resources were valued highly by the great majority of respondents in all three studies. Similarly, growth seems generally favored in all three areas.

A majority of respondents from the Verde Valley favored growth in most sectors of life in the valley (53% to 81% favored, depending on the type of growth) with the exception of mobile home parks (40% favored), seasonal apartments (40% favored), and fast food facilities (46% favored). The kinds of growth preferred included both winter and summer tourists (75% favored); retired and working permanent residents (78% favored); the industrial and commercial sectors (72% favored); and motels, restaurants, and shopping malls (65% favored).

Strong majorities agreed with the allocation of taxes and water to support and maintain present levels of development (70% favored), including agriculture. Protection of existing wildlife and natural resources received the highest positive rating (80% favored). Nonetheless, the majority opposes allocating taxes and water to specifically provide for growth in any of the current community sectors (only 34% to 43% favored), with the single exception of improving the river and its plant, animal, and bird life (61% favored).

The majority favored the use of public funds to gradually purchase rights in private lands along the Verde River (62% favored), favored the designation of a water management authority to promote and enforce water conservation to protect the Verde River (73% favored), and strongly favored the public control and limitation of residential and commercial development in the Verde Valley as necessary to protect the river (72% favored). A strong majority favored blocking all further transfers, trades, or sales of water out of the Verde Valley (85.1% favored and only 5.3% opposed).

There was also strong support for vesting a valley-wide authority with power to protect the valley's scenic, natural, and cultural/historical resources through various means including a public planning and review process for development and use of surrounding lands (72% favored).

Eighty percent of the respondents thought that development on private land should only be allowed when significant wildlife and natural communities are adequately protected. Fifty-five percent thought that the costs to private citizens of protecting these resources would be more than compensated by increases in property values, growth in economic activity, and improved quality of living.

Thirty-nine percent of respondents were "extremely" satisfied and 43% were "generally" satisfied with their quality of living. The valley's present scenic quality (89%), air quality (89%), and access to outdoor recreation (87%) and national park facilities (84%) were expressed as the principal contributors to their high quality of living. As regards development of the Verde River Corridor, passive activities such as walking, picnicking, birdwatching, swimming, and fishing were accorded high importance (60% to 84%) as compared with more active pastimes like RV camping, off-road vehicle use, hunting, paramilitary games and the like ( only 8% to 33%).

These results are very similar to those found in the San Pedro River Valley, another river system considered to be of exceptionally high quality when compared to others in the region. Results for the Gila River system are still being analyzed, but it appears not to be nearly as highly regarded by its neighbors as these two much higher quality river systems.

Overall, Verde Valley residents ranked their scenic, natural, and cultural/historic resources as very important to their quality of life; in particular, wildlife and natural resources were ranked highest. It was generally agreed that development and growth are desirable and important, and tax money and water should be allocated at present levels of growth but that the resource values should be protected. Furthermore, it was generally agreed that some type of management authority for the Verde Valley with limited powers should be established to enforce water conservation among all users, to protect water quality of the Verde River, and to promote its rational use for the environmentally sensitive development of the valley.

The following percentages express specific results of the public opinion survey.

**Demographics:**

*Percent of respondents who:*

Are permanent valley residents 89.4%

Voted in the last general election 87.2

Get local news from local radio or TV 72.3

Make majority of household purchases

in Cottonwood 66.0

Subscribe to/read local paper 59.6

Live in a local city, town, or community 56.4

Favor expanding the County Board of

Supervisors to a more representative number 51.0

(opposed to this are 24.5%)

Are registered Republican 50.0

(36.2% Democrat)

Are female 45.7

*Length of time respondents have lived in the Verde Valley:*

0 to 5 years 26.6%

6 to 10 years 29.8

11 to 15 years 13.8

16 to 20 years 08.5

More than 20 years 10.6

All their life 02.1

Born in Verde Valley 05.3

*Age of respondents:*

18 to 25 years 02.1%

26 to 35 years 09.6

36 to 45 years 18.1

46 to 55 years 18.1

56 to 65 years 23.4

66 to 75 years 20.2

Over 75 years 05.3

*Total annual household income of respondents:*

\$5,000 to \$9,999 04.3%

\$10,000 to \$19,999 33.0

\$20,000 to \$29,999 20.2

\$30,000 to \$39,999 12.8

\$40,000 to \$49,999 10.6

\$50,000 to \$74,999 09.6

\$75,000 to \$99,999 00.0

\$100,000 or more 01.1

*Respondent's highest level of education attained:*

No formal education 02.1%

Completed grade school 01.1

Completed middle or junior high school 04.3

Completed high school 21.3

Completed at least some college 31.9

Bachelor's degree 19.1

Master's degree 10.6

Doctoral or higher degree 04.3

**Survey Results:**

*Twelve most important potential uses of the Verde River Corridor (percent of respondents considering this a very or somewhat important potential use):*

Walking access to the river 84.0%

Picnicking 80.9

Hiking 78.3

Photography 74.5

Bank fishing 70.2

Swimming/wading 65.9

Birdwatching/nature study 62.8

Handicap access 62.8

Landscape sketching/painting 60.7

Tent/outdoor camping 55.4

Horseback riding 53.2

Bike access to river 53.2

Nine least important potential uses of the Verde River Corridor (percent of respondents *considering this a very or somewhat unimportant potential use*):

Paramilitary games/maneuvers 71.3%

Trapping 71.3

Off-road vehicle use 62.8

Mountain bike riding 52.1

Hunting 52.1

Golfing 50.0

RV Camping 41.5

(33% considered it important)

Cutting firewood 40.5

(29.7% considered it important)

Panning for gold 40.5

(34.1 % considered it important)

*Top ten activities of respondents in past year—anywhere in the world (percent of respondents indicating they had done this):*

Picnicking 72.3%

Hiking 70.2

Swimming/wading 57.4

Photography 55.3

Walking access to river 50.0

Birdwatching/nature study 38.3

Tent/outdoor camping 30.9

Cutting firewood 27.7

Motor vehicle access to river 26.6

Hunting 25.5

*Top ten activities of respondents in past year on the Verde River (percent of respondents indicating they had done this on the Verde River):*

Hiking 53.2%

Picnicking 50.0

Walking access to river 35.1

Bank fishing 34.0

Swimming/wading 30.0

Photography 29.8

Bird watching/nature study 27.7

Motor vehicle access 16.0

Canoeing/kayaking 09.6

Cutting firewood 08.5

*What activities should take precedence over private property rights (percent of respondents thinking these activities should take precedence):*

Walking access to river 30.9%

Hiking 29.8

Birdwatching/nature study 23.4

Picnicking 21.3

Rafting 20.2

Photography 19.1

Canoeing/kayaking 18.1

Flycasting 12.8

Bankfishing 12.5

Sketching/painting 11.7

*The Verde River Corridor experiences chronic overuse (percent of respondents favoring/opposing the following):*

Favoring Opposing

Fees for selected uses or areas 68.1% 22.4%

Limiting parking at frequently used areas 66.0 14.8

Reservations for selected uses or areas 66.0 22.3

Developing access points far from population centers and restricting those closer 62.7 21.3

Restricting publicity about the area to potential visitors or tourists 31.9 43.6

**VERDE RIVER VISUAL ASSESSMENT**

Citizens have become concerned about the changing character of the Verde Valley. People are being attracted in increasing numbers to the natural wonders of the area. They seek out its recreational amenities as tourists or retirees. Concern about change, especially the degradation of the natural beauty of the valley, resulted in the initiation of the Visual Assessment as a special study in support of the VRCP. The primary purpose of the Visual Assessment was to identify and evaluate the perceived scenic quality of the river corridor. Edward Cook, William Whitmore, and Frederick Steiner of the Department of Planning, College of Architecture, Arizona State University (ASU), conducted the Visual Assessment study during the Fall of 1990 with participation by local citizens. The results of the process support many of the VRCP recommendations and suggest incorporation of visual and aesthetic considerations into future management decisions. Following is William Whitmore's summary of the assessment and the results.

In addition to the tangible benefits of recreation, fish and wildlife habitat, commercial and other economic activity, the Verde River is a significant scenic resource. The visual assessment process resulted in an evaluation of the relative scenic quality within a larger context and documentation of areas that have special significance to Verde Valley residents. The process involved participants from the Verde Valley as well as researchers from ASU. It was determined that three methods of visual assessment would be used to involve different groups and address varied perspectives. These three methods included: 1) expert evaluation, 2) public valuation, and 3) public nomination of areas of high scenic value or significance.

Visual assessment, because it involves individual perceptions of aesthetics, is generally considered to be subjective. It is said that beauty is in the eye of the beholder; however, this study illustrates that, at least in the case of the Verde Valley, people generally agree on what they behold to be most beautiful and what they consider most unattractive. In this study, several methods and different groups were used to reduce the potential for subjectivity and to identify those areas that are clearly most preferred to behold. The expert evaluation process was conducted by faculty and students of environmental planning and landscape architecture from ASU. The public valuation process was conducted by the same group from ASU, but it incorporated public involvement. Verde Valley residents indicated preferences in scenic quality in a series of structured workshops. The public nomination process was coordinated by ASU and Arizona State Parks, and Verde Valley residents participated by nominating areas of scenic quality with little formal direction.

The area included in the visual assessment is the same as that of VRCP, from Tapco to Beasley Flat along the river corridor. The assessment was conducted from the perspective of river corridor users, meaning that the primary orientation points or viewpoints were from within the corridor itself. This narrowed the scope of the assessment slightly from the broader VRCP. The VRCP considered adjacent lands because they are linked with other resource issues with stronger social or economic implications. Background views, however, were included as part of the visual assessment. As a result, the larger corridor was considered but only as it relates visually from the river itself.

## **Composite Findings**

The original intent of this project was to combine all three methods into a composite map. However, once the three segments were complete, it was decided that such a combination would be artificial and yield no new useful information. The individual results from each of the methods yielded distinct findings interesting in their own right.

*The findings were:*

The expert method evaluates the scenic quality by rating the area's landscape characteristics and relating them to the surrounding physiographic region. This method, as applied in this study, was adapted from the method used by BLM resource managers for assessing the scenic quality of lands under their jurisdiction. It is a systematic process that is used to manage the visual resource of public lands. Both the BLM method and a similar method used by the FS were developed by R. Burton Litton (1968), a University of California—Berkeley professor of landscape architecture. They are widely used whenever an expert evaluation is called for in a visual assessment.

The landscape of the Verde River, with flowing water, significant riparian vegetation, and rock outcroppings set in the backdrop of Verde Formation limestone is unique when evaluated in the context of the arid uplands typical of the Central Highlands province. This rarity by BLM criteria resulted in 83 of 99 scenic reaches receiving scenic classification A, and suggests much of the river corridor is highly valued for its scenic quality. The relatively few areas receiving lower scenic rating did so because of substantial cultural modifications that offset the high scenic quality of the surrounding natural environment.

Respondents in the public valuation portion of the study showed the most preference for the region's geologic structure in combination with a well developed riparian forest and emergent marsh edges along the river's course. These landscapes were void of cultural modifications and exhibited strong contrast in form, texture, and color between landscape elements. These areas have a high degree of enclosure and mystery.

Preferred landscapes are natural in character with minimal natural disturbances or cultural modification. The landscapes created by the river's fluvial process, such as cut banks, were considered scenic as well. Water surfaces are open, smooth, and reflective. A well developed riparian forest edge is present but contrast between landscape elements is lower. Enclosure is moderate with open end views.

Landscapes for which no clear preference is exhibited are typically culturally modified landscapes such as hillside homes and mini-farms. Modifications also include bank stabilization, remnant light structures, and miscellaneous items such as power lines, lawns, fences, aggregate stock piles, and junk scrap. These river segments have degraded riparian edges and enclosure is moderate.

The least preferred landscapes are typically culturally modified to the extent that the alteration is dominant over the surrounding natural landscape. These include heavy structures such as bridges, mining apparatus, mill tailings, and the Tapco substation. Day use recreation and agricultural fields also are ranked low on the preference scale. These cultural landscapes contrast

sharply and are inharmonious with the surrounding natural landscape. The river's edge is highly degraded, and enclosure is low.

Public nominations of the river's scenic quality encouraged the respondents to reflect on the river's landscape as a whole by reflecting on experiential perceptions. This personal interaction creates landscape preferences that transcends pure visual aesthetics. The entire river corridor received the largest number of nominations. This indicates a strong interest in preserving the free-flowing characteristics of the river and the adjacent riparian edge from increased cultural degradation.

The river segment between Tapco and Dead Horse Ranch State Park was credited with easy access and many recreational opportunities. Most nominations indicated the surrounding area's beauty, presence of wildlife, and views of cliff dwellings and Tuzigoot National Monument as important factors contributing to the enjoyment of the area.

Between Middle Verde and Camp Verde river access is not as easy. This lack of accessibility, however, is considered a positive factor to the respondents partaking in nature activities such as hiking, canoeing, horseback riding, and wildlife observation.

Casual day use areas around Camp Verde and the confluence of Oak Creek are mentioned because of the sand beaches and slow current amenable to use by families with small children and by the elderly.

## **Recommendations**

This study indicates that the scenic quality of the Verde Valley is high. Its beauty is significant to those who are attracted there to live as well as those who visit the area from elsewhere. The high scenic quality is significant regionally and statewide. It contributes to economic development as a factor in tourism, recreation, and retiree settlement. But beyond economic value, the visual nature of the Verde landscape is important to the quality of the lives of the Valley residents and of all Arizonans who seek the wide open spaces of the American West.

Two types of recommendations can be offered based on this study. The first can be categorized as house cleaning. These actions would enhance the appearance of the river corridor and include:

- Use indigenous plant materials for bank stabilization efforts so that they blend with natural surroundings.
- Screen unsightly land uses from the river by revegetating riparian areas.
- Mine the slag dome for aggregate to eliminate this visual scar and bridge abutments.
- Clear river of all trash and large items such as cars.
- Bridges, such as Tuzigoot Bridge, should be painted pastel colors that are harmonious with the background geology.

- Facilities such as trash receptacles, fire pits, restrooms, etc. should be located at heavily used day use recreation sites. Well marked permanent access roads should be established to prevent the wandering of vehicles over the natural landscape.
- Improve river access at bridge locations to provide ingress and egress for water activities. This will provide dependable access points at regular intervals along the river which will discourage the more random access habits now in practice which degrade the shoreline landscapes as illustrated in day use recreation landscapes.
- Remove aggregate stock piles from point bars and revegetate.
- Remove abandoned heavy equipment and buildings near unused mining pits. These pits, if reclaimed and revegetated, will not only increase in scenic preference but can provide recreation opportunities as well as expanding wildlife habitat.

The second category of recommendations involve government actions. State and local governments should consider:

- the purchase of permanent scenic easements or fee-simple purchase of the landscapes identified as most preferred by the public;
- the adoption of design standards to protect views and to integrate new development into the existing landscape;
- the inclusion of highly rated landscape types in all management and planning decisions;
- maintaining instream flows within the river channel required to support the aquatic and riparian habitats needed for preserving scenic quality;
- the support of ongoing educational efforts about the scenic quality of the Verde Valley directed toward residents, tourists, and potential tourists, and
- the implementation of further research about the interrelationships among nature, culture, and aesthetics.

Scenic easements especially merit serious consideration. Easements have been used in other parts of the nation, such as the Blue Ridge Parkway in Virginia, to protect views. There are two strengths of easements. First, they are a permanent protection measure. Second, private property rights can be maintained, and private property owners can receive financial benefits. The new Arizona Heritage Fund provides the source of funding to purchase such easements.

Easements are but one option, which certainly could be used as part of more comprehensive efforts. Some action in whatever form is necessary. The Verde Valley is a beautiful place. That beauty is fragile. If the Verde Valley is visually despoiled, the negative consequences to the local quality of life and to the economy would be substantial.

## **OTHER PROTECTION AND MANAGEMENT ACTIONS**

For years, individuals, organizations, and governmental entities have recognized the value of the Verde River and its remarkable resources. Protection and conservation efforts took on a national perspective near the turn of the century with cultural resources as the focal point. More recently, fish, wildlife, and riparian ecosystems have garnered widespread support and concern, with resulting action. The desire to enhance recreation use and access, and protect and conserve the instream flows of the river have initiated several tangible actions.

These actions are being undertaken by a variety of people and groups. Many of the actions are cooperative efforts or partnerships with others. The following protection and management actions are several examples that demonstrate the incredible interest and support generated by concern and caring for the Verde River.

## **CULTURAL RESOURCE PROTECTION**

There have been several successful efforts to protect the significant cultural resources found in the Verde Valley. For example, in 1906, the Sinagua cliff dwellings, known as Montezuma Castle and located along Beaver Creek, became a National Monument under the protective management of the National Park Service. In 1933-34, the pueblo dwellings perched atop a hill along the Verde River were excavated, and then became a National Monument in 1939. Fort Verde, a late 1800s military reservation located along the Verde River at what is now Camp Verde, is a State Historic Park.

Land trusts and conservancies are achieving considerable success in protecting our precious cultural heritage. The Archaeological Conservancy, a national non-profit preservation organization based in Santa Fe, has begun efforts to acquire and protect the Sugarloaf Ruin along Oak Creek near Cornville.

Individuals, organizations, towns, and agencies have made cultural resource protection and restoration a priority. Several public and private historic sites in the Verde Valley have been nominated for listing on the National Register of Historic Places. The State Historic Preservation Office coordinates the cooperative Arizona Site Steward Program which strives to prevent vandalism and destruction through site monitoring (see the Cultural Values section).

## **VERDE RIVER GREENWAY AND DEAD HORSE RANCH STATE PARK**

Arizona State Parks currently manages 26 parks statewide with several more to be opened in the near future. Many of Arizona's state parks were established to protect unique natural features such as the riparian habitat along Oak Creek at Red Rock State Park and the incredible cave formations at Kartchner Caverns State Park near Benson. There has been an emphasis within Arizona recently to protect its diminishing riparian resources. The Arizona Statewide Comprehensive Outdoor Recreation Plan identified the need for the protection of wetland and riparian communities in the state. The need to protect open space in growing communities and provide access to streams and rivers is also stated. The changes in the State Parks System will include expansion, protective management, and development that provides for these issues.

In 1986, House Bill 2510 was passed requiring the State of Arizona to establish the Verde River Protection Fund. The bill provided the authority and the appropriation for ASPB to acquire real property, improvements, and easements to enhance and protect the riparian habitat along the Verde River. The Verde River Greenway is the result of this legislation. It represents a continuing effort by State Parks to acquire and protect riparian lands along the Verde. Acquisitions have been and shall be consistent with the following criteria:

- providing protection and preservation of the Verde River;
- providing habitat enhancement and/or habitat protection; and
- can be managed most efficiently by the Arizona State Parks Board.

To date, over 295 acres have been purchased or donated. A substantial percentage of that acreage was donated or bought at less than full appraisal with full concurrence of the landowners who felt that the Greenway was a very worthwhile endeavor. Additional riverfront acreage has been acquired as part of Dead Horse Ranch State Park and should be considered as part of the Greenway. Conservation easements, cooperative agreements, and donations, as well as other non-traditional mechanisms in cooperation with willing participants will be pursued to protect and manage the lands within the Greenway. A basic stipulation was that only willing sellers would be approached. The Greenway will also provide public access to the river for certain recreational activities such as hiking, fishing, and bird watching.

The Greenway is managed as a special management area of Dead Horse Ranch State Park. The Greenway covers a six-mile segment of the Verde River beginning at the Tuzigoot Bridge and continuing downstream to the Bridgeport Bridge at 89A Highway. The stand of Fremont Cottonwood/Goodding Willow riparian gallery forest within this stretch of the Verde is one of only five remaining extensive stands in Arizona of this community type. This community type is considered globally threatened. To increase awareness of the unique nature of the Verde River Greenway, State Parks' first full color poster was produced and made available to the public.

ASPB is currently developing a Master Plan for the Verde River Greenway. The master plan represents an opportunity to demonstrate sound natural resource planning and management principles structures to protect the natural ecosystem while providing for public use and enjoyment. Connections from the towns along the river to the Greenway will be explored. Members of the VRCP Steering Committee will serve on the master plan steering committee. The public will be involved throughout the development of the master plan, which should continue into late 1992.

## **TAVASCI MARSH WILDIFE MANAGEMENT AREA**

Tavasci Marsh, located on the Verde River near Tuzigoot National Monument, is one of Arizona's few remaining wetland areas. Wetlands have been defined as "the lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water" (Cowardin, et al, 1979). Wetlands are further defined by a periodic presence or amount of water, hydric soils, and aquatic vegetation. These areas are

frequently drained to make them more "productive" from a development or human land use perspective. In Arizona, these areas are also extremely valuable for their water supply and wetlands are frequently pumped dry during drought years. These practices have resulted in a substantial loss of wetlands and wildlife habitat throughout the state. Even Tavasci Marsh, which receives its water from Shea Spring and Peck's Lake (an old oxbow lake of the Verde), has undergone alterations to make the land more productive for livestock grazing.

The Arizona Game & Fish Commission formally recognized the immense value of the perennial waters and associated riparian ecosystems of the Verde River through the passage of a Commission Position Statement on the Verde River. The Commission statement says "Under established policies, the Arizona Game & Fish Commission requires the Department to recognize these unique habitats as areas of critical environmental importance, to protect instream flows, and in accordance with the compensation policy to establish a compensation goal of no loss of existing in-kind habitat values in these Resource Category I habitats. Further, the Commission supports the establishment of the Verde River Greenway and all efforts to preserve riparian habitat in the Verde Valley. It is the position of the Commission to oppose any projects that would result in significant environmental impacts to the ecosystems associated with the Verde River."

On January 15, 1990, the AGFD and Phelps Dodge Corporation entered into an agreement to cooperate in the management of Show Low Lake, a riparian area near Tuzigoot National Monument known as Tavasci Marsh, and another riparian area on the Verde River upstream from Tavasci Marsh known as Packard Ranch, and to cooperate in conservation programs and quality real estate developments at Show Low Lake and Verde Valley Ranch.

The AGFD plans to restore the wetland character of the riparian lands at Tavasci Marsh and Packard Ranch. The AGFD will carry out habitat improvement and modification by vegetation control, drainage modifications, and transplanted species. Portions of the areas will be fenced to protect the lands from livestock grazing. The public will be allowed to use the sites for wildlife observation and hiking.

## **VERDE RIPARIAN PROJECT**

The Verde Riparian Project is a cooperative grants project headed by the Verde Natural Resource Conservation District and the Environmental Education Center. Other cooperators include Arizona State Parks Board, Arizona Department of Environmental Quality, Arizona Conservation Corps, Environmental Protection Agency, and Cocopai Resource Conservation & Development. Many other individuals and groups have also participated in this project. The following summary was submitted by Verde Riparian Project Farm Manager, Dena Greenwood.

The Verde Riparian Project is a 13-month federal grant/demonstration project funded from September 30, 1990 to September 30, 1991. It was created to restore riparian vegetation and improve water quality on the Verde River, generally between Clarkdale and Camp Verde.

It has been shown that a factor in reducing nonpoint source pollution is creating riparian vegetation along streambanks. This has the effect of removing and transforming impurities as

well as stabilizing streambanks, which in turn affects erosion, sediment loads, and turbidity levels.

The purpose of the demonstration project is fourfold:

- To establish a woody riparian plant materials nursery and demonstrate its horticulture feasibility.
- To revegetate an already disturbed area along the Verde River.
- To involve and educate the public about demonstration project activities and the beneficial effects on water quality.
- To monitor nursery planting success, revegetate site planting success, and nonpoint source pollution reduction.

Eight months into the grant the Verde Riparian Project has achieved the following:

- A ten-acre parcel at Dead Horse Ranch State Park was planted during the tree-dormant months (January-March) with 41,200 native riparian trees. Tree species planted include: Fremont Cottonwood (77%), Narrowleaf Cottonwood (.6%), Goodding Willow (15%), Coyote Willow (2%), and Bonpland Willow (.6%).
- An experimental furrow was planted to test the feasibility of non-willow riparian species propagated through pole planting. Those species planted were: Arizona Sycamore, Arizona Alder, Box Elder, and Velvet Ash. Also Fremont Cottonwoods were planted upside down, halved, quartered, and horizontal to the ground. Some of the successes have been surprising!

The trees will continue to grow through the summer reaching an estimated height of 6- 10 feet. During the tree-dormant months of 1992, the trees will be harvested as six-foot poles and sold to land agencies where they will be planted along Arizona's rivers.

- During March 1991, a 1,200-foot section of Forest Service land on the Verde River, locally known as Skidmore, was planted. Approximately 650 Fremont Cottonwood, Goodding, and Coyote Willow trees were planted along the river bank. "Beaver cages" were constructed and placed around most every tree.
- Several elementary school classes and a scout troop participated with the tree planting at the nursery. In-class programs (K-6) were developed and presented on riparian issues. A curriculum guide for teachers is currently being developed on "The Care of Rivers."
- Public education consists of ongoing radio, TV, and adult organization talks about the Project.
- Weekly and quarterly water monitoring continues at the Skidmore site. These tests include: pH levels, air and water temperatures, turbidity, electrical conductivity, and bacteria counts.

Planting success monitoring at the nursery is an ongoing process. March statistics showed 13% were budding. Our last monitoring count in May showed 52% had leafed out. Our next monitoring count will be in July, hopefully with a success increase.

The Arizona Conservation Corps Crew was instrumental in the procuring, processing, and planting at the Dead Horse Ranch State Park nursery and at Skidmore. Dead Horse Ranch State Park Manager, John Clow, and State Parks staff have been invaluable in the success of the Verde Riparian Project.

## **ADVANCED IDENTIFICATION (ADID) FOR FUNCTIONS AND VALUES OF THE VERDE RIVER, ARIZONA**

This project is a cooperative effort between the Environmental Protection Agency (EPA) and U.S. Fish & Wildlife Service (FWS). In general, it is an environmental study of a selected segment of the Verde River.

The intent of ADID studies is to provide the public and prospective Clean Water Act, Section 404 permit applicants with advanced information about the potential for permit issuance and to seek avoidance of those areas designated unsuitable because of their special environmental values. The ADID for the Verde River is intended to increase public awareness of the resource values associated with the river, increase public awareness of the Section 404 program, and serve as a source of information in developing a comprehensive management plan for the river.

The purposes of the Advanced Identification studies are to identify sites which are considered as:

- 1) possible disposal sites, including existing disposal sites and non-sensitive areas, or
- 2) areas generally unsuitable for disposal site specification.

It is the hope of the FWS and EPA that this ADID process will result in better protection of valuable wetland and riparian habitats in the Verde Valley.

Advanced Identification (ADID) is described in Section 230.80 of the Guidelines for Specification of Disposal Sites for Dredged or Fill Material. The purpose of the Guidelines is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material. Fundamental to the Guidelines is the precept that dredged or fill materials should not be discharged into the aquatic ecosystem unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact to the aquatic ecosystem. The guiding principle is that degradation or destruction of aquatic ecosystems may represent an irreversible loss of valuable resources. ADID studies must be consistent with the Guidelines.

If persons propose activities that involve discharge into waters of the U.S., they must apply for a permit from the Army Corps of Engineers. The Corps and the EPA, with input from the FWS, AGFD, ADEQ, and other agencies and entities, determine if the activity will have adverse impacts on the ecosystem and if a permit should be granted. The ADID process enables more

effective advance planning, increases public awareness of the importance and value of aquatic ecosystems, and provides the regulated community with an indication of the likelihood of permit issuance. Identification or specification of sites is generally based on an assessment of the functions performed by the ecosystem and the values it maintains.

The results of the ADID studies are informational and advisory, not regulatory; any person may still submit an application for a Section 404 permit for sites that have been identified as generally unsuitable for discharge. Conversely, individuals applying for permits in areas identified as generally suitable may, in some circumstances, not receive a permit.

Wetland functions are the chemical, physical, and biological characteristics of a wetland, and wetland values are those characteristics that are beneficial to society. Functions and values typically associated with wetlands are: ground water recharge, ground water discharge, flood flow alteration, sediment stabilization, sediment/toxicant retention, nutrient removal/transformation, production export, wildlife diversity/abundance, aquatic diversity/abundance, uniqueness/heritage, and recreation.

The Verde River ADID study is intended to be an advance planning tool that will allow the Corps and EPA a means of anticipating and preventing the loss of these types of habitat on the Verde River. The objectives are to:

- 1) Assess the performance and maintenance of functions and values of the Verde River ecosystem.
- 2) Qualitatively rank the performance and maintenance of functions and values so that decisions regarding the appropriateness of fill activities in the river ecosystem can be made.
- 3) Assess impacts to the Verde River ecosystem with particular reference to activities regulated under the Guidelines for the Specification of Disposal Sites for Dredged or Fill Material.

Functions and values of the Verde River will be assessed from Sullivan Lake to Horseshoe Dam, which constitutes 125 river miles. The lateral boundaries of the assessment area will be the upland edge of the riparian or wetland habitat as defined in revised FWS National Wetland Inventory maps and as determined from ground truthing of the maps in the field. Function and value assessment will extend one mile up major tributaries of the Verde River.

## **NATIONAL WILD AND SCENIC RIVER SYSTEM**

### **Verde Wild and Scenic River**

The Wild and Scenic Rivers Act of 1968 was a far-sighted expression by Congress of national policy to protect, "for the benefit and enjoyment of present and future generations," selected "rivers . . . and their immediate environments [that] possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values." (16 U.S.C. 1271)

Over the last 23 years, Congress has implemented this policy by designating over 100 river segments and 9,000 river miles as part of the national Wild and Scenic Rivers System (ARC, 1991). This activity has, however, largely bypassed the Southwest, and particularly Arizona.

The Verde River was recognized in the Nationwide Rivers Inventory (NRI), which was prepared by the National Park Service to identify rivers and river segments that are eligible for further study and potential inclusion in the National Wild & Scenic Rivers System. Only 14 rivers in Arizona made the NRI list. A federal study on the Verde River was completed in 1982 .

In 1984, Arizona's first Wild & Scenic River segment, a 39.5 mile stretch of river immediately below Beasley Flat, was designated by Congress. The Scenic River Area begins near Beasley Flat and continues approximately 14.5 miles downstream where the river enter the Mazatzal Wilderness Area. The remaining 25.9 miles of the Verde River to the mouth of Red Creek, is classified as "Wild." This places the entire Wild River Area within a Wilderness Area with completely compatible management direction. The area encompassed within the boundaries is approximately 12,640 acres of National Forest land and includes about 26 acres in private ownership. The private lands remain in private ownership and management. Existing use of the land is not affected by designation.

The Forest Service released a draft implementation plan for the management of the Verde Wild and Scenic River in 1990. The Verde Wild and Scenic River falls under the jurisdiction of three national forests, Coconino, Prescott, and Tonto.

Many other Arizona rivers and streams qualify for national Wild and Scenic River designation.

### **New Proposals**

The Arizona Rivers Coalition has recently proposed 40 river segments, totalling approximately 1,700 river miles throughout the state, for Wild and Scenic River designation by Congress. This citizen's proposal recommends the inclusion of two additional segments of the Verde in the National Wild & Scenic River System: 33 miles of the upper Verde as "recreational" from the National Forest boundary near Paulden to the northern edge of Clarkdale, and nine miles of the lower Verde as "wild" from Red Creek to Horse Creek Canyon at the Sheep Bridge. Several tributaries to the Verde are also being proposed: Beaver Creek, East Verde River, Oak Creek and West Fork of Oak Creek, and West Clear Creek.

The Arizona Rivers Coalition feels that Congressional designation of certain free-flowing rivers and streams in Arizona as components of the federal Wild and Scenic Rivers Act is the most effective way to preserve the natural values of those streams. To be designated, the Wild and Scenic Rivers Act requires the river to be free-flowing, and have at least one "outstandingly remarkable value." Those values are "scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values." A Wild and Scenic River corridor is an average of one-quarter mile wide on each side of the designated river.

Wild and Scenic River designation will protect recreation, wildlife, and cultural values along the designated river for the future. Designation would honor existing water rights, but would prevent

new dams and diversions from degrading the flows in the future. In addition, Wild and Scenic River designation would help protect water quality necessary to maintain the natural and recreational values in the river. In addition to preventing new water projects, Wild and Scenic River designation will restrict or prevent harmful new mining operations within the designated river corridor.

Major new developments along the river may be restricted, but existing homes and other structures on any private property will not be affected. As long as the river segment has over 50 percent federal land there can be no condemnation of private property by the government.

This citizen's initiative to protect some of Arizona's important rivers and streams is a grassroots effort that has included a wide range of interests and organizations. The coalition has worked with many of the user groups normally opposed to environmental protection efforts. Members from "both sides" have discussed concerns and fears and found areas of mutual support. The proposal has also been well received by several members of Arizona's Congressional delegation.

## **RECREATIONAL RIVER ACCESS**

### **State Lake Improvement Fund**

The State Lake Improvement Fund (SLIF) program was established in 1960 by the Arizona State Legislature to assist State and local units of government to improve boating related resources and facilities and to assure the safe use of lakes and rivers where boating is permitted. State Lake Improvement Fund revenues are derived from a portion of watercraft license taxes paid by boaters at the time boats are registered and from State taxes collected on motor fuel which is used to propel watercraft. SLIF grants are allocated by the ASPB as approved by the Arizona Outdoor Recreation Coordinating Commission (AORCC).

Eligible participants include ASPB, AGFD, Board of Supervisors of any county, and the governing body of a city or town. However, eligible participants may also sponsor a SLIF application through an intergovernmental agreement on behalf of a third party, such as the Forest Service, National Park Service, or an Indian Tribe. SLIF grants may be used for eligible improvements which are designed to increase or enhance boating opportunities.

The Prescott National Forest, in cooperation with the Town of Camp Verde and City of Cottonwood, is currently designing and developing nine river access sites along the Verde River with SLIF monies. In addition, several other projects along the Verde River have been funded including portions of the City of Cottonwood's Riverfront Park and Dead Horse Ranch State Park/Verde River Greenway.

### **Land and Water Conservation Fund**

The Land and Water Conservation Fund Act of 1965 (Public Law 88-578) provides financial assistance to states, their political subdivisions and Indian Tribal Governments for the acquisition and development of public outdoor recreation areas and facilities. Revenues for the program are derived from the sale of surplus federal properties, a special marine fuel tax, the sale of entrance

permits and user fees at federal outdoor recreation areas, and lease fees associated with the Outer Continental Shelf Act. The National Park Service is responsible for administering the program on a federal level. The ASPB is responsible for administering the LWCF program in Arizona and preparing and maintaining the required statewide comprehensive outdoor recreation plan (SCORP). Eligible applicants under this program include incorporated municipalities, counties, state agencies, and tribal governments. Eligible activities under this program include, but are not necessarily limited to : park development and land acquisition to serve future outdoor recreation purposes.

In 1986, Congress passed the Emergency Wetlands Resources Act. The purpose of this Act is to promote, in concert with other federal and state statutes and programs, the conservation of the wetlands of the nation in order to maintain the public benefits they provide. The Act provides for federal wetlands acquisition and gives equal consideration to acquisition involving the purchase of wetlands with LWCF monies. While acquisition of wetlands for public outdoor recreation purposes has always been eligible for LWCF assistance, they are now specifically highlighted under this new Act.

### **Arizona Heritage Fund**

The Arizona Heritage Fund was voted into law November 6, 1990. The Fund provides \$20 million annually from state lottery revenues to be divided equally between the ASPB and AGFD. There are many components of the Fund. Among other components, the Arizona Heritage Fund created several grant programs. Two grant programs are specifically related to recreational activities and facilities and could be used to enhance recreation access and opportunities along the Verde River. Arizona State Parks Board administers the **Local, Regional, and State Parks** grant program and the **Trails** grant program. For the first year, both of these grant programs will be generally based upon the provisions of the LWCF. Heritage funds for these two programs are allocated by AORCC. It is expected that Arizona State Parks will award an estimated \$6.5 million from the Fund to eligible grant applicants during the 1991-92 fiscal year to be used to acquire and develop local, regional, and state parks and trails throughout the state.

The remainder of the fund allocated to ASPB is to be used for historic preservation, acquisition and development of state parks, environmental education, and acquisition, operation, and maintenance of natural areas. Several of these components will also be developing a grant program. The funds allocated to AGFD are to be used for habitat acquisition, identification, and inventory, habitat evaluation and protection, urban wildlife, public access, and environmental education.

Both agencies are currently developing guidelines and programs to utilize these monies to benefit of the state and its people, and its natural, cultural, and recreational resources. For more information, please contact ASPB and AGFD.

### **WATER CONSERVATION PROPOSAL**

The following was written by Deborah Moore, staff scientist for the Environmental Defense Fund. This executive summary, [Opportunities for Riparian Ecosystem Preservation in the Verde](#)

River Basin, Arizona, was presented at the American Water Resources Association's Symposium on Headwaters Hydrology, Missoula Montana, June 26-30, 1989.

In Arizona, 95 percent of the riparian habitat has been lost due to impoundments, surface water diversions, groundwater pumping, and land conversions. The Verde River, located in the Gila River basin in central Arizona, provides much of the remaining five percent and its headwater are home to the threatened native fish species, the spikedace. Yet, the Verde River's precious instream flows are still in danger of being depleted by exchanges of surface water to fulfill Central Arizona Project allocations and increased groundwater pumping to satisfy both local growth and exports.

A case study of this region is presented in an effort to identify creative solutions to such problems through the use of conservation and incentive -based mechanisms as alternatives to more conventional water-supply planning approaches. The study examines the desert riparian ecosystem of the Verde River, current water supply and use, and future water supply scenarios that try to resolve conflicts among environmental, rural, Native American, and urban interests. Alternatives discussed include (1) investments in water conservation in exchange for rights to the saved water and (2) acquisition and transfer of senior water rights to instream uses, considering in each linkages between cumulative impacts and the economic and institutional structures that control water use.

A water-balance model was developed to describe quantitatively the current and future water use and supply situations in the upper Verde River basin. This approach balances demand for water with available supply. An estimate of the potential amount of water available from savings through conservation and reallocation can be made by examining water-use efficiencies and other variables in the system. The water balance uses information on water supply and demand from 1985 as the baseline case, and then compares this case to current projections for future water supply and demand in the year 2025. Alternative scenarios for the future are developed using different assumptions about municipal and agricultural demands, levels of conservation, surface water exports, and groundwater mining.

If growth occurs in the Verde Valley and Prescott areas as anticipated and all increases in water demand are met, the model predicts that by 2025 instream flows in the Verde River could be reduced by up to 21,000 acre-feet instream flows in the Verde River could be reduced by up to 21,000 acre-feet per year. However, there is a potential to reduce the increase in demands through conservation. The efficiency of water use in the municipal and industrial sector could be increased by almost 100 percent with current water- conserving technologies. In the agricultural sector, irrigation efficiency could potentially be increased by twenty to thirty percent. Finally, alternative water supplies could be found to satisfy CAP allocations. If these changes are incorporated, the model predicts that Verde River instream flows could not only be maintained, but could potentially be enhanced by about 21,000 acre-feet per year.

In order to maintain the integrity of headwater environments, or better yet to restore degraded riparian habitats, instream flows must be preserved. To accomplish such preservation goals, alternative supplies of water to meet future demands must be provided. The water balance approach used in this paper shows that implementation of agricultural and domestic conservation

within the Verde Valley could "free up" enough water to meet future local demands while simultaneously enhancing instream flows.

In addition to enhancing water supplies in upstream area, the alternative scenarios provide numerous benefits to downstream interest as well. By enhancing instream flows, the Wild and Scenic reaches of the Verde River will certainly be maintained and the recreational potential in the lower Verde River will be increased. Furthermore, enhanced instream flows could provide water to fulfill the reserved-rights claims of the Fort McDowell Mohave-Apache Tribe, who are currently involved in settlement negotiations. Yet another beneficiary could be the Salt River Project or Phoenix, whose firm yield supplies would be increased by enhanced flows.

More specific plans would need to be developed in order to implement the alternatives discussed. The potential for specific on-farm conservation measures—such as laser-levelling, drip irrigation, and crop switching—needs to be assessed in order to better estimate the water savings available from the agricultural sector. Municipal and industrial conservation measures—such as low-flow shower head and toilets, effluent re-use, and xeric landscaping—also need to be evaluated. More importantly, methods of financing such conservation measures must be identified. Financing options could include arrangements between downstream entities, such as Phoenix, that need an incentive to conserve. In addition, public and private entities interested in preserving Verde River habitats could invest in conservation measures and directly acquire the saved water for instream flow purposes. Finally, prospects for settlement of Native American water rights claims along the Verde River could be enhanced by these water conservation and instream flow opportunities.

## **ARIZONA WATER RESOURCES PLAN**

In January, 1990, the Governor of Arizona directed the Arizona Department of Water Resources to develop a comprehensive statewide water resources plan. The Arizona Water Resources Plan will provide current and projected water supply and demand data, and analyze institutional arrangements. It will identify issues and concerns statewide and by planning areas (Phase I). The plan will then identify and recommend alternative management strategies for each planning area, and the state as a whole (Phase II).

The objectives of the plan are to:

- 1) Establish an ongoing communications process that includes all major water users from all areas of the state.
- 2) Provide a comprehensive and concise database that is necessary for the planning process.
- 3) Provide an analysis of water resources institutions, and whether decisions on future water resources needs can be met by these institutions.
- 4) Provide a plan that recognizes water resources related planning activities on a statewide and local level.

5) Identification of where data is inadequate and where further research is required.

6) Establish a flexible and responsive plan that is maintained and updated in accordance with changes in assumptions and data.

The first planning area that is being studied is the Central Highlands Area which includes the Verde River Basin. The outline prepared for this study includes:

- Introduction and Background
- Statewide Physical, Demographic, Economic, and Environmental Considerations
- Statewide Water Supplies and Demands
- Statewide Legal, Regulatory, Institutional Considerations
- Planning Area Analysis
- Statewide Issues and Challenges
- Potential Alternative Strategies

## **RIVER CONSERVATION AND PROTECTION STRATEGIES**

Rivers connect us with our cultural heritage and link us to the natural environment. Close to home, these open spaces are settings for personal renewal, inspiration, relaxation, and recreation. River corridors attract walkers, joggers, bicyclists, horseback riders, anglers, birdwatchers, and boaters. Creeks provide educational sites for children and adults. Greenways invite out-of-town visitors to meander through restored city centers and historic districts. Rivers bestow identity on our towns and bring recognition to our communities.

The following section describes the important roles our rivers play in our daily lives and outlines a variety of ways for the enhancement, protection, and conservation of our nation's rivers. Hopefully, some of these ideas may spark awareness and action on the part of the reader. The following paragraphs on river values were excerpted from the River Network newsletter.

## **THE VALUES OF RIVERS**

- Perhaps most important, rivers are the habitat and life-corridors for **wildlife**, the matrix for biological diversity. River corridors that run from the mountains to the lowlands to the sea connect many ecosystems and populations. In contrast to an "island" preserve dedicated to one species, a river corridor contains a rich and varied pool of interacting life forms.

- Rivers carry **nutrients** that sustain our wetlands, estuaries, and ocean shallows, the beginning link in the food chain.
- Rivers are a free delivery system for **fresh waters** to support human settlements, agriculture, and industry, but only to the extent that we protect the quality of those waters.
- Rivers recharge the vast underground **aquifers** that our cities and farms depend upon.
- They are the home for **fisheries**, resident and anadromous, commercial and sport, that support many local economies.
- Rivers provide the free capital of **top soil** in their flood-plains, replenishing the fertility of our farmlands.
- They absorb the energy of **floods** in their meanders and marshes and floodplains when allowed to flow freely.
- They provide free **recreation** that brings millions closer to nature, through floating, fishing, swimming, or hiking.
- Rivers provide easy **access to wilderness** for those who cannot carry a 40- pound pack.
- They provide our cities with **greenways** that are often the best chance for urban open space.
- Rivers have carved out the breathtaking **beauty** of canyons, valleys, waterfalls, cataracts - the glory of our continent.

Beyond these intrinsic values, there are **symbolic values** that make rivers special for millions of people:

- Rivers **define the landscape** for most of our population: The three rivers of Pittsburgh, the Hudson of New York, and innumerable settled valleys, such as the Verde Valley.
- Rivers are the "canary in the coal mine," an **index of watershed quality** and early warning of environmental problems.
- As such, rivers are a **rallying point for environmental concerns** throughout the watershed: forest management, mining practices, roads and highways, water supply and conservation toxic wastes, industrial pollution and so on. A group can deal with all these issues by protecting the quality of a river.
- Rivers are also a rallying point for **local control** in the face of pressures by outside economic interests for water storage, navigation, hydropower and so on.
- Rivers were the **historic pathways** for exploration and settlement, and they remain embodied in our song and literature.

- Most important but hardest to talk about is the **spiritual** quality of rivers. As Ken Olson writes: *"Rivers are refuges for the soul, places of spiritual refreshment, where the natural flow and play of running water plainly mirrors the movement of life itself."*
- Rivers embody the **free work** that nature does for people in all the ways above, in contrast to the expensive and fallible systems that engineers construct.

## **STRATEGIES TO ENHANCE RECREATION USE AND CONSERVATION**

### **Background**

The majority of the Verde River is managed by the Forest Service for multiple uses, such as recreation, grazing, mining, water storage, and timber. There are several designated Wilderness Areas along the Verde and a 39.5 mile segment designated as a National Wild and Scenic River. Many of the above uses can still occur within these special areas. These public lands are important resources for the State of Arizona. The Forest Service has developed land management plans, with considerable public input, for these national forest lands that include nearly two thirds of the Verde River. The focus of this project, however, is the predominantly privately owned stretch of the Verde that flows through the Verde Valley.

The Verde River Corridor, which represents about a third of the entire river, is primarily in private ownership. The large number of small, private parcels along the river greatly reduce the amount of public access to the river along this section of the Verde. There are several small public parcels along the corridor that do provide some public access points to the river.

The river corridor is facing increasing recreational pressure with more people wanting access to fish, walk, ride, picnic, and bird watch. Even private landowners along the river have expressed interest in being able to access more of the river through a trail system along the river banks.

The lands that are public along the corridor are managed primarily by the Forest Service, National Park Service, Arizona State Parks, Arizona Game & Fish Department, and Arizona State Land Department. The Camp Verde Yavapai-Apache Indian Tribe owns three parcels of land along the river corridor. Yavapai County, Clarkdale, Cottonwood, and Camp Verde also own land along the corridor. Several of the commercial and private landowners have opened parts of their lands to public use, such as Phelps Dodge, Thousand Trails, and Superior Companies (Lake Superior). Even so, existing access points are crowded and will likely become more so in the future.

Arizona is expected to grow over 26 percent within the coming decade. This growth percentage exceeds that of the nation four times. Approximately 96,700 newcomers will arrive in Arizona every year and Arizona will probably become the nation's fastest growing state. These people are coming to enjoy our year-round outdoor recreation opportunities, among other reasons.

Agencies are currently working cooperatively to provide needed public access to the river and to adjacent corridor lands for access, trails, and other recreational activities. Development of public access points will alleviate the problems and conflicts when recreationists use unmanaged private

lands. Management needs and careful studies of carrying capacities must be conducted to protect the resources these people are coming to enjoy.

There are many methods to protect rivers, greenways, and riparian lands, and access and use of these areas. Not all of the strategies listed below may be desirable or feasible or may only apply in a few instances, but are offered for consideration.

## **Strategies for Enhancing Recreation Use and Conservation of Arizona Streams and Wetlands**

The 1989 Statewide Comprehensive Outdoor Recreation Plan (SCORP) described strategies that could be used to enhance public recreation opportunities and conserving natural values associated with Arizona's streams, riparian areas, and wetlands. These strategies vary in their scope and effectiveness, and are intended to provide an idea of the range of opportunities available for managing streams, riparian areas, and wetlands. Many of the strategies are already being implemented on a limited scale by various agencies and groups throughout the state. For a more detailed description of the various strategies, refer to the Arizona Rivers, Streams, and Wetlands Study (SCORP 1989) published by ASPB.

### **Stream and Wetland-Based Recreation**

*Recreation Access Law.* The state could enact a streams and wetlands public access law consistent with the rights of landowners to provide for public access to streams, riparian areas, and wetlands with significant recreation potential.

*Recreation Access and Facility Needs Assessment.* Arizona State Parks could assess recreational access and facility needs associated with streams, riparian areas, and wetlands, and develop a strategy for meeting these needs.

*Incorporating Public Access into Local, State, and Federal Programs.* The Governor could direct all appropriate state agencies and encourage federal and local agencies to specifically consider recreational access needs in their planning and management activities.

*Streamflow Maintenance for Recreational and Ecological Purposes.* The state could actively pursue opportunities for maintaining and, in some instances, enhancing flow on river stretches possessing significant recreation and conservation values.

*Streamflow Information for Recreationists.* The state, in cooperation with federal and quasi-public water management agencies, could provide boaters, anglers, and other recreationists with timely information regarding flow levels of river segments with significant recreation opportunities.

*Recreation Guides and Nature Awareness Brochures.* The Arizona Game & Fish Department, Arizona State Parks, and local organizations could prepare public information brochures focusing on stream and riparian recreation and values.

*Recreation Research.* Arizona State Parks and other groups could identify priorities for future river recreation and conservation research and facilitate individual research projects.

## **Awareness of and Knowledge about Stream and**

### **Riparian Resources**

*River Celebrations and Events.* Arizona State Parks and local organizations could help to facilitate public river awareness programs on specific rivers around the state.

*Statewide Streams and Riparian Symposium.* The state could hold a statewide symposium that would address stream and riparian issues and be attended by a broad spectrum of interested persons.

*River Crossing Sign Program.* The Arizona Department of Transportation and, in some instances, local traffic and engineering departments could promote public awareness of rivers and river systems through placement of signs at river crossings and other appropriate locations.

*Public Programs for Streams and Riparian Education.* Appropriate state agencies could cooperate in the preparation of informational and educational materials for the general public that highlights the values of streams and riparian resources. Also, study materials for elementary and secondary levels that introduce both ecological concepts and socio-economic considerations should be developed. In addition, individual schools should initiate student stream monitoring programs.

*Database Maintenance and Enhancement.* The state could maintain and enhance the computerized streams and wetlands information system initiated through the Arizona Land and Resource Information System and the Arizona Rivers Assessment.

*Streams and Wetlands Library.* The state could establish and maintain a library of streams and wetlands information.

## **Local Government and Community Involvement in Stream and Wetland Conservation**

*State Assistance to Local Governments and Communities.* The state could prepare educational programs and provide technical assistance to communities and counties that wish to better manage their rivers and riparian areas.

*Community Riparian Parks and Greenways.* Arizona cities and towns located on perennial or ephemeral streams could take actions to maximize recreation and open space opportunities offered by these water courses.

*Inter-local Agreements to Manage Stream Courses.* An effort could be undertaken by state and local governments to identify institutional barriers to inter-local cooperation and to encourage appropriate cooperative stream management efforts.

*Support and Facilitation of River Corridor Planning.* The state could identify river areas where corridor planning may be beneficial and take the necessary steps to initiate such planning.

*Voluntary Riparian Lands Program.* The state could support and facilitate efforts by private non-profit organizations to establish programs to preserve riparian lands and provide public access to waterways by means of conservation easements and other voluntary techniques.

*Tax Incentives for Private Conservation Initiatives.* The state could enact a law to provide property tax incentives to landowners who take actions to protect riparian areas.

*Landowner Stream Management Techniques.* The state could develop and distribute a handbook on techniques that landowners might use to conserve and enhance riparian areas on their lands. The state could also provide or facilitate technical assistance to landowners with stream corridor problems.

*Adopt-A-Stream Programs.* The Arizona Game & Fish Department, Arizona State Parks, and appropriate federal land and resource management agencies could assist private citizens and organizations to "adopt a stream" for purposes of rehabilitating and conserving the natural ecology of that stream.

### **Enhance and Conserve Critical Streams, Riparian Areas, and Wetlands**

*Identification of Critical Streams, Riparian Areas, and Wetlands.* The state could, in cooperation with other interested parties, undertake a systematic assessment of rivers, streams, and wetlands in order to identify waters possessing critical recreation and environmental values.

*Implementing a Critical Streams, Riparian Areas, and Wetlands System.* The state could adopt management policies, laws, and practices to ensure the conservation, enhancement, and wise use of the state's critical stream, riparian area, and wetland resources.

*Acquisitions and Transfers.* Appropriate state and federal agencies, local governments, and private organizations could acquire lands adjacent to critical streams, riparian areas, and wetlands for the purpose of protecting natural resource values and/or providing recreational opportunities.

A subsequent section describes the various types of acquisition strategies possible to protect access and sensitive areas along a river corridor.

### **Other Options for River Corridor Protection**

The following river corridor protection strategies were taken from:

- River Network Bulletin, Vol. 1, No. 2. River Network, Portland, Oregon.

A lot of communities are working to protect rivers that flow through private lands. Very often, the problem to be faced is not a dam, but land use. The health of our rivers are threatened by land

development, grazing, logging, mining, erosion, pollution discharges, uncontrolled recreation, and other activities. The designation as Wild and Scenic is not the perfect answer because it does not give the federal managing agency any authority to regulate private land use.

Private land use may be the toughest problem to be tackled, simply because private property rights are inherently strong in the United States. The objective is usually to preserve the status quo, to apply the brakes to unplanned development, not to undo past development. Effective river protection must occur within the river valley. Local people are the voice of America's rivers and without local action, rivers cannot be protected effectively, nor permanently. Local support for river conservation must be developed. This support must include the establishment of a broad-based coalition that includes boaters, landowners, anglers, environmentalists, and others.

### **Some River Conservation Tools Available**

- Federal Wild and Scenic River Designation (the Verde River Corridor is not considered eligible, but the lower stretch has been designated, and segments of the upper and lower Verde have been proposed)
- State River Designation (not currently in place in Arizona)
- Local Zoning
- State Regulation
- Special Area Designation (federal, state, or county)
- Public Land Acquisition
- Planning (beginning with the VRCP!)
- Private Land Trust
- Local Organization or Coalition—"Friends of the River"

### **Land Trusts**

Land trusts are groups that work with different people and agencies to protect land through various mechanisms. A few of these mechanisms include purchasing fee title to property, holding and managing the land or conveying it to a public agency, or acquiring conservation easements. Land trusts are being used more and will be of critical importance in the years to come.

Many outstanding rivers flow across private lands. Fearing a government "taking," owners often oppose designations. Private land trusts can be one solution. So can creative use of the Wild & Scenic Rivers Act itself, which does not mandate acquisition. At New Hampshire's Wildcat River, the local towns, landowners, agencies, and Congressional delegation unanimously

supported federal designation—because the specter of public acquisition was removed entirely and thoughtful planning preceded the town's decision to seek designation.

The Wildcat River study has been one of the most successful cooperative river conservation and land protection projects. What began in 1984 as a narrowly focused opposition to a proposed hydroelectric facility on scenic Jackson Falls evolved into a comprehensive river corridor protection program based on local government and private actions and agreements. Future management of the river corridor will be guided by the river conservation plan prepared by the Town of Jackson during the study and by the congressionally authorized Wildcat River Commission to be made up of federal, state, and local officials, and private riparian landowners.

## **ACQUISITION STRATEGIES**

It may be necessary to purchase select land parcels or easements from public and private landowners to permit public access to the river corridor and protect sensitive areas while leaving room for growth. The following strategies, which have been researched from a "trails" angle, have been excerpted from:

- Arizona Trails: Public Access and Corridor Preservation (Draft-1991). Arizona Hiking & Equestrian Trails Committee, Arizona State Parks Board. Phoenix, Arizona.

**Purchase.** Acquisition of land in fee simple is expensive, but provides a high degree of protection. Recommended for areas which will be developed into public rest or "staging areas," which include parking areas, campgrounds, and sanitary and water facilities. ARS 11-932 authorizes a county or municipality to purchase or lease real property for public park purposes, including trails. A landowner may be willing to trade or donate a strip of land in fee simple to obtain the benefits of a tax deduction.

**Trade.** ARS 11-251 (44) authorizes the acquisition of land for public purposes, by exchange without public auction. Land exchanges usually occur between different government entities, although municipalities may also exchange with a private property owner.

**Donation.** An outright donation is a highly desirable method of conveying property. Citizens have given money for the purchase of land, donated their own property, or granted easements across their land for the development of a trail. The owner, by execution of a standard deed of conveyance, gives the land to the public agency or nonprofit organization with no strings attached. This is known as a conveyance in fee simple title.

**Deed Restriction.** As the name implies, "deed restrictions" are clauses placed in deeds restricting the future use of land. When property containing a trail is sold, donated, or willed, deed restrictions can prohibit uses or activities by the new owners that would destroy, or damage, or modify the trail. When land is donated to a government agency or charitable organization, the donor may include a reverter clause that provides that if the land is not managed and used as specified in the deed, the property must be returned to the original owner or heirs. Alternately, the reverter clause may require that the land revert to a third party such as a conservation group capable of maintaining the land according to the terms of the restrictions.

**Covenant.** Covenants can be used in some situations where deed restrictions, including reverter clauses, are not legally enforceable. A covenant is a contract between a landowner and another party stating that the landowner will use or refrain from using their land in an agreed-upon manner. Covenants, like deed restrictions, can require, for example, that landowners refrain from activities that will damage a trail. In lieu of purchasing lands and attaching restrictive covenants to deeds, citizen groups may pay trail owners to attach covenants to their deeds. The covenants can bind the present owners and all future owners to maintain the trail in their natural state with the citizen group holding rights of enforcement. Once placed in deeds, covenants become deed restrictions.

**Easement.** An easement is the ownership of an interest in the land without transferring the title to the land. Because it is recorded in the county deed records and is binding on future owners, the easement is the strongest of the non-possessory methods of acquiring a trail corridor. Examples of rights granted in easements include: right-of-way across the land, sewer and utility placement, or conservation restrictions. Many easements also include access for maintenance or repair. "Negative" easements restrain the owner from specific uses, while "positive" easements enable another party to use the land for special purposes. Easement agreements should set forth the rights of both parties, the amount of land over which the agreement is applicable, a time limit, the cost, liability coverage, and the preservation of any other rights about or within the property.

**Conservation Easement.** The conservation easement statute in Arizona (ARS 33-271 through 33-276) adopted in 1985, provides tax incentives for individuals who provide easements on their lands for conservation, scenic, recreation, or preservation purposes. Arizona recognizes the legality of "conservation" easements and binds all subsequent owners of the property to the terms of the easements for their duration. Of course, if an easement is granted only for a term of years, owners of the property subsequent to expiration of the easement would not be subject to its terms. Conservation easements can be used whenever the public interest will be served by keeping property in its existing use and there is little or no need for public access. For example, a scenic easement could be purchased to protect and preserve habitat or scenic areas on either side of a river or trail corridor. Such easements are usually much cheaper than the affirmative easements which permit use to made of the land.

**Lease.** Like an easement, a lease is a real property interest which is recorded. A lease conveys the right of possession without transferring ownership. A lease allows the use of land for a fixed period of time in exchange for payment of a negotiated sum. The incentive to enter into such an agreement is that the lease does not extend for any period of time greater than the term of ownership. The agreement therefore does not encumber the property to the extent that an easement would. The agreement could be made between private landowners and any agency having the statutory authority to do so. ARS 11-932 authorizes the lease of land for public parks defined as "a park, parkway, trail, recreational area, or play ground established, maintained, or administered by a county, city, or town."

**License.** A license is not a property interest, but evidences the landowner's permission to use the property. It is typically revocable at will.

Public ownership of river corridors and access points that are designated for public use is essential in order to develop an effective trail network. Acquisition of needed sites should involve the combined uses of fee simple purchases, easements purchases, lease agreements, and the acceptance of land donations. A balanced acquisition program should help provide a balanced trail system. Easement, lease, and license agreements have value for complementing an acquisition program, but are of limited values in developing a comprehensive public trail network.

### **Subdivision and Rezoning Process**

Land use planning can be a powerful trail protection mechanism. Dedication of property for trail, open space, or conservation easement purposes can be required as part of local land development ordinances. Approval of residential plats or commercial development, can be contingent on such dedications. Zoning or setback requirements are just some of the regulations which can direct and limit development along the river corridor.

Given the rapid pace of development, it is critical that trails and open space be included in the early stages of development plans when trail linkages can most easily be added. A trail corridor can be dedicated as open space during the zoning or rezoning process when the landowner or developer is most willing to negotiate. Make sure that your local parks and planning departments work well together.

Check your municipal ordinance to see if it incorporates open space and trail needs in the land use rezoning procedures section. Communities can require developers to include trail corridors in their development plans by establishing a local trail ordinance through ARS 11-806.01 (E). Pima County has developed its own trails plan and needed ordinances (including a floodplain and erosion hazard management ordinance that authorizes floodways to be used for private and public recreational uses) and is a good contact for other interested counties.

Other types of zoning mechanisms include equestrian zoning, clustering, planned unit development, and density transfers.

### **Funding**

Only with proper funding can adequate access and corridors be acquired, developed, maintained, and managed. You must address the issue of financial support in order to have river and trail access that meets your needs. Keep in mind that funding sources will vary from year to year as new legislation is passed and existing funding sources are exhausted. The following are examples of potential funding sources:

#### *Federal Funding*

Land and Water Conservation Fund (LWCF). In the past, one of the most significant funding sources for state and local park acquisitions and recreation development has been the federal Land and Water Conservation Fund (LWCF). It is a 50/50 matching grant-in-aid program. It is administered by the National Park Service and Arizona Outdoor Recreation Coordinating

Commission. Since 1965, Arizona has received more than 44 million dollars in matching grant assistance to over 700 projects at the state, county, and local level, enabling development of thousands of public outdoor recreation areas. The last ten years have seen a steady decline in funding; in 1990, Arizona received only \$260,000 in LWCF monies.

USDA Forest Service's Challenge Cost Share Program. This program is a successful example of stretching limited federal dollars by attracting outside funding and support from potential partners. To participate, an organization or individual must make a contribution equal in value to that of the Forest Service. The Forest Service's and the partner's contributions can include funding, labor, equipment, or technical skills.

### *State Funding*

Arizona Heritage Fund. In November, 1990, Arizonans overwhelmingly supported passage of the Arizona Heritage Trust Fund Proposition. This program commits \$20 million annually to the Arizona State Parks Board and the Arizona Game & Fish Department for outdoor recreation, trails, park acquisition and development, historic preservation, environmental education, natural area and habitat acquisition and management, access, and urban wildlife enhancement. Many of the components include a matching grant program to make a portion of the monies available to local governments and groups.

State Lake Improvement Fund (SLIF). While primarily used to develop and improve boating facilities at Arizona's lakes, a portion of the monies are targeted for improvements along inland rivers and streams. Matching grants are available for river access site development. The Arizona Outdoor Recreation Coordinating Commission administers this fund.

State Trails Grant Fund. In 1989, the Arizona Legislature passed ARS 41-511.22 which provides the basic authority for the establishment of a state trails system. The statute established a fund to consist of appropriations, gifts, grants, donations, and sale of materials to be used for the improvement of trails. At present, no money has been appropriated for this fund which would be managed by ASPB.

Arizona Conservation Corps (ACC). The ACC provides employment, educational, and personal development opportunities for young adults ages 18-25 engaged in conservation and community service projects for a variety of public and non-profit organizations. Started in 1990, the ACC is new to Arizona. Future projects may involve trail building, revegetation of river corridors, and assisting in construction of park and recreation facilities. With the new ACC, Arizona has the means to develop our youth, and, at the same time, protect and enhance our environment. The program is administered within ASPB.

Other possibilities to consider are local funding, general appropriation, taxes, bonding bills, fees, and gifts donations.

## **ECONOMIC IMPACTS OF PROTECTING RIVERS**

The following information has been excerpted from:

- Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors: A Resource Book. 1990. Rivers, Trails, and Conservation Assistance Program, National Park Service.

## **Real Property Values**

Greenway corridors provide a variety of amenities, such as attractive views, open space preservation, and convenient recreation opportunities. People value these amenities. This can be reflected in increased property values and increased marketability for property located near open space. Developers also recognize these values and incorporate open space into planning, design, and marketing new and redeveloped properties.

A study of property values near greenbelts in Boulder, Colorado, noted that housing prices declined an average of \$4.20 for each foot of distance from a greenbelt up to 3,200 feet. In one neighborhood, this figure was \$10.20 for each foot of distance. The same study determined that, other variables being equal, the average value of property adjacent to the greenbelt would be 32 percent higher than those 3,200 feet away (Correl, Lillydahl, and Singell, 1978). An increase in property values generally results in increased property tax revenues for local governments. Many arguments made for park and open space investment claim these acquisitions pay for themselves in a short period of time, due in part to increased property tax revenues from higher values of nearby properties.

## **Expenditures by Residents—Leisure, a Spending Priority**

Leisure is often considered to be discretionary, or free time, away from work and other responsibilities, where participants choose and control their activities. Leisure activities can vary from mountain climbing, walking for health, or watching a football game on television. Outdoor recreation is a major component of leisure. Leisure and recreation expenditures can account for a substantial part of people's discretionary spending. In 1982, people spent more on leisure and recreation than the U.S. Government spent on national defense or housing construction. How much outdoor recreation and leisure is attributable to the activities pursued along greenways, rivers, and trails? Greenways are likely to provide increased opportunities for the more popular outdoor recreation activities.

A greenway project can attract residents not only to the greenway, but also to nearby businesses, and encourage residents to purchase recreation-related equipment and services. These greenway-related expenditures help support the local economy through generation of employment and income.

Activities include fish and wildlife-related recreation, river boating, trail-related recreation, and traditional park pursuits. According to the FWS, 77 percent of the U.S. population take part in wildlife-related recreation each year. Annual expenditures by these participants in 1985 were \$55.7 billion. Sport fishing is one of the most popular outdoor recreation activities in the United States. A steady increase in fishing has been occurring nationwide. Viewing wildlife was another rapidly growing activity in the 1980s and is the most common form of wildlife recreation. Birdwatchers alone contributed \$27 million in wages and business income to California's economy in 1987 (Loomis and Unkel, 1989). Increase in wildlife viewing should continue to

increase over the next decade in areas where urbanization, education, and income levels continue to rise.

Recreational river boating is one of the nation's most popular outdoor activities and includes rafting, rowing, kayaking, canoeing, motorboating, and more recently jetskiing. In the last two decades a dramatic growth in whitewater boating has been evidenced (Shelby and Lime, 1986). Use of wild and scenic rivers in national forests more than doubled in the six years between 1976 and 1984 (Feuchter, 1984).

In Colorado, river running brings in more than \$50 million annually to the state's economy and fishing contributes over \$1 billion annually (Finken, 1988). Americans purchased over 90,000 canoes in 1988, a fourteen percent increase over purchases in 1985 (Ingrassia, 1989). Canoeing by residents and visitors contributes \$20.1 million per year to the Arkansas economy (Wilson, 1986). It has been forecasted that there will be participation by a wider segment of society in river boat activities and that there will be increased representation by family groups. There is also likely to be longer participation throughout people's lifetimes, increased numbers of participants from older age groups, and increased sport expertise and equipment ownership. These trends are expected to increase the demand for quality river trips and for challenging whitewater experiences, technical innovation in creating new river equipment, better skill and safety instruction, and more sponsored events (Lime, 1984).

Much of the population enjoys trail-related recreation such as: walking for pleasure and health, jogging, hiking, volksmarching, bicycling, horseback riding, and cross-country skiing. Research has shown walking and hiking have played a significant role in nationwide growth in outdoor recreation. There are over 26 million day hikers in the U.S., and over half the American public says they walk for pleasure (Spitzer, 1988). The rate of participation in bicycling tripled since the early 1960s. Since the 1960s, participation in horseback riding has been fairly constant. Horseback riding is a very high expenditure activity.

### **Commercial Uses**

Greenways can provide business opportunities, locations, and resources for commercial activities. These activities may include on-site concessions, permittees, partnerships between the managing agency and other groups, special events, and commercial filming activities. Compatible business ventures can provide a wide range of visitor services and facility improvements.

Along the lower Colorado River, thirteen concessionaires under permit to the BLM generate more than \$7.5 million annually on gross receipts, with a major spinoff effect in the local economy (BLM, 1987). Revenues may also be generated through agricultural leases within a greenway. The California Fish & Game Department generated revenues for recreation and habitat improvement for the endangered Aleutian Canada Goose by leasing lands for cattle grazing.

Special events, such as Verde River Days, not only can generate revenues to sponsors and the community, but promote the greenway itself to residents and visitors.

## **Agency Expenditures**

The managing agency supports the local economy by providing jobs and purchasing supplies and services to develop, operate, and maintain the greenway and related improvements. Employment generated by a greenway project can be targeted by the managing agency to benefit particular needs of the community, such as youth employment.

## **Tourism**

Greenways, rivers, and trails which attract visitors from outside the local area can stimulate the local economy. Travel and tourism is the leading employer in several states and has been predicted to be the leading industry in the U.S. and the world by the year 2000. Expenditures for travel and tourism impact transportation, lodging, eating establishments, retail, and service businesses. These expenditures support jobs, personal income, and government tax revenues. Travel industry employment for 1989 increased by nearly 3 million jobs from 1988. A greenway, which provides local opportunities and enhances tourist draw, can be an important asset to your community. Recent trend analyses show that weekend trips to nearby areas are on the increase, while the traditional two-week summer vacation is on the decline.

Outdoor recreation, and natural, historical, and cultural resources are increasingly important attractions for travellers. Recreational and environmental tourism, as well as historic and cultural, can be very relevant to greenway projects. Greenways often link together cultural and natural resources. Environmental-minded travel or ecotourism, in which the attraction is nature and conservation has also emerged during the 1980s and is expected to increase during the 1990s.

A poll commissioned by the President's Commission of American Outdoors found that natural beauty was the single most important factor for tourists in selecting a site for outdoor recreation. In a recent report, the governors of five New England states officially recognized open space as a key element in the "quality of life" in their region. They credited "quality of life" as providing the foundation of a multi-billion dollar tourism industry and bringing rapid economic growth to the region.

In 1988, 75 percent of all travel was for pleasure. Travellers are increasingly attracted to educational-oriented experiences provided by natural, and cultural sites. One of the fastest growing areas of tourism includes cultural community festivals, events, and competitions. This will be a boon to community-based tourism. Greenways and trails can provide a link between historic and cultural sites.

Greenways, rivers, and trails can have varied levels of tourist draw. They can be travel destinations in themselves, encourage area visitors to extend their stay in the area or enhance business and pleasure visits. If visitors extend their trip an extra night to visit a greenway, the additional night's lodging and meals can be attributed to the greenway. The San Antonio Riverwalk is considered the anchor of the tourism industry in San Antonio, Texas. Tourism is the second largest economic sector in the city, accounting for \$1.2 billion annually. The Gauley River is a high quality whitewater rafting and kayaking resource in West Virginia. It is growing

in popularity and increasing its economic impact in the region. The rafters, during a very short season, generate \$20 million in economic activity in the region.

Tour operators, outfitters, and guides are important to local economies due to the expenditures their businesses generate, the fees they pay to operate, and their advertising and promotion of local resources. An Oregon study of guides and packers indicates that in 1986, the industry in Oregon (for river, land, and marine activities) had a direct economic impact of \$42.5 million. This resulted in a total economic impact of \$300 million (BLM, 1987). For every \$1 paid to canoeing outfitters, customers spent \$5 for gas, groceries, restaurants, campgrounds, and other lodging. Seventy canoe liveries in Florida generate \$38.5 million per year (Stout, 1986). Commercial river outfitters are estimated to account for \$70 million annually in Colorado.

The actual amount spent by greenway visitors at businesses within your local economy represents only a portion of the total economic activity resulting from this spending. For instance, greenway visitors purchase goods and services from local businesses. In turn, these businesses and their employees purchase goods and services from other businesses, thereby creating a chain reaction. Therefore, an increase in visitor expenditures is likely to impact related sectors in the economy.

### **Economic Effects of Greenway Expenditures**

#### **DIRECT EFFECTS**

Purchases by greenway users

+

#### **INDIRECT EFFECTS**

Purchases of inputs by the producers

of greenway-related products and services

+

#### **INDUCED EFFECTS**

Purchases by households who receive wages from producers

of greenway-related products and services

=

**TOTAL ECONOMIC EFFECTS OF**

**GREENWAY EXPENDITURES**

## **Corporate Relocation**

Many communities want to attract new, expanding, or relocating businesses to their area in order to increase their employment and tax bases. The importance of quality of life in an area is increasingly cited as a major factor in corporate location decisions. One aspect of quality of life is a location with convenient access to natural settings, recreational and cultural opportunities, and open space.

A survey of 71 economists rated factors for Arizona's attractiveness as a place to live, work, vacation, retire, and locate future plants and corporate headquarters. The strongest factors contributing to Arizona's positive image were climate, job opportunities, and open space including abundant outdoor recreation opportunities. Seventy firms relocated or expanded their businesses in Arizona, creating 27,800 jobs and \$970 million in indirect salaries and wages. Chief executive officers of these firms said they chose Arizona for its "outdoor lifestyle and recreation opportunities" (Valley National Bank, 1980).

## **Public Cost Reduction**

Conservation of greenways, rivers, trails may result in reduced costs to local governments and other public agencies. By conserving a greenway corridor rather than permitting intensive development, local agencies may reduce costs for public services such as sewers, roads, and school facilities. Establishing a greenway in an area prone to hazards, such as flooding, may decrease the costs for potential damages. Greenways and associated vegetation can also help control water, air, and noise pollution by natural means, resulting in potential decreased pollution control costs. Greenways and trails may promote physical fitness, leading to decreased public health care costs.

The choices between retaining undeveloped lands as open space or allowing residential development must be considered. How this choice effects public expenditures and the tax base is often the subject of debate. Expansion of the tax base is not always beneficial in the long term. Expansion almost always results in increased public service requirements. In many situations, the cost of providing these services to residential development is much higher than the revenues to local governments resulting from the expanded tax base. A list of development costs could include:

### Transportation and Utility Costs

- roads - water
- public and private utilities - natural gas
- sanitary sewage - storm sewage
- electricity

### Facility and Service Costs

- open space, recreation, and libraries - mail delivery
- solid waste collection and disposal - health care
- police and fire protection - schools

In the City of Boulder, Colorado, the 1988 public cost for maintaining non-open space, such as developed acres, was estimated to be over \$2,500 per acre, and could be as high as \$3,200 per acre when utilities, flood control, transportation, and subsidiary governmental entities' costs are included. The public cost for maintaining open space in the city was only \$75 per acre, or less than three percent of the cost of non-open space (Crain, 1988). The same seems to hold true for many industrial and agricultural uses of land. In Culpeper County, Virginia, a study showed that for every dollar of tax revenue collected from residential land uses in 1987, \$1.25 was spent on county services. For every dollar collected from industrial/commercial or farm/forest/open space lands, only \$0.19 was spent on county services (Vance and Larson, 1988).

Researchers have found that natural properties of plants and trees mitigate water, air, and noise pollution. Greenways which help to conserve such plants and trees provide a valuable contribution towards pollution control. Establishment of a greenway along a river or stream helps maintain water quality because riparian vegetation helps filter out pollutants. Riparian vegetation serves as an effective buffer between a stream and adjacent agricultural chemicals from polluting the stream. A study of an agricultural watershed and riparian forest in Maryland (Peterjohn and Correll, 1984 as cited in Risser, 1987) found that if the riparian forest were removed, there would have been twice as much nitrogen lost to the stream.

### **Benefit Estimation**

Several recent surveys show that Arizonans are willing to pay to protect the state's natural and cultural heritage. Greenways, rivers, and trails, provide many benefits which do not have established market values and are difficult to price and express in monetary terms. Total recreation benefits are defined as the sum of the maximum amount individuals are willing to pay to engage in a recreation activity, rather than forego it. (Walsh, 1986). This concept is referred to as willingness to pay. Usually, the lower the cost of an activity, the more likely it is that people will engage in that activity. Many studies have been conducted which attempt to measure the willingness to pay for recreation activities. A composite table of various study results is provided below. These values are listed in 1987 dollars and are given to illustrate the range of willingness to pay, depending upon the activity. Willingness to pay may also vary upon the quality of the resource, or where the activity takes place.

#### Average Willingness to Pay by Activity

(in 1987 dollars) (Walsh, et al, 1988)

Activity Average Value, Numbers of

per activity day studies evaluated

Camping \$19.05 14

Picnicking \$18.26 6

Swimming \$24.02 9

Hiking \$28.49 6

Non-motorized boating \$48.68 11

Cross-country skiing \$16.76 2

Cold water fishing \$30.72 33

Warm water fishing \$29.25 8

Non-consumptive wildlife \$20.06 3

### **Public Expression of Value**

In these times of fiscal restraint, various non-profit funding initiatives, public interest organizations, and special interest legislation have emerged. This has resulted in fundraising drives and ballot initiatives which offer people the opportunity to contribute to special government funds for causes they value. Many of these involve resource conservation. The vehicles for these expenditures include donations, special licenses, fees, and tax rebate earmarked to support these causes.

Proof of support for conservation programs has been evidenced in taxpayer donations. In Arizona, state income tax voluntary contributions to non-game wildlife programs generate revenues that support the Arizona Game & Fish Department's Non-game Wildlife Management program.

In November 1990, the people of Arizona overwhelmingly passed a citizen's initiative, the Arizona Heritage fund, to earmark \$20 million from the state lottery proceeds for parks and wildlife conservation programs within Arizona State Parks and Arizona Game & Fish Department.

A portion of license fees and marine fuel tax monies goes into the State Lake Improvement Fund administered by the Arizona Outdoor Recreation Coordinating Commission and Arizona State Parks Board. These SLIF monies are used by local and state agencies to improve boating opportunities on Arizona's lakes and rivers.

### **Numbers are Not Everything**

Remember that estimates of economic impacts and benefits are only one tool available to conservation advocates. As mentioned earlier, many of the benefits of greenways may still not be

quantified and numbers would underestimate the total value. Rivers, trails, and greenways should be promoted using the tools which are most effective. Focusing on the intrinsic values is most likely to be the most effective tool to begin building your constituency.

## CONCLUSIONS

The Verde River Corridor Project was a total "unknown entity" when it began over a year and a half ago in September of 1989. Today it has a life and momentum of its own and has made a positive contribution to the Verde Valley and will continue to do so for decades.

The VRCP was intended as a communication, education, participation, cooperation, and coordination tool powered by local citizens to plan for the future of the Verde River. The Verde River is a precious resource to local citizens and to visitors alike; and the purpose of the VRCP is to ensure that recreational, cultural, scenic, economic, and environmental values of the river are maintained for present and future generations in their cleanest and purest form.

In an effort to conserve them in the most comprehensive and sensitive manner, the VRCP presents this report. It expresses their vision, goals, and recommended actions to inspire future coordination and cooperation among citizens, government agencies, and private organizations for the benefit of this unique resource, the Verde River. The willingness of local citizens to grapple with the often conflicting issues that surround the Verde River has demonstrated their status as a unique resource in their own right.

Although the Verde Valley has avoided many of the pressures of land development thus far, it is evident that a comprehensive strategy for the river corridor to solve impending problems and resolve issues is needed. The maze of land management along the Verde River places responsibility on a number of state, local, and private entities for the many uses of the resources; however, no single agency does, or can, do it all.

The intent of the Verde River Corridor Project Final Report is to guide the various individuals, groups, and agencies through suggested actions. The Report makes several suggestions of "who, how, and when" these actions can be achieved, and references and technical information are included to help guide those who continue on as participants in the Verde River Corridor Project. Hopefully, it will also foster ongoing recognition of the special cultural, natural, and recreational values that make the Verde River a unique Arizona resource.

It is important to emphasize that this report is only a beginning of conservation and planning efforts to maintain the Verde River Corridor, around which life here revolves. The future of the river resources will depend upon the active participation and cooperation of everyone. The National Park Service, Arizona State Parks Board, several local governmental entities, and many private conservancy groups stand by to offer whatever assistance they can. In fact, several federal and state agencies have expressed significant interest in and, even, commitment to implementation of several of the Project's recommended actions.

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## **FOREWORD**

The Verde River Corridor Project was initiated to respond to concerns about the future of the Verde River as a major economic force and a principal quality of life asset of the Verde Valley.

Local control of direction and recommendations is a key tenet of the plan. It is intended to keep us positively focused on the river and its resources as we grow. Implementation will occur through existing entities. Some goals will be achieved rather quickly, while others will take years.

Periodic review will help adjust the plan to changing conditions and attitudes, as new information is developed, and as goals are refined.

The plan attempts to present a balanced, multiple use strategy for the river resource so that many uses can be accommodated where compatible. Its flavor is intended to be supportive and advisory rather than regulatory since existing legally established entities have the planning and implementation tools needed.

Many people contributed to this effort. Your long term commitment was essential to complete this unique focus on an Arizona treasure. As we look to the future, may understanding and a spirit of cooperation guide our efforts.

*Richard Thompson  
Chairman  
Verde River Corridor Project*

Dear Verde River Corridor Project Participants:

Working with you, the dedicated people of the Verde Valley, throughout the Verde River Corridor Project has been inspirational and gratifying. Your love of the Verde River and your commitment to its future are evident in your individual and collective efforts on the project.

Though you have come from diverse backgrounds, you have joined together to achieve a shared vision for the Verde Valley. Some may have considered your task overwhelming for a broad-based citizens' group, but your accomplishments stand in tribute to you. The Verde River Corridor Project is the first of its kind in Arizona, and because of your success other river communities may look to you for inspiration and direction.

You have made a difference in many ways already. Lines of communication have opened up; attention has focused on the Verde River from all directions; studies have produced needed background material and, perhaps, caused important questions to be asked. Many of your goals will not be met immediately; they were not all meant to be. Instead, you have approached your charge with a forward-thinking attitude, too often lacking in planning efforts, and the benefits may be reaped by generations to come. Though each of you deserve a pat on the back, it is the cooperation and teamwork you displayed that is truly significant.

We have tried hard to make this a plan that reflects your concerns, visions, and goals. The Project is dynamic and flexible, however, and you will make changes over time as the need arises. We have included additional information that will be useful and help guide you in the future as your recommendations begin implementation.

We feel we have some special new friends in the Verde Valley. We congratulate you on your sterling efforts so far and wish you continued success as the Verde River Corridor Project matures and enters a new phase of cooperative involvement. This is not the end-- this is just the beginning.

*With warmest regards,  
Tanna Thornburg and Peggy Tabor  
Verde River Corridor Project Facilitators  
Arizona State Parks*

**STEERING COMMITTEE**

**Steve Andrews** AZ Flycasters Club, AZ Game & Fish  
**Jim Armer** Verde Valley Horsemen's Council  
**Bob Barker** Realtor/Formar Mayor of Camp Verde  
**Earl Bauer** Clarkdale Chamber of Commerce  
**Tom Bonomo** Prescott National Forest  
**Jim Bullard** Camp Verde Water System  
**Mike Burnett** Cottonwood Planning & Zoning Comm.  
**Carlton Camp** Yavapai County Board of Supervisors  
**Jean Clark** Verde Valley Horsemen's Council  
**Jon Clow** Dead Horse Ranch State Park  
**Marsha Foutz** Friends of the Verde  
**Joan Gray** Northern Arizona Paddlers Club  
**Loft Hollamon** Well Driller  
**George Kovacovich** Rancher and Farmer  
**Anita MacFarlane** Northern Arizona Audubon Society  
**C. A. McDonald** Construction Contractor  
**Brian Mickelsen** City of Cottonwood Assistant Manager  
**Randall Miller** Environmental Education Center  
**Ron Moen** Mayor of Cottonwood and City Council  
**Marc Nielsen** Verde Village Property Owners Assn.  
**Tap Parsons** Camp Verde Town Council/former Mayor  
**John Petrosky** Verde Nursery  
**Pete Sesow** Cottonwood/Verde Valley Chamber of Commerce  
**Lester Hall** Superior Companies  
**Richard Thompson** Mayor of Clarkdale, Verde NRC  
**Charles Wright** Verde Valley Horsemen's Council

**ASK YOURSELF . . .**

**What would the Verde Valley be like without the river and its riparian areas?**

Would you have chosen to live here?  
Would the communities still exist?  
Would any of the historic and prehistoric sites and ruins exist?  
Would anyone have chosen this valley to locate their farms or their mining operations?  
From an environmental standpoint, would there be as many animals or plants or mineral resources in the area which in turn impact economic opportunities?

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**What do you envision for the Verde Valley and its river corridor in the year 2000? In the year 2025 or 2050?**

Will there still be a flowing river with trees shading the banks and bald eagles soaring overhead?  
Will there still be fish and frogs and children swimming in the river and in its deep pools?  
Will people still want to live along its banks?

Will the river still be a scenic attraction that brings visitors and new residents, businesses, and dollars into the Verde Valley?

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These are some of the questions that triggered the initiation of the Verde River Corridor Project. Local citizens and organizations wanted to have some say in how the Verde River Corridor is managed, used, and protected.

***WHAT IS THE ANSWER?***