United States Department of Agriculture

Forest Service

**Southwestern Region**

# Verde Wild and Scenic River Comprehensive River Management Plan Final Environmental Assessment

## Coconino, Prescott and Tonto National Forests, Arizona

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Printed on recycled paper – [June 2004]

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# Chapter 1 – Need for the Proposal

## Introduction

Congress designated a portion of the Verde River as a National Wild and Scenic River (NWSR) through the Arizona Wilderness Act of 1984 (P.L. 98-406). The Verde Wild and Scenic River (VWSR) is located within the administrative boundaries of the Coconino (CNF), Prescott (PNF), and Tonto (TNF) National Forests in Gila and Yavapai Counties of central Arizona and consists primarily of public lands. The boundaries of the VWSR encompass an area generally one-half mile wide, one-quarter mile each side of and parallel to the river, as approved by the Southwestern Regional Forester on January 15, 1997. The Scenic River area begins near Beasley Flat, continues downstream about 18.8 miles to the boundary of the Mazatzal Wilderness, and contains approximately 5,692 acres. The Wild River area lies within the Mazatzal Wilderness, beginning at the wilderness boundary and continuing downstream about 22.2 miles to the confluence of Red Creek, and contains approximately 6,824 acres. See Table 1 below for acreage split between forests. Elevations throughout the Wild and Scenic River area range from 2,180 feet to 3,383 feet. The river drops an average of 19.5 feet per mile along its 41 mile, Wild & Scenic River reach. See Figure 1, Verde Wild and Scenic River Location Map.

**Table 1. Verde Wild and Scenic River Acres by Forest 1/**

| | National Forest (Acres) | Private (Acres) | Total (Acres) |
|---|---|---|---|
| **Verde Wild River** | | | |
| Coconino NF | 505 | 0 | 505 |
| Prescott NF | 0 | 0 | 0 |
| Tonto NF | 6,319 | 0 | 6,319 |
| **Total Wild River** | 6,824 | 0 | 6,824 |
| **Verde Scenic River** | | | |
| Coconino NF | 2,846 | 0 | 2,846 |
| Prescott NF | 2,138 | 28 | 2,166 |
| Tonto NF | 680 | 0 | 680 |
| **Total Scenic River** | 5,664 | 28 | 5,692 |
| **Total Wild and Scenic River** | **12,488** | **28** | **12,516** |

See Map section CD startup page.

**Figure 1. Verde Wild and Scenic River Location Map**

## Purpose and Need

The purpose of this planning effort is to implement direction of the Wild and Scenic Rivers Act of 1968 (P.L. 90-542), as amended, that requires the USDA Forest Service, in consultation with State and local governments, tribal governments, and the public, to develop a comprehensive river management plan (CRMP) for the Verde Wild and Scenic River. The CRMP shall be designed to protect the free-flowing character, water quality, and outstandingly remarkable values within the designated Wild and Scenic segments of the Verde River for the benefit and enjoyment of present and future generations.

The Verde River Wild and Scenic River Study Report and Environmental Impact Statement (VWSR FEIS) (Chapter 7, Section C), completed in September 1982, identified the need for a management plan that would protect and enhance the values that enabled the river to be added to the NWSR System. While the CNF, PNF, and TNF Land and Resource Management Plans (Forest Plans) provide general goals, objectives, standards, and guidelines for various activities and land allocations along the Wild and Scenic segments of the Verde River within each respective national forest, there is a need for a comprehensive river management plan that specifically addresses protection and enhancement of the river's values consistently across all three national forests. The CRMP will amend all three Forest Plans to make management direction consistent and to include area-specific management direction.

## Planning Process

In developing a management plan for the Verde River, the Forest Service followed the National Environmental Policy Act requirements as well as forest land management planning regulations found at 36 CFR 219, including establishing an interdisciplinary team and involving the public. Resource specialists from all three forests representing each of the river's values and critical issue areas were members of the interdisciplinary team, and several others served as consultants to the team. A list of interdisciplinary team members and consultants, along with their qualifications, can be found in Chapter 5.

The environmental assessment (EA) for this project is tiered to the final environmental impact statements (FEIS) for each of the Forest Plans, as amended, and the VWSR FEIS.

## Agency Jurisdiction

The Wild and Scenic Rivers Act requires that a CRMP be prepared by the Agency with primary jurisdiction over the river's resources. This is accomplished through the development of desired conditions and management standards for the Verde River that amends existing management direction found in the three Forest Plans.

The river management plan should be compatible with local and statewide planning goals of other agencies with jurisdiction over the resources of the Verde River. These jurisdictions are described below.

### USDA Forest Service

The CNF, PNF, and TNF have management responsibility for most of the lands within the designated VWSR corridor. Forest Service management of lands is accomplished through a two-

level planning process. The first level of planning is programmatic and is represented by the Forest Plans and their amending documents, such as this EA and CRMP. The Forest Plans provide direction for management programs, practices, uses and protection measures on the respective national forests. Direction from the three Forest Plans that currently guides management within the VWSR corridor is found in: MA 1 – Wilderness and MA 2 – Verde Scenic River on the CNF; MA 6 – Wilderness and MA 7 – Recreation on the PNF; and MA 1C – Verde Wild River (Cave Creek RD), MA 1D – Verde Scenic River, and MA 4B – Verde Wild River (Payson RD) on the TNF. See Map 1, Appendix D.

The second level of planning is at the project level. Individual project plans implemented within the VWSR corridor will be analyzed for potential site-specific environmental impacts and for compliance with desired conditions and management standards set in the amended Forest Plans through the CRMP.

## U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) enforces Federal wildlife laws, protects endangered species, manages migratory birds, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands. It also oversees the Federal Aid program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to State fish and wildlife agencies.

For the VWSR, USFWS management and enforcement activities directly affect management and uses. The Agency's role and authority under the Endangered Species Act require that the three national forests enter into informal and/or formal consultation with the Service on the effects of implementation of proposed actions on Federally-listed or proposed species and critical habitat. At the conclusion of formal consultation, the Service issues a biological opinion (BO) that determines whether the selected alternative protects or enhances species and habitat or whether additional actions are required to adequately protect species. The USFWS also participates with Arizona Game and Fish Department (AGFD) and the forests in reintroduction, surveys and monitoring of listed species within the VWSR and the Southwest and provides Federal funds under the act to accomplish these activities.

Under Executive Order 13186 of January 10, 2001, "Responsibilities of Federal Agencies to Protect Migratory Birds," each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement a memorandum of understanding (MOU) with the USFWS that promotes the conservation of migratory bird populations. Nongame migratory birds, many of which are riparian-dependent species, are the focus of this order.

## Arizona State Historic Preservation Office

The State Historic Preservation Officer (SHPO) is a State office with a Federal mandate. Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations at 36 CFR 800, Federal agencies are required to consult with SHPOs regarding the eligibility of historic and cultural properties for nomination to the National Register of Historic Places, and on determinations of effect from Federal undertakings and management decisions.

## Arizona Department of Environmental Quality

The Arizona Department of Environmental Quality (ADEQ) is responsible for protecting public health and the environment by administering the State's environmental quality laws and delegated Federal programs to prevent, control and abate pollution of air, water and land resources.

The department's Water Quality Division regulates drinking water and waste water systems, monitors and assesses waters of the State, and provides hydrologic analysis to support hazardous site remediation. Specific activities include providing critical information on water quality conditions, establishing water quality standards, and developing water quality management plans.

The ADEQ conducts water quality monitoring above, within and below the Verde Wild and Scenic River. ADEQ monitors water quality quarterly at Beasley Flat and contracts with the U.S. Geological Survey (USGS) to conduct water quality monitoring at the gage on the Verde River below Tangle Creek, which is downstream of the Wild and Scenic River segment. ADEQ assesses the quality of the water within the Wild and Scenic River as part of their biannual Water Quality Assessment Reporting required under Section 303 of the Federal Clean Water Act. If water quality within the Wild and Scenic River were to be placed on the list of streams not meeting water quality standards (303(d) list), then ADEQ would place the reach(es) not meeting standards on their schedule of streams for developing water quality management plans. ADEQ can also take enforcement actions for violations of water quality standards within the Wild and Scenic River.

The Forest Service has been designated as the management agency for control of nonpoint sources of pollution on national forest lands through an Intergovernmental Agreement (IA 16-R3-91-033) with ADEQ. The agreement recognizes that Best Management Practices (BMPs) are the primary means for controlling nonpoint sources of pollution.

## Arizona Department of Water Resources

In 1980, the Arizona Department of Water Resources (ADWR) was created to ensure dependable long-term water supplies for Arizona's growing communities. The ADWR administers State water laws (except those related to water quality), explores methods of augmenting water supplies to meet future demands, and works to develop public policies that promote conservation and equitable distribution of water. The ADWR oversees the use of surface and ground water resources under State jurisdiction and negotiates with external political entities to protect and augment Arizona's water supply.

Surface water rights within and above the Wild and Scenic corridor are administered and enforced by ADWR. Because an adjudication of the Verde River basin has not been completed, these rights have not been quantified and their priority of use has not been established.

Ground water use in the Camp Verde area is not regulated under the Active Management Area (AMA) provisions of the State Ground Water Management Code (1980) because this area has not been designated as an AMA. Recent court decisions are helping to clarify the definition of ground water and surface water, and some of the wells upstream of the Wild and Scenic River corridor may be defined as withdrawing appropriable surface water. These wells may eventually be administered by ADWR as surface water.

### Arizona Game and Fish Department

The Arizona Game and Fish Department (AGFD) is the responsible agency for managing and protecting Arizona's fish and wildlife resources. The VWSR lies within portions of three AGFD Game Management Units (GMUs): 6A, 21 and 22. The agency sets game animal harvest levels, hunting seasons, and similar wildlife population regulatory actions for each GMU, or statewide, based on the species. Within the VWSR corridor, AGFD has no limits on catch and possession of non-native fish and has placed restrictions on transport of baitfish. Native fish management activities include stocking of razorback sucker and Colorado pikeminnow and angler education programs.

AGFD's strategic plan, "Wildlife 2006," provides goals, objectives and strategies for the management and use of Arizona's wildlife and fish populations and habitat. The strategic plan directs collaboration among agencies to enhance nongame and endangered wildlife habitats and biotic communities, and to prevent avoidable, or mitigate unavoidable losses. Because of the loss, degradation, or fragmentation of most of Arizona's richest wildlife habitat—lowland riparian habitat (like that found along the Verde River)—specific direction for proposed protection efforts is provided in the strategic plan.

Other AGFD riparian habitat management emphases arise from Executive Order No. 89-16, dated June 10, 1989, which directs State agencies to work toward restoration of riparian resources. AGFD has designated the Verde River as a Wildlife Resource Category 1, signifying that it supports habitats that are of the highest value to Arizona wildlife species and are unique and/or irreplaceable on a statewide or ecoregion basis. Other agency direction for projects and subsequent mitigation measures is aimed to achieve no net loss in riparian acres and maintenance or improvement of habitat quality for wildlife and fish populations.

Agency documents, such as "Wildlife of Special Concern in Arizona," identify species with population viability issues including some found in the VWSR. In addition, the Verde River's importance to the bald eagle results in extensive monitoring of bald eagle nests and reproduction in the VWSR. The agency actively participates with the forests in protection of this species. Surveys for sensitive wildlife species and native fish populations are conducted frequently to monitor populations.

### Gila and Yavapai County Planning

The authority to regulate and control land use and development activities on private lands within Gila and Yavapai Counties rests with local and county governments, and not the Federal government. There is one 28-acre parcel of private land within the corridor. The Forest Service does not have the authority to zone or regulate uses of this and other private lands.

## Values and Issues

The river values and the issues are the "drivers" of this plan development. The purpose of the CRMP is to protect and enhance river values and to resolve issues related to management of the river's resources. The Wild and Scenic Rivers Act (P.L. 90-542, Section 1(b)) identifies free-flow, water quality, and outstandingly remarkable values (ORVs) as those river values that are to be protected and enhanced. The issues and concerns expressed in public comment letters, newsletters

of organized interest groups, and Agency managers were taken into consideration in the identification of significant issues considered in this analysis.

Indicators have been selected for water quality, outstandingly remarkable values, and significant issues in order to evaluate protection and enhancement of river values, issue resolution, attainment of goals, and describe potential environmental impacts. Where possible, the indicators are quantified. When the indicators cannot be quantified, a narrative discussing specific effects is presented in Chapter 4. The indicators used in this analysis are listed below for each value and issue.

| River Values | Significant Issues |
|---|---|
| Scenery | River Access |
| Fish and Wildlife | Recreation Use/Capacities |
| Historic and Cultural | Livestock Grazing |
| Water Quality | Water Quantity/Quality |
| Free-flow | |

## Outstandingly Remarkable Values

The Wild and Scenic Rivers Act requires a determination that a river and its immediate environments possess one or more specific "outstandingly remarkable values" before that river corridor can be considered for designation as a NWSR. The 1982 VWSR FEIS (Chapter 3, Section A) found that this portion of the river corridor contained **outstandingly remarkable scenic, fish and wildlife, and historic and cultural values**. Protection and enhancement of the specific outstandingly remarkable values recognized for the VWSR provides a foundation upon which management actions and authorizations of uses will be based. Following are summaries of each of the ORVs.

**Scenery –**The Verde River has outstandingly remarkable scenic values. The scenic qualities of landform, vegetation, and water within the Verde Wild and Scenic River are distinctive. Landform varies from steep, rocky canyons framing the river, to plateaus dropping to wide flood plains, with the river as a central feature. Vegetation varies according to terrain, from broad mesquite bosques and cottonwood gallery forests to narrow bands of riparian willows, in contrast to the surrounding dry grassland and desert vegetation. Scenic qualities of the perennial Verde River change dramatically with the seasons and with changes in river flow. Dramatic fall color contrasts with summer greenery. Water flow changes from shallow, still pools and slow water, to high flow, seasonal rapids and waterfalls. Recreationists view the river corridor from the high edges of plateaus and canyons, from within the flood plain, from the riverbank, and from the surface of the river itself.

**Indicators**

- Scenic Integrity Objectives

**Fish and Wildlife –** Outstandingly remarkable fish and wildlife values along the Verde Wild and Scenic River result from the high quality habitat that the river and its associated riparian areas provide for threatened and endangered fish and wildlife species. There are currently 56

threatened, endangered, sensitive or special status fish and wildlife species present, or potentially present, within the VWSR. The designated river area contains important nesting habitat for the bald eagle, and provides habitat for several listed fish species. In addition, the river and its riparian area provide habitat for over 60 percent of the vertebrate species that inhabit the Coconino, Prescott, and Tonto National Forests. The high variety of both resident and migratory wildlife species found in the VWSR illustrates the corridor's value for these species within Arizona and the Southwest.

**Indicators**

- Fish species composition
- Aquatic habitat quality for TE&S fish species
- Terrestrial habitat quality and diversity for: TE&S species, game species, migratory birds
- Riparian and upland vegetation species diversity and structure

**Historic and Cultural –** Information gained from historic and cultural resource surveys along the Verde River shows the area contains outstandingly remarkable historic and cultural values. The Verde Wild and Scenic River corridor is known to contain archaeological evidence of the occupation and agricultural use and modification of the Verde River flood plains, terraces, and hill slopes by people related to the prehistoric Hohokam and Southern Sinagua cultural traditions over a period of at least 600 years. It may contain sites of human use and occupation from as long ago as 8,000 to 10,000 years. The river corridor is also expected to contain a number of pre-European contact and historic sites reflecting its use and occupation by Yavapai and Apache hunters, gatherers, and farmers and it is known to have sites representing the Anglo, Hispanic, and Basque stockmen who raised or drove cattle and sheep throughout the area. The earliest hydroelectric power plant in the State of Arizona is located in the VWSR corridor at the small settlement of Childs, still occupied and functional. The significance of the Childs Power Plant has already been recognized by its listing in the National Register of Historic Places. The VWSR corridor also contains the burned out remains of one of Arizona's first tourist developments, the Verde Hot Springs Resort across the river from Childs. Most of these sites, depending on their condition, are significant and eligible for the National Register of Historic Places, either individually or as part of a group.

**Indicators**

- Opportunities for protection and/or conservation of cultural and historic resource values.
- Opportunities for public interpretation of cultural and historic resources.
- Narrative description on risk of losing historic/cultural site integrity.

## Free-flow and Water Quality

The VWSR FEIS found that this portion of the river corridor was free-flowing, making the river eligible for NWSR designation. Section 7(a) of the Wild and Scenic Rivers Act protects the VWSR from the harmful effects of water resource development projects. This provision of the Act adequately protects the free-flow of the river, so alternatives were not developed in response to this river value.

Water quality is a river value that is to be protected and enhanced, and it was also determined to be a significant issue. Indicators for measuring protection and enhancement of water quality are listed below with the water quality/water quantity issue description. Alternatives were designed to improve water quality to varying levels.

## Significant Issues

The Agency received approximately 125 letters with over 280 substantive comments on the information provided in the October 30, 2001 NOI published in the Federal Register, and the January 23, 2002 scoping letter. The issues and concerns expressed in these letters, in newsletters of organized interest groups, and by Agency managers have been taken into consideration in the identification of significant issues, and in the development of the alternatives described in Chapter 2.

**River Access Issue ─** Reducing the number of vehicular access points to the Verde River may limit some people's opportunities to enjoy the river's recreational activities and view its natural scenic beauty.

Developing or improving river access points and/or recreation sites may reduce the desert river back-country experience for some recreational river users.

**Indicators**

- Recreation Opportunity Spectrum (ROS) and Wilderness Opportunity Spectrum (WOS) classifications by acres
- Miles of road open to public use
- Miles of nonmotorized trails
- Number of road and trail access points to the river
- Boat launch locations
- Narrative description of facilities and recreation opportunities for persons with disabilities

**Recreation Use/Capacities Issue ─** Allowing too much recreation use (private, institutional, or commercial) in the river corridor may be inconsistent with effective protection and enhancement of scenery, cultural/historic resources, and native fish and wildlife habitats. Too much recreational use may also detract from the desert river back-country experience.

Restricting recreational use in the river corridor may interfere with people's ability to enjoy its outstandingly remarkable values.

**Indicators**

- Recreation Opportunity Spectrum (ROS) and Wilderness Opportunity Spectrum (WOS) classifications by acres
- River launches per day by person
- Regulations related to river running
- Commercial permits issued and user days per permit
- Group size limits

- Narrative description of impacts to and change in riparian and upland vegetation and streambank stabilization due to recreation use
- Narrative description on risk of losing historic/cultural site integrity

**Livestock Grazing Issue ─** Changing livestock management in the VWSR may pose an economic hardship on some grazing permittees.

Livestock grazing in the river corridor and uplands may be inconsistent with effective protection and enhancement of the native fish and wildlife that depend upon the riparian area, may negatively affect the recreation experience of some visitors, and may negatively affect the scenery.

**Indicators**

- Acres excluded from grazing, including acres where grazing may no longer be practical
- Permitted livestock numbers in allotments that include the VWSR
- River miles open to grazing
- Miles of fencing required
- Narrative description of impacts to and change in riparian and upland vegetation and streambank stabilization due to livestock grazing
- Narrative description of changes in scenic integrity
- Narrative description of recreation experience
- Narrative description of economic impact

**Water Quantity/Quality Issue ─** Population growth, land development, and land use in the Verde River watershed upstream from the Wild and Scenic River reach may impact instream flows and water quality in the WSR segment. Activities such as recreation use and livestock grazing within the WSR corridor may also impact water quality. Reduction in instream flow and water quality could adversely affect the scenery and fish and wildlife outstandingly remarkable values.

**Indicators**

- Water quality
- Bank stability
- Narrative description of instream flow protection
- Narrative description of soil and water conservation practices implemented
- Narrative description of disturbances created by recreation, roads, trails, and livestock grazing

## Management Goals

In addition to the requirements of the Wild and Scenic Rivers Act (as stated earlier), and other applicable legislation and regulation, Forest Service management goals in the Verde Wild and Scenic River corridor are as follows:

- Protect the quality of river water by meeting or exceeding Arizona State water quality standards;
- Protect and enhance the river's identified outstandingly remarkable values of scenery, fish and wildlife, and cultural and historic resources;
- Protect the river's free-flowing characteristics.
- Maintain the river's classifications of wild and scenic.
- Consult with State and local governments, and interested public, recognizing them as partners and participants in managing the VWSR;
- Protect the integrity of wilderness areas and their associated wilderness values; and
- Maintain the desert river back-country experience for visitors in the Wild and Scenic River areas.

## Decision Framework

The Coconino, Prescott, and Tonto National Forest supervisors are the officials responsible for making the following programmatic decisions in the CRMP of the Verde Wild and Scenic River.

- Measures for protection and enhancement of fish and wildlife habitat;
- Measures for protection and enhancement of scenic values;
- Measures for protection and enhancement of historic and cultural values;
- Measures for protecting water quality;
- Determination of instream-flow needs to protect and enhance the ORVs;
- Delineation of a river access system including roads, trails, and parking facilities;
- Recommendations for acquisition of land, or scenic easement on private land, with willing sellers;
- Measures for management of special uses to protect and enhance water quality and ORVs;
- Determination of recreation use capacity and controls including sanitation needs; and
- Design of a recreation and resource monitoring system.

References

**1/** Acres reported for VWSR are derived from 1997 boundary declaration signed by the Southwestern Regional Forester.

# Chapter 2 - Alternatives

## Introduction

The alternatives represent a variety of ways to manage the river in response to public issues and management goals raised during scoping. Each alternative represents a different strategy through varying the amount and type of public access provided and the extent of human uses allowed.

Alternative 1 is the "no action" alternative. It continues to implement current management direction from three different Forest Plans independently on each forest's respective lands within the VWSR corridor. The other three alternatives offer strategies different from current direction based on different long-term visions for the river corridor. The alternative identified as "preferred" will form the strategy for the Comprehensive River Management Plan for the VWSR corridor.

The following narratives summarize the overall management direction/emphasis for each alternative. At the end of this chapter, Table 2 gives a more detailed description of management actions proposed by resource value and alternative. Management actions proposed under each alternative are ones that would be compatible with the theme of that alternative. Site-specific analysis and further public involvement would be needed to implement many of the actions proposed.

Table 3 briefly summarizes the outputs and effects of each alternative, and can be found immediately after Table 2.

## Actions Considered but Eliminated from Further Study

The following actions were proposed but not included in any of the alternatives.

Some commenters suggested that designated camping sites be provided at Beasley Flat recreation site. This concept was dropped from further consideration after determining that there are ample dispersed camping opportunities within one mile of Beasley Flat. The available dispersed camping opportunities should meet the needs of river runners who camp out prior to their river launch. Maintaining the existing mix of uses at Beasley Flat will allow the site to continue to serve day-use visitors, while individuals wishing to camp can find campsites relatively close by.

The alternative of closing all motorized routes at the VWSR boundary was considered and eliminated from further analysis. While the action alternatives explore closing several access routes, FR 334 to Beasley Flat and FR 502 to Childs remain open to public motorized use in all alternatives. The reasoning is that both roads predate the WSR designation and have provided access to the river for an extremely long time. Some vehicular access to the river is necessary to allow people of all abilities to enjoy the river's resources. The Childs area was determined to be an important river take-out point for public safety reasons, and there is the necessity of maintaining vehicular access to the hydroelectric facilities there. Beasley Flat Picnic Area was reconstructed using State Lake Improvement Funds, which require that the site remain open to the public, necessitating motorized access.

Some commenters suggested eliminating all commercial river rafting on the VWSR. At this time there is minimal demand for commercial river rafting, and there does not appear to be any negative effect to resources or recreation experience resulting from the current level of commercial use. Demand for commercial river rafting is not projected to substantially increase in

the forseeable future. Therefore, it is not necessary to reduce or eliminate the amount of commercial use at this time. If, at some point in the future, commercial use does increase to a point that it results in resource damage or changes the river recreation experience, reductions in commercial permits may be evaluated. The action was dropped from further consideration.

There was considerable discussion surrounding the river crossing between Forest Road 9206Y and Forest Road 16 at Childs. Both of these roads currently go to the river, but neither crosses it. There is a forest closure on cross-country travel in this area, however, users routinely leave the roadbed and cross the river in vehicles. It was determined that this crossing should not be made a legal river crossing because repeated vehicular use in the riverbed contributes to resource damage, wilderness trespass by motorized vehicles, water quality degradation, and causes liability concerns. The action was dropped from further consideration.

A road crossing of the Verde River at Childs between Forest Roads 57 and 502 was also considered. There is a forest closure on cross-country travel in this area, however, users routinely leave the roadbed and cross the river in vehicles. A concrete low water crossing could be installed at this location. A similar crossing built on the Aqua Fria River cost the Tonto NF $90,000 in the mid-1990s. Since this crossing would be more difficult to access and prices have increased, it is expected the cost would approach $200,000 today. In addition, a concrete low water crossing at this location would probably not remain intact through the first major flood, would not reduce pollution caused by emerging vehicles in the water way, and may encourage unsafe vehicular crossings. A concrete vented ford could also be installed which would keep vehicles out of the water, but the costs would range from $300,000 to $500,000. This crossing would be an obstacle to boaters and would probably also be lost during flooding. A bridge high enough to resist being washed out by flood would cost millions of dollars. A similar bridge over Tonto Creek is estimated in excess of $6 million. A bridge would also negatively affect the existing scenic integrity at this location. The low volume of traffic projected for this crossing does not justify the large expenditure of dollars and the potential for negative effects to river values. The action was dropped from further consideration.

Commenters requested areas be designated within the VWSR corridor where cross-country motorized vehicle use could occur. This type of use is currently being analyzed in the “Draft Environmental Impact Statement for Cross-Country Travel by Off Highway Vehicles on the Apache-Sitgreaves, Coconino, Kaibab, Prescott, and Tonto National Forests” (DEIS). At this multi-forest level, the proposal put forth in the DEIS is to only allow motorized travel on designated routes. Under the DEIS, this policy would apply to lands within the VWSR corridor. It was determined that designating areas open to cross-country motorized use within this narrow river corridor would not be consistent with the purpose of protection and enhancement of the river’s outstandingly remarkable values and so the alternative was dropped from further consideration.

## Actions Common to All Alternatives

Following are management actions that would be implemented under all of the alternatives, including Alternative 1 (No Action). This list represents management direction that is now in place and will continue to be implemented regardless of the alternative selected through this process.

- Inventories and surveys of fish and wildlife species and habitats will continue in accordance with existing plans.
- Inventories of historic and cultural resources will continue on an as-needed basis.
- Monitoring will be conducted in accordance with identified Limits of Acceptable Change (LAC) standards.
- Dispersed camping opportunities will continue to be available to river runners, outside of bald eagle closures and developed recreation sites.
- There will continue to be no designated Forest Service system roads crossing the Verde River.
- The access roads into Beasley Flat (FR 334) and Childs (FR 502) will be maintained for passenger car access (maintenance level 3).
- The VWSR corridor will continue to be closed to cross-country motorized travel, consistent with decisions made in the "Cross-Country Travel by Off Highway Vehicles on the Apache-Sitgreaves, Coconino, Kaibab, Prescott and Tonto National Forests" EIS.
- Seasonal no-stopping areas will continue to be implemented along the river to protect bald eagle nesting from human disturbances.
- Management direction found in Forest Plans, approved recovery plans, and USFWS consultations to recover fish and wildlife species or optimize habitat will continue to be implemented.
- Historic and cultural sites and traditional use areas will continue to be preserved in place wherever feasible.
- Instream flows needed to support the flow-dependent ORVs will be identified and water rights necessary to protect these flows will be applied for through the State appropriation process and/or claimed as a Federal reserve right.
- Site-specific BMPs will be developed and applied during implementation of management direction.
- Disposition of the historic facilities at Childs will conform to the Childs/Irving Hydropower Decommissioning Project decision.
- The forest supervisors will continue to approve the use of motorized equipment in emergency situations within the Wild section of the river. The district rangers will continue to coordinate emergency operations with the appropriate county and State agencies. The district rangers will continue to authorize and coordinate all emergency operations within the Scenic section of the river with the appropriate county and State agencies.

## Alternative 1

### Overview

This alternative would prescribe continued management of the VWSR corridor in accordance with present management direction from each of the three forests (See Map 2, Appendix D). Existing regulations and closures would continue to be enforced within the Wild and Scenic River.

Current management direction from the Coconino, Prescott and Tonto National Forest Plans would be applied to lands within the VWSR corridor: MA 1 – Wilderness and MA 2 – Verde Scenic River on the CNF; MA 6 – Wilderness and MA 7 – Recreation on the PNF; MA 1C – Verde Wild River (Cave Creek RD), MA 1D – Verde Scenic River, and MA 4B – Verde Wild River (Payson RD) on the TNF. See Map 1, Appendix D.

See Table 2 for a more detailed description of actions possible under Alternative 1 by resource value.

## Alternative 2

### Overview

This alternative responds to the issues by maximizing public use opportunities within the Wild and Scenic River corridor. The existing authorized motorized vehicle access to the VWSR and existing controls on recreational use would remain in place. Livestock grazing would continue to occur in some riparian and upland areas within the river corridor with improved management oversight. See Map 3, Appendix D.

New Forest Plan management direction would amend previous direction from the Verde Wild and Scenic River portions of the MA-1 and MA-2 land allocations on the Coconino National Forest and the MA-1C, MA-1D, MA-4B land allocations on the Tonto National Forest. A new management area with management direction specific to the Verde Scenic River would be established to replace the WSR portions of MA-6 and MA-7 land allocations on the Prescott National Forest. See Map 6, Appendix D.

See Table 2 for a more detailed description of actions possible under Alternative 2 by resource value.

## Alternative 3

Overview
This alternative responds to the issues and provides for protection and enhancement of the river's values while providing moderate controls on public use opportunities within the WSR corridor. Much of the motorized vehicular access to the VWSR would be converted to nonmotorized access, and moderate controls would be placed on recreational uses of the river corridor. Livestock grazing would be excluded from riparian areas, but allowed to continue in upland areas within the river corridor. See Map 4, Appendix D.

New Forest Plan management direction would amend previous direction from the Verde Wild and Scenic River portions of the MA-I and MA-2 land allocations on the Coconino National Forest and the MA-1C, MA-1D, and MA-4B land allocations on the Tonto National Forest. A new management area with management direction specific to the Verde Scenic River would be established to replace the WSR portions of MA-6 and MA-7 land allocations on the Prescott National Forest. See Map 6, Appendix D.

See Table 2 for a more detailed description of actions possible under Alternative 3 by resource value.

## Alternative 4

Overview
This alternative responds to the issues and provides for protection and enhancement of the river's values while placing the most restrictions on access to the VWSR and the most controls on recreational uses of the river corridor. Most of the motorized vehicular access to the VWSR would be converted to nonmotorized access or obliterated. Stricter controls would be placed on recreational uses of the river corridor. Livestock grazing would be excluded from the entire VWSR corridor. See Map 5, Appendix D.

New Forest Plan management direction would amend previous direction from the Verde Wild and Scenic River portions of the MA-1 and MA-2 land allocations on the Coconino National Forest and the MA-IC, MA-1D, and MA-4B land allocations on the Tonto National Forest. A new management area with management direction specific to the Verde Scenic River would be established to replace the WSR portions of MA-6 and MA-7 land allocations on the Prescott National Forest. See Map 6, Appendix D.

See Table 2 for a more detailed description of actions possible under Alternative 4 by resource value.

## Comparison of Alternatives

The alternative descriptions that follow describe in greater detail those management actions that could take place if the alternatives were implemented. The reader should bear in mind that many projects would still need additional site-specific NEPA analysis prior to being implemented. The alternatives are shown in matrix form to allow easier comparison between specific resources.

- Narrative description of changes in scenic integrity
- Narrative description of recreation experience
- Narrative description of economic impact

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Overview** | This alternative would prescribe continued management of the VWSR corridor in accordance with present management direction from each of the three forests. Existing regulations and closures would continue to be enforced within the Wild and Scenic River. | This alternative responds to the issues by maximizing public use opportunities within the VWSR corridor. The existing authorized motorized vehicle access to the corridor and existing controls on recreational use would remain in place. Livestock grazing would continue to occur in some riparian and upland areas within the river corridor with improved management oversight. Management actions resulting from this alternative could include: | This alternative responds to the issues and provides for protection and enhancement of the river's values while providing moderate controls on public use opportunities within the WSR corridor. Much of the motorized vehicular access to the VWSR would be converted to nonmotorized access, and moderate controls would be placed on recreational uses of the river corridor. Livestock grazing would be excluded from riparian areas, but allowed to continue in upland areas within the river corridor. Management actions resulting from this alternative could include: | This alternative responds to the issues and provides for protection and enhancement of the river's values while placing the most restrictions on access to the VWSR and the most controls on recreational uses of the river corridor. Most of the motorized vehicular access to the VWSR would be converted to nonmotorized access or obliterated. Stricter controls would be placed on recreational uses of the river corridor. Livestock grazing would be excluded from the entire VWSR corridor. Management actions resulting from this alternative could include: |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Forest Plan Management Areas** | Current management direction from the Coconino, Prescott and Tonto National Forest Plans would be applied to lands within the VWSR corridor: MA 1 – Wilderness and MA 2 – Verde Scenic River on the CNF; MA 6 – Wilderness and MA 7 – Recreation on the PNF; MA 1C –Verde Wild River (Cave Creek RD), MA 1D – Verde Scenic River, and MA 4B – Verde Wild River (Payson RD) on the TNF. Some management direction would not be consistent across forest boundaries. | New Forest Plan management direction would amend previous direction from the Verde Wild and Scenic River portions of the MA-1 and MA-2 land allocations on the CNF and the MA-1C, MA-1D, and MA-4B land allocations on the TNF. A new management area with management direction specific to the Verde Scenic River would be established to replace the WSR portions of MA-6 and MA-7 land allocations on the PNF. Management direction would be consistent across forest boundaries. | Same as Alternative 2 | Same as Alternative 2 |
| **Access/Travel Management** | The access road into Beasley Flat (FR 334) would be maintained for passenger car access (maintenance level 3). | Same as Alternative 1 | Same as Alternative 1 | Same as Alternative 1 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Forest Road 9244 would remain open to public motor vehicle access (Maintenance Level 2). | Same as Alternative 1 | Forest Road 9244 would be closed at a location where recreationists currently park and access Verde Falls. Approximately one-tenth of a mile of road beyond this point would be decommissioned and a small trailhead constructed. | Forest Road 9244 would be decommissioned between the river and a location just outside of the VWSR boundary at an existing fence line. In addition, the decommissioned portion of the road would be obliterated as appropriate for watershed protection. |
| | Forest Road 9245 would remain a Maintenance Level 1 road, closed to public use. | Same as Alternative 1 | FR 9245 would be decommissioned (approximately one-tenth mile of road). | Same as Alternative 3 |
| | Forest Road 9242 would remain open to public motor vehicle access (Maintenance Level 2). | Same as Alternative 1 | Forest Road 9242 would be converted to a nonmotorized trail to the Cavates area opposite Beasley Flat. The road would be gated at approximately one-quarter mile outside of the WSR boundary, just east of Cottonwood Basin drainage. A trail to the Cavates site would be created and a small trailhead would be constructed where the road ends. | Forest Road 9242 would be decommissioned between the river and approximately one-quarter mile outside of the WSR boundary, just east of Cottonwood Basin drainage. In addition, the decommissioned portion of the road would be obliterated as appropriate for watershed protection. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Forest Roads 9139P, Q, R, S, T, U, V, and W (currently Level 1) would continue to be closed and would be obliterated per the current RATM. All other roads within the WSR corridor classified as Maintenance Level 1 in the Forests' Road and Access Travel Management Plan (RATM), would remain Level 1 as well. | Same as Alternative 1except: Forest Roads 9139P, Q, R, S, T, U, V, and W would be decommissioned. | Same as Alternative 2 | Same as Alternative 2 |
| | Forest Road 500 would remain open to public motor vehicle access (Maintenance Level 2). | Same as Alternative 1 | Same as Alternative 1 | Forest Road 500 would be decommissioned between the river and a location just outside the VWSR boundary. In addition, the decommissioned portion of the road would be obliterated as appropriate for watershed protection. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Forest Road 9709R (Maintenance Level 2) would continue to be closed seasonally by gate at the junction with FR C574 (Brown Springs Rd.) for wildlife protection. Forest Trail 16 (Ladders Trail) would continue to be accessed from the end of FR 9709R. | Same as Alternative 1 | Same as Alternative 1 and a small trailhead/vehicle turnaround would be constructed as needed to serve Forest Trail 16 (Ladders Trail). | Forest Road 9709R (Maintenance Level 2) would continue to be closed seasonally by gate at the junction with FR C574 for wildlife protection, and would be converted to a nonmotorized trail starting at a location approximately one-half mile west of the Verde River and outside of the VWSR corridor. This new trail segment would be added to Forest Trail 16 (Ladders Trail) and would be closed seasonally when the road is closed. A small trailhead/vehicle turnaround would be constructed as needed to serve Forest Trail 16. |
| | Forest Road 57 (Maintenance Level 2) would remain open to public motor vehicle access to the river. This road currently ends at the river, with no legally designated river crossing. | Same as Alternative 1 | Forest Road 57 would be gated at a feasible location approximately one mile from the river and managed as Maintenance Level 2, administrative or permitted access only. Public nonmotorized access would be allowed. A small parking area would be constructed at the gate for nonmotorized users. | Forest Road 57 would be closed between the river and a point approximately one mile from the river, outside the VWSR corridor. In addition, the closed portion of the road would be decommissioned and obliterated as appropriate for watershed protection. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Forest Road 502 (Maintenance Level 3) would remain open to public motor vehicle access from the junction with FR 708 to the junction with FR 9206Y. It would remain open to administrative access (Maintenance Level 2) through the APS administrative site, to the river. This road ends at the river with no legally designated river crossing. | Same as Alternative 1 | Forest Road 502 (Maintenance Level 3) would remain open to public motor vehicle access and upgraded to Maintenance Level 3 through the APS administrative site and to the river, opposite the Verde Hot Springs. This would facilitate access to a new river runner launch/take-out at the end of FR 502. This road would end at the river with no legally designated river crossing. | Same as Alternative 3 |
| | Forest Road 9206Y (Maintenance Level 3) would remain open to public motor vehicle access from the junction with FR 502 to Childs Campground and beyond to the river. This road ends at the river with no legally designated river crossing. | Same as Alternative 1 | Forest Road 9206Y would be used as a nonmotorized trail and added to the Verde Hot Springs Trail, providing access to a new day use area (formerly Childs Campground) and also to the Verde Hot Springs. This road would also continue to serve as a Maintenance Level 2, administrative access road into the day use area. | Forest Road 9206Y (Maintenance Level 3) would be decommissioned and converted to a nonmotorized trail and added to the Verde Hot Springs Trail, providing access to a new day use area (formerly Childs Campground) and also to the Verde Hot Springs. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Forest Road 16 (Maintenance Level 2) would remain open to public motor vehicle access to the river. This road currently ends at the river, with no legally designated river crossing. | Same as Alternative 1 | Forest Road 16 would be converted to a nonmotorized trail at a point just above the river. A small trailhead would be constructed where the road ends and becomes a nonmotorized trail. | Forest Road 16 would be closed between the river and a point approximately 2 miles from the river and outside the VWSR corridor. In addition, the closed portion of the road would be decommissioned and obliterated as appropriate for watershed protection. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Nonmotorized Trails | Formally recognized FS nonmotorized trails would continue to be maintained per direction found in Forest Plans. This includes: Ladders Trail (#16), Towel Creek Trail (#67), Lower Cedar Bench Trail (#540), Verde Hot Springs Trail (#48), Verde River Trail (#11), and High Water Trail (#20). No trails would be added to or removed from the system. | Same as Alternative 1 | Nonmotorized trails would be added to the FS trail system to access the VWSR including: Cavates Trail (new trail converted from FR 9242), new trail converted from FR 16, Verde Falls Trail, and Verde Hot Springs Trail extension.<br><br>Five trailheads would be constructed, each with 2 to 3 parking spaces and motor vehicle turnaround, parking barriers, and signing as appropriate. The trailheads would be constructed on: FR C574 to serve Towel Creek, Lower Cedar Bench, and Cold Water Trails; FR 9242 to serve Cavates Trail; FR 9244 to Verde Falls Trail; FR 502 near the APS administrative site to serve Verde Hot Springs Trail and extension; and FR 16 to serve its new trail. | One nonmotorized trail would be added to the FS trail system to extend the Verde Hot Springs Trail.<br><br>Two trailheads would be constructed, each with 2 to 3 parking spaces and motor vehicle turnaround, parking barriers, and signing as appropriate. One trailhead would be constructed on FR C574 to serve Towel Creek, Lower Cedar Bench, and Cold Water Trails. The other trailhead would be constructed on FR 502 near the APS administrative site to serve Verde Hot Springs Trail. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Cross-Country Motor Vehicle Travel | The VWSR corridor would continue to be closed to cross-country motorized travel unless posted open; consistent with decisions resulting from the "Cross-Country Travel by Off Highway Vehicles on the Apache-Sitgreaves, Coconino, Kaibab, Prescott, and Tonto National Forests DEIS" that has been published. | Same as Alternative 1 | Same as Alternative 1 | Same as Alternative 1 |
| Motorized Watercraft Use | Motorized boat use of the Wild section of the river would continue to be prohibited. Motorized boat use would continue to be allowed on portions of the Scenic section, outside of the Cedar Bench Wilderness. | Motorized watercraft use of the entire WSR stretch of the river would be prohibited. | Same as Alternative 2 | Same as Alternative 2 |
| Area Closures | Seasonal no-stopping areas would continue to be implemented along the river to protect bald eagle nesting from human disturbances. | Same as Alternative 1 | Same as Alternative 1 | Same as Alternative 1 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Fish and Wildlife Species Including TE&S** | Management direction found in Forest Plans, approved recovery plans, and USFWS consultations to recover species or manage habitat would continue to be implemented.<br><br>Monitoring of TE&S fish and wildlife populations and habitat for effects of management activities, in accordance with existing plans would continue. | Same as Alternative 1 | Same as Alternative 1 | Same as Alternative 1 |
| | Coordination with Arizona Game and Fish Dept. on reintroduction and maintenance of viable populations of razorback suckers and river otters would continue. Monitoring would continue to be conducted to identify and correct any management conflicts.<br><br>The FS would continue to work cooperatively with Arizona Game and Fish Dept. to address problematic nonnative fishes in VWSR. | Same as Alternative 1 and:<br><br>Coordination with Arizona Game and Fish Dept. on reintroduction and maintenance of viable populations of other T&E fish species within VWSR would occur. Monitoring would be conducted to identify and correct any management conflicts. | Same as Alternative 2 | Same as Alternative 2 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Bald eagle habitat would continue to be managed in accordance with the "Action Program for Resolution of Livestock and Riparian Conflicts in Salt and Verde Rivers" and the "Bald Eagle Recovery Plan."<br><br>Existing bald eagle closures would continue to be implemented. | Same as Alternative 1 and:<br><br>Existing bald eagle closures would be implemented in addition to any additional closures necessary to protect TE&S species. | Same as Alternative 2 and:<br><br>Public education and information efforts would be increased in order to improve the implementation and effectiveness of bald eagle closures and no stopping zones. | Same as Alternative 3 |
| | Forest plans would continue to direct that maintaining or improving habitat suitability and riparian dependent wildlife populations shall have preference over other resource uses in the river corridor. | Same as Alternative 1 and:<br><br>Roads, trails and recreation sites within the river corridor would be managed to minimize or eliminate habitat disturbances beyond the developed facilities themselves.<br><br>Habitat monitoring would increase in areas where riparian and upland habitat was not in a state of recovery. Habitat condition thresholds, defined by factors such as vegetative cover, species composition, and bank stability, would trigger additional management actions to correct problems. | Same as Alternative 2 except:<br><br>Habitat monitoring would focus on habitat development and species distribution. | Same as Alternative 2 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Heritage** | Heritage sites and traditional use areas would continue to be preserved in place wherever feasible. | Same as Alternative 1 | Same as Alternative 1 | Same as Alternative 1 |
| | Disposition of the historic facilities at Childs will conform to the Childs/Irving Hydropower Decommissioning Project. | Disposition of the historic facilities at Childs will conform to the Childs/Irving Hydropower Decommissioning Project with an emphasis on developing onsite interpretation. | Same as Alternative 2 | Same as Alternative 1 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Newly reported heritage sites would continue to be inventoried as opportunities arise.<br><br>Impacts to heritage resources would continue to be evaluated on a case-by-case basis, as situations arise. Adverse effects would continue to be subject to consultation with SHPO and tribes, and mitigated where possible.<br><br>Maintenance and repair of damaged sites would continue to occur as opportunities and funding arise.<br><br>Site conditions would continue to be monitored as opportunities arise. | Same as Alternative 1 except:<br><br>Additional inventory of heritage sites and traditional tribal use areas would be conducted as funding becomes available.<br><br>Site conditions would be monitored annually in high use recreation areas. | Same as Alternative 2 | Same as Alternative 2 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | Heritage values would continue to be incorporated into the VWSR interpretive program.<br><br>Offsite education and interpretation would continue to be the primary methods used to increase public appreciation and respect for historic and prehistoric sites and traditional uses of the VWSR. | Same as Alternative 1 and:<br><br>Two heritage sites within the Scenic section of the VWSR would be developed for active visitation and interpretation, including Beasley Flat Cavates site and Childs/Verde Hot Springs cultural landscape. | Same as Alternative 2 | Same as Alternative 1 |
| **Interpretation/ Environmental Education** | Continue to publish a brochure and river runner's map for the VWSR. | Implementation of a river user's education program and an interpretive plan for the WSR corridor would occur, consistent with the expected level of visitation and management under this alternative. | Same as Alternative 2 | Same as Alternative 2 |
| | | Public awareness of the negative impacts of nonnative fish and crayfish would be increased through interpretation and education. | Same as Alternative 2 | Same as Alternative 2 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Invasive Plants** | On the Prescott NF noxious weeds would continue to be controlled to prevent buildup on rangelands. There would continue to be no management direction addressing invasive plants (or noxious weeds) on the Tonto and Coconino NFs. | Invasive plants would be selectively controlled, focusing on species such as salt cedar, which have the greatest impact on native species in the Scenic section. | Same as Alternative 2 | Invasive plants would be selectively controlled, focusing on species such as salt cedar, which have the greatest impact on native species in both the Wild and Scenic sections of the river. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Livestock Grazing** | Each forest would continue to implement grazing direction from their FPs including utilization standards and riparian effects direction.<br><br>The Coconino would continue to exclude livestock grazing from the river, except in emergency situations. The Coconino and the Prescott would continue to not assign grazing capacity to the riparian zone.<br><br>All three forests would continue to treat unsatisfactory rangelands through improved grazing management and modification of existing allotment management plans.<br><br>The Tonto would continue to manage suitable rangelands at Level B. Level B requires management controls on livestock numbers so that use is within present grazing capacity. Improvements are minimal and constructed only to the extent needed to protect and maintain the range resource in the presence of grazing. | Livestock grazing would be allowed throughout portions of the river corridor, consistent with protection and enhancement of water quality and the ORVs. Only minimal range improvements would be developed and only when essential to management.<br><br>Unsatisfactory rangelands would be treated through improved grazing management and modification of existing allotment management plans. | Livestock grazing would be allowed in upland areas, consistent with protection and enhancement of water quality and the ORVs. Only minimal range improvements would be developed and only when essential to management.<br><br>Unsatisfactory rangelands in the uplands would be treated through improved grazing management and modification of existing allotment management plans.<br><br>Livestock would be excluded from grazing in riparian areas. This would be accomplished through utilization of existing fences in the Wild section and may require construction of additional fencing in the Scenic section. Any future proposal to reintroduce grazing to riparian areas would be evaluated through the NEPA process and the decision would be made by the forest supervisor.<br><br>Livestock would be allowed to water at three river locations within the Brown Springs Allotment within the corridor. | Livestock grazing would be excluded from the entire VWSR corridor. To prevent livestock from entering the WSR corridor, new fences would be constructed outside the river corridor, or pastures that access the VWSR would not be grazed. Fences within the corridor would be removed if incompatible with scenery or wildlife values. Any future proposal to reintroduce grazing to riparian areas would be evaluated through the NEPA process and the decision would be made by the forest supervisor.<br><br>Livestock would not be allowed to water at the river. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Recreation Capacity/ Management**<br><br>Recreation Opportunity Spectrum/WOS | The river corridor would continue to be managed as Roaded Natural at Beasley Flat and Childs, and Semi-Primitive Motorized or Nonmotorized in between. Wilderness areas would continue to be managed as Wilderness Opportunity Spectrum (WOS) class II. | Same as Alternative 1 | Recreation Opportunity Spectrum (ROS) classes would be revised to reflect changes in road management: Beasley Flat recreation site would be managed as Roaded Natural; Beasley Flat to Childs would be managed as Semi-primitive Nonmotorized and WOS II; Childs would be managed as Roaded Natural; Childs to Red Creek would be managed as WOS I; Red Creek to Sheep Bridge would be managed as WOS I. | Same as Alternative 3 |
| **Dispersed Camping** | Dispersed camping would continue to occur along the entire river corridor except in areas with seasonal closures and at developed sites. | Same as Alternative 1 | Same as Alternative 1 except:<br><br>The Verde Hot Springs area and the new Childs river launch would be day use only with no campfires allowed. | Same as Alternative 3 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Human Waste Removal/Campfires | Human waste removal and use of fire pans would continue to be encouraged, but not required. Ground fires would continue to be allowed using available dead and downed wood. | Same as Alternative 1 | Overnight boaters would be required to carry portable toilets and fire pans, and to remove their human waste and ash from the river corridor. Ground fires would be allowed with a fire pan, using available dead and downed wood as fuel. | Same as Alternative 3 |
| Recreation Special Uses | Continue under the current forest planning direction regarding types and capacities for recreation special uses. | Same as Alternative 1 | Permitted special uses would meet CRMP goals and be consistent with protection and enhancement of free-flow, water quality and ORVs. | No recreation special uses, other than river running, would be authorized in the Wild or Scenic sections of the river, |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Commercial River Capacity | Continue to allow one priority commercial use permit for river guiding with a maximum of 500 client days on the Wild river section. In addition, continue to offer a temporary pool with 100 total client days and no more than 25 client days per permit.<br><br>Continue to permit commercial river use in the Scenic river section under temporary use guidelines.<br><br>Continue to permit educational and research trips in addition to the number of client days allocated above.<br><br>No daily commercial river runner capacity is established except as guided by ROS and WOS encounter levels.<br><br>In the Wild section of the river, a commercial group size limit guideline of 15 persons would remain in place. | Same as Alternative 1 | On the Wild river section, 2 priority, commercial use permits with 200 user days each would be offered. In addition, a temporary pool would be offered on the Wild section with 100 total user days and no more than 25 user days per permit.<br><br>On the Scenic river section, 2 priority, commercial use permits with 400 user days each would be offered. In addition, a temporary pool would be offered on the Scenic section with 200 total user days and no more than 50 user days per permit.<br><br>Commercial trip group sizes would be limited to 12 in the Wild section with 1 launch per day, and 25 in the Scenic section with 2 launches per day. | On the Wild river section, 2 priority, commercial use permits with 125 user days each would be offered. In addition, a temporary pool would be offered on the Wild section with 100 total user days and no more than 25 user days per permit.<br><br>On the Scenic river section, 2 priority commercial use permits with 200 user days each would be offered. In addition, a temporary pool would be offered on the Scenic river section with 200 total user days and no more than 50 user days per permit.<br><br>Commercial trip group sizes would be limited to 12 in the Wild section with 1 launch per day, and 25 in the Scenic section with 2 launches per day. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Noncommercial River Capacity and Registration | No daily noncommercial river runner capacity is established.<br><br>In the Wild section of the river, a noncommercial group size limit guideline of 15 persons would remain in place. In the Scenic section, noncommercial groups of less than 75 people would continue to be allowed without a permit. Permits may be issued for noncommercial groups over 75 people in the Scenic section.<br><br>The voluntary river runner registration system would remain in place at Beasley Flat and Childs launch sites. | Same as Alternative 1 | Noncommercial river runner capacity for the Wild river would be set at 48 persons launching per day, and 200 launching per day on the Scenic river. This capacity includes private, educational, and research trips.<br><br>In the Wild section of the river, a 12-person group size limit would be established. In the Scenic section, noncommercial groups of less than 25 people would be allowed without a permit. Permits may be issued for noncommercial groups over 25 people in the Scenic section.<br><br>A mandatory river registration system would be implemented at launch sites to monitor river use levels. | Same as Alternative 3, except:<br><br>A mandatory river permit system would be implemented with no limit on total permit numbers. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Commercial Motion Picture and Still Photography | Motion picture, video, and television filming would continue to be prohibited within the Wild river and the Cedar Bench Wilderness section of the Scenic river, unless the filming activity is wilderness dependent and found to be necessary to meet the minimum requirements for the administration of the areas for the purpose of the Wilderness Act.<br><br>Additionally, motion picture, video, and television filming within the Wild section would continue to be prohibited except for documentaries that are consistent with wilderness management objectives.<br><br>Motion picture filming and commercial still photography would continue to be permitted in the Scenic river section outside of the Cedar Bench Wilderness. | Same as Alternative 1 and:<br><br>Commercial filming and photography activities in the VWSR would meet CRMP goals and be consistent with protection and enhancement of free-flow, water quality and ORVs. | Same as Alternative 2 and:<br><br>Commercial motion picture and still photography would be permitted in the Scenic River section outside of the Cedar Bench Wilderness, only when no other reasonable location can be found. | Same as Alternative 3 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Recreation Facilities** | Existing developed facilities would continue to be managed for current uses and capacities. Beasley Flat would continue to be a day use recreation site. Childs Campground would continue to be managed as a campground but individual campsites may be moved out of the flood plain, as feasible. | Same as Alternative 1 | An improved boat launch/take-out site would be developed at the end of FR 502, past the Arizona Public Service Co. (APS) housing area, at the river upstream of Childs. Campsites and other facilities within Childs Campground would be relocated out of the flood plain. The flood plain area where campsites would be removed, would be open to hike-in day use and closed to motor vehicles. The APS housing area would be considered as part of the area renovation to meet the need for camping and management functions. Development or improvements at the Verde Hot Springs would be minor and only to meet interpretive, safety, or resource protection goals. | Same as Alternative 3 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Riparian Areas** | Where possible under existing management plans, riparian dependent vegetation would continue to have preference over other resources in the river corridor.<br><br>Riparian areas would continue to be managed to trend toward satisfactory condition over the long term. | Woody and herbaceous riparian vegetation would be managed to achieve species composition, establishment, and growth rates that are consistent with site potential.<br><br>Where livestock grazing is permitted, plant density, composition, and biomass would be optimized by grazing practices that benefit riparian dependent species and bank conditions (e.g. brief winter-only grazing periods, year or more periods of rest, conservative utilization and bank alteration standards, intensive monitoring.) Permitted livestock use would be managed to minimize or eliminate bare soils and compacted banks resulting from concentrated high use areas within riparian areas.<br><br>Roads, trails, and recreation sites within riparian areas would be managed to minimize or eliminate bare soil, compacted banks, and disturbed vegetation beyond the developed facilities themselves.<br><br>Monitoring of resource uses would occur frequently | Same as Alternative 2 except:<br><br>Livestock would be excluded from grazing in riparian areas. | Same as Alternative 3 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Safety and Communications** | In the Wild section of the river the forest supervisor would continue to approve the use of motorized equipment in emergency situations. The district ranger would continue to coordinate with the appropriate county and State agencies. In the Scenic section of the river the district rangers would continue to authorize and coordinate all emergency operations with the appropriate county and State agencies. | Same as Alternative 1 | Same as Alternative 1 | Same as Alternative 1 |
| **Scenery** | The river corridor would continue to be managed according to the Visual Management System. Lands within the WSR corridor are seen as foreground views, primarily from the river, which is assigned Sensitivity Level 1. These foreground views would continue to be managed to a Retention Visual Quality Objective (VQO) outside of wilderness and Preservation VQO inside wilderness. | The river corridor would be managed in accordance with the Scenery Management System (SMS). Foreground views would be managed to a High scenic integrity objective outside of wilderness and Very High scenic integrity objective (SIO) inside wilderness.<br><br>Historic remnants at Childs and the Verde Hot Springs would be managed as valued cultural landscape elements. | Same as Alternative 2 except:<br><br>Foreground views would be managed to a Very High scenic integrity objective, except at Beasley Flat and Childs where the SIO would be High. | Same as Alternative 3 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Scenic Easement | There is one parcel of private land in the VWSR corridor known as Brown Springs Ranch. The Forest Service does not own a scenic easement on this parcel of land. | As opportunity arises with willing sellers, the Forest Service would acquire a scenic easement (or fee simple purchase) on the parcel of private land known as Brown Springs Ranch, in order to attain desired scenic protection goals. | Same as Alternative 2 | Same as Alternative 2 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Upland Areas** | Upland areas would continue to be managed to trend toward satisfactory condition over the long term, including reducing soil loss and improving watershed condition. | Upland areas would be managed to achieve an upward trend in ecological condition of herbaceous vegetation. Once the potential vegetative composition and cover is reached, these areas would be managed to maintain that condition.<br><br>Where livestock grazing is permitted, improvement in ecological trend or condition would be maintained through intensive livestock management practices.<br><br>Permitted livestock use within upland areas would be managed to minimize or eliminate disturbed areas resulting from concentrated high use areas.<br><br>Roads, trails, and recreation sites within upland areas would be managed to minimize or eliminate vegetation and soil disturbances beyond the developed facilities themselves.<br><br>Monitoring of resource uses would occur frequently enough to prevent exceeding these impact standards. | Same as Alternative 2 | Same as Alternative 3, except:<br><br>Livestock would be excluded from grazing in upland areas. |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Utilities and Communication Sites** | The two existing power line/potential upgrade corridors and one potential power line corridor within the VWSR boundary would continue to be managed in accordance with the Forest Plans. Environmental review would still be required prior to any utility upgrades or any additional installation within existing utility corridors.<br><br>Electronic installations are allowed only at existing developed sites as listed in the Forest Plans. Proposals for new electronic sites require approval of the Regional Forester and Forest Plan Amendment. There are no electronic sites within the VWSR. | Reconstruction or modification of existing transmission lines would be permitted consistent with standards for protection and enhancement of free-flow, water quality, and ORVs.<br><br>Normal maintenance activities such as access and line clearing would also require consistency with protection and enhancement standards for free-flow, water quality and the ORVs.<br><br>Power lines in existence prior to WSR designation would be accepted as nonconforming inconsistencies in relation to scenery goals. As opportunities arise, they would be brought into compliance with established SIOs.<br><br>Construction of new electronic sites, utility lines, or transmission lines would not be allowed within any river segment. | Same as Alternative 2 | Same as Alternative 2 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Water Resources**<br><br>Water Quality | Support continued water quality monitoring by the USGS and ADEQ within and below the VWSR. Continue to implement BMPs to control nonpoint sources of pollution throughout the WSR corridor.<br><br>Continue to cooperate with ADEQ to reduce or eliminate pollution of the Wild segment of the river. In the Wild portion of the river, the cause of any water contamination (human, livestock, or other) would continue to be determined and immediate action taken to correct the problem and/or warn the public not to use the water in question. Contamination of springs or streams by recreation stock or human wastes, as well as detergents and other cleaning materials, would continue to be minimized by education and enforcement.<br><br>Any use that unacceptably alters a healthy aquatic ecosystem within the Wild section would continue to be reduced and managed to an acceptable level. When necessary to protect water quality, restrictions on camping near springs and | Support continued water quality monitoring by the USGS and ADEQ within and below the VWSR. Continue to implement BMPs to control nonpoint sources of pollution throughout the WSR corridor.<br><br>The Forest Service would cooperate with ADEQ to reduce or eliminate pollution of the Wild and Scenic sections of the river. The cause of any water contamination (human, livestock, or other) would be determined and immediate action taken to correct the problem and/or warn the public not to use the water in question. Contamination of springs or streams by recreation stock or human wastes, as well as detergents and other cleaning materials, would be minimized by education and enforcement.<br><br>Any use that unacceptably alters a healthy aquatic ecosystem in the Wild or Scenic section of the river would be reduced and managed to an acceptable level. When necessary to protect water quality, restrictions on camping near springs and streams would be | Same as Alternative 2 | Same as Alternative 2 |

**Table 2. Verde Wild and Scenic River Management Alternatives**

| Resource | Alternative 1 – No Action | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| Water Quantity/ Instream Flows | Instream flows needed to support the flow-dependent ORVs will be identified and water rights necessary to protect these flows will be applied for through the State appropriation process and/or claimed as a Federal reserved right. | Same as Alternative 1 | Same as Alternative 1 | Same as Alternative 1 |

**Table 3. Summary of Outputs and Effects for the Verde Wild and Scenic River**

| Indicator | Alternative 1 | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| **Scenery** | | | | |
| Scenic Integrity Objectives (SIOs) | No SIOs - Preservation in wilderness and Retention VQOs elsewhere | Very High SIO in wilderness and High SIO elsewhere | High SIO at Beasely Flat and Childs, Very High SIO elsewhere | High SIO at Beasely Flat and Childs, Very High SIO elsewhere |
| **Fish** | | | | |
| Habitat quality for threatened, endangered, and sensitive (TE&S) fish species **2**/ | Low | Moderate | High | High |
| **Wildlife** | | | | |
| Habitat quality and diversity for riparian-dependent wildlife: **3**/<br>TE&S species<br><br>Game species<br><br>Migratory birds | <br><br>Fair<br><br>Very Poor to Fair<br>Very Poor to Poor | <br><br>Fair<br><br>Very Poor to Good<br>Very Poor to Fair | <br><br>Good<br><br>Good<br><br>Good to Optimum | <br><br>Good to Optimum<br>Good<br><br>Optimum |
| **Cultural/Historic** | | | | |
| Opportunities for public interpretation of resource values | Moderate | High | Moderate | Low |
| Opportunities for protection and/or conservation of resource values | Moderate | High | Moderate | Low |
| **Water Resources** | | | | |
| Water quality | Existing quality maintained/ possibly some decline if use increases | Slight improvement | Slight improvement over Alt. 2 | Slight improvement over Alt. 3 |
| Bank stability | Existing | Some | Greater | Greater |

**Table 3. Summary of Outputs and Effects for the Verde Wild and Scenic River**

| Indicator | Alternative 1 | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| | conditions maintained | improvement | improvement | improvement |
| **Riparian Vegetation** | | | | |
| Species and age diversity | Poor | Fair | Good to Excellent | Good to Excellent |
| Structure | Less dense and diverse in grazed areas Dense or at site potential in ungrazed areas | Less dense and diverse in grazed areas Dense or at site potential in ungrazed areas | Dense or at site potential in all areas | Dense or at site potential in all areas |
| **Upland Vegetation 4/** | | | | |
| Species diversity | Grasses low, shrubs/trees high | More grass species | More grass species | Most grass species |
| Structure | Least ground cover | More ground cover | More ground cover | Most ground cover |
| **River Access** | | | | |
| Miles of road open to public use | Approx. 8 | Approx. 8 | Approx. 6 | Approx. 2 |
| Miles of nonmotorized trails | Approx. 13 | Approx. 13 | Approx. 17 | Approx. 14 |
| Number of public road access points to within 1/8 mi. of the river | 9 | 9 | 3 | 2 |
| Number of public nonmotorized trail access points to the river | 6 | 6 | 9 | 6 |
| Boat launch access | Beasley Flat PG Childs CG | Beasley Flat PG Childs CG | Beasley Flat PG Childs Area | Beasley Flat PG Childs Area |
| **Recreation Use and Capacities** | | | | |
| ROS classification in acres 5/ | SPNM – 15,285 SPM – 53,015 RN – 25,729 R – 7,437 | SPNM – 15,285 SPM – 53,015 RN – 25,729 R – 7,437 | SPNM – 16,669 SPM – 59,837 RN – 17,899 R – 7,061 | SPNM – 16,669 SPM – 59,837 RN – 17,899 R – 7,061 |

**Table 3. Summary of Outputs and Effects for the Verde Wild and Scenic River**

| Indicator | Alternative 1 | Alternative 2 | Alternative 3 | Alternative 4 |
|---|---|---|---|---|
| River launches: people per day | No capacities set | No capacities set | Wild – 60<br>Scenic – 250 | Wild – 60<br>Scenic – 250 |
| Registration system for river runners | Voluntary registration system | Voluntary registration system | Mandatory free registration system | Mandatory free permit system |
| Commercial permits issued and user days per permit | Wild – 1 priority permit 500 days, temporary pool 100 days<br>Scenic – case-by-case | Wild – 1 priority permit 500 days, temporary pool 100 days<br>Scenic – case-by-case | Wild – 2 priority permits 200 days each, temporary pool 100 days<br>Scenic – 2 priority permits 400 days each, temporary pool 200 days | Wild – 2 priority permits 125 days each, temporary pool 100 days<br>Scenic – 2 priority permits 200 days each, temporary pool 200 days |
| Group size limits for VWSR corridor | Wild – 15 people<br>Scenic – 75 people | Wild – 15 people<br>Scenic – 75 people | Wild – 12 people<br>Scenic – 25 people | Wild – 12 people<br>Scenic – 25 people |
| Waste carryout systems | Encourage | Encourage | Required for overnight boaters | Required for overnight boaters |
| **Developed Recreation Facilities** | | | | |
| Beasley Flat | Remains day use picnic area | Remains day use picnic area | Remains day use picnic area | Remains day use picnic area |
| Childs area | Childs CG to be moved out of flood plain | Childs CG to be moved out of flood plain | Childs CG to be moved out of flood plain; day use area and parking constructed | Childs CG to be moved out of flood plain; day use area and parking constructed |
| **Livestock Grazing** | | | | |
| Acres excluded from grazing **6/** | Approx. 2,200 | As much as 40,425 | As much as 57,225 | As much as 78,725 |
| Permitted livestock **7**/ | 3,338 | Estimated 3,073 | Estimated 3,073 | Estimated 2,782 |
| River miles open to livestock grazing/watering | 37 | 14 | ¼ | 0 |
| Additional Fencing in miles | 0 | Approx. 6 | Approx. 8 | Approx. 15 |

**2**/ Fish habitat quality is determined by water quality, riparian vegetation, and streambank conditions that maintain aquatic habitat requirements of native fish. Water quality parameters are affected by activities that increase turbidity, sediment, animal or human waste, or contaminants in the water column. Riparian vegetation and streambank conditions are affected by activities that reduce riparian vegetation. Riparian vegetation helps stabilize streambanks, aids in flood plain development, and aids in protection from scouring floods. This helps to maintain stream channel characteristics with low substrate embeddedness, abundant aquatic food supply, and diverse stream habitat types for various life stages (i.e. spawning and rearing habitats).

**3**/ Wildlife habitat quality and diversity is measured by how well the habitat meets the foraging, reproductive, and other needs of riparian-dependent and other target species to maintain and/or increase populations or meet desired population goals. Quality and diversity is defined by vegetation (horizontal and vertical density, species composition, structure, crown cover), rate of vegetation recovery or advancement toward potential, stream processes that allow for vegetation establishment and widening of stands of vegetation at the "green line," and associated factors such as increases or decreases in susceptibility to nest predation.

**4**/ In much of the analysis area shrub and/or tree cover limits grasses and ground cover change. Tree and shrub composition and cover would not change in any alternative.

**5**/ Acres reported for each ROS class are those within an area 4 miles each side of the VWSR corridor.

**6/** Includes acres within and outside of the VWSR corridor but within allotments affected by the alternative.

**7**/ Number of permitted livestock in allotments that include the VWSR corridor

# Chapter 3 – Affected Environment

## Introduction

This chapter describes the character and resources of the designated Verde River corridor for one-quarter mile on each side of the river and adjacent lands. The current conditions, as well as any known trends, are described to acquaint readers with the corridor and to provide a basis for assessing the consequences of various alternatives as displayed in Chapter 4.

Existing conditions are described first for river resources identified as outstandingly remarkable in the 1982 VWSR FEIS. Existing conditions for resources related to significant issues are then described, followed by other resource conditions or topics that are not issue-related and, thus, not tracked throughout the rest of this document.

## Scenery

### Introduction

The scenic quality of the VWSR is highly valued by the public and is distinct and unique. Scenery is one of the river's outstandingly remarkable values. The VWSR offers a unique ribbon of riparian life in a desert landscape, a strong contrast between the features of the river environment and the upland, an outstanding variety of landforms and vegetative patterns visible from the river area, and distinct water and geologic features. Cumulative effects related to scenery will be assessed within the WSR corridor.

Under the USFS Scenery Management System the VWSR is classified as a distinctive Class A landscape. Factors that influence this classification include high scenic attractiveness, close distance zones, and high public concern levels. Special designations of wilderness and Wild and Scenic River indicate a high social value for the scenic attributes of this landscape. Current Forest Plan visual quality objectives also reflect the desire to maintain high levels of scenic integrity. Public comment received during scoping efforts for the planning of the CRMP also indicates a high value for scenic integrity.

### Existing Scenic Integrity

United States Forest Service Handbook, "Landscape Aesthetics, A Handbook for Scenery Management," provides definitions for scenic integrity that may be found in the Glossary.

The river corridor is characterized in many locations by open, expansive vistas viewed from numerous viewpoints. Existing scenic integrity within the VWSR corridor ranges from moderate to very high, depending upon the type and degree of human impacts, as explained below. The VWSR area is sensitive to further visual impact due to the combination of high viewer expectations, generally long duration of foreground views, the current predominance of the natural appearing landscape, and high amount of detail visible by the viewer.

### Scenic Integrity - Scenic River

The existing scenic integrity for the Scenic River is High. However, this section could also achieve the objective of Very High by removing and screening selected elements.

- The Beasley Flat Day Use recreation site, between river mile (RM) 60 to 59.3 has Moderate to High scenic integrity as viewed from the river or road since it is visually subordinate to the natural landscape, and has very little trash or vegetation damage.
- There is visible evidence of deterioration of the natural environment in dispersed recreation sites along roads, and at the river, from about RM 62 to 56.5. Some roads are visible and vehicles are often observed.
- A gauging station at RM 55.5 is highly visible from the river.
- The 69 Kv power lines are seen along the Scenic River from RM 42.6 to 52. They cross the river 3 times and are generally in the foreground. Their color and scale remain generally subordinate to the surrounding landscape. The larger 220 Kv power lines are substantially more obvious due to the size and color starting at about RM 43.5 and cross the river at RM 42. These lines are still visible to about RM 49.6
- Grazing is obvious in many locations throughout the Scenic River by the cow manure, occasional fencing and visible alteration of vegetation in some areas.
- The presence of fire rings, piles of charcoal, litter, human waste and cattle waste visibly impact many river camps.
- Dispersed camp and picnic sites along roads are generally Moderate to High scenic integrity. Broken branches, litter, feces, and barren ground occurs to varying degrees.
- The Verde Hot Springs is a visible cultural feature at RM 43.5 and adds scenic value.
- Childs Campground is visibly deteriorated with Low to Moderate existing scenic integrity due to severe vegetation loss, trash and soil compaction.
- The Childs Powerhouse, associated buildings, and power lines are visually prominent at RM 42 to RM 43.8. They are visually obvious from the river. The historic landscape elements at Childs are considered positive landscape features, valued by the general public.

## Scenic Integrity - Wild River

The existing scenic integrity for the Wild River is Very High as seen from the river. Some deviations, upon close site inspection, are due to small-scale constructed features, recreation activities and grazing.

- The larger 220 Kv power lines across the river are still visible to about RM 49.6 and towers on the high points (outside the W&S section) are still visible at RM 35.1.
- The radio tower on Ike's Backbone (outside the W&S corridor) is visible between RM 42 to 41.5.
- OHV tracks along the river exist in at MP 40.6.
- Trash from previous human habitation is visible at the old line shack at MP 36.6.
- A water gauging station is visually obvious on the river edge at MP 32.8.
- Grazing is obvious in many locations throughout the Wild River by the cow manure, occasional fencing and visible alteration of vegetation in some areas.
- The presence of fire rings, piles of charcoal, litter, human waste and cattle waste visibly impact many river camps.
- Red Creek Cabin (outside the corridor) is visible from within the VWSR at RM 20.

# Fish

## Introduction

Fish are one of the outstandingly remarkable values in the VWSR. The Verde River provides valuable fish habitat to a diversity of native fish species including several Federally listed, endangered and threatened species and their critical habitats. It is a free-flowing river from its headwaters beginning at Sullivan Lake Dam downstream 150 miles until it enters Horseshoe Reservoir, the first of two mainstem reservoirs. The Wild and Scenic reach of the river begins at Beasley Flat and ends downstream 40.5 miles at the confluence with Red Creek, about 20 miles north of Horseshoe Reservoir Dam. Major perennial tributaries within this reach include Fossil Creek and the East Verde River. The cumulative effects area is described as the Verde River from Horseshoe Dam upstream, to the headwaters at Sullivan Dam. This area corresponds to the critical habitat designations of the razorback sucker, spikedace, and loach minnow within the Verde River.

## Aquatic Habitat

Aquatic habitat is described in terms of water quality, water quantity, and the physical characteristics of the stream. Water quality and quantity are described in greater detail in the Water Resources section of this report.

Streamflow in the VWSR is highly variable. The majority of high flows occur during winter/spring of the year due to runoff from snowmelt and/or widespread frontal storm systems. It has been observed that winter/spring flood events have a positive effect on the native fish community in the Verde River (Stefferud and Rinne 1995; Rinne et al. 1998; Brouder et al. 2000). These flood events re-invigorate channel substrates and can reduce the populations of nonnative fishes (Minckley and Meffe 1987). Major flood events occurred in 1993 (50-year event) and 1995 (25-year event) that affected aquatic conditions throughout the VWSR. There have not been any major flood events in the VWSR since 1996.

The ADEQ sets water quality standards for the Verde River and monitors the river to determine if these standards are being met. ADEQ also evaluates the health of the aquatic communities within the Verde River using bioassessments. Bioassessments consist of collections of macroinvertebrates (aquatic insects) from riffle areas of perennial streams to determine the condition of the biological community. Bioassessments conducted for the reaches of the Verde River from West Clear Creek to Fossil Creek and from Tangle Creek to Ister Flat found good and exceptional communities, respectively (ADEQ 2000). Aquatic macroinvertebrate assessments were also conducted at Childs in 1986-87, 1990-91, and 1997 by the Forest Service (Magnum 1987, Magnum 1991, Vinson 1998). The BCI (Biotic Condition Index) ratings for these samples resulted in ratings of fair and poor indicating organic and sediment enrichment. Recreational use within the flood plain at Childs, and unauthorized vehicle fording of the river at Childs, are contributors to this localized impact to aquatic habitat quality.

Physical habitat within the VWSR is influenced by the geomorphology of the area. Basalt cliffs are present that confine the river channel through much of the VWSR. This confinement results in narrow flood plains and steep gradients in much of the Scenic reach. Gradients then flatten out in the Wild reach where the valley bottom becomes less confined. The wider valley bottom provides for a greater opportunity for flood plain development. Flood plain areas are key habitat

components used by two of the listed fish species found in the VWSR—razorback sucker and Colorado pikeminnow—during various life stages (USFWS 2002a, USFWS 2002b).

The Verde River is characterized as having long pools separated by short riffles. Habitat mapping of the VWSR recorded a subtotal of 29 percent pools, 13 percent riffles, and <1 percent side channels within the Scenic section, and a subtotal of 37 percent pools, 14 percent riffles, and 6 percent side channels within the Wild section (Sillas 2002). Based on visual observations, the majority of pools tend to be shallow. Riffle areas consisted of high gradient riffles, low gradient riffles, runs, and glides. The largest rapid within the WSR reach is Verde Falls located in the Scenic section. Backwaters tend to be small and scattered and are associated with the end of pool areas, side channels, or channel constrictions.

Pebble counts (measurements of stream substrates) were completed by Rocky Mountain Research Station at four riffle sites in 1998 and six riffle sites in 2002 between Beasley Flat and Gospel Hollow (PNF files). These assessments showed that sand, gravel, and cobble substrates were dominant with some areas of bedrock and boulders. Fine substrates (silt and sand) ranged from 13 to 39 percent of total substrate composition at all stations.

Streambanks in the VWSR have numerous areas of bedrock that form the banks along the river, mainly in the Scenic reach. In other areas, streambanks tend to be composed of sand, gravel, and cobble substrates. Bank alteration and some areas of instability were noted in areas where livestock grazing occurred in 2002 (Ross 2002, Sillas 2002). Riparian and streambank impacts were observed to be the highest on the Brown Springs Allotment where livestock have direct access to the river in three pastures. Riparian and streambank conditions have improved on the Red Creek Allotment where livestock grazing has been excluded along the Verde River since 1998.

## Native and Nonnative Fish Species

The fish community currently present within the VWSR is represented by six native fish species and numerous introduced nonnative fish species. Native fish species include razorback sucker (*Xyrauchen texanus*), Colorado pikeminnow (*Ptychocheilus lucius*), roundtail chub (*Gila robusta*), Sonora sucker (*Catastomus insignis*), desert sucker (*Catastomus clarki*), and longfin dace (*Agosia chrysogaster*). Nonnative fish species commonly found in the VWSR include common carp, channel catfish, flathead catfish, smallmouth bass, largemouth bass, green sunfish, red shiner, and mosquitofish.

The native fish community structure in the Verde River is influenced by the presence and abundance of nonnative fish, winter/spring flood events, and alterations of the natural hydrograph (Stefferud and Rinne 1995; Rinne et al. 1998; Brouder et al. 2000). Based on 10 years of data (1988-1997), native species generally comprise less than 20 percent of the fish community in the river reach from Camp Verde to Horseshoe Reservoir (Rinne et al. 1998). Native fishes were more abundant in 1995 following significant spring flooding that provided for better spawning conditions. High reproduction of desert sucker, Sonora sucker, and roundtail chub was observed and resulted in the recruitment of a strong year class that is evident in the fish community (Jahrke and Clark 1999).

Among the native fish species present in the VWSR, two are listed as Federally Endangered (razorback sucker and Colorado pikeminnow) and one is listed as a Forest Service Sensitive

species (roundtail chub.) Appendix D lists all Special Status Species present within the VWSR corridor and those with suitable habitat or critical habitat present. The other three native species present (Sonora sucker, desert sucker, and longfin dace) have no special status designation at this time.

Razorback sucker and Colorado pikeminnow have been reintroduced into the Verde River as part of recovery actions that began in 1981 and 1985, respectively (Hendrickson 1993). Since 1994, almost all reintroductions in Arizona have occurred within the VWSR. Stockings occur at Beasley Flat and Childs river access points. Small populations of these species occur in the VWSR, with most fish being found near stocking sites. There has been a steady increase in the number of recaptures in annual monitoring by the Arizona Game and Fish Department and multiyear survival has been documented (Jahrke and Clark 1999, Weedman 2002). Some fish have been found in spawning condition but no evidence of reproduction or recruitment has been documented. Colorado pikeminnow and razorback suckers are occasionally caught on hook and line near stocking sites and signs have been posted to inform anglers to release these species.

Catfish and bass species are the most commonly sought after game fish in the VWSR. Most recreational fishing takes place at the public access sites at Beasley Flat, Verde Falls, Gap Creek, and Childs. The AGFD changed fish regulations for the Verde River and its tributaries in 1998 to allow for unlimited harvest of channel catfish, flathead catfish, smallmouth bass, and largemouth bass. In addition, there are restrictions on transport of baitfish and crayfish in the Verde River. These changes are aimed at managing the nonnative fish populations in the Verde River and allowing for recovery of threatened and endangered native species.

## Critical Habitat for Special Status Species

The U.S. Fish and Wildlife Service has designated critical habitat (CH) for the razorback sucker, spikedace, and loach minnow in the Verde River (USFWS 1994, USFWS 2000). Critical habitats are defined as specific areas where physical or biological features are present that are essential to the conservation of the species, and which may require special management considerations of protection. Critical habitat for the razorback sucker includes the Verde River (T18N, R2E, Sec. 31) downstream to Horseshoe Dam. Within the VWSR, razorback sucker CH includes the entire reach of river and its 100-year flood plain. Critical habitat for the spikedace and loach minnow includes the Verde River from the confluence with Fossil Creek upstream to Sullivan Dam and several of its major tributaries. Unoccupied CH for the spikedace and loach minnow includes 21 miles of the VWSR and its 100-year flood plain, and the lower section of Fossil Creek, almost entirely within the Scenic reach. All elements of CH for these species are considered to be present within the VWSR except for presence of nonnative fish species that can negatively impact these species. There is also a threat of potential habitat loss from urban development and water withdrawals in the watershed above CH.

## Special Status Species – Razorback Sucker

| | |
|---|---|
| Endangered Species Act Status: | Endangered October 23, 1991 |
| Critical Habitat: | Designated March 21, 1994 |
| Recovery Plan: | Issued 1998 |
| Recovery Goals: | Issued 2002 |

Razorback suckers were extirpated from the Verde River drainage by the 1950s. U.S. Fish and Wildlife Service recovery goals include establishment of a population in the Lower Colorado River Basin. Critical habitat for the species includes the Verde River, which is currently the focus of this recovery program in Arizona. A reintroduction program was initiated in 1981 and now its annual goal is to stock 2,000 large (>300 millimeters in length) individuals into the Verde River system (Jahrke and Clark 1999). Since 1994, a total of 19,363 large individuals have been stocked into the VWSR (Jahrke and Clark 1999, F. Agyagos 2003). Today a small population is present in the project area from these stockings of hatchery-raised fish. There has been a steady increase in the number of razorback sucker recaptured in annual monitoring, and survival over several years has been documented (Jahrke and Clark 1999, Weedman 2001, Weedman 2002). Some fish have been found in spawning condition but no evidence of reproduction or recruitment has been documented. Threats to the species in the Verde River include potential habitat loss from urban development and water withdrawals in the watershed, and competition and predation by nonnative fish species.

Habitats required by adult razorback suckers include deep runs, eddies, backwaters, and flooded off-channel environments in spring; runs and pools, often in shallow water associated with submerged sandbars in summer; and low-velocity runs, pools, and eddies in winter. Spring migrations of adult razorback sucker were associated with spawning in historic accounts, and a variety of local and long-distance movements and habitat-use patterns have been documented. Spawning in rivers occurs over bars of cobble, gravel, and sand substrates during spring runoff (January – April) at widely ranging flows and water temperatures (typically greater than 14 $^{o}$C). Razorback sucker are broadcast spawners that scatter adhesive eggs over cobble substrate. Eggs incubate in small, narrow spaces between rocks or other substrates called interstitial spaces. Young require nursery environments with quiet, warm, shallow water such as tributary mouths, backwaters, or inundated flood plain habitats in rivers, and coves or shorelines in reservoirs.

## Special Status Species – Colorado Pikeminnow

| | |
|---|---|
| Endangered Species Act Status: | Endangered March 11, 1967 |
| Critical Habitat: | Designated March 21, 1994 |
| Recovery Plan: | Issued 1978, revised 1991 |
| Recovery Goals: | Issued 2002 |

Populations of Colorado pikeminnow within the Verde River are considered “experimental non-essential” under Section 10J of the Endangered Species Act (USFWS 1985). Under this designation, the pikeminnow is treated as a threatened species, except for the purposes of Section 7 of the Endangered Species Act, where they are treated as a proposed species. There is no critical habitat for Colorado pikeminnow designated in the Verde River.

The Colorado pikeminnow was extirpated from the Lower Colorado River Basin in the 1950s. Reestablishment of a population in either the Salt or Verde Rivers is an identified action in the recovery plan. However, the recovery goals are only considered necessary in the upper Colorado River Basin. The Verde River is currently the focus of Colorado pikeminnow reintroductions in Arizona by the Arizona Game and Fish Department. A reintroduction program was initiated in 1985 and now its annual goal is to stock 2,000 large (>300 millimeters in length) individuals into the Verde River system (Jahrke and Clark 1999). Since 1994, a total of 10,852 large individuals have been stocked into the VWSR (Jahrke and Clark 1999, F. Agyagos 2003). Today a small population is present in the project area from these stockings of hatchery-raised fish. There has

been a steady increase in the number of Colorado pikeminnow recaptured in annual monitoring (Jahrke and Clark 1999). No evidence of reproduction or recruitment has been documented. Threats to the species include potential habitat loss from urban development and water withdrawals in the watershed above occupied habitat, and competition and predation by nonnative fish species

Adult Colorado pikeminnow require pools, deep runs, and eddy habitats maintained by high spring flows. These flows maintain channel and habitat diversity, flush sediments from spawning areas, rejuvenate food production, form gravel and cobble deposits used for spawning, and rejuvenate backwater nursery habitats. Spawning occurs after spring runoff at water temperatures typically between 18 and 23 °C. After hatching and emerging from spawning substrate, larvae drift downstream to nursery backwaters that are restructured by high spring flows and maintained by relatively stable base flows. Strong year classes of Colorado pikeminnow have been linked to years immediately following wet hydrologic conditions, resulting in high spring-runoff flows.

## Special Status Species – Spikedace

Endangered Species Act Status: Threatened July 1, 1986
Critical Habitat: Designated April 25, 2000
Recovery Plan: Issued 1991

Spikedace are not known to occupy waters in the Wild and Scenic reach of the Verde River, although it's designated critical habitat includes the Scenic segment of the river. In the middle Verde River, it was last recorded in the mainstem above Camp Verde in 1950. Spikedace populations do occur in the upper Verde River from the headwaters downstream to the confluence with Sycamore Creek within the PNF (RMRS 2002). This population has become rare recently due to various factors, most notably predation and competition by nonnative fish and lack of flooding (Rinne 1999). There is also a threat of habitat loss from urban development and water withdrawals in the watershed above occupied and critical habitat.

The spikedace is found in moderate to large perennial streams, where it inhabits shallow riffles with sand, gravel, and rubble substrates, and moderate to swift currents and swift pools over sand or gravel substrates. Specific habitat for this species consists of shear zones where rapid flow borders slower flow, areas of sheet flow at the upper ends of mid-channel sand/gravel bars; and eddies at downstream riffle edges. Recurrent flooding and a natural hydrograph are very important in maintaining the habitat of spikedace, and in helping the species maintain a competitive edge over invading nonnative aquatic species.

## Special Status Species – Loach Minnow

Endangered Species Act Status: Threatened October 28, 1986
Critical Habitat: Designated April 25, 2000
Recovery Plan: Issued 1991

The loach minnow is considered extirpated from the Verde River Basin (USFWS 2000), although it's designated critical habitat includes the Scenic segment of the river. In the Verde River drainage, it was last recorded in 1938 in the Verde River above Camp Verde, and from Beaver Creek near its confluence with the Verde River (Minckley 1993). Fish surveys of Verde River tributaries in 2001 found no loach minnows present (USFWS 2001). The existence of suitable

habitat in the VWSR creates a high potential for restoration of loach minnow to the Verde River system. Threats to critical habitat include potential habitat loss from urban development and water withdrawals in the watershed and the presence of nonnative fish species.

The loach minnow is found in small to large perennial streams, and uses shallow, turbulent riffles with primarily cobble substrate and swift currents. The loach minnow uses the spaces between, and in the lee of (sheltered side), larger substrate for resting and spawning. It is rare or absent from habitats where fine sediments fill the interstitial spaces (Propst and Bestgen 1991). Recurrent flooding and a natural hydrograph are very important in maintaining the habitat of loach minnow, and in helping the species maintain a competitive edge over invading nonnative aquatic species.

## Special Status Species – Roundtail Chub

The roundtail chub is listed as a Forest Service Region 3 Sensitive Species and a State Wildlife Species of Concern (Towns 1996, AGFD 1996). A status survey on the roundtail chub in the lower Colorado River Basin was completed in 2002 (Voeltz 2002).

Roundtail chubs are found in cool to warm water, mid-elevation rivers and streams throughout the Colorado River Basin, often occupying open areas of the deepest pools and eddies on middle-sized to larger streams. They occasionally concentrate in relatively swift, turbulent waters below rapids, moving into less turbulent chutes in small groups, presumably to feed. Habitats occupied by roundtail chubs are often associated with adjacent cover in the form of boulders, overhanging cliffs, undercut banks, or vegetation. Surveys conducted by Voeltz (Voeltz 2002) identified populations within the project area, in the Verde River drainage throughout the mainstem, and in Fossil Creek. The majority of these populations are considered Unstable-Threatened mainly due to predation and competition by nonnative fish.

## Status of Management Indicator Species (MIS) - Macroinvertebrates

Macroinvertebrates (aquatic insects) are the MIS for aquatic habitats. These species occur along the entire reach of the VWSR. Macroinvertebrate bioassessments are a rating of the health of the aquatic insect community. Bioassessments have been completed in the project area by ADEQ to rate the warm water aquatic community category of A&Ww (Aquatic and Wildlife) (2000, 2002). The findings are summarized below for the VWSR.

**Verde River, West Clear Creek to Fossil Creek -** Bioassessments were taken in 1995, 1999, and 2000. The 1995 bioassessment rated the macroinvertebrate community as "good." The reach is currently rated as inconclusive to support A&Ww because of exceedances in the turbidity standard and has been placed on ADEQ's planning list for further monitoring and investigation. There is not sufficient information to indicate population status and habitat trends.

**Verde River, Fossil Creek to Red Creek -** This reach has not been assessed by ADEQ. Aquatic macroinvertebrate assessments were conducted at Childs in 1986-87, 1990-91, and 1997 by the Forest Service (Magnum 1987, 1991; Vinson 1998). The BCI (Biotic Condition Index) ratings for these samples resulted in ratings of fair and poor, indicating organic and sediment enrichment. Recreational use within the flood plain at Childs and unauthorized vehicle fording of the river at Childs are contributors to this localized impact to instream habitat quality. There is not sufficient information to indicate population status and habitat trends.

**Verde River, Tangle Creek to Ister Flat -** Bioassessments were taken in 1999. The reach is currently rated as inconclusive to support A&Ww because of exceedances in the turbidity standard and has been placed on ADEQ's planning list for further monitoring and investigation. There is not sufficient information to indicate population status and habitat trend

# Wildlife

## Introduction

The VWSR provides habitat for a diverse array of wildlife species and contains some of the most important riparian and associated upland habitat found in Arizona and the Southwest. Wildlife is one of the outstandingly remarkable values of the VWSR. An estimated 60 percent of the vertebrate species found on the three national forests occur within the VWSR. Excluding fish, the VWSR contains habitat, occupied or suitable, for 7 Threatened, Endangered or Candidate species, 38 Sensitive plant and animal species, 19 Management Indicator Species, and numerous other species of concern on the three national forests. Due to dramatic declines in riparian habitat in Arizona, the VWSR represents an important resource.

For this analysis, the area of assessment of cumulative affects includes the watershed of the Verde River (see Figure 2) and range allotment boundaries that encompass portions of the VWSR (see Map 8, Appendix D).

A list of threatened, endangered, sensitive, and management indicator species, including their status and occurrence within the VWSR, is presented in Appendix A. Listed terrestrial species include the bald eagle, southwestern willow flycatcher, Yuma clapper rail, Mexican spotted owl, cactus ferruginous pygmy-owl, and lesser long-nosed bat. No listed plants have been identified within the VWSR.

## Terrestrial Habitat

Wildlife habitat within the VWSR is made up of several distinct vegetation types: riparian woodland, xeric (dry) riparian, aquatic (emergent and submergent), and various upland vegetation types (see Upland Vegetation section for more details). The riparian woodland type has similar species composition throughout the VWSR, but differs in individual stands based on stream morphology, flood plain features and management activities. Aquatic habitat also varies based on stream characteristics, with dense stands of emergent vegetation occupying large amounts of the channel in wide, slower moving segments of the lower sections of the VWSR.

The quantity and quality of riparian-dependent wildlife habitat is directly related to, and ultimately determined by, future management of the Verde Wild and Scenic River. Upland habitat within the corridor is also important for a number of other species. Current habitat conditions vary throughout the VWSR. For purposes of comparison, the river is divided into 10 sections (described in the riparian vegetation analysis), beginning in the lower section of the VWSR (Red Creek) and progressing upstream to Beasley Flat. Table 4 summarizes current uses affecting habitat, and rates vegetation conditions and current and potential habitat quality for wildlife based on the effects of current uses on vegetation.

**Table 4. Habitat Quality and Associated Impacts by River Section Within the VWSR, Fall 2002**

| River Section | River Miles 8/ | Grazing Impacts | Rec. Impacts | Road/ OHV Impacts | Plant Cover 9/ | Plant Density | Plant Species Diversity | Habitat Quality/ Potential |
|---|---|---|---|---|---|---|---|---|
| 1 | 19.8-24.0 | No | No | Yes | Good | Good | Good | High/high |
| 2 | 24.0-35.8 | Yes | No | No | V poor | V poor | Poor | Low/high |
| 3 | 35.8-44.5 | Yes | Yes | Yes | Poor | Fair | Fair | Mod/high |
| 4 | 44.5-49.3 | No | No | No | Good | Good | Good | High/high |
| 5 | 49.3-53.0 | Yes | No | No | V poor | V poor | V poor | V low/high |
| 6 | 53.0-54.5 | Yes | No | No | Poor | Poor | Fair | Mod/high |
| 7 | 54.5-56.0 | Yes | Yes | No | V poor | V poor | V poor | V low/mod |
| 8 | 56.0-57.2 | No | Yes | No | Poor | Fair | Good | Low/low |
| 9 | 57.2-57.7 | Yes | No | No | V poor | V poor | V poor | V low/mod |
| 10 | 57.7-60.0 | No | Yes | Yes | Good | Good | Good | High/high |

In river sections 2, 3, 5, 6, 7 and 9, livestock grazing is the primary reason for poor to very poor vegetation conditions during 2002 (Ross 2002a, 2002b, 2002c, 2002d, 2002e). Vertical and horizontal cover values at grazed and ungrazed sites were also evaluated in 2002 (Ross and Johnson-Grove 2003b). Cover values at ungrazed sites were four times higher, and total biomass was twice as high, than at grazed sites (Tables 5 and 6). Higher cover values indicate better quality habitat for wildlife. In River sections 1, 3, and 10 roads contribute to reduced habitat quality through direct impacts to vegetation or by providing access for OHV use within the corridor. Habitat quality is affected in Sections 3, 7, 8 and 10 because of recreation impacts related to use levels, dispersed or designated campsites, or other disturbance.

**Table 5. Vertical/Horizontal Cover Values for Grazed and Ungrazed Sites on the Verde River, September 2002**

| Site No. | Grazing Status | Cover Location | Plot Number | | | | | | | | | | Cover Value 10/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | |
| 1 | Grazed | Herbaceous | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 |
| | | Woody | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 9 |
| Total | | | 0 | 2 | 3 | 0 | 0 | 2 | 0 | 0 | 4 | 1 | 12 |
| 2 | Ungrazed | Herbaceous | 4 | 2 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 32 |
| | | Woody | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | 18 |
| Total | | | 4 | 2 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 4 | 50 |

**Table 6. Ground Cover (Biomass) Values From Two Grazed and One Ungrazed Site on the Verde River, September 2002**

| Site No. | Grazing Status | Plot Number | | | | | | | | | | | | | | | Average | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | 7 | 8 | 9 | 10 | | |
| | | Ht 11/ | Wt 12/ | Ht | Wt | Ht | Wt | Ht | Wt | Ht | Wt | Ht | Ht | Ht | Ht | Ht | Wt | Ht |
| 1 | Grazed | 3 | 10 | 3 | 30 | 3 | 40 | 4 | 15 | 3 | 15 | 4 | 4 | 2 | 2 | 3 | 22 | 3.1 |
| 2 | Grazed | 2 | 45 | 2 | 70 | 2 | 20 | 2 | 35 | 2 | 20 | 2 | 2 | 2 | 2 | 2 | 38 | 2 |
| 3 | Ungrazed | 5 | 200 | 5 | 300 | 6 | 250 | 5 | - | 5 | - | 5 | 6 | 6 | 6 | 6 | 250 | 5.5 |

## Special Status Species – Bald Eagle

Endangered Species Act Status: Threatened July 12, 1995
Critical Habitat: Designated - No
Recovery Plan: Issued 1982

Four bald eagle nest territories are located within the VWSR: Ladders, Coldwater, East Verde and Table Mountain. Along the Verde, eagles forage on the river at selected pools and riffles. Fish, such as catfish, suckers and carp, are a primary food source. They build their nests on cliff ledges, pinnacles, and in live cottonwood trees or snags. The Ladders and Coldwater territories each fledged two young in 2002. The Ladders territory is seasonally closed to entry from December 1 through June 15 to prevent human disturbance from affecting bald eagle reproduction. The East Verde and Table Mountain territories did not fledge young in 2002 (Koloszar 2002) or 2003 (Driscoll, personal communication, 2003). The East Verde nest is susceptible to disturbance due to a popular camping beach immediately downstream of the nest. The new location of the Coldwater nest (on a cliff face above the river) may also be susceptible to disturbance from use of a camping beach immediately downstream of the nest.

## Special Status Species – Southwestern Willow Flycatcher

Endangered Species Act Status: Endangered March 29, 1995
Critical Habitat: Designated - Yes, but rescinded
Recovery Plan: Issued 2003

Nesting populations of southwestern willow flycatchers occur below and above the VWSR at Horseshoe Reservoir and in the Verde Valley. The VWSR provides migratory habitat for the species and may contain occupied habitat. Potential or suitable habitat has been identified within all sections of the VWSR. Habitat is distributed throughout the management area in pockets of dense sapling and mature willows and mixed broadleaf riparian stands. Nearly all habitat within the river corridor is linear and patchy.

## Special Status Species – Yuma Clapper Rail

Endangered Species Act Status: Endangered March 11, 1967

Critical Habitat: Designated - No
Recovery Plan: Issued 1983

The VWSR contains numerous large patches of cattail, *Phragmites* and mixed emergent vegetation that provides potential habitat for the Yuma clapper rail. A rail was heard calling just upstream from the Red Creek confluence in May 2001, but a survey of the river from Childs to Sheep Bridge in May 2002 and 2003 elicited no responses.

### Special Status Species – Mexican Spotted Owl

Endangered Species Act Status: Threatened March 16, 1993
Critical Habitat: Designated - Yes, but none in VWSR
Recovery Plan: Issued 1995

The VWSR contains potential nesting, wintering and migratory habitat for the Mexican spotted owl (MSO). Surveys have not been conducted in or near the analysis area and there are no records of the species in the VWSR. Mexican spotted owl protected activity centers do occur at higher elevations on either side of the Verde River drainage and the river may be used as both dispersal and wintering habitat. Riparian habitat is designated as restricted habitat in the MSO Recovery Plan. Canyons adjacent to the river also provide suitable habitat for the species.

### Special Status Species – Cactus Ferruginous Pygmy-owl

Endangered Species Act Status: Endangered March 10, 1997
Critical Habitat: Designated - Yes
Recovery Plan: Issued Draft 2003

### Special Status Species – Lesser Long-nosed Bat

Endangered Species Act Status: Endangered September 30, 1988
Critical Habitat: Designated - No
Recovery Plan: Issued 1995

Suitable habitat for the cactus ferruginous pygmy-owl and lesser long-nosed bat occurs in the saguaro-palo verde vegetation type found below the East Verde River confluence; however, neither species has been documented within the VWSR area.

### Special Status Species – Yellow-billed Cuckoo

Endangered Species Act Status: Candidate July 25, 2001
Critical Habitat: Designated - N/A
Recovery Plan: Issued - N/A

Yellow-billed cuckoos have been documented at various locations along the Verde River including the designated reach. Potential and suitable habitat for the yellow-billed cuckoo is found in nearly all sections of the VWSR. Dense understory foliage in riparian stands is important in nest site selection, while cottonwood trees are an important foraging habitat. The USFWS has determined that listing may be warranted, but is precluded due to other listing priorities.

### Sensitive Species

Sensitive species observed within the VWSR corridor include (see Appendix A): the southwestern river otter, common black-hawk, Bell's vireo, Maricopa tiger beetle, Mexican garter snake, lowland leopard frog, Arizona toad, peregrine falcon, and Gila monster. All of these species, with the exception of the peregrine falcon and Gila monster, are riparian-dependent and their populations are directly affected by riparian habitat quality. The peregrine falcon may forage on riparian-dependent species such as waterfowl, while the Gila monster has only been observed in riparian areas in adjacent drainages where topography precludes use by livestock. Appendix A lists sensitive plants that might occur in the VWSR, but no plant locations have been identified.

### Management Indicator Species and Migratory Birds

Appendix A lists management indicator species found within the VWSR corridor. These vertebrate species were identified based on the key vegetation types they inhabit. For pinyon-juniper woodland, the MIS are ash-throated flycatcher, gray vireo, Townsend's solitaire, plain titmouse, juniper titmouse, common flicker, spotted towhee and mule deer. For chaparral areas, the MIS are spotted towhee, black-chinned sparrow, and rufous-sided towhee. For desert grassland areas, the MIS are savannah sparrow, horned lark, and antelope. For desert scrub vegetation types, the MIS are black-throated sparrow, canyon towhee, and antelope. For riparian areas the MIS are bald eagle, Bell's vireo, summer tanager, hooded oriole, Lucy's warbler, and yellow-breasted chat. For aquatic vegetation the MIS is cinnamon teal.

On January 10, 2001, President Clinton signed Executive Order 13186 placing emphasis on conservation of migratory birds. Appendix B lists Migratory Birds of Conservation Concern (U.S. Fish and Wildlife Service 2002) that have been identified or may occur within the VWSR study area.

### Game and Other Species

A number of game species and furbearers are found in the VWSR. Mule deer, white-tailed deer, javelina, small game mammals, Gambel's quail, waterfowl and other migratory game birds are common throughout the WSR. Beaver, bobcat, mountain lion, coyote, and black bear are also found in this area. An important bat roost exists within the VWSR near Beasley Flat, and bat use in the area is affected by current recreational use of the area.

## Cultural and Historic

### Introduction

The historic and cultural resource, one of the outstandingly remarkable values of the VWSR, consists of those prehistoric and historic archaeological sites, and historic structures within and immediately adjacent to the designated corridor. This also includes those areas identified as having traditional or religious significance by the Indian tribes who lived there historically. The area for cumulative effects, therefore, extends 1,000 feet beyond the designated VWSR corridor.

## Evidence of Prehistoric, Historic, and Cultural Use

The VWSR corridor is known to contain archaeological evidence of the occupation and agricultural use and modification of the Verde River flood plains, terraces, and hill slopes by people related to the prehistoric Hohokam and Southern Sinagua cultural traditions, over a period of at least 600 years. It may contain sites of human use and occupation from as long ago as 8,000 to 10,000 years.

It is also expected to contain a number of pre-European contact and historic sites reflecting use by Yavapai and Apache hunters, gatherers, and farmers and by Anglo, Hispanic, and Basque stockmen who raised or drove cattle and sheep throughout the area. It even contains a significant**13/** part of the industrial history of Arizona, as it

contains the site of the earliest hydroelectric generating facility in the State at the small settlement of Childs, currently still occupied and functional. The significance of the Childs Power Plant has already been recognized by its listing in the National Register of Historic Places. The VWSR corridor also contains the burned out remains of one of Arizona's first tourist developments, the Verde Hot Springs Resort across the river from Childs.

Archaeological surveys, including the one conducted for this analysis (North, Senior, and Foster 2003), have identified a wide range of features embedded into the Verde landscape. These features range from nearly invisible scatters of discarded artifacts and trash or collapsed and buried pithouses, to intact cliff dwellings, to ruins of buildings with as many as 100 rooms constructed of stone masonry walls collapsed into rubble piles several meters high. The great majority of these features are prehistoric in date and consist most frequently of collapsed stone masonry structures of various sizes, stone-built water control devices, pit ovens for preparing plant and animal foods, and petroglyphs (rock art hammered into the surfaces of boulders and basalt outcrops) (North, Senior, and Foster 2003).

No specifically located traditional cultural properties, native plant gathering areas, sacred sites, or other significant tribal places have been securely identified within the VWSR corridor (North, Senior, and Foster 2003). Nevertheless, portions of the VWSR corridor fall within the traditional territories of the Bald Mountain and Fossil Creek Bands and the Third and Fifth Semi-bands of the *Dil zhéé*, or Tonto Apache, as well as different groups of Yavapai. At least eight *Dil zhéé* clans, some mixed with Yavapai, are known to have inhabited portions of the corridor or kept farms there. Several may have originated in the adjacent Fossil Creek drainage. In addition, the *Dil zhéé* maintain many place names associated with features in and adjacent to the VWSR corridor (North, Senior, and Foster 2003). Although specific sites with evidence of Apache or Yavapai occupation are poorly represented in the current inventory, it is expected they will be found in greater numbers through additional survey and closer inspection of known sites. Likewise, as additional information can be gathered through interviews with tribal elders, specific locations may yet be identified that correspond to historic farms and camps.

## Condition of the Historic and Cultural Resource Inventory

Seventy-four (74) archaeological and/or historic sites have been recorded or reported within or immediately adjacent to the VWSR corridor (North, Senior, and Foster 2003). Prior to the designation of the VWSR, only 43 archaeological sites had been inventoried within the corridor. Since then, an additional 31 sites have been recorded, a 72 percent increase. The larger, more

permanent stone masonry residential sites dominated the pre-designation inventory with few other site types represented. That situation has changed considerably since designation as a result of project level archaeological surveys, increased interest on the part of the forests, and the recent survey contracted for this study (Table 7).

Thirty-seven of the 74 sites (50 percent) are now noted as permanent residential settlements, ranging in size from small homesteads of a couple of rooms to large masonry room blocks and outliers containing perhaps as many as 100 contiguous rooms. At least four of these are large, early pithouse settlements. Another 29 (39 percent) are said to have been temporary residential sites, usually one-room structures known as "fieldhouses." These one-room structures, often devoid of artifacts, seem to be more common in the southern half of the corridor, though this may be an effect of the varying levels of past survey intensity between the different forests, since they were a common occurrence in the northern part of the area during the recent survey (North, Senior, and Foster 2003).

Only three artifact scatters without masonry or other visible surface features or indications of subsurface pithouses are recorded and only four sites are described as defensive in either architecture or location. There are also a variety of agricultural features associated with many residential sites.

There are six historic sites, all related to hydroelectric power generation, tourism, or ranching. With the exception of several of the ranching related sites, all of the historical and cultural sites inventoried in the corridor, are located outside the zone of riparian vegetation and scouring floods on the terraces, ridges, and hills overlooking the river.

**Table 7 - Comparison of Pre-Designation and Post-Designation Historic and Cultural Inventory of the Verde Wild and Scenic River Corridor14/**

| | Large Residential 20+ rooms | Small Residential 2-20 rooms | Temporary Residential | Pithouse Settlements | Defensive Architecture | Historic | Unknown/ Others | Sites with Agricultural Features | Total |
|---|---|---|---|---|---|---|---|---|---|
| Number Recorded Prior to 1984 | 12 | 17 | 11 | 1 | 1 | 2 | 1 | 1 | **46** |
| Number Recorded After 1984 | 2 | 2 | 8 | 3 | 1 | 4 | 2 | 10 | **32** |
| **Totals** | **14** | **19** | **19** | **4** | **2** | **6** | **3** | **11** | **78** |

## Site Condition

Site condition throughout the corridor is highly variable. Of the 34 sites assessed for baseline condition during the recent survey (North, Senior, and Foster 2003), only 5 could be characterized as having more than half of their recognizable features vandalized. Remarkably, 26 out of the 34 documented sites appeared to be only barely impacted by vandalism, if at all. At least half of

these were characterized as “intact,” that is, undisturbed by post-occupational activities, subject only to natural collapse and deterioration.

Two sites were impacted by roads, two by trails, and five appeared to be affected by recent erosion. Only one appeared to have been disturbed by strictly recreational activity. This same site has also been impacted by the intrusion of a recent (1984) headstone, purportedly marking a human burial. Overall impressions of the remainder of the inventoried sites suggest that they are generally in good condition.

Given the high level of site integrity and the significance of the settlement history of this area, all inventoried sites within the corridor are currently considered eligible for the National Register of Historic Places, pending further evaluation.

## Water Resources

### Setting

The Verde River originates in North Central Arizona at Sullivan Lake in Big Chino Valley, just below the confluence of Big Chino Wash and Williamson Valley Wash. Perennial flow begins approximately 1 mile downstream from Sullivan Lake. The river flows generally southeast for approximately 91 miles from Sullivan Lake through the Prescott and Coconino National Forests and private and State lands in the Verde Valley until it reaches the beginning of the Wild and Scenic River corridor at Beasley Flat. From Beasley Flat the river flows south for 41 miles through the Wild and Scenic River area. From the lower end of the Wild and Scenic corridor (below the confluence with Red Creek) the river flows an additional 18 miles to Horseshoe Reservoir. The river then flows south 45 miles from Horseshoe Reservoir through Bartlett Lake to its confluence with the Salt River near Phoenix. Major tributaries include Sycamore Creek, Oak Creek, Dry and Wet Beaver Creeks, West Clear Creek, Fossil Creek and the East Verde River. Fossil Creek and the East Verde River are tributaries to the Verde River within the Wild and Scenic corridor. Red Creek and Houston Creek are smaller perennial tributaries that enter the Verde River within the Wild reach. Watershed area of the Verde River above the Wild and Scenic corridor is approximately 5,000 square miles (see Figure 2).

### Hydrology

Two gaging stations operated by the U.S. Geological Survey (USGS) monitor streamflow within or below the Wild and Scenic River. The “Verde River near Camp Verde” gage (gage number 09506000) is located approximately 4 miles downstream of Beasley Flat. It has operated discontinuously from 1934 to present. The downstream gage, “Verde River below Tangle Creek, Above Horseshoe Dam” (gage number 09508500) is located about 9 miles below Red Creek and has been in operation continuously since August 1945. A third gage was installed in 2001 upstream of the “falls” to monitor baseflow conditions in the river. This gage was installed by the Salt River Project and is operated by the Verde Watershed Association. Streamflow in the Wild and Scenic River is highly variable. Streamflow statistics are displayed in Table 8.

The majority of the runoff (greater than 70 percent) occurs from December through April from snowmelt and widespread frontal storm systems. Minimum flows occur during May and June, the hottest and driest part of the year. Flows typically increase during the summer monsoon season, which normally occurs from July through September. Upstream diversions for agricultural uses

are highest during the summer irrigation season. Base flows during the summer months are sustained primarily by ground water discharge.

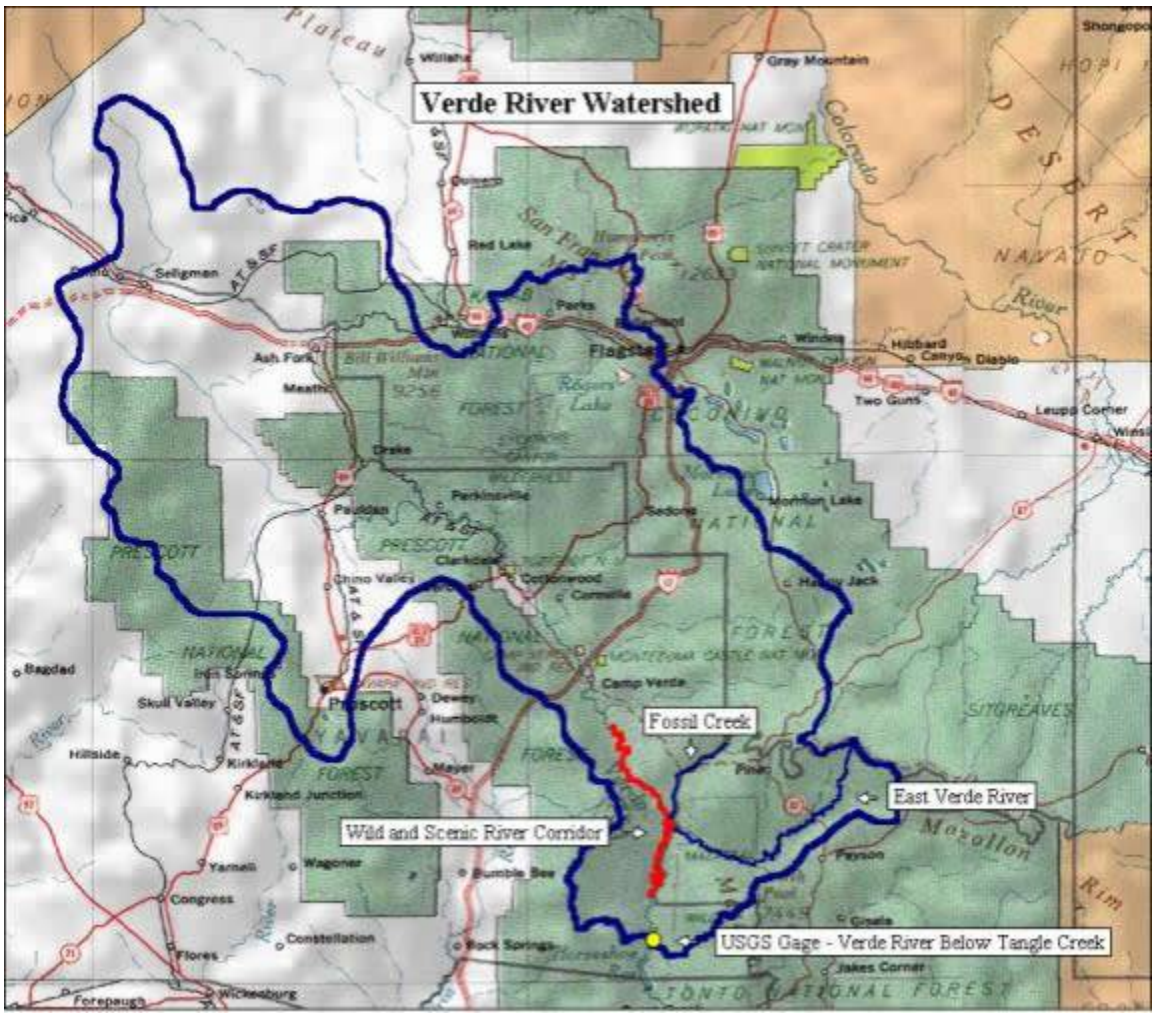



**Figure 2. Verde River Watershed**

**Table 8. Verde River Streamflow Statistics (cubic feet per second (cfs))15/**

| | Camp Verde Gage (cfs) | Tangle Creek Gage (cfs) |
|---|---|---|
| Minimum recorded flow | 40 | 48 |
| Maximum recorded flow | 119,000 | 150,000 |
| Mean annual flow | 389 | 576 |
| Median annual flow | 175 | 238 |

**Median Monthly Flows (cfs)**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sept | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Camp Verde Gage | 224 | 251 | 596 | 209 | 106 | 79 | 86 | 132 | 127 | 155 | 190 | 212 |
| Tangle Creek Gage | 314 | 345 | 546 | 284 | 166 | 122 | 136 | 209 | 189 | 200 | 251 | 283 |

Flood flows on the Verde River are highly variable. Annual peak flows at the Tangle Creek gage range from 1,180 cfs in June of 2000 to 150,000 cfs in February of 1891 (USGS, 1998). The 1891 flood was nearly equaled by the winter floods of 1993 (145,000 cfs). Two thirds of the peak flows recorded at the Tangle Creek gage occurred during the winter/spring runoff period. The 1993 flood at the Tangle Creek gage was approximately a 50-year flood. The 1995 peak flow of 108,000 cfs represented about a 25-year flood. The greatest flow since 1995 was about 26,000 cfs in the winter of 1998. This flow represents about a 3-year flood. The prolonged drought of the past few years is reflected in the small magnitude of the peak flows recorded at the gage during this period.

Fossil Creek enters the Verde River approximately 3 miles below the beginning of the Wild portion of the corridor. Perennial flow in Fossil Creek is maintained by discharge of approximately 43 cfs from a series of springs (Fossil Springs) located 14 miles upstream of the confluence of Fossil Creek and the Verde River. This flow is diverted 0.2 mile below the springs into a series of flumes and penstocks that carry the water to the Irving and Childs hydroelectric plants. The diverted flow is discharged to the Verde River at the Childs Power Plant, 3.5 miles upstream of the confluence of the Verde River with Fossil Creek. The Childs/Irving project is currently involved in a relicensing proceeding by the Federal Energy Regulatory Commission (FERC). Arizona Public Service Corporation (APS), operator of the project, has applied to surrender it's license with the intent to return full flows to the channel of Fossil Creek. If approved, discharge of approximately 43 cfs to the Verde River would shift downstream from Childs to the confluence with Fossil Creek. The 43 cfs discharged at Childs increases the flow in the Verde River by almost 50 percent (based on median monthly flows at the Camp Verde gage) during the low flow season from May through July.

The East Verde River enters the Verde River approximately 3 miles below the confluence with Fossil Creek. Median monthly flows in the East Verde River range from 15 cfs in June and July to 54 cfs in March. Streamflow in the East Verde River has been augmented by imports from Blue Ridge Reservoir on East Clear Creek since September 1965. Imports typically occur during the summer and fall but can occur at any time of the year. Imported flows typically range from 20 to 30 cfs. An alternative arrangement for exchange of this water has recently been developed and

imports to the East Verde River have ceased. Cessation of imports has its greatest impact on the Verde River in June when median monthly flows are reduced by approximately 10 percent.

## Water Quality

Water quality standards for the reach of the Verde River within the Wild and Scenic River corridor are intended to protect the designated uses of A&Ww (Warm Water Aquatic Community), FC (Fish Consumption), FBC (Full Body Contact), AgI (Agriculture Irrigation), and AgL (Agriculture Livestock Watering). Water quality in the portion of the East Verde River within the Wild and Scenic River area is protected for DWS (Domestic Water Source), in addition to the uses identified for the mainstem of the Verde River. Water quality in the reach of Fossil Creek within the Wild and Scenic River area is not protected for the AgI designated use but is protected for the other uses identified for the mainstem of the Verde.

The Arizona Department of Environmental Quality assesses the quality of the State's waters every 2 years. Their most recent water quality assessment report (305(b) Report) (ADEQ, 2002) assesses water quality within a reach of the Verde River that extends from West Clear Creek to Fossil Creek. The next assessed reach begins at the confluence of Tangle Creek with the Verde River which begins downstream of the Wild and Scenic River corridor. The reach of the corridor from the confluence with Fossil Creek to its terminus at the confluence with Red Creek has not been assessed.

The reach of the Verde River from West Clear Creek to Fossil Creek was assessed as attaining the water quality standards necessary to support the FC, AgI and AgL designated uses, but violations of the turbidity standards**16/** for the A&Ww use have occurred in 4 of 9 samples and violations of the Escherichia Coli (E. Coli) standard for the FBC use have occurred in 1 of 9 samples. The number of samples and violations are insufficient to designate the reach as impaired. Arizona Department of Environmental Quality has added this reach to its planning list for further monitoring and investigation.

The reach of the Verde River that begins at the confluence with Tangle Creek, below the Wild and Scenic River corridor was assessed as attaining the standards necessary to support FC, FBC, DWS, AgI and AgL, but was rated as inconclusive for A&Ww due to turbidity exceedences in 4 of 15 samples. This reach has also been placed on ADEQ's planning list for further monitoring and investigation. The East Verde River was rated as fully attaining standards necessary to support all designated uses. Fossil Creek was rated as inconclusive for all uses due to an inadequate number of samples. It has been added to the planning list for further monitoring and investigation.

Within the Wild and Scenic River corridor there are currently 10 Forest Service system roads that provide river access. These roads are classified as maintenance level 2 roads (high clearance vehicles only) except for Forest Roads 334 (Beasley Flat) and 502 (Childs), which are maintenance level 3 roads (suitable for passenger cars). There are also 2 boat launch sites (Beasley Flat and Childs), 1 developed campground at Childs (12 sites), and several hiking trails. Numerous dispersed undeveloped campsites exist along the river. Ninety-seven of these sites were inventoried and more than half were found to have widespread litter, human feces, more than 50 square feet of charcoal scarred ground, severe tree and shrub damage, and visible cattle waste (USFS, 2002, Campsite Condition Surveys). Portions of eight livestock grazing allotments occur within the Wild and Scenic River corridor. Four of the allotments provide livestock access

to the river: Brown Springs, Skeleton Ridge/Ikes Backbone, Cedar Bench and Red Creek. As a result of consultation with the USFWS, livestock have recently been excluded from the river on the Ikes Backbone and Red Creek Allotments.

Water quality constituents most likely to be affected by Forest Service management of the Wild and Scenic corridor include sediment and bacteria from roads, recreational use and livestock grazing. Concurrent monitoring data collected between 1983 and 2001 for turbidity and bacteria (fecal coliform) concentrations at the gage at the beginning of the VWSR corridor were compared to data collected during the same time period at a gage downstream of the Wild and Scenic River reach. While the data suggests that the concentrations of these constituents are not increasing from the beginning of the corridor to the end, four violations of the turbidity standard did occur at each gaging site. In addition, one violation of the fecal coliform standard occurred at the upper gage and there were no violations at the lower gage. A limited number of E. Coli bacteria samples have been collected with even fewer concurrent months of sampling. Two violations of the E. Coli standard occurred at the upper end of the Wild and Scenic reach. One violation occurred below the lower end of the reach.

Arizona Department of Environmental Quality also evaluates the health of the aquatic communities within stream and river reaches using macroinvertebrate-based bioassessments. Bioassessments have been conducted for the reach of the Verde River from West Clear Creek to Fossil Creek, and from Tangle Creek to Ister Flat above Horseshoe Reservoir (ADEQ, 2000). These assessments found a good community in the upper reach that fully supports designated uses, and an exceptional community in the lower reach that also fully supports designated uses. The assessments concluded that turbidity was not impairing the warm water fishery community in these reaches. Bioassessments have also been conducted for tributaries to the Verde River within the Wild and Scenic corridor (ADEQ, 2000). These assessments range from good to exceptional for the East Verde River, exceptional for Houston Creek, exceptional for Gap Creek (a tributary to the Verde between Beasley Flat and Fossil Creek), and fair for Red Creek.

## Channel Morphology

From the wide valley bottom of the Verde Valley, the river enters a narrow, confined canyon below Beasley Flat that continues to the confluence with the East Verde River. Much of the canyon is formed from basalt flows that are highly resistant to erosion. Bedrock canyons and steep sided valleys with limited alluvial deposits are typical of areas where the river has down cut into basalt. Flood plain width is limited by the confining basalt canyon walls to a narrow band of sparsely vegetated gravel and cobble bars bordered by discontinuous, vegetated, narrow terraces on one or both sides of the river. Gradient averages about 22 feet per mile through this reach, and frequent riffles and occasional rapids, separated by flatter glides and pools, are common. Side and point bars are also common throughout this reach. These bars are sparsely vegetated and are composed primarily of sand, gravel and cobbles.

From 1 to 2 miles below the East Verde River to the end of the Wild and Scenic corridor, reddish colored Precambrian granite is exposed along the west side of the river. Basalt flows predominate on the east side. The granite is fairly resistant to erosion and forms steep slopes above the river. The valley bottom of the mainstem is less confined through this reach and gradient flattens to about 17 feet per mile. Bar formations become more prominent and some diagonal as well as midchannel bars appear, suggesting reduced sediment transport capacity and consequently, greater sediment deposition within the reach.

Riparian vegetation in both reaches is limited to a narrow band, or "green line," along the margins of the low flow channel, on mid-channel bars, and along overflow channels. Absence of riparian vegetation on gravel and cobble bar surfaces, except for a few mature individuals on terrace features, is believed to be due to the elevation of the bar surfaces above the alluvial water table. Bar surfaces greater than about 3 feet above the alluvial water table typically do not support recruitment of riparian vegetation (ADWR, 1994). Restriction of riparian vegetation to the margins of the low flow channel makes this vegetation vulnerable to the scouring effects of high flows. The absence of the stabilizing effects of riparian vegetation on bar surfaces also results in these features being more vulnerable to scour and erosion during high flows.

## Water Use

Water is diverted upstream of the Wild and Scenic River corridor for agricultural, domestic and industrial uses. Water supplies for these uses come from diversion of surface waters from the mainstem and tributaries of the Verde River, and from ground water pumping. Upstream of the Wild and Scenic River reach, the Verde Basin is growing rapidly. Water usage by municipal/private suppliers in the Upper and Middle Verde basins is projected to increase by approximately 14,800 acre-feet per year by 2040 (ADWR, 2000). Irrigated agriculture is the single largest water consumer in the Upper and Middle Verde basins. Agricultural water use in the Verde Basin peaked in the 1960s and has declined since that time, while high density residential and commercial/industrial land uses have been increasing. The long-term effects of this conversion on ground water withdrawals, surface water diversions and ground water recharge are unknown (PNF, 2001). A recently completed study by ADWR concluded that the ground water system of the Middle Verde was currently in a long-term balanced state (ADWR, 2000). Ground water discharge to the Verde River maintains baseflows in the Verde and its perennial tributaries.

The greatest threats to maintaining instream flows in the VWSR corridor come from accelerated ground water pumping to support the rapid population growth upstream from the Wild and Scenic reach, and from water exchanges that would allow upstream diversions. Public Law 98-406 passed on Aug. 28, 1984 (Arizona Wilderness Act) specifically states the inclusion of the reach of the Verde River included in Wild and Scenic River System "shall not prevent water users receiving Central Arizona Project water allocations from diverting that water through an exchange agreement with downstream water users in accordance with Arizona water law." Two Central Arizona Project (CAP) allocations exist that could potentially affect the river. These include an allocation of 1,200 acre-feet to the Yavapai Apache Tribe near Camp Verde, 128 acre-feet to the Tonto Apaches near Payson, and 161 acre-feet to the Pine Water Company in Pine/Strawberry. Maximum capacity of the proposed diversion for the Yavapai Apache allocation is 10 cfs, which represents 13 percent of the median monthly flow at the gage below Camp Verde in June.

Although the Verde River Basin has not yet been adjudicated, the waters of the Verde River watershed are likely fully appropriated. Most of the surface water not diverted above the Wild and Scenic reach is claimed by the Salt River Project (SRP). It is unlikely that new diversions other than those needed to consummate the CAP allocations would be permitted above the Wild and Scenic River area without an exchange agreement with SRP.

In an effort to protect the water dependent resources of the Verde River, the Tonto, Coconino and Prescott National Forests filed an instream flow water right application (33-90309) in 1985. The flows that have been certificated for this right are displayed by month in Table 9. These flows are

intended to provide for wildlife and fish during the critical low-flow season in the summer. Flows during this period are most vulnerable to depletion due to upstream ground water pumping or surface water diversions. Since no dams or other structures capable of capturing high flows in the winter or spring exist upstream of the Wild and Scenic reach, streamflows far greater than those certificated are expected but not protected by the instream flow water right. The Agency's instream flow water right can prevent new upstream water rights from being granted, can prevent severance and transfer of senior rights that would adversely affect our instream flow right, and can prevent exchange agreements that would adversely affect the instream flow within the WSR reach.

**Table 9. Instream Flows Certificated on the Verde River - Beasley Flat to USGS gage below Tangle Creek (cfs)**

| Gage | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Spt | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Near Camp Verde | 4 | 4 | 5 | 10 | 37 | 45 | 65 | 65 | 33 | 15 | 10 | 4 |
| Below Tangle Creek | 70 | 70 | 70 | 100 | 120 | 120 | 130 | 135 | 130 | 100 | 80 | 70 |

The forests have also filed a claim for a Federal reserved water right for the Wild and Scenic River with a priority date of August 28, 1984 (the date of designation of the Wild and Scenic River). This claim ranges from 25 cfs year-round at the beginning of the reach, to 100 cfs year-round at the end of the reach. The adequacy of these flows for protecting the outstandingly remarkable values for which the Wild and Scenic River was designated have not been assessed.

## Riparian Vegetation

### Introduction

Verde Wild and Scenic River riparian vegetation communities are typical of riverine systems in central Arizona. Dominant tree species include willows (Goodding's, red and coyote), velvet ash, Fremont cottonwood and Arizona sycamore, while sedges, rushes, horsetail, cattail and *Phragmites* dominate the herbaceous layer. Size classes of most of the trees are seedling or sapling (less than 10 years old), the result of major runoff events in 1993 and 1995, but stands of mature trees and scattered individuals remain throughout the VWSR. Large, elevated cobble bars, deposited during major floods, with open stands of xeric vegetation are a dominant feature in the lower portion of the river. The proximity of riparian communities to Sonoran Desert upland communities makes the VWSR a unique resource.

Although fluvial surface acreages (acres of soils deposited by the river that form the banks, bars and other features) in the valley bottom are relatively large, actual acreage of mesic (wet site) riparian vegetation is limited. Mesic riparian vegetation occurs primarily as a narrow greenline along the margins of the active channel and along overflow channels and backwaters. The limited area occupied by mesic riparian vegetation makes it highly susceptible to permitted activities, such as grazing and recreation use. The limited extent of mesic vegetation and presence of features such as water and green forage that attract both recreationists and livestock, often result in rapidly occurring overuse and damage to the vegetation and channel.

Mesic riparian vegetation in the VWSR is also affected by natural events. Like fire in conifer types, flow events periodically set greenline vegetation back to early successional stages. While large floods can scour existing vegetation, they also set the stage for recruitment of new riparian vegetation. Large winter floods scour vegetation from banks and flood plains and deposit fresh alluvium. Subsequent flood flows moisten flood plain surfaces at appropriate times (during seed dispersal) and appropriate places (bank and flood plain surfaces above the zone of frequent scouring by summer floods). This moisture serves to germinate riparian seedlings at sites that provide the greater likelihood of survival. Continued survival is dependent on the rate of water table decline through the summer. Greatest survivorship of cottonwood seedlings is found where alluvial water tables decline no more than about 1 inch per day (Mahoney and Rood 1991) and where water tables are between 1 to 3 feet below the flood plain surface by summers end (ADWR 1991).

In a healthy riparian ecosystem, dense vegetation cover stabilizes flood plain soils and minimizes plant and soil loss from flood scour. Several studies have demonstrated that sites with reduced density of riparian vegetation due to losses of water diversion, ground water pumping, livestock grazing or wood cutting can reduce the natural resistance and resilience of riparian ecosystems to flood disturbance (ADWR 1991). Periods between channel altering flows are extremely important to development of riparian vegetation. Riparian vegetation can become reestablished at the fastest rates if not hindered by disturbances. It can recover under grazing, but at slower rates. Since riparian vegetation is key to wildlife species, water quality, channel stability and scenic values, management of riparian vegetation under the VWSR plan is key to protection and enhancement of outstandingly remarkable values.

## Riparian Vegetation Communities

A total of 2,050 acres in 14 riparian vegetation communities were mapped within the VWSR corridor (Table 10). These 14 communities represent a consolidation of communities originally mapped in the field (Ross and Johnson-Grove 2002). Open water areas were not mapped. Community descriptions can be found in the project record.

**Table 10. Riparian Vegetation Communities within the Verde Wild and Scenic River.**

| Vegetation Type | Acres in WSR | Percent Vegetation Type |
|---|---|---|
| Ash | 3 | <1 |
| Baccharis | 10 | <1 |
| Cottonwood | 16 | <1 |
| Herbaceous | 8 | <1 |
| Phragmites | 11 | <1 |
| Cattail | 20 | 1 |
| Mesquite Bosque | 596 | 29 |
| Mesquite | 38 | 2 |
| Mixed Riparian | 275 | 13 |
| Open Riparian | 34 | 2 |
| Open Xeric | 812 | 40 |
| Saltcedar | 5 | <1 |

| Vegetation Type | Acres in WSR | Percent Vegetation Type |
|---|---|---|
| Sycamore | 34 | 2 |
| Willow | 188 | 9 |
| Total | 2,050 | |

## Riparian Vegetation Condition

Current riparian vegetative conditions vary throughout the VWSR. The following assessment of riparian conditions begins at Red Creek, the downstream end of the VWSR, and proceeds upstream to Beasley Flat. For the purpose of this analysis, the VWSR was separated into 10 sections based on the condition of riparian vegetation at the time of the 2002-2003 survey as influenced by management activities, primarily grazing.

## Section 1 - Red Creek to Mule Shoe Bend (RM 19.8-24.0)

This section contains structurally and compositionally diverse riparian vegetation. Sediments are being captured in both the greenline and on the flood plain and the riparian area is expanding along the greenline both into the channel and up the cobble bars. A variety of age classes of willows and extensive stands of emergent aquatic vegetation are found in this section of river that has remained ungrazed since April 1998. An assessment of cover in this area in the fall of 2002 found a cover index approximately 400 percent greater (Table 5), 10 times the weight (biomass) and approximately twice the height (Table 6) of similar grazed areas (Ross and Grove 2002).

## Section 2 - Mule Shoe Bend to East Verde River (RM 24.0-35.8)

The section was heavily grazed in 2002 with a resulting loss of most residual cover and a change in herbaceous species composition (Ross and Johnson-Grove 2002, Ross 2002, Ross and Sillas 2002). Species composition along many stretches of bank changed from sedge/rush/horsetail communities to cocklebur/rabbitfoot grass/Bermuda grass communities. Heavy use was also detected on cottonwood seedlings at a number of sites. Some areas of bank remained bare where drier conditions and/or soil compaction were the most severe. This section has a number of willow or mixed woody sapling/mature stands.

Unauthorized livestock grazing occurred from the Houston Creek confluence downstream to Red Wall Rapid and upstream on Houston Creek to Pigeon Spring during April/May 2002. Herbaceous and woody vegetation was heavily impacted (Ross 2002b, Farmer 2002). Unauthorized livestock use also occurred along the river in the adjoining Cedar Bench Allotment from the allotment boundary upstream for approximately 3 miles (Ross 2002a, Ross 2002b). This area was recovering from the impacts of long term, unauthorized livestock use by a number of cattle that grazed the area year-round from 1998 to 2001 (Ross 2000, Barcus 2001).

## Section 3 - East Verde River to Above Childs (RM 35.8-44.5)

Above the East Verde confluence, the valley bottom narrows, but the potential for riparian vegetation development remains high in areas of fine sediment deposition and old channels, in addition to the greenline along the river's edge. Although perched xeric cobble and sand bars

occur above the confluence, the amount of flood plain occupied by mesic riparian vegetation is proportionately higher than downstream.

The section of river between Fossil Creek and Childs has a relatively narrow flood plain, but is capable of supporting dense, structurally diverse willow and mixed woody riparian stands. Livestock grazing did not occur in most of this area in 2002, although unauthorized use was detected at one important backwater site. This backwater site has high potential for riparian habitat development, but has been hampered by frequent concentrated livestock use (permitted and unauthorized).

At Childs, the flood plain widens and the area contains stands of mature riparian trees. Habitat quality is affected by high recreation use in this area and upstream at the ranch (under special use permit). Vehicle crossings and off-highway travel at both sites, combined with other recreation use has affected streambanks and vegetation.

## Section 4 - Above Childs to Gospel Hollow (RM 44.5-49.3)

From river mile 44, upstream to river mile 49, only flooding or the occasional head of unauthorized livestock disturbs vegetation. Herbaceous vegetation is dense and well developed and there are a number of stands of dense willow saplings and mature riparian species.

## Section 5 - Gospel Hollow to Bull Run Rapid (RM 49.3-53.0)

Based on comparisons of vegetation and streambank condition immediately downstream and upstream, riparian vegetation in this section has been highly altered by livestock grazing (see report/photos in project record). Livestock used this reach of river the entire year and the effects of chronic long-term use by livestock are evident (Ross and Sillas 2002, Ross 2002c, Story and Burbridge 1974). All herbaceous riparian vegetation was totally grazed to ground level, i.e. no residual biomass (litter) remained. Only Bermuda grass and rabbitfoot grass were evident along this entire stretch of river. No evidence of *Phragmites* was found along this reach, although there were dense stands of it above and below the heavily grazed section. All velvet ash, many willows and unpalatable species such as sycamore, seepwillow and mesquite were heavily hedged. Seep willow dominated many of the flats and banks. Sedge, rush, horsetail, cattail, and *Phragmites* communities have been converted to Bermuda grass/rabbitfoot communities. Forest monitoring of grazing use indicates that, except in 2002, utilization was within allowable limits (Doug MacPhee, personal communication 2003). However, this monitoring did not recognize that species composition was less than the site's potential. When livestock graze in riparian areas following scouring flood events, it appears they select palatable native plants, particularly herbaceous species. Hot season use of riparian vegetation may also exacerbate recovery of riparian vegetation. As a result, these palatable species may be reduced or eliminated as a component of the vegetation community and, therefore, not considered in monitoring of livestock use. Monitoring of vegetation in early summer 2003 found little riparian vegetation recovery. Uplands and mesquite bosques within this area were also heavily grazed and denuded of herbaceous vegetation.

This area has a very high potential for riparian vegetation development. Much of the valley bottom contains areas of fine soil deposition and current or potential dense stands of willows. Potential riparian vegetation, coupled with mature riparian trees around Browns Spring, offers an extremely high value riparian site if livestock use is eliminated.

The assessment of the condition of riparian vegetation and chronic effect of grazing in this area differs from conclusions documented by PNF personnel (USDA Forest Service 2001a, 2001b). Proper Functioning Condition (PFC) surveys were conducted in 1998, 2000, and 2001. The 1998 and 2000 surveys found the stream reach at Browns Spring to be functioning at risk (Sillas, pers. com. 2003), while the 2001 survey found the stream to be proper functioning in this reach. The estimated category in 2002 was nonfunctioning due to the condition of vegetation and banks from yearlong grazing.

## Section 6 - Bull Run Rapid to Kissit Goud-by Rapid (RM 53.0-54.5)

The area contains a dense stand of Goodding's willow and small backwaters with diverse herbaceous species. Livestock use was not observed in 2002, but there was some evidence of heavy livestock use the previous fall/winter because of the lack of residual herbaceous ground cover (litter) and reduced plant vigor (height).

## Section 7 - Kissit Goud-by Rapid to Upper End of Ladders Closure (RM 54.5-56.0)

This section has received concentrated past and present livestock use, as indicated by the dominance of nonnative weeds and absence of herbaceous litter. The area is similar in condition

to the Brown Springs reach and was similarly rated in the mapping and PFC analysis, although chronic livestock use was indicated as a problem. Sillas (pers. comm. 2002) indicated that livestock use in this area had been a long-term, chronic problem.

As in the case of the Brown's Spring section, Bermuda grass and seepwillow comprise the major herbaceous and shrub species in this area. Native sedge/rush/horsetail/cattail/*Phragmites* communities are restricted to very small sections of bank that are inaccessible to livestock. Riparian potential is high where deep soils occur. Immediately upstream of this area, the same bank/channel type supports healthy stands of deergrass, instead of Bermuda grass, and dense willow stands instead of sparse willow and seepwillow.

#### Section 8 - Upper End of Ladders Closure to Verde Falls (RM 56.0-57.2)

From the alternate bald eagle nest at the Ladders Territory, to just upstream of Verde Falls, herbaceous and woody riparian vegetation are inaccessible to livestock. Herbaceous vegetation is diverse with dense stands of deergrass on sites with deeper soils. Little woody vegetation occurs in this area because of exposed bedrock, cobble bars and shallow soils.

### Section 9 - Verde Falls to Off-the-Wall Rapid (RM 57.2-57.7)

Above the falls, a final area of intense livestock use occurs from river mile 57.2 to 57.7. Velvet ash and Goodding's willow were heavily hedged within this reach. Herbaceous vegetation communities consist of nonnative weed species. No herbaceous litter is present. The flats in this area have very high potential to develop riparian woody species communities. Photos taken after one summer's rest from grazing document willow growth of over 2 feet on plants that had been hedged to the ground the previous winter. It is likely to take a number of years of rest and subsequent flood depositions to achieve desired habitat potential.

### Section 10 - Off-the-Wall Rapid to Beasley Flat (RM 57.7-60.0)

Riparian vegetation in this last section is species and structurally diverse. Stands of dense woody and herbaceous vegetation occur. In this upper reach of the VWSR, riparian communities are only lightly affected by livestock use. Off-highway vehicles (OHV) access the greenline and terraces in the area and eliminate vegetation along the more heavily used trails. One OHV river crossing was noted in this area downstream of Beasley Flat.

## Upland Vegetation

### Introduction

Assessment of upland vegetation types and their condition was conducted on those ecological types within a 2-mile wide zone either side of the centerline of the river. This distance was deemed representative of the area affecting the VWSR corridor. Ecological types (ecotypes) are areas with similar soils and vegetative potential and based on the Terrestrial Ecosystems Surveys (TES) of the PNF and CNF and a partial terrestrial ecosystem mapping conducted on the TNF in the late 1970s and early 1980s. Acreages reported in the following assessment summaries are only for those ecotypes found within the VWSR corridor.

Thresholds are mentioned in discussions of ecological types. They are important for understanding the attainable ecological potential. "Thresholds are points in space and time at which one or more of the primary ecological processes responsible for maintaining the sustained equilibrium of the state degrades beyond the point of self-repair (Stringham, et al. 2001)." A threshold limits the ability of a site to return to a previous state without active restoration. Tree and shrub canopy is the most common threshold in the analysis area and the effect is suppression of herbaceous species including grasses and forbs by the canopy density of the trees and shrubs.

## Sonoran Desert Scrub

| Slopes | 0-40 Percent |
|---|---|
| Acreage on CNF **17/** | 0 |
| Acreage on PNF | 0 |
| Acreage on TNF | 1,298 |

Ecological Condition - The current cover of perennial grasses is much less than the 5 to 10 percent canopy expected at ecological potential. The density and vigor of false mesquite (*Calliandra eriophllya*) is probably lower than at potential. Other palatable species, such as Wright buckwheat (*Erigonum wrightii*) and deer vetch (*Lotus rigida*) are lower in density and vigor than would be expected under climax conditions. In some years, a dense cover of nonnative annuals, especially red brome (*Bromus rubens*), may occur. Soil compaction occurs on slopes less than 15 percent.

Sonoran Desert Scrub-Semi Desert Grassland Association

| Slopes | 40-120 Percent |
|---|---|
| Acreage on CNF | 0 |
| Acreage on PNF | 0 |
| Acreage on TNF | 1,366 |

Ecological Condition - Because of steep slopes, most of this type has only minimum impacts from domestic livestock. In most places, the current cover of perennial grasses is near the expected cover for the ecological type.

Semi-Desert Grasslands

| Slopes | 0-40 Percent |
|---|---|
| Acreage on CNF | 449 |
| Acreage on PNF | 470 |
| Acreage on TNF | 629 |

Ecological Condition - In most places, the current cover of perennial grasses is less than the 25 to 45 percent canopy expected for the TES map unit. In addition, the diversity of perennial grasses is lower than predicted. Most sites are dominated by grazing-tolerant curly mesquite (*Hilaria belangeri*) or tobosa (*Pleuraphis mutica*), in both existing condition and in TES predicted composition. Bunch grasses are poorly represented. Other palatable species, such as Wright buckwheat and false mesquite are sparser than would be expected to occur under undisturbed conditions. On the CNF and PNF locations, shrub dominates on more level slopes, reducing herbaceous composition and productivity.

Most of this ecological type found on the TNF is on mesa tops of the Red Hills Pasture of the Red Creek Allotment. This type is slowly recovering from historically heavy grazing use. Monitoring

in 1998 found increases in ground cover, basal plant hits, and frequency of grass key species over monitoring conducted in 1982. The ongoing NEPA analysis for issuance of the Red Creek Allotment grazing permit proposes that grazing be discontinued in Red Hills Pasture, so these units should continue to recover.

Juniper/Velvet Mesquite Woodlands

| | |
|---|---|
| Slopes | 0-40 Percent |
| Acreage on CNF | 145 |
| Acreage on PNF | 8 |
| Acreage on TNF | 259 |

Ecological Condition - Most of these types found on the TNF lie within full capacity rangeland (lands deemed appropriate for grazing), on higher elevation mesa tops, on the east side of the river, and on gentle slopes and basins on the west side. In most places, the current canopy cover of perennial grasses is less than the 20 to 40 percent canopy expected for the natural climax. In addition, the diversity of perennial grasses is poor. Most sites are dominated by a few perennial species. Other species palatable to livestock, such as Wright buckwheat and false mesquite, are sparser than would be expected to occur under predicted conditions.

On portions of the CNF where this ecological type is found, its condition ranges from one with no grass and “drought stricken” trees and shrubs, to near potential for cover of grasses and shrubs, but lower on grass diversity. The PNF had both palatable and grazing tolerant grasses and cover was similar to potential but diversity was lower than predicted. One plot displayed a threshold from shrub cover with little grass present.

Juniper/Turbinella Oak Woodlands

| | |
|---|---|
| Slopes | 15-40 percent |
| Acreage on CNF | 0 |
| Acreage on PNF | 53 |
| Acreage on TNF | 511 |

Ecological Condition - In most places, the current cover of perennial grasses is slightly less than the 10 to 15 percent canopy expected for the potential plant community. The diversity of grasses is poorer than expected for climax conditions. The total canopy of trees and shrubs may be greater than what would be expected to occur naturally. A single plot on the Prescott had more grass cover and less grass species diversity than predicted.

Juniper/Turbinella Oak/Crucifixion Thorn

| Slopes | 0-40 Percent |
|---|---|
| Acreage on CNF | 342 |
| Acreage on PNF | 261 |
| Acreage on TNF | 1 |

Ecological Condition - The average grass cover on the CNF plots was similar to TES predicted but individual plots varied, with some having heavy cover and others having little grass. All plots exceeded predicted levels for litter. The diversity of grasses is poorer than expected for climax conditions. The total canopy of trees and shrubs may be greater than what would be expected to occur naturally. The only PNF plot was similar to described in TES for cover but lower in grass diversity.

Pinyon Pine/Utah Juniper/Turbinella Oak Woodlands

| Slopes | 0-40 Percent |
|---|---|
| Acreage on CNF | 16 |
| Acreage on PNF | 1,741 |
| Acreage on TNF | 0 |

Ecological Condition - In most places, the current cover of perennial grasses is slightly less than the 12 to 15 percent canopy expected for the TES predicted cover on the CNF. The composition, diversity and productivity of grasses are poorer than expected for climax conditions on the CNF. Grass cover is equal to or greater than predicted levels on the PNF; however, species diversity is lower than predicted. In many areas, high levels of historic and current grazing have negatively impacted soil condition, plant composition and diversity.

## Pinyon Pine/Utah Juniper/New Mexico Needlegrass Woodlands

| Slopes | 0-40 Percent |
|---|---|
| Acreage on CNF | 0 |
| Acreage on PNF | 132 |
| Acreage on TNF | 0 |

Ecological Condition - In most places, the current cover of perennial grasses is less than the 15-20 percent canopy expected at potential. Lower grass cover can be, in part, attributed to higher shrub cover, which is more than double that predicted at potential. The actual potential for these specific areas may include a much higher canopy cover of chaparral species and lower herbaceous cover than is indicated in the potential.

## Juniper/Turbinella Oak Woodlands

| Slopes | 40-120 Percent |
|---|---|
| Acreage on CNF | 1,744 |
| Acreage on PNF | 701 |
| Acreage on TNF | 1,104 |

Ecological Condition - Because of steep slopes, most of this ecological type has only minimum impacts from domestic livestock. However, on accessible footslopes (slopes less than about 50 percent) on the CNF historic and current grazing may have compacted soil. The total canopy of trees and shrubs may be greater than what would be expected to occur naturally because of long-term fire suppression. In most places, the current cover of perennial grasses is near the 10 to 15

percent canopy expected although the total herbaceous production may be slightly suppressed because of an increased canopy cover. The diversity of grasses is good except in the limited accessible areas on the CNF, and is generally low on the PNF, where the type is found mostly on east and north-facing slopes and is shrub dominated.

# Recreation

## Introduction

The VWSR offers a recreation setting that is scarce and unique in the arid southwest. Perennial water that supports diverse vegetation and wildlife, and a remote, wild, nonmotorized setting characterize much of the VWSR. The primitive setting and remote character are valuable recreation characteristics offered by the VWSR.

Recreationists come to the VWSR area for a wide variety of recreation opportunities including boating, swimming, fishing, hiking, camping, picnicking, wildlife viewing, hunting, and scenic driving. Evidence of national forest management is currently minimal outside of the developed areas of Childs and Beasley Flat.

Additional characteristics that add value to this recreation setting include challenging river rapids, spectacular scenery, dramatic geology, natural hot springs, the historic Childs Power Plant, extensive archaeological remains, lush stream and river vegetation, and perennial side streams. A summary of the river recreation characteristics includes:

- The Verde River can have extremely high flows, but these are rare and cannot be relied on to erase impacts of recreationists within the flood plain.
- River camps are plentiful.
- Observations indicate that river use is very light on the Wild section and predominantly multiday trips. River use is light to moderate on the Scenic section and includes both day and overnight trips. Use fluctuates with water level.
- Road and trail access in the corridor is limited. Dispersed campsite use and impacts associated with road and trail access are not extensive (USFS 2002 VWSR Road and Trail Reconnaissance). However, where access is provided, impacts range from moderate to severe.
- Excluding the developed areas of Beasley Flat and Childs, the entire river corridor offers an extraordinary remote and wild recreation character with little to no management presence or evidence of humans.
- Many river runners show a lack of knowledge regarding the hazards of boating a free-flowing river and do not practice river leave-no-trace behaviors (USFS, 2002, Campsite Condition Surveys).
- River user's expectations include: ability to access the river at any time, ability to choose where to camp, demand for a sense of remoteness and few encounters with others, clean beaches, and few regulations. Scenic beauty, few regulations, and wild, remote character are important to many river runners (USFS 2002, Public Comments on Proposed Action for VWSR Plan).
- Changes that may substantially affect the recreation benefits and qualities at the developed sites of Beasley Flat and Childs include changes to esthetics, facilities,

management presence, and amount of regulation, access and road conditions, and the presence or absence of motor vehicles.

- While currently unauthorized, vehicle crossing of the Verde River at Childs is a frequent occurrence.
- Off-highway vehicles frequently enter the Mazatzal Wilderness on its west boundary at three locations (USFS 2002 VWSR Road and Trail Reconnaissance).

The recreation resources associated with the VWSR are predominantly influenced by the populations and demographics of northern Arizona and Maricopa County. Consequently, the effects of alternative management scenarios are described for this geographic area. A small percentage of VWSR recreationists are visitors from outside Arizona.

## Recreational River Running

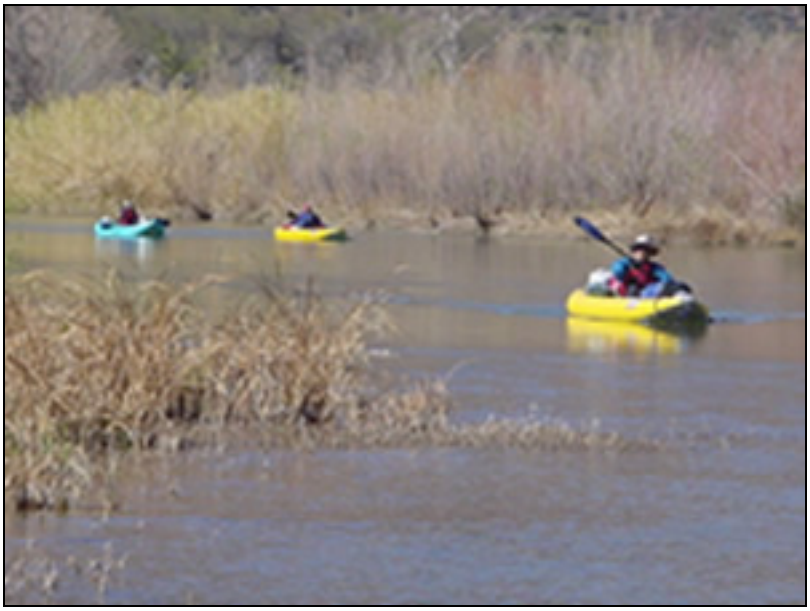
February through April is the primary river running season (USFS 2003, River Patrol Reports). This season can be longer with adequate winter precipitation, or without adequate rainfall, very short, or not at all. Upstream irrigation depletes river flows in the spring. However, the Verde River is now boated year-round, often at flows less than 100 cfs (cubic feet per second).

Most Verde River boaters are from Arizona (USFS file data). Most have prior experience with the Verde River or accompany someone else familiar with the Verde. Canoes and kayaks are the primary craft used, except during annual spring high flows when rafts may navigate the river. Group size averages 4 people (USFS Ladders Nest Watch Data and ranger observations).

River runners respond quickly to increases in flow: for example in September 2002, monsoon rains caused flow to jump from 200 cfs to over 4,000 cfs in 24 hours. Within hours, over 22 vehicles were parked at Beasley Flat river access. Mean daily flow data shows that the Verde is higher than 1,000 cfs 25 to 40 days each year (USGS 1998). When this happens, parking and ramp capacity at Beasley Flat is usually exceeded.

Most river running on the VWSR occurs in the 18 miles from Beasley Flat to Childs. This reach can either be run in a day (during higher flows) or over a weekend. The Wild River section, from Childs to Red Creek, and beyond (30 miles from Childs to Sheep Bridge take-out) has substantially less use, requiring a longer trip at low flows, and longer shuttle.

Less than 3 percent of river running use is commercial and demand remains low. Between 1998 and 2001 there were approximately 140 commercial client days each year, all on the Scenic River (USFS file data). Unpredictable water levels make a reservation system problematic, and low water commercial kayak trips are not currently in great demand. Commercial river access on the Wild River is coordinated by the TNF and consistent with the Tonto Forest Plan, which limits commercial use to one priority use permit and a temporary use pool. Currently there is no priority permit holder. On the Scenic River, commercial use is approved on a case-by-case basis.



## Other River Corridor Recreation Use

Road and trail access is a key factor that determines amount and type of recreation use along the Verde River and its associated impacts. Swimming, fishing, driving, hiking, camping, picnicking, hunting, and wildlife viewing occur along the VWSR where roads and trails offer access. Access is concentrated at Childs and Beasley Flat, with limited access in between. Commercially guided hunting, jeep tour, horseback trips, and hiking occur infrequently.

## Developed Recreation Sites

Beasley Flat Picnic Area, 8 miles from Camp Verde, is the only developed recreation site along the VWSR. Beasley Flat forms the northern boundary of the Scenic River and was developed with State Lake Improvement Funds in 1996. Site capacity is 100 persons at one time (PAOT). The site is wheelchair accessible and includes ramadas, picnic tables and grills, interpretive signs, a restroom, and a boat ramp. Beasley Flat is popular year-round for picnics, wildlife viewing, swimming, riverboat launches and take-outs, and fishing. Recreationists who wade or swim across the river access archaeological sites associated with the Cavates across the river from Beasley Flat.

Childs Campground is located at the river's edge, 24 miles from Camp Verde and 9 miles from Strawberry. While the camping area is popular and the setting is beautiful, there is little to no onsite management and there have been occurrences of social conflicts including assaults. Anecdotal information indicates that some people no longer visit the area due to the lack of security. The capacity of the campground is 12 sites and it is not wheelchair accessible. However, over 80 cars have been observed within the campground on a popular weekend. All of the campsites are within the river's flood plain. The campground has a single vault toilet and no garbage collection, water, electricity or emergency phone. Emergencies (over 50 per year) are reported to the nearby Arizona Public Service (APS) employees stationed at the small outpost of Childs, just upriver of the campground (USFS 2002 Fossil Creek Recreation Report).

APS manages the Childs hydroelectric generation facility that dominates the Childs area with turbines, utility lines, and other structures that comprise the century-old facility. This facility is part of a National Register District. While most of the APS area is currently gated and off limits to the public, this situation is expected to change with the future decommissioning of the Childs Hydropower facility. Most APS structures will be removed and more area may be open to public access.

The well known Verde Hot Springs and remnants of a turn-of-the-century hotel are located one-half mile upstream of Childs Campground on the opposite shore. There is no road access to the Hot Springs. Remnants of the original hotel add considerably to the historic character of the site. Hot spring seekers from the world over make the long drive and hike to experience the warm waters. The Hot Springs can be accessed via the Hot Springs Trail that follows the river approximately one-half mile from Childs Campground. The river must be crossed. This can be difficult at higher flows. Persons with disabilities can obtain a special use permit to drive to the rivers edge on FR 502 to get closer to the Hot Springs. Seven persons obtained these permits in the last year (USFS file data).

## River Use Regulations

Leave-no-trace and safety "recommendations" printed in the Verde River Recreation Opportunity Guide (ROG) published by the USFS encourage river runners to practice leave-no-trace etiquette. The Wild River section through the Mazatzal Wilderness has a group size limit of 15 per Tonto National Forest Order. The Cedar Bench Wilderness on the Prescott NF Scenic River section has a group size limit of 25 persons per the Prescott National Forest Plan. There is no special order to enforce this limit. Except within and near Beasley Flat and the APS permit area, dispersed camping is allowed within the VWSR (USFS Land Management Plan Direction).

## Road Access and Travel Management

The three forests are consistent in their regulations concerning cross-country motor vehicle travel in the VWSR. All three forests have forest orders that prohibit cross-country motor vehicle travel within the Wild and Scenic boundary. In addition to the few forest system roads that provide access to the river in the Scenic section, there are about equal that number of unauthorized cross country "user created tracks" that access the river within the Scenic section. Currently 10 National Forest System road access points exist within the Verde Wild and Scenic River. These include:

**Tonto**: Forest Roads 16 and 57.

**Prescott**: Forest Roads 334 and 9709R.

**Coconino**: Forest Roads 9242, 9244, 500, 9206Y and 502.

All forest roads that enter the VWSR are classified as a Maintenance Level 2, with the exception of FR 334 (Beasley Flat Road), FR 502 (Childs Road), and FR 9206Y (to Childs Campground), which are Maintenance Level 3.

While unauthorized, recreationists routinely ford the Verde River at Childs, linking Forest Road 16 (Tonto) with Forest Road 9206Y (Coconino) to make a long loop drive, to access camp areas on the opposite shore, for hunting access, or for general recreational driving. Recreationists often

drive cross-country downstream on the Tonto NF along the Verde River, and into the Mazatzal Wilderness. Efforts to sign and block this wilderness trespass have been unsuccessful.

## Trail Access and Management

Several nonmotorized trails lie within the VWSR. Little use data exists for these trails. In addition to National Forest System trails, people travel cross-country to the river in several locations. The nonmotorized system trails include:

Ladders Trail (#16)
Verde Hot Springs Trail (#48)
Towel Creek Trail (#67)
Verde River Trail (#11)
High Water Trail (#20)
Lower Cedar Bench Trail (#540)

## Recreation Opportunity Spectrum and Limits of Acceptable Change Indicators and Standards

The three forest plans identify Recreation Opportunity Spectrum (ROS) classes for the river corridor (see Map 7, Appendix D). The developed areas of Beasley Flat and Childs are classified as Roaded Natural. The Scenic River section is generally Semi-Primitive Motorized, except in the Cedar Bench Wilderness. The Mazatzal and Cedar Bench Wildernesses are classified by the Wilderness Opportunity Spectrum (WOS), primarily WOS Class II. The Tonto NF has established Limits of Acceptable Change (LAC) indicators and standards for the Mazatzal Wilderness. None are established for the Cedar Bench Wilderness or the remainder of the VWSR (USFS Land Management Plans).

## Recreation Resource Conditions

A total of 97 river campsites have been evaluated for esthetic, sanitation and environmental elements. More than half of the camps have moderate to widespread litter, obvious presence of human feces, in excess of 3 fire rings and 50 square feet of charcoal scarred ground, severe tree and shrub damage, and visible cattle waste (USFS 2002 Campsite Condition Surveys). Some people believe that floods will “cleanse” the river with enough frequency that river leave-no-trace behaviors are unnecessary. The last large flood was a decade ago and observations indicate that human impacts accumulate and may be evident for years (USFS 2002 Campsite Condition Surveys). Forest Service rangers cleaned a total of 132 fire pits in four January 2003 patrol trips.

In-camp and on-river encounters with other parties are an important (though complex) recreation quality and capacity indicator. Because campsites are generally abundant along much of the river, camping out of sight of other occupied camps is usually possible (and desirable). The level of on-river encounters has not been measured. On-river encounters generally increase at higher water, as river use increases. At low flows, boat use and on-river encounters between boaters decreases.

In general, recreation use conflicts are site specific and infrequent in the river corridor. Competition for “take-out” and launch space during higher flows can occur at both Beasley Flat and Childs Campground. River runner launch/take-out at Childs can occupy scarce campsite and parking space.

### Anticipated Trends in Recreation

The Verde River's proximity to growing populations in the Verde Valley and Phoenix is expected to increase the demand for fishing, swimming, wildlife viewing and hiking at all river access points (USDA 1999, 2003 SE Experiment Station; ASP 1994). The population of the Verde River Basin doubled between 1980 and 1994. This trend is projected to continue with some forecasts estimating a 128 percent increase in population between 1994 and 2040 for the Verde Valley (ADWR 2000). Private river running use is expected to continue its growth trend. Demand for commercial use is not expected to increase, except for support services such as shuttles and boat rentals.

## Livestock Grazing

### Introduction

The Verde River and its' perennial tributaries were the primary source of water for largely unsuccessful small ranching operations in the early 1870s, and the more successful efforts of larger, better financed ranchers who followed. Livestock had serious impacts on vegetation and soils in the VWSR corridor as a result of the heavy, unregulated grazing of this era. Numbers of livestock declined in the drought of the 1890s but remained high until fencing of national forest lands beginning in the 1920s. This fencing allowed for improved grazing management including removal of nonpermitted livestock, and development of livestock waters away from the river. Stocking levels have been reduced on allotments in all three forests and management changes have been made that increase the amount of control over domestic livestock grazing in the river corridor.

Today the VWSR corridor includes parts of nine livestock grazing allotments on the three national forests. Map 8 in Appendix D shows the locations of these allotments in relation to the VWSR boundary and forest boundaries. Tables 11 through 18 display acres, pastures, and permitted livestock for each allotment. The aggregation of these allotments forms the cumulative effects analysis area related to livestock grazing.

Monitoring on all allotments documents general improvement in vegetative condition between initial establishment and readings of the Parker trend transects, and more recent monitoring. Research has identified utilization levels that do not impair establishment, growth, and survival of riparian woody species and additional research on those plants is being conducted in the analysis area. Other species and habitats have been, or are being, studied and monitored for response to grazing. Adjustments in utilization rates have been made on the Verde River allotments in response to findings on grazing effects, and will continue to be made in the future. These adjustments may affect stocking on the allotments and would affect vegetation as well.

In addition, consultation on the effects of livestock grazing on Federally listed threatened and endangered species have resulted in biological opinions that required changes in livestock management including specified utilization rates and season of grazing. Monitoring the effects of grazing on listed species and their habitat include utilization, riverbank and flood plain impacts, and unauthorized grazing. Adjustments in grazing management result from monitoring for compliance with biological opinions.

## Livestock Grazing Allotments

**Table 11. Thirteen Mile Rock Allotment (Coconino National Forest)**

| | |
|---|---|
| Total Acres in Allotment | 38,684 |
| Number of Pastures in Allotment | 26 |
| Number of Pastures Bisected by VWSR Corridor | 2 |
| Total Acres of Those Pastures Bisected by VWSR Corridor | 2,368 |
| Pasture Acres within VWSR Corridor | 432 |
| Permitted Livestock Numbers | 556 |

The portion of the Thirteen Mile Rock Allotment boundary within the VWSR corridor was fenced in the 1980s to prevent livestock from grazing within the corridor.

**Table 12. Hackberry/Pivot Rock Allotment (Coconino National Forest)**

| | |
|---|---|
| Total Acres in Allotment | 79,643 |
| Number of Pastures in Allotment | 45 |
| Number of Pastures Bisected by VWSR Corridor | 4 |
| Total Acres of Those Pastures Bisected by VWSR Corridor | 11,348 |
| Pasture Acres within VWSR corridor | 1,942 |
| Permitted Livestock Numbers | 770 |

The VWSR corridor crosses four pastures within the Hackberry/Pivot Rock Allotment. These pastures have been fenced to keep livestock away from the river, except for one emergency access point for livestock water. Ninety percent of the existing river fences are within the corridor.

**Table 13. Fossil Creek Allotment (Coconino National Forest)**

| | |
|---|---|
| Total Acres in Allotment | 38,678 |
| Number of Pastures in Allotment | 26 |
| Number of Pastures Bisected by VWSR Corridor | 3 |
| Total Acres of Those Pastures Bisected by VWSR Corridor | 4,380 |
| Pasture Acres within VWSR Corridor | 519 |
| Permitted Livestock Numbers | 453 |

The VWSR corridor crosses three pastures within the Fossil Creek Allotment. These pastures were fenced in the 1980s to keep livestock from grazing within the river corridor. All of these fences are within the corridor.

**Table 14. Squaw Peak Allotment (Prescott National Forest)**

| | |
|---|---|
| Total Acres in Allotment | 12,190 |
| Number of Pastures in Allotment | 1 |
| Number of Pastures Bisected by VWSR Corridor | 1 |
| Total Acres of Those Pastures Bisected by VWSR Corridor | 12,190 |
| Pasture Acres within VWSR Corridor | 40 |
| Permitted Livestock Numbers | 90 |

The Squaw Peak Allotment has only one pasture. This pasture is separated from the river by an exclosure.

**Table 15. Brown Springs Allotment (Prescott National Forest)**

| | |
|---|---|
| Total Acres in Allotment | 12,476 |
| Number of Pastures in Allotment | 5 |
| Number of Pastures Bisected by VWSR Corridor | 3 |
| Total Acres of Those Pastures Bisected by VWSR Corridor | 9,744 |
| Pasture Acres within VWSR Corridor | 1,632 |
| Permitted Livestock Numbers | 170 |

The Brown Springs Allotment includes three pastures that cross the VWSR corridor. These pastures are used for rest-rotation grazing. Two of these, along with a holding pasture, allow livestock to access the river for water at any time of year.

**Table 16. Ike's Backbone and Skeleton Ridge Allotments (Tonto National Forest)**

| | |
|---|---|
| Total Acres in Allotments | 46,271 |
| Number of Pastures in Allotments | 19 |
| Number of Pastures Bisected by VWSR Corridor | 9 |
| Total Acres of Those Pastures Bisected by VWSR Corridor | 25,566 |
| Pasture Acres within VWSR Corridor | 5,480 |
| Permitted Livestock Numbers | 280 |

The grazing permit for Ike's Backbone Allotment is held by the Skeleton Ridge Allotment permittee and the two allotments are managed together. Four pastures and a holding pasture allow livestock to access the river in the winter and spring on the Skeleton Ridge Allotment. One pasture on the Ike's Backbone Allotment previously allowed livestock river access, but is now fenced. About 20 cattle annually cross the river from the Skeleton Ridge Allotment to graze Ike's Backbone in April and return to Skeleton Ridge in September.

**Table 17. Cedar Bench Allotment (Tonto National Forest)**

| | |
|---|---|
| Total Acres in Allotment | 32,395 |
| Number of Pastures in Allotment | 11 |
| Number of Pastures Bisected by VWSR Corridor | 1 |

| | |
|---|---|
| Total Acres of Those Pastures Bisected by VWSR Corridor | 7,249 |
| Pasture Acres within VWSR Corridor | 576 |
| Permitted Livestock Numbers | 500 **18/** |

The Cedar Bench Allotment has only one pasture that crosses the VWSR corridor. Grazing is only allowed in this pasture in the winter and spring.

**Table 18. Red Creek Allotment (Tonto National Forest)**

| | |
|---|---|
| Total Acres in Allotment | 79,749 |
| Number of Pastures in Allotment | 12 |
| Number of Pastures Bisected by VWSR Corridor | 2 |
| Total Acres of Those Pastures Bisected by VWSR Corridor | 31,126 |
| Pasture Acres within VWSR Corridor | 504 |
| Permitted Livestock Numbers | 519 |

The Red Creek Allotment crosses the VWSR corridor in two pastures which are only grazed in the winter and spring. Livestock grazing on the Red Creek Allotment is currently undergoing a separate environmental analysis which includes a proposal to exclude one of these, the Red Hills Pasture, from grazing. The Red Hills Pasture has been excluded from grazing since 1999 pending completion of consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act.

In compliance with the terms and conditions of the biological opinions for razorback sucker and southwestern willow flycatcher (USFWS, 1997a and 1997b), range managers have been monitoring livestock utilization of riparian trees and herbaceous stubble height on the Skeleton Ridge and Cedar Bench Allotments since 1997. This monitoring is done three times per year—in January/February, April/May and September/October. In addition, the Cave Creek district is cooperating with Arizona State University's (ASU) School of Environmental Resources to conduct a long-term study of effects of livestock grazing on woody vegetation along the Verde River. Thus far, monitoring has shown that livestock use on woody vegetation was above allowable use levels during the drought year of 1999-2000, and herbaceous vegetation was used excessively. In non-drought years, use levels have generally been below allowable on both woody and herbaceous vegetation. Initial findings from the study with ASU are that livestock grazing under the current grazing system allows riparian trees to establish, grow and survive.

The Brown Springs Allotment has been monitored for compliance with Forest Plan direction of no more than 20 percent utilization on woody species. No monitoring on riparian herbaceous species has been done, although observations of use on those plants were noted. Within each reach monitored, the woody plant use was less than 20 percent except in 2002 when it exceeded that amount. Herbaceous species receive differing amounts of utilization with higher use in warm weather or dry years (2002). Ross, 2002, found the more palatable herbaceous species to either not be present, or represented at amounts less than site potential, on most grazed areas in the flood plain of this allotment. Bermuda grass dominates most grazed areas while native grasses dominate ungrazed areas. Differences in species composition and frequency may be a result of post scouring flood grazing before vegetation has recovered from the effects of the scouring.

One difficulty in managing livestock grazing in the VWSR riparian area is the amount of time that lapses between reaching grazing utilization levels and subsequent removal of livestock from the riparian area. This amount of time can result in utilization above allowable levels.

The effects of grazing are most evident on slopes less than 15 percent and soil compaction is common on those same areas. In much of the analysis area, tree and/or shrub canopy density affects the amount of ground cover present. Where canopy is not limiting, perennial grasses and forbs are found near or greater than TES-predicted levels but species diversity is less than predicted. In these areas, grass species composition favors grazing tolerant species such as tobosa and curly mesquite.

## Other Resources

The following topics are described here to give the reader more background information, but are not analyzed for effects in Chapter 4 because they were not identified as significant issues or as outstandingly remarkable river values.

## Air

A portion of the Scenic section of the VWSR includes a portion of the Cedar Bench Wilderness. This wilderness area is designated Class 2 for air quality protection. The portions of the Scenic River that do not pass adjacent to or through wilderness areas are not classified for air quality protection. The Wild section of the river passes through the Mazatzal Wilderness. This portion of the river's airshed is designated Class 1. Class I status under Section 162(a) of the Clean Air Act is designated for specified geographic areas where the cleanest and most stringent protection from air quality degradation is considered important. Class I areas include national parks over 6,000 acres and national wilderness areas over 5,000 acres. Air quality in the Mazatzal Wilderness is protected under provisions of the State Implementation Plan, which is administered by ADEQ.

Air quality in the Wild and Scenic corridor is generally good. The corridor does not lie within a nonattainment area for any of the monitored air quality pollutants. Particulate matter (dust) from unimproved roads and from wind erosion on undisturbed areas, along with haze from the Phoenix metropolitan area (40 miles to the south) is occasionally evident within the VWSR corridor.

## Soil

### Introduction

The basic properties of soils found within the VWSR are described below by aggregating similar soils from the twelve ecological types described in the Upland Vegetation section (USDA 1985, 1995, 2000). Each dominant TES map unit component is assigned a soil condition category that is an indication of the status of soil function and may reflect soil disturbances. Terrestrial Ecosystem Survey soil condition ratings are based on interpretations of the three primary soil functions: soil hydrologic function, soil stability, and nutrient cycling. The three soil condition categories**19/** are impaired, satisfactory, and unsatisfactory.

### Sonoran Desert Scrub

The soils in this ecological type occur on gently sloping elevated plains to steep hills with slopes of 0 to 40 percent. Soils are predominantly formed from old alluvium derived from basalt, limestone, and sandstone. Soils are mostly shallow to moderately deep. They are mostly medium textured, however, many soils on flats have clayey textures throughout. Soil condition is impaired or unsatisfactory. Most of the unsatisfactory soils occur on slopes less than 15 percent and tend to be compacted because of high levels of current and historic grazing. Some soils on steeper slopes have excessive sheet and rill erosion.

### Sonoran Desert Scrub, Semi-Desert Grassland Association

The soils in this ecological type occur on steep to very steep mountains and escarpments (40 to 120 percent slopes) and are formed from mixed sources. Many areas include rock outcrop. Soil depths are variable ranging from about 10 to greater than 40 inches. Soils are mostly medium and coarse textured. Because of steep slopes, livestock grazing has not heavily impacted most of this type. Soil condition is generally satisfactory but inherently unstable.

### Semi-Desert Grasslands

The soils in this ecological type occur on gently sloping elevated plains to steep sloped hills (0 to 40 percent slopes), however, most slopes are less than 15 percent. Soils are predominantly formed from old alluvium derived from basalt, limestone, and sandstone. Soils are mostly greater than 20 inches to bedrock and have clayey textures throughout, however, some soils have loamy textures on steeper slopes. Soil condition is impaired or satisfactory on the CNF and PNF, and a mixture of satisfactory and unsatisfactory on the TNF. Slopes less than 15 percent tend to be compacted where high levels of current and historic grazing has occurred and probably has impaired conditions. Many soils on steeper slopes have excessive sheet and rill erosion.

### Juniper/Velvet Mesquite Woodlands

These soils occur on gently sloping elevated plains and steep hills (0 to 40 percent slopes), however, most slopes are greater than 15 percent on the TNF and less than 15 percent on the CNF. Soils are predominantly formed from basalt residuum tuff. Soils are variable (less than 20 to more than 60 inches to bedrock) with clayey or loamy textures throughout. Soil condition for the two units on the CNF is satisfactory and unsatisfactory. Soil condition is impaired or satisfactory on the PNF, and mostly impaired or satisfactory on the TNF. Approximately 20 percent of the TNF soils are rated as unsatisfactory and tend to be on slopes less than 15 percent. On all forests, slopes less than 15 percent tend to be compacted where high levels of current and historic grazing has occurred and probably has impaired or unsatisfactory soil conditions. Soils on steeper slopes have moderate sheet and rill erosion.

### Juniper/Turbinella Oak Woodlands, and Pinyon Pine/Utah Juniper/Turbinella Oak Woodlands

These soils occur on gently sloping to steep slopes (up to 40 percent) on elevated plains and hills. Soils are predominantly formed from basalt residuum. They are variable in depth ranging from 10 to greater than 40 inches to bedrock with predominantly clayey and a few loamy textures throughout. Soil condition on the CNF and PNF is variable and includes satisfactory, impaired

and unsatisfactory soils. Soil condition on the TNF is mostly impaired with a few areas of unsatisfactory. Slopes less than 15 percent tend to be moderately compacted where high levels of current and historic grazing has occurred and probably has impaired or unsatisfactory soil conditions. Soils tend to have moderate amounts of sheet and rill erosion.

### Juniper/Turbinella Oak/Crucifixion Thorn, and Pinyon Pine/Utah Juniper/New Mexico Needlegrass Woodlands

Soils in these ecological types are highly calcareous with pHs commonly above 8.2 and have high wind erodibility. These soils are formed in limestone or calcareous parent materials including alluvium and residuum and occur on steep hills (up to 60 percent slopes). They are generally less than 20 to 40 inches to bedrock. Soil condition on the CNF is satisfactory, inherently unstable due to high natural erosion rates, and unsatisfactory. Soil conditions on the PNF are either satisfactory or impaired.

### Juniper/Turbinella Oak Woodlands

Soils in this ecological type occur on very steep mountains and escarpments (40 to 120 percent slopes) and are formed from mixed residual sources including limestone, basalt, and other metamorphic materials. Many areas include rock outcrop. Soils are generally less than 40 inches to bedrock and are mostly medium (loamy textured) but include fine textured (clayey soils). There are inclusions of slopes ranging from 25 to 40 percent, especially on the CNF. Because of steep slopes, most of this type has only minimum impacts from domestic livestock. However, on accessible footslopes (slopes less than about 50 percent) on the CNF, high levels of historic and current grazing have negatively impacted soil condition. Most other areas have natural erosion rates exceeding tolerable rates due to inherently unstable soils. Soil condition is generally satisfactory-inherently unstable for these types.

### Streamside Vegetation

These soils occur in or areas directly adjacent to riparian areas on valley and lowland plains (0 to 10 percent slopes). These soils are formed in alluvium from mixed sources and are subject to flooding frequencies ranging from 1 to 50 or more years. Soil condition ranges from satisfactory to impaired. There are a few areas on the TNF rated as unsatisfactory. These occur mostly on areas accessible to livestock. Accessible areas are probably somewhat compacted where high levels of current and historic grazing have occurred and recreation use is high and probably has unsatisfactory soil conditions.

## Invasive Species

Executive Order 13112 of February 3, 1999, Invasive Species, established the Department level National Invasive Species Council to provide leadership in the management of invasive species including coordination with State, local and tribal governments. The order also described Agency duties including prevention, detection, control, monitoring, research native species restoration, and public education.

Currently the Forest Plans for the Coconino, Tonto and Prescott National Forests have no management direction for invasive plant species. The Coconino, Prescott and Kaibab forests are

preparing an environmental impact statement that will provide direction that can be applied to those forests.

Invasive plant species are common in and beside the Verde River, although no complete survey of invasive plants has been conducted in the WSR corridor. Table 19, Invasive Plant List, was prepared with input from the forests, the Arizona State Department of Agriculture, and others with knowledge of the presence or possible presence of these species in the analysis area. Also included in the table is the recommended management action for each listed plant.

**Table 19. Verde Wild and Scenic River Invasive Plant List - 2003**

| Scientific Name | Common Name | Management Objective20/ |
|---|---|---|
| Acroptilon repens | Russian knapweed | Eradicate |
| Aegilops cylindrica | jointed goatgrass ** | Contain/Control |
| Ailanthus altisssima | tree of heaven | Eradicate |
| Alhagi maurorum | camelthorn ** | Eradicate |
| Arundo donax | giant reed grass | Eradicate |
| Avena fatua | wild oats ** | Contain/Control |
| Bromus catharticus Vahl. | rescuegrass | Contain/Control |
| Bromus rigidus | ripgut | Contain/Control |
| Bromus rupens | red brome | Contain/Control |
| Bromus tectorum | cheat grass | Contain/Control |
| Cardaria draba | whitetop | Eradicate |
| Centaurea diffusa | diffuse knapweed ** | Eradicate |
| Centaurea solstitialis | yellow starthistle ** | Eradicate |
| Centaurea melitensis | Malta starthistle ** | Eradicate |
| Convolvulus arvensis | field bindweed | Inventory/Control |
| Cynodon dactylon | Bermuda grass ** | Contain/Control |
| Eleagnus angustifolia | Russian olive ** | Contain/Control |
| Eragrostis lehmanniana | Lehmann's lovegrass | Contain/Control |
| Hordeum murinum ssp. leporinum | hare barley | Contain/Control |
| Kochia scoparia | kochia | Contain/Control |
| Ludwigia peploides | water primrose ** | Eradicate |
| Myriophyllum spicata | Eurasian water milfoil | Eradicate |
| Medicago polymorpha | bur clover | Contain/Control |
| Onopordum acanthium | Scotch thistle ** | Eradicate |
| *Paspalm dilatatum Poir.* | Dallis grass | Contain/Control |
| Pennisetum secaceum | fountain grass | Eradicate |
| Phalaris arundinacea | reed canary grass | Contain/Control |
| Polypogon monspeliensis | rabbitfoot grass | Contain/Control |
| Potamogeton crispus | pondweed, curlyleaf | Contain/Control |

**Table 19. Verde Wild and Scenic River Invasive Plant List - 2003**

| Scientific Name | Common Name | Management Objective20/ |
|---|---|---|
| Rubus procerus | Himalayan blackberry ** | Eradicate |
| Sorghum halepense | Johnson grass | Contain/Control |
| Tamarix pentandra & spp | tamarix or salt cedar ** | Contain/Control |
| Tribulus terrestris | puncture vine | Contain/Control |
| Verbascum thapsus | common mullein | Contain/Control |
| ** species present or potentially present in VWSR corridor | | |

## Social Setting

The VWSR is located in central Arizona, in the far eastern part of Yavapai County and the extreme northwestern edge of Gila County. It begins approximately 10 miles downstream of the town of Camp Verde and the adjacent Yavapai-Apache Reservation in Yavapai County. The nearest community in Gila County is Strawberry, about 15 miles to the northeast. The VWSR ends at a very remote location about 30 miles north of the Phoenix metropolitan area. A Federal Energy Regulatory Commission (FERC) authorized housing facility for the Childs Power Plant and a Forest Service permitted ranch headquarters are the only occupied sites within the corridor. Only two private land parcels that are located within 5 miles of the VWSR have residences.

To characterize the social setting, information related to population, minorities, and income levels was obtained from the U.S. Census Demographic Profiles (Source: www.de.state.az.us) for the various political units. This information is summarized in Table 20. Except for the Yavapai-Apache Reservation, minority and low-income populations within nearby communities are comparable to, or less than, the Statewide percentages.

**Table 20. Demographics in the Vicinity of VWSR**

| Political Unit | Population | Percent of Pop. Identified as Non-white | Percent of Pop. with Income Below Poverty Level | Percent of Pop. Employed in Agriculture, Forestry, or Mining |
|---|---|---|---|---|
| Arizona | 5,130,632 | 22.1 | 9.9 | 1.5 |
| Gila County | 51,335 | 20.6 | 12.6 | 7.6 |
| Strawberry | 1,028 | 0.3 | 6.9 | 2.6 |
| Yavapai County | 167,517 | 6.3 | 7.9 | 3.2 |
| Camp Verde | 9,451 | 13.0 | 9.5 | 2.4 |
| Yavapai-Apache Reservation | 743 | 93.7 | 30.8 | 7.2 |

From Forest Service observations, the primary user groups in the VWSR are river runners, hikers, anglers, equestrians, motorized vehicle users, campers, and ranchers. Most of these users are from northern Arizona and Maricopa County, according to SCORP (Statewide Comprehensive Outdoor Recreation Plan) and other data. The Verde is also an important source of domestic water for residents of the Phoenix metropolitan area.

River runners use the entire VWSR reach. This group is increasing but limited in its growth by frequent periods of low flows. Limited data exists for numbers and demographics of people running the Verde River, but this group appears to be dominated by middle to upper income urban users.

Hikers, anglers, and equestrians are historic users of the river area. They access the river via several roads near the Scenic section and via trails in the Wild section. They are increasing in numbers but use is low compared to other areas of the State. They often have fishing or wildlife viewing areas that are very important to them. Income levels are variable but usually in the middle to upper income brackets.

Motorized groups access the Verde in several places. This group is increasing and motorized access is important to them.

Light amounts of dispersed camping occur along the entire WSR stretch except at Beasely Flat. The most frequently used camping area is at Childs Campground. Users come from all economic levels and are there to fish and enjoy the Verde Hot Springs.

Ranchers make up a very small group. There are nine grazing permit holders along the VWSR. They are from middle to upper income brackets. Most of them employ workers to manage their livestock. These workers are usually from lower income levels.

**Footnotes**

**8/** River miles based on the Verde River Recreation Opportunity Guide (ROG)

**9/** Vertical and horizontal cover

**10/** Cover Value – the sum of one-foot sections of the Robel pole obscured by vegetation. This value is used as a relative measure of density and height of vegetation less than 6 feet in height.

**11/** Ht – height of herbaceous vegetation measured in feet.

**12/** Wt – weight of herbaceous vegetation measured in grams. Weights were only taken at five grazed and three ungrazed plots at the three sites due to time constraints. The data are only used to quantify vegetation conditions. See Ross and Johnson-Grove, 2002, for methodology.

**13/** Section 106 of the National Historic Preservation Act, as amended in 1992, establishes the basis for determining effects to cultural and historic sites as eligibility for inclusion in the National Register of Historic Places. Significance, the level of importance a site has in local or national culture or history, is a central concern in the evaluation of such eligibility and is determined by applying the National Register Criteria for Evaluation as defined in 36 CFR Part 60.

**14/** Several sites fall into multiple categories and are counted more than once in this table.

**15/** Source: USGS 1998 and Hydrosphere 2001

**16/** The water quality standard for sediment changed from a turbidity standard to a suspended sediment concentration standard in 2003. The new standard for warm water fisheries is 80 mg/l and applies only during baseflow conditions, not during periods of storm water or snowmelt runoff.

**17/** Acres shown for each ecological type are measured on each forest within an area 2 miles either side of the VWSR.

**18/** Livestock are only allowed on Cedar Bench Allotment for 7 months of the year.

**19/** Definitions of soil condition ratings are located in the Glossary.

**20/** Management objective derived from Biology and Management of Noxious Rangeland Weeds and recommended by the Southwest Weed Council and Arizona Department of Agriculture.

# Chapter 4 – Environmental Consequences

## Introduction

This chapter summarizes the scientific and analytic information used to compare alternatives. The project record contains complete documentation of data collection and analysis undertaken throughout this planning process. Short-term, long-term, direct, indirect, and cumulative effects of proposed activities are considered and displayed below as they relate to each of the issues.

## Scenery

### River Access Issue

**Alternative 1 –** Under this alternative, road and trail access will remain generally as it is today. In the Scenic river segment, scenery would meet a Retention VQO. Scenery in some locations such as Beasley Flat, Childs, and where vehicles access the river, meets the Partial Retention VQO. Scenery in the Wild river segment would continue to meet the Preservation VQO. Road impacts and vehicles would be visible from Beasley Flat day use area as visitors look across the river at FR 9242 and associated user-created roads along the river. In addition, road impacts and vehicles associated with FR 9244, 9245, 57, 16, 502, and 9206Y would be visible from river locations within the Scenic River area. User-created tracks and associated crushed vegetation and displaced soils in the riverbed at the end of FR 16 would be visible at the Childs area. Scenery would continue to be impacted by tracks and vehicles associated with FR 18 as viewed from the Wild River.

**Alternative 2 –** Same effects as under Alternative 1except that Scenic Integrity Objectives of High and Moderate would be expected to be achieved.

**Alternative 3 –** Compared with Alternatives 1 and 2, there would be fewer effects to scenery from visible roads and vehicles. User-created tracks and potential vehicle access that exists along the river in several locations would be eliminated. Scenic quality at the Childs area is expected to improve when motor vehicle access is eliminated from the current campground location and the site becomes a walk-in day use area. Scenic Integrity Objectives of High and Very High would be expected to be achieved.

**Alternative 4 –** Same effects as under Alternative 3.

### River Use/Capacities Issue

**Alternative 1 –** In the absence of regulations addressing human waste and fire pits at river camps, impacts to scenery at river camps would continue to occur. User capacities at the developed sites of Beasley Flat and Childs would continue to result in some vegetation impacts and trash. Visual Quality Objectives would not be met in some camp areas and high use developed sites due to the presence of trash and human waste.

Existing limits on river group size and launch capacities are expected to result in an “uncrowded” visitor experience, except during holidays, weekends, and high water events. However, there could be times when large recreation groups negatively impact the experience of others under this alternative.

**Alternative 2 –** Same effects as under Alternative 1, except that SIOs of High and Moderate would be expected to be achieved.

**Alternative 3 –** Regulations for human waste and ash carry out and use of fire pans are expected to dramatically improve scenic quality at river camps. Capacities at the developed sites of Beasley Flat and Childs would continue to result in some vegetation impacts and trash. Scenic Integrity Objectives of High and Very High would be expected to be achieved.

Limits on river group size and launch capacities are expected to result in an "uncrowded" visitor experience, except during holidays, weekends, and high water events. Limits on noncommercial recreation group size should contribute to a less crowded recreation experience in both the Scenic and Wild River.

**Alternative 4 –** Same effects as under Alternative 3.

## Livestock Grazing Issue

**Alternative 1 –** Visible livestock waste, and the unnatural appearance of trampling and browsing of vegetation will continue to degrade scenic quality in locations where livestock still roam the Wild and Scenic riparian corridor. The effect will continue to result in a VQO of Partial Retention in these areas.

**Alternative 2 –** Same effects as under Alternative 1 except that Scenic Integrity Objectives of High and Moderate would be expected to be achieved.

**Alternative 3 –** Under this alternative livestock grazing would be excluded from the riparian area and most visitors to the VWSR would not encounter visible impacts of this use, except at the three livestock watering locations in the Brown Springs Allotment. At these sites, cattle fencing, cattle waste, denuded ground, and trampled vegetation would be visible from the river. A Moderate High SIO would be met at those locations. Throughout the remainder of the corridor, range fences would be less visible. Overall, a Very High SIO would be achieved.

**Alternative 4 –** This alternative would be slightly improved over Alternative 3 because users in the uplands would not encounter livestock impacts and there would be no watering sites on the river. Overall, a Very High SIO would be achieved.

## Water Quality/Quantity Issue

There would be very little difference between the alternatives related to scenic impacts of water quality and quantity. The only detectable impact is related to turbidity resulting from motor vehicle crossings of the river.

**Alternative 1 –** Under this alternative water would continue to be visibly turbid as a result of motor vehicle travel across the river and in the river downstream of FR 9242, and in the vicinity of Childs.

**Alternative 2 –** Same effects as under Alternative 1.

**Alternative 3 –** Under this alternative there would be no turbidity impacts from motor vehicles crossing the river or driving within the riverbed.

**Alternative 4 –** Same effects as under Alternative 3.

### Cumulative Effects to Scenery

The cumulative effect of this decision, when added to all the other past, current and foreseeable future actions (see Appendix C) within the analysis area, is not expected to be significant.

The analysis area that has been considered for cumulative effects to scenery includes the viewshed of the Verde River. This encompasses lands that can be viewed from the river or the riverbanks, or from trails that lie within the VWSR corridor. Likely events that have been considered within the cumulative effects area include: expected increasing human population and resulting visible damage to soils and vegetation, additional trash and human waste; decisions related to the "Cross-Country Travel by Off Highway Vehicles EIS;" and expected decommissioning and removal of hydropower facilities at Childs hydropower site.

Population growth in the Verde Watershed is ongoing, and will be for the foreseeable future. Resulting increases in the number of people using the VWSR corridor increases the probability that scenic integrity will continue to be affected at heavy use sites, despite management efforts.

If the Childs/Irving hydroelectric facilities are decommissioned, as planned, scenic integrity will be improved when power lines are removed.

If the "Cross-Country Travel by Off Highway Vehicles EIS" results in closure of lands outside the VWSR corridor to off-highway vehicle use, there is the potential for improved scenic integrity on areas seen from the corridor. Middleground views from the VWSR corridor will include fewer user-created roads, thus creating more natural appearing views from the river.

Cumulatively, the effects of Alternatives 1 through 4 are not expected to add to any of the effects described above. Management actions proposed under Alternatives 2 through 4 may, instead, mitigate some of these effects through public information and education, improved livestock grazing management, and improved recreation site management and development.

## Fish

### River Access Issue

**Alternative 1 –** Under this alternative there would continue to be direct effects to TE&S fish habitat from Forest Roads 57, 502, 16, and 9206Y that are located within the 100-year flood plain of CH (critical habitat) for razorback sucker, spikedace, and loach minnow. These roads affect flood plain by reducing riparian vegetation that helps to stabilize streambanks, alter flood flows, filter sediments, and capture nutrients. The roads can also concentrate runoff and sediment input, and are possible sources of pollution to the river. In addition, there are direct effects to TE&S fish from unauthorized fording of the river near Cottonwood Basin and at Childs between FR 9206Y and FR 16. This activity can occur throughout the year except during higher flows and results in direct effects to TE&S fish through disturbance, short-term turbidity, alteration of stream channel width/depths, and is a possible source of pollution. These impacts are concentrated in the Childs area and effects are limited in extent of area affected within the VWSR corridor.

There would be indirect effects from Forest Roads 9244, 9242, 500, and 9709R within the VWSR corridor. These roads end on bluffs above the river and can concentrate runoff and sediment input

into tributaries that are hydrologically connected to the river. These impacts are concentrated in the Verde Falls area and effects are limited in extent of area affected within the VWSR corridor.

The VWSR corridor would continue to be closed to cross-country motorized travel. This management direction benefits TE&S fish and CH by maintaining riparian and upland conditions within the VWSR corridor that would otherwise be impacted by this use.

There would continue to be direct effects from Ladders Trail #16, Towel Creek Trail #67, Lower Cedar Bench Trail #540, Verde Hot Springs Trail #48, Verde River Trail #11, and High Water Trail #20 that access the river. These trails affect the flood plain by reducing riparian vegetation that helps to stabilize streambanks, alter flood flows, filter sediments, and capture nutrients. These trails impact very small areas within the 100-year flood plain of CH. There are direct effects from use of the Verde Hot Springs Trail by recreationists that cross the river to access the hot springs. This activity can occur throughout the year except during higher flows and results in direct effects to TE&S fish through disturbance and short-term turbidity. These effects are limited in extent of area affected within the VWSR corridor.

There are direct effects to TE&S fish from motorized boat use along the Scenic section (excluding Cedar Bench Wilderness). This activity is rare but results in short-term disturbance to TE&S fish and is a possible source of pollution. Motorized boat use is prohibited in Cedar Bench Wilderness and in the Wild section of the VWSR. There would be no effects to TE&S fish in these wilderness areas.

This alternative has localized impacts to TE&S fish and CH, mainly in the Childs area. Fish ORVs are protected at the existing levels. This alternative does not provide any form of enhancement.

**Alternative 2 –** The effects of this alternative on fish only differs from Alternative 1 in relation to motorized watercraft use. Motorized watercraft would be prohibited throughout the VWSR, which would result in beneficial effects to TE&S fish by eliminating physical disturbance and the potential pollution source generated by this activity.

Fish ORVs would be protected and enhanced to a slightly higher degree than with Alternative 1.

**Alternative 3 –** Under this alternative there would be direct effects to TE&S fish species from FR 502 being located within the 100-year flood plain of CH. There would be a slight impairment to riparian function from the road. The road would be upgraded to Maintenance Level 3 from the APS administrative site down to the river to facilitate the development of a river runner launch/take-out site. The road would continue to concentrate runoff and sediment input into the river and is a possible source of pollution. Proper road design and maintenance and implementation of BMPs could mitigate these effects. Forest Roads 16 and 9206Y would be converted to nonmotorized trails within the 100-year flood plain of CH. Forest Road 57 would be gated 1 mile from the river and converted to a Maintenance Level 1 road for administrative use and open to public nonmotorized use to the river. These road conversions would eliminate unauthorized vehicle crossings of the river between FR 9206Y and FR 16 and reduce disturbance to TE&S fish, improve riparian areas within the 100-year flood plain, and improve water quality. There would still be direct effects from the trails in the flood plain but effects are limited in extent of area affected within the VWSR corridor. Impacts would be concentrated within the Childs area.

Forest Roads 9242, 9244, 500, and 9709R would be converted to nonmotorized trails at or beyond the VWSR boundary and small trailheads would be constructed. The potential for concentrated runoff and sediment production to the river would be less for these trails than for roads. The area improved would be concentrated in the Verde Falls area.

This alternative has reduced impacts to TE&S fish and CH due to the removal of several roads in the flood plain, and elimination of unauthorized vehicular river crossings. Fish ORVs are protected and enhanced to a higher degree than with Alternatives 1 and 2.

**Alternative 4 –** This alternative is similar to Alternative 3 except that Forest Roads 9244, 9242, 500, 57, and 16 would be closed at or beyond the VWSR corridor and the road sections not converted to trails and no trailheads constructed. These roads would be obliterated as appropriate for watershed protection. The potential for concentrated runoff and sediment production to the river would be eliminated for these sections of closed roads and result in improved water quality for TE&S fish and CH.

This alternative would further reduce potential impacts to TE&S fish and CH due to road obliterations in the VWSR corridor. Fish ORVs are protected and enhanced to the highest degree than all alternatives.

## River Use/Capacities Issue

**Alternative 1 –** Under this alternative there would continue to be direct effects to TE&S fish and CH from recreational activities along the VWSR and from the location of Childs Campground within the 100-year flood plain. Swimming, fishing, and river running would result in disturbance to TE&S fish, impairment to riparian function from loss of vegetation and/or streambank alteration, and reduced water quality from human wastes and litter. Impacts would be concentrated at the Beasley Flat and Childs recreational sites, Verde Falls and Gap Creek river access points, and at dispersed camping sites along the river. Recreational impacts would continue to increase throughout the VWSR with increasing population growth under current uses and capacities.

This alternative has localized impacts to TE&S fish and CH due to concentrated recreational use and the presence of Childs Campground in the flood plain. Fish ORVs are protected at existing levels. There would not be any form of enhancement.

**Alternative 2 –** Same effects as under Alternative 1.

**Alternative 3 –** This alternative would result in beneficial effects to TE&S fish and CH due to relocating Childs Campground out of the 100-year flood plain, reducing river runner user capacities in the VWSR, and requiring use of portable toilets by river runners. Riparian function would be improved by relocating Childs Campground. Localized, water quality impacts would be reduced because of the requirement for human waste carryout by river runners. There would continue to be impacts from the presence of a day use area at the former Childs Campground and from construction of a new boat launch/take-out at the end of Forest Road 502. These impacts are limited in extent of area affected within the VWSR corridor.

This alternative would further reduce impacts to TE&S fish and CH by relocation of Childs Campground out of the flood plain, reducing river runner capacities, and requiring waste carryout

by river runners. Fish ORVs are protected and enhanced to a greater extent than with Alternatives 1 and 2.

**Alternative 4 –** The effects of this alternative on fish only differs from Alternative 3 in relation to the further reduction of river runner capacities. These reduced user capacities would result in fewer impacts to TE&S fish and CH than under Alternative 3.

Overall, this alternative has the most beneficial effects to TE&S fish and CH and provides the highest level of protection and enhancement of fish ORVs.

## Livestock Grazing Issue

**Alternative 1 –** This alternative would continue current livestock grazing management in the VWSR. There are direct effects to TE&S fish and CH from livestock grazing within the Verde River flood plain on the Brown Springs, Cedar Bench, and Skeleton Ridge Allotments. Livestock cause physical disturbance to TE&S fish by routinely crossing the river to access forage and loafing areas. The season of use of the Brown Springs Allotment occurs during the spawning period and could result in trampling of eggs during livestock river crossings. Livestock activities would continue to impact streambank and riparian conditions. Unstable banks recorded upstream and downstream of the Gap Creek confluence could be aggravated by continued livestock grazing, and result in excess sediment being deposited into the river, affecting spawning and foraging habitat for fish. Livestock use on the river would be concentrated in the flood plain areas during drought years (most recently in 1996, 2000, and 2002) when water sources and forage on the uplands are limited.

There would be direct effects from livestock river crossings of 25-35 head two times a year (April and September) at the FR 57 and FR 502 vehicle river crossing site. The effects to TE&S fish and CH would be similar to those related to vehicle river crossings, plus potential for livestock waste products to be excreted during the crossing. These impacts would be limited to extent of affected area within the project area and would have minimal effects to TE&S fish and CH.

There are impacts to the watershed from livestock grazing in the uplands on all allotments. Ecological type conditions record current canopy cover of perennial grasses is much less than potential for many types. These conditions can result in increased erosion and sedimentation input in the river. It would be difficult to measure the effect to TE&S fish and their habitat from natural and anthropogenic caused sediment levels in and upstream of the project area. Unsatisfactory rangelands would be addressed through improved grazing management and modification of existing allotment management plans.

This alternative would have the most impacts to TE&S fish and CH because of livestock grazing along the river on several allotments. Fish ORVs would be protected at the existing levels. There would not be any form of enhancement.

**Alternative 2 –** This alternative would result in direct effects to TE&S fish and CH from livestock grazing within the Verde River flood plain along 11 miles on the Skeleton Ridge Allotment. Livestock activities would result in reduced streambank and riparian condition, though a one-third reduction in stocking and creation of an additional winter pasture would improve conditions faster than Alternative 1. Livestock grazing would be excluded in the Verde River flood plain on the Brown Springs and Cedar Bench Allotments. Riparian and streambank conditions and water quality would be improved. There would be impacts to TE&S fish from

water access at three points along the river on the Brown Springs Allotment. There would be impacts from livestock river crossings similar to Alternative 1. Effects include nutrient input and possible disturbance to fish. These impacts would be limited in extent of area affected with the VWSR corridor.

This alternative would reduce impacts to TE&S fish and CH because of the exclusion of livestock grazing in the river flood plain on the Brown Springs and Cedar Bench Allotments. Fish ORVs would be protected and enhanced to a greater degree than with Alternative 1.

**Alternative 3 –** Direct effects to TE&S fish and CH would be further reduced due to exclusion of livestock grazing within the Verde River flood plain in the WSR corridor. Streambank and riparian conditions would improve on an additional 11 miles on the Skeleton Ridge Allotment, compared to Alternative 2. There would be the same direct effects from livestock river crossings as described in Alternative 1. There would be the same direct effects from water access points on the Brown Springs Allotment as described under Alternative 2.

This alternative would further reduce impacts to TE&S fish and CH due to the exclusion of livestock grazing in the river flood plain on all allotments in the VWSR. Fish ORVs would be protected and enhanced to a greater degree than Alternative 2.

**Alternative 4 –** There would be no direct effects from livestock grazing on TE&S fish and CH under this alternative. Livestock would be excluded from grazing and watering within the entire VWSR corridor. Streambank and riparian conditions would improve throughout the VWSR. Impacts from grazing on the uplands would be reduced within the corridor from exclusion of livestock on all allotments, a one-third reduction in stocking on the Skeleton Ridge Allotment, and removal of livestock from the Brown Springs Allotments. Watershed and soil conditions are expected to improve at faster rates in ungrazed areas and result in improved water quality to TE&S fish habitat.

TE&S fish and CH within the VWSR corridor would not be impacted by livestock grazing. Fish ORVs would be protected and enhanced to the greatest degree of all alternatives.

## Water Quantity/Quality Issue

As a management indicator species for aquatic habitat within the VWSR, macroinvertebrates are directly affected by water quality. Effects of each of the alternatives on macroinvertebrate populations are displayed below in relation to effects on water quality.

**Alternative 1 –** Water rights that would be claimed would provide some protection for streamflows in the VWSR. There would be direct, beneficial effects to TE&S fish, CH, and macroinvertebrate populations from protection of streamflows.

There would be impacts to water quality from continued existing uses in the VWSR corridor. This would include direct and indirect effects to macroinvertebrates. There would be impacts to streambanks, riparian vegetation, riffle habitats, and water quality from authorized and unauthorized vehicle crossings of the river at Cottonwood Basin and Childs; recreational activities occurring within and adjacent to the river; and livestock activities occurring within and adjacent to the river. These impacts can affect macroinvertebrate populations by increasing sediments and reducing water quality. Aquatic habitat conditions would be maintained at existing levels. MIS population trends would be maintained at existing levels.

Implementation of BMPs, water quality monitoring, and reduction/elimination of pollution sources in the VWSR corridor would have some beneficial effects to TE&S fish and CH. Overall, the fish ORV would be protected or enhanced at the existing level.

**Alternative 2 –** Water quantity effects to TE&S fish, CH, and macroinvertebrates would be the same as Alternative 1.

Impacts to aquatic habitat and water quality within the VWSR corridor would be slightly reduced due to changes in livestock grazing management and management direction in riparian areas. There would be some beneficial effects to macroinvertebrates and their habitat from improved water quality. MIS population trends would slightly improve. Protection and enhancement of the fish ORVs and beneficial effects to TE&S fish and CH would be slightly better than Alternative 1.

**Alternative 3 –** Water quantity effects to TE&S fish, CH, and macroinvertebrates would be the same as Alternative 1.

Water quality impacts from within the VWSR corridor would be further reduced due to exclusion of livestock grazing and closure of several roads in the riparian area, conversion of roads to trails within the VWSR corridor, and requirements for removal of human waste and litter by boaters. There would be an overall improvement in water quality. There would be beneficial effects to TE&S fish, CH and macroinvertebrates from improved water quality. MIS population trends would improve. This alternative would provide a higher level of protection and enhancement of fish ORVs than Alternatives 1 and 2.

**Alternative 4 –** Water quantity effects to TE&S fish, CH, and macroinvertebrates would be the same as Alternative 1.

This alternative would further reduce water quality impacts from within the VWSR corridor slightly more than Alternative 3 due to obliteration of several roads within the VWSR corridor. There would be beneficial effects to TE&S fish, CH, and macroinvertebrates from improved water quality. MIS population trends would improve. This alternative would provide the highest level of protection and enhancement of fish ORVs.

## Cumulative Effects to Fish

The analysis area that has been considered for cumulative effects to fish includes the Verde River from Horseshoe Dam upstream to the headwaters at Sullivan Dam. This area corresponds to the critical habitat designations of the razorback sucker, spikedace, and loach minnow within the Verde River.

Continued community growth and development in the Prescott area and the Verde Valley would have impacts to the Verde River system. In addition, there are still unclaimed water rights by the City of Prescott, the Yavapai Apache Tribe near Camp Verde, and the Tonto Apache Tribe near Payson. Potential impacts include reduction in streamflow from increased water usage, and reduced water quality from increased runoff and sediment input from development in the watershed. Reduction in streamflow would have direct effects to TE&S fish and CH by reducing habitat quantity (i.e. depth and/or width). Reduced water quality would have indirect effects by reducing habitat quality due to sedimentation that can impact spawning habitats and macroinvertebrate production (food source).

The Forest Service has applied for instream flow rights on the upper Verde River for the benefit of listed fishes, has certified instream flows for the Verde River from Beasley Flat to Tangle Creek, and has been active in watershed improvements, road closures, and land acquisitions along the Verde River to help mitigate impacts to the river. These management actions protect and enhance the fish ORVs in the VWSR.

The Childs/Irving FERC decommissioning project would alter flows within a 3.75-mile reach of the VWSR between Childs and the confluence with Fossil Creek. This project would return full flows of 43 cfs back into Fossil Creek that are currently diverted and discharged to the river at Childs. There would be a reduction in flow of 43 cfs in the 3.75 miles of the VWSR. Median monthly flows in this reach range from 79 to 596, based on flows at the Camp Verde gage (Water Resources section). The 43 cfs discharged at Childs increases the flow in this reach of the Verde River by almost 50 percent during the low flow season from May through July. There would be some loss of TE&S fish habitat in this 3.75-mile reach of the VWSR due to reduction in water quantity of 43 cfs. Reductions in water quantity would result in a decrease in fish habitat (widths and depths), most notably in the low flow season from May through July. In the long term, this project would return the natural hydrograph to the Verde River and Fossil Creek, and improve native fish habitat along 14 miles of Fossil Creek, including 5 miles of critical habitat for two Federally listed species.

A native fish restoration project is being considered within Fossil Creek. This project would involve construction of a fish barrier in the lower reaches of Fossil Creek to restrict upstream migration of nonnative fish from the Verde River. The creek would be chemically renovated to remove nonnative fish above the barrier and then be repatriated with native species. There would beneficial effects to overall TE&S fish species recovery, but this action would occur outside of the VWSR and would not change the level of protection or enhancement of fish ORVs.

Livestock grazing occurs throughout the watershed on other forest allotments, State lands, and private lands. Since 1997, livestock grazing has been excluded from the upper Verde River on seven Forest Service grazing allotments. Livestock grazing has also been excluded along tributaries to the Verde River for the protection of TE&S fish species and their habitat. Currently, analysis is in progress for term grazing permits on four allotments within or adjacent to the VWSR. Range utilization standards and guidelines are in place on forest lands and are expected to improve watershed conditions. Improvements in watershed conditions and water quality would protect and enhance fish ORVs in the VWSR.

The “Cross-Country Travel by Off Highway Vehicles EIS” will amend Forest plans to limit vehicle use to designated roads and trails. Implementation of this management direction would maintain and/or improve soil and watershed conditions in the 5$^{th}$ code watersheds within and adjacent to the VWSR by reducing runoff and sedimentation to the river. Improvements in watershed conditions and water quality would protect and enhance fish ORVs in the VWSR.

An invasive weed plan for the Coconino, Kaibab, and Prescott National Forests would direct management for treatment of weeds within the Scenic reach of the VWSR on those forests. Treatments would improve native riparian vegetation along the VWSR and allow for development of potential riparian community to provide water resource related benefits. Improvement in native riparian vegetation would have beneficial effects to TE&S fish and CH. Improvements in riparian conditions and water quality would protect and enhance fish ORVs in the VWSR.

Cumulatively, the effects of Alternative 1, combined with the actions listed above, would maintain existing aquatic conditions for TE&S fish and CH in the majority of the VWSR, with a change in habitat in a 3.75-mile reach due to alteration of flows in Fossil Creek. Impacts would continue from livestock grazing along two-thirds of the VWSR flood plain, as well as impacts from recreational uses concentrated at river access points.

The effects of Alternative 2, combined with the actions listed above, would improve existing aquatic conditions for TE&S fish and CH for the majority of the VWSR, with a change in habitat in a 3.75-mile reach due to alteration of flows in Fossil Creek. Livestock grazing impacts would be reduced to one-quarter of the VWSR flood plain. Impacts from recreational uses would be concentrated at river access points.

The effects of Alternatives 3 and 4, combined with the actions listed above, would improve aquatic habitat conditions for TE&S fish and CH within the VWSR, with a change in habitat in a 3.75-mile reach due to alteration of flows in Fossil Creek. There would be no impacts from livestock grazing along the entire VWSR flood plain, and impacts from recreational uses would be concentrated at fewer river access points.

Cumulatively, the effects of Alternatives 1 through 4 are not expected to add to any of the effects described above. Management actions proposed under Alternatives 2 through 4 may, instead, mitigate some of these effects through public information and education, improved livestock grazing management, and improved recreation site management and development.

## Wildlife

### River Access Issue

**Alternative 1 –** Direct adverse effects to wildlife habitat and populations from vehicular access to riparian areas would continue under this alternative. Roads at Red Creek and the Childs, Cottonwood Wash and Beasley Flat areas would continue to allow vehicular access to areas upstream and downstream within the Scenic and Wild sections of the designated corridor. Riparian and aquatic vegetation and banks would continue to be altered by this vehicular use. Impacts to riparian vegetation due to camping related activities around the terminus of these roads in riparian vegetation at the river's edge would continue to reduce habitat suitability and riparian vegetation potential at these sites. Riparian-dependent wildlife populations in these areas would remain at less than potential levels.

**Alternative 2 –** Same effects as under Alternative 1.

**Alternative 3 –** The potential for direct adverse effects to wildlife habitat and populations resulting from vehicular access would be reduced under this alternative. The closure of vehicle access points at Childs, Cottonwood Wash and the area opposite Beasley Flat would eliminate vehicular access to areas of high quality wildlife habitat. Riparian vegetation and banks would improve in these areas and habitat suitability would increase.

Enforcement of OHV restrictions would be improved by closure of access points. Improved enforcement would discourage illegal motorized use that negatively affects vegetation, streambanks and wildlife habitat. Riparian-dependent wildlife populations in these areas would increase as habitat recovers from motorized vehicle-related alteration.

Closure of FR 9242, opposite Beasley Flat, to administrative use only and designation as nonmotorized recreation access will improve protection of bat populations at the Cavates area; however, it is likely that bat populations will continue to be affected to some degree by human disturbance during periods of high use at the site.

The reduction in motorized access provided under this alternative may slightly reduce hunting opportunities for participants who like to drive to their hunting spot.

**Alternative 4 –** Same effects as under Alternative 3, however, bat populations at the Cavates area would be better protected by closure of the road system in this area and no development of additional trails.

## River Use/Capacities Issue

**Alternative 1** - Under this alternative, recreation use at the Childs area, Gap Creek, Verde Falls area, Cottonwood Wash and Beasley Flat would continue to cause riparian habitat alteration and disturbance at high value wildlife sites (bats, gallery forests, herbaceous cover, bank conditions). Bat populations would continue to decline.

Hunting and wildlife watching recreation activities would not be affected by implementation of this alternative.

**Alternative 2** - Same effects as under Alternative 1.

**Alternative 3** - Recreation use at Childs and across the river from Beasley Flat would continue to result in some disturbance of high value wildlife habitat through trampling of woody seedlings, herbaceous plants, and banks, but effects would be reduced to much lower levels in comparison to Alternatives 1 and 2 through the change from vehicle access and camping to foot access and day use only.

At Cottonwood Wash camping use would likely be reduced by elimination of OHV access. Current camping use at this site appears to be light, but future increases in camping related disturbance from OHV access would be prevented.

At Childs, removal of the campground facilities from the flood plain would improve wildlife habitat suitability in the mature riparian stand by reducing impacts to vegetation and banks. The area would remain open to day use and some level of impact to vegetation would continue to occur. Relocation of the campground to the APS site would lessen impacts to additional riparian habitat. Relocation of the boat launch and implementation of “no camping” restrictions at the new launch site would improve overall habitat at the old river access point. Habitat at the proposed boat launch site is generally of lower quality due to the existing road, soils, existing vegetation and past livestock and other uses. Day use and dispersed camping would continue to occur on the west side of the river, but would likely be at lower levels due to the difficulty in accessing the west side of the river. This use would affect vegetation and habitat suitability to some degree.

It is likely that bat populations in the Cavates area will continue to be affected to some degree by human disturbance during periods of high recreational use at the site.

Camping and stopping within view of bald eagle nest sites would be reduced as no stopping zones were enforced and new areas were added. Other wildlife viewing opportunities are likely to

increase as disturbance from vehicles and motorized use in the riparian area decreases and as interpretive efforts increase. The number of hunting days and number of hunters might decline, while the quality of hunting experience might improve under this alternative as motorized access to the VWSR is restricted.

**Alternative 4 –** Same effects as under Alternative 3, however, without additional protection or other restrictions, it is likely that bat populations would continue to be affected as dispersed recreational use increases in the Beasley Flat area.

## Livestock Grazing Issue

A review of literature pertinent to the assessment of the effects of livestock grazing on riparian vegetation and riparian-dependent wildlife species was conducted. The review focused on recent articles specific to the effects of grazing or exclusion of grazing (see References section).

In summary, no literature was found that indicated livestock grazing was good for riparian-dependent wildlife species and related habitat characteristics. On the contrary, all studies indicated that grazing negatively affects these resources in one respect or another. Most literature indicates that grazing in riparian areas reduces populations, species diversity, and specific habitat quality for riparian-dependent terrestrial vertebrates. Literature that supports riparian area grazing only indicates that riparian vegetation can recover under properly managed grazing, but that recovery rates are faster if the riparian area is excluded from grazing (Stanley and Knopf 2002, Case and Kauffman 1997).

Within the VWSR corridor, vertebrate MIS and migratory birds are potentially impacted by livestock grazing more than other land uses (such as roads and recreation sites). Therefore, effects of each of the alternatives on MIS and migratory bird populations are displayed below in relation to the effects of livestock grazing on the key vegetation types they inhabit.

**Alternative 1 –** This alternative provides the least amount of protection for, or enhancement of, riparian-dependent wildlife species, including MIS and migratory birds. Riparian habitat along two-thirds of the VWSR could be adversely affected by livestock grazing, depending upon the intensity of grazing along the river. Elimination of herbaceous vegetation, as occurred at all grazed sites during the 2002 grazing period, would continue depending on factors such as water and forage availability away from the river, the ability to comply with management standards, intensity of monitoring, etc. Herbaceous plant density and vigor (height) would be reduced in fall/winter grazed areas and eliminated in summer grazed areas (Brooks 1999, Galt, et al. 1999, Brookshire, et al. 2002, Manske 2001). The reduction in herbaceous cover (density and height) and woody foliar cover (density and height) would negatively affect most riparian-dependent wildlife species (Homyack and Guiliano 2002; Bull, et al. 2001; Hayward, et al. 1997; Pearce, et al. 1998; Pearce, et al. 1997; Douglas, et al. 1992). Riparian-dependent species would not be favored in management of the VWSR.

Warm season grazing would continue to result in excessive use on woody species. Areas capable of producing dense stands of woody riparian species would contain sparse vegetation and species unpalatable to wildlife. Banks in heavily grazed areas would remain compacted and susceptible to scouring flows (Bengyfield 2002, Clary and Kruse 2002).

Cowbirds attracted to livestock use along the river would affect nesting success of riparian bird species through nest parasitism (Ammon and Stacey 1997, Brittingham and Temple 1996,

Goguen and Mathews 1998). Continuation of the ranch special use permit at Childs would continue to alter riparian and upland vegetation adjacent to the river with direct effects on wildlife habitat suitability. Cowbird densities are likely to remain at higher levels due to the attraction of livestock at the ranch, with a resulting increase in nest parasitism.

Populations of riparian-dependent wildlife, reptiles, mammals and birds, including MIS and migratory birds, would occur at much lower levels in grazed areas than in ungrazed areas, and the number of species present would be less**.** Nonriparian wildlife species would be favored, which might increase overall species diversity in some areas. Habitats for MIS and migratory birds using pinyon-juniper woodlands, desert grasslands, and desert scrub are projected to remain stable as livestock will continue to graze within these areas.

Based on existing plans and implementation, monitoring would not be adequate to insure that livestock use of vegetation and bank alteration were kept within acceptable limits (Clary and Kruse 2002). Based on existing methodology, monitoring would not be adequate to define wildlife habitat issues and prevent habitat alteration.

**Alternative 2 –** Actions under this alternative will improve riparian-dependent wildlife habitat conditions (including riparian-dependent MIS and migratory birds) on some portions of the river corridor, but adverse effects from grazing would continue on approximately one-fourth of the riparian corridor. Elimination of livestock grazing within the flood plain on the Browns Spring and Cedar Bench Allotments will allow riparian vegetation and habitat to develop to site potential. Additional fencing on portions of Black Ridge and Hot Springs Pastures on Skeleton Ridge Allotment would exclude grazing from those portions of the river. Vertical and horizontal cover would increase as vegetation composition, height and density improves in ungrazed areas. Nonnative weed species, such as cocklebur and Bermuda grass, would be replaced by native species. Woody riparian species are likely to increase as floods deposit sediment in dense herbaceous communities along the greenline in areas where livestock have been excluded. These changes in vegetation composition and density in ungrazed areas would result in an increase in riparian-dependent wildlife species populations.

Under this alternative, over 11 miles (approximately 25 percent) of the VWSR (Pete's Cabin, Hot Springs and Power House Pastures of the Skeleton Ridge Allotment) would remain open to grazing, and riparian areas within this portion of the valley bottom would continue to be affected by grazing. Herbaceous plant vigor (as expressed by plant height), density, and species composition would continue to be adversely affected in the grazed areas. Vertical and horizontal vegetative cover from herbaceous and woody species would also be adversely affected in the grazed areas. Riparian-dependent wildlife species populations would remain at low levels in these grazed areas, depending on the overall level of grazing.

Although changes are proposed to grazing on the Skeleton Ridge Allotment, areas with continued grazing are likely to result in continued concentrated use on portions of those pastures. The remoteness of Pete's Cabin Pasture, its size, lack of water sources other than the river, potential for poor forage years, and an inability to accurately monitor livestock use and move livestock before use limits are reached, make it questionable whether any revised grazing management plan can effectively protect wildlife habitat values on this portion of the VWSR (Clary and Kruse 2002).

Other problems with livestock grazing and unauthorized use could occur at the proposed water access sites on Brown Springs Allotment. Allowing livestock to water in the river poses a problem in controlling livestock access to unauthorized areas along the river. Selection of appropriate watering sites by a fish/wildlife biologist is required to insure minimal damage to riparian habitat. If adequate monitoring and administrative actions are not taken when unauthorized livestock use occurs, impacts to wildlife habitat are likely to occur.

Cowbirds tied to livestock use along the river would affect nesting success of riparian bird species. Continuation of the ranch special use permit at Childs would affect mature riparian habitat and cowbird occurrence within 5 miles of the area.

Populations of riparian dependent wildlife, reptiles, mammals and birds, including MIS and migratory birds, would occur at levels lower in grazed areas than in ungrazed areas, and nonriparian species would be favored. Habitats for MIS and migratory birds using pinyon-juniper woodlands, desert grasslands, and desert scrub are projected to remain stable as livestock will continue to graze within these areas.

**Alternative 3 –** This alternative would result in beneficial effects to riparian-dependent wildlife species, including riparian-dependent MIS and migratory birds, because of the exclusion of livestock grazing from riparian habitat in the corridor. However, because there will still be three livestock watering points at the river in the Brown Springs Allotment, and the possibility of trespass cattle entering riparian areas at these locations, there is the potential for localized adverse effects to riparian habitat. Livestock crossing the river between Forest Roads 57 and 502 twice yearly would also impact riparian vegetation adjacent to this crossing, but effects would be limited to areas immediately adjacent to the roads. Most, if not all, of the habitat alteration and effects to wildlife populations due to livestock grazing would occur in upland areas in this alternative. Management of riparian-dependent species would be emphasized in riparian areas of the VWSR corridor. Herbaceous riparian vegetation would recover under this alternative and herbaceous riparian species composition would change to native species over time. Areas capable of producing woody riparian species would recover as new flood events and deposits provided sites for woody species establishment. Banks in heavily grazed areas would revegetate with dense native vegetation and be protected from scouring flows.

The impacts of cowbird parasitism on nesting success of riparian bird species would be reduced as livestock were excluded from the river. However, parasitism would likely continue at some level due to the proximity of livestock use in the uplands and the concentrated recreational use at Childs and Beasley Flat. Continuation of the ranch special use permit at Childs would affect mature riparian habitat and cowbird occurrence within the area.

Populations of riparian dependent wildlife, reptiles, mammals and birds, including MIS and migratory birds, would increase toward optimum levels based on the natural characteristics of a site. Habitat for MIS and migratory birds using pinyon-juniper woodlands and desert grasslands are projected to remain stable as livestock will continue to graze within these areas. Habitat for MIS and migratory birds using desert scrub areas is projected to trend upward due to increases in plant densities and species diversity resulting from exclusion of livestock from Pete's Cabin and Red Hills Pastures. Changes in MIS and migratory bird populations may occur as a result of fencing to exclude livestock from the river, development of water sources outside the VWSR corridor, and possible changes in livestock use of the uplands within the corridor, but the amount of change will probably be undetectable. Aquatic habitat, represented by the MIS cinnamon teal,

is expected to show an upward trend on half the aquatic acres within the corridor as emergent vegetation increases along shores and within the river channel, while open water areas will remain stable. Monitoring would be focused on identifying and taking action on compliance, fence conditions and removing unauthorized livestock within the flood plain.

**Alternative 4 –** This alternative would result in the most beneficial effects to wildlife species, including MIS and migratory birds, because of the exclusion of livestock grazing from the VWSR corridor. However, because there will still be the possibility of trespass cattle entering the VWSR corridor, there is the potential for localized adverse effects to wildlife habitat, should this occur. Both upland and riparian-dependent species populations would be favored. Herbaceous vegetation in both riparian and upland areas would recover under this alternative and herbaceous species composition would change to native species over time. Areas capable of producing woody riparian species would recover as new flood events and deposits provided sites for woody species establishment. Banks in former heavily grazed areas would be revegetated and be protected from scouring flows.

The effects of cowbird parasitism on nesting success of riparian bird species would be reduced as livestock are excluded from the river and adjacent uplands. Riparian habitat and cowbird parasitism would no longer be concerns due to termination of the special use permit at the ranch just above Childs.

Habitats and populations of riparian-dependent MIS and migratory birds would be affected the same as described in Alternative 3. Habitats and populations of MIS and migratory birds using pinyon-juniper woodlands, desert grasslands, and desert scrub are projected to trend upward as livestock are excluded from these areas. Monitoring would focus on identifying and taking immediate action on unauthorized livestock use within the VWSR.

## Water Quantity/Quality Issue

No effects related to wildlife resources other than as described in relation to other issues.

## Cumulative Effects to Wildlife

The analysis area that has been considered for cumulative effects to wildlife includes the watershed of the Verde River and range allotment boundaries that encompass portions of the VWSR. Likely events that have been considered within the cumulative effects area and their effects are described below (see Appendix C for list of events considered).

When flood events occur, habitat and wildlife populations in both the Scenic and Wild sections (ADWR 1994) would be affected over a longer time period under alternatives with continued grazing in the riparian zone, than in those alternatives without grazing in riparian zones. Cessation of diversion of waters into the East Verde River will affect downstream riparian vegetation and wildlife habitat quality on the Verde Wild River over the long term. Implementation of any control program for invasive species in the Scenic section might decrease riparian vegetation/habitat quality in the short term, but could improve native plant communities and habitat over the long term. Decommissioning of Childs-Irving Hydroelectric Plants will reduce flow and may affect wildlife habitat quality in the Scenic and Wild sections above Fossil Creek, but may improve riparian habitat at and downstream of Fossil Creek in the Wild section. Central Arizona Project allocations, coupled with long-term increases in water demand, could

reduce flows and affect habitat and riparian vegetation in the VWSR. Allotment management plans developed for adjoining allotments could either increase, decrease or have no effect on livestock impacts to riparian vegetation and habitat over the long term, depending upon changes in stocking, monitoring, use standards, fencing and other factors. Potential Federal listing of the yellow-billed cuckoo and designation of critical habitat for the willow flycatcher could require alterations in management of the VWSR.

Cumulatively, the effects of Alternatives 1 through 4 are not expected to add to any of the effects described above. Management actions proposed under Alternatives 2 through 4 may, instead, mitigate some of these effects through public information and education, improved livestock grazing management, and improved recreation site management and development.

## Cultural and Historic

Impacts to historic and cultural resources can be generally defined as anything that results in the removal, displacement of, or damage to artifacts, structural features, and/or stratigraphic deposits of cultural material. For historic and cultural resources considered eligible for the National Register of Historic Places, this can also include alteration of a site's setting or context. In the case of traditional cultural properties and places having traditional, historical, or religious significance to Indian tribes, additional considerations may include alterations to geological formations, closure or restriction of access routes, or changes in the presence or availability of particular plant species.

The Forest Service is required by law and regulation to protect and preserve historic and cultural resources from damage, excessive deterioration, vandalism, and looting. The primary causes of impacts to historic and cultural resources in the Verde Wild and Scenic River corridor are vandalism and looting. Damage from recreational activities is another potential source of impact.

### River Access Issue

Historic and cultural resources are best protected from vandalism and looting by active management, particularly observation and monitoring. This can be provided by Forest Service personnel patrolling and inspecting sites on a regular basis, or by volunteer organizations such as the Arizona Site Stewards who perform a similar function. Recreational visitors can also keep an eye on each other, although this method requires that visitors be informed and aware of the consequences of looting and vandalism. Where roads and trails provide proximate access to historic and cultural sites, they can be more easily and frequently patrolled and monitored.

Vandalism and looting are impacts arising from intent, generally with foreknowledge that such activity is illegal. Passive methods of protection, including restricting access by physical barriers such as fences or by onsite notification and education signs, are effective only when combined with active observation and monitoring. In remote locations, where there is little concern that illegal activities will be observed, passive measures are easily and anonymously defeated. Contrary to conventional wisdom, lack of access is no deterrent to vandalism or looting; nature lovers are not the only ones seeking solitude in the desert.

These conclusions result from observation by Forest Service and other land managers in Arizona over the last 30 years. It also derives from several decades of active participation in the Arizona Volunteer Site Stewards Program operated by the State Historic Preservation Officer. Since that

program began, vandalism has decreased appreciably on the Tonto, Prescott, and Coconino National Forests. This decrease appears to correlate directly with increases in site visitation and monitoring by the site stewards. There is also a direct and very dramatic correlation between frequency of site visitation by the public and the reduction of vandalism, even at remote locations, a result of combined efforts by all three forests to interpret sites and expand public education and appreciation of heritage values. In addition, vandalism decreases in areas that are regularly patrolled by Forest Service law enforcement officers. These observations form the basis for continued support of both the Site Steward Program and the development of interpretive visitor facilities at major sites by land managers throughout Arizona.

Reducing vehicular access to the Verde River may also reduce the ability of Forest Service personnel and volunteer site stewards to monitor the condition of sites within the corridor and to enforce laws protecting them from vandalism and looting. Reduction of access will also result in reduced visitation in general, resulting in fewer potential observers of all kinds. Finally, reduction in vehicular accessibility increases law enforcement response time and costs.

Developing or improving river access points and/or recreation sites will provide additional opportunities for recreational site visitation. It will also provide opportunities for interpreting those resources and educating visitors regarding rules of conduct when visiting historic and cultural sites, and the laws and regulations protecting them. Better access will improve opportunities for patrol and monitoring and facilitate visitation by site stewards, thus improving the effectiveness of historic and cultural resource law enforcement in the area.

One site will be directly impacted from changes in river access proposed by two of the alternatives—AR-03-12-01-1198, also known as Forest Road 57 on the Tonto National Forest. This is the historic road originally built to provide access for the construction of the Childs Power Plant. Two of the alternatives propose altering portions of that road within the corridor. No other actions proposed in any of the alternatives involve any activity within the specific boundary of any known site, therefore, all other impacts derived from changes in river access are considered indirect.

**Alternative 1 –** Under this alternative, existing roads and trails accessing the river would remain open and maintained to current standards. Public visitation of historic and cultural resources would continue at current levels, increasing over time in proportion to regional population growth, concentrated in those areas having the highest motorized access or most recreational facilities. Accessibility for patrol, monitoring, and other law enforcement activities would remain limited to existing roads and would continue to concentrate on the areas of highest day use recreational activity, with minimal access to the more remote portions of the corridor where heavily vandalized sites are located. Impacts from vandalism and looting would remain at current levels, with reduction over time commensurate with management intensity and monitoring frequency.

While management strategies will not change under this alternative, management itself may still intensify, at least in relation to the cultural and historic sites. More site stewards sign on with each forest every year. As more become available, more may be assigned to monitor Verde Wild and Scenic River sites. They, in turn, will interact more with district personnel, including law enforcement officers, and the forests will continue to train district employees as para-archaelogists and use them as de facto monitors when they are in the corridor. As the forests are able to field more observers, vandalism will go down.

As in all alternatives, the existing protection of historic and cultural resources provided by Federal laws and regulations will continue. By continuing existing, unrestricted access for monitoring and law enforcement, this alternative will have no effect on the level of protection currently afforded historic and cultural resources. It will not provide any form of enhancement.

**Alternative 2 –** Same effects as under Alternative 1.

**Alternative 3 –** Along with several others, Forest Road 57 (AR-03-12-01-1198) would be gated at a point well outside the corridor, and the remaining portion to the river restricted to administrative or permitted use. This will involve the construction of a parking area at the gate. Both of these actions may adversely affect the integrity of the historic character of the road. These effects may be minimized by means of mitigation measures identified during project-specific analysis that would be subject to consultation with the State Historic Preservation Officer and the Advisory Council for Historic Preservation under Section 106 of the National Historic Preservation Act, and its implementing regulations at 36 CFR 800.

Reduction in the number of road and trail access points available to the public, reduction of service levels of existing roads, restriction of some roads to administrative access only, and conversion of other roads to nonmotorized trails would also reduce the effectiveness of protective measures by increasing the difficulty and expense of site monitoring, and by increasing law enforcement response time. Site protection will have to rely primarily on passive educational methods.

While opportunities for vehicular access to historic and cultural sites will be more restricted, proposed interpretive developments at Beasley Flats, Childs, and Verde Hot Springs (same as Alternative 2, except that there will be no vehicular access to the Beasley Flat Cavates site in Alternative 3) will offer additional opportunities for interpreting those resources and educating visitors. The combination of a potentially adverse effect on one site and more restricted access for visitation and protection of others, with increased opportunities for education and interpretation, results in a level of protection and enhancement similar to that under Alternative 1.

**Alternative 4 –** Along with several others, Forest Road 57 (AR-03-12-01-1198) would be closed at a point well outside the corridor and obliterated from that point to the river. This action will adversely affect both the physical integrity and the historic character of the road requiring the development and implementation of a treatment and mitigation plan to be developed during project-specific analysis that would be subject to consultation with the State Historic Preservation Officer and the Advisory Council for Historic Preservation under Section 106 of the National Historic Preservation Act, and its implementing regulations at 36 CFR 800.

Closure and obliteration of nearly all existing roads within the corridor would severely limit the effectiveness of protective measures. Most historic and cultural sites within the corridor would be accessible only from the river or on foot over long distances. Site protection and law enforcement would be the most difficult, least effective, and most expensive under this alternative. It also offers the fewest opportunities for either public visitation of historic and cultural sites, or for interpreting them and educating visitors. While this alternative allows for the protection and enhancement of historic and cultural resources, it proposes the partial destruction of a significant**21/** historic property and provides lower levels of protection and fewer opportunities for enhancement to the remaining historic and cultural resources than Alternative 1.

## River Use/Capacities Issue

High levels of recreation use within the Verde Wild and Scenic River corridor may affect the integrity of historic and cultural resources as visitors expand use areas outside the established access points and campgrounds. Informal camping areas within cultural and historic site boundaries can impact site integrity through the introduction of modern trash, the removal of architectural materials to construct fire rings, and the digging of holes for disposing of waste. Other direct effects of camping on sites include the casual collection and displacement of surface artifacts and the establishment of informal trails that can initiate destructive gullying erosion. Indirect effects of camping on cultural and historic sites may include increased vandalism encouraged by the presence of fire rings and trash as an indicator that the sites might not be closely monitored or maintained. Given the low incidence of this form of impact (North, Senior, and Foster 2003), few sites within the corridor appear to be at substantial risk from this effect.

Since no action proposed in any alternative authorizes any activity within the specific boundary of any known historic and cultural site, all potential impacts derived from changes in recreation use or capacities must be considered indirect.

**Alternative 1 –** Under this alternative recreation use levels will remain unrestricted, both in numbers and distribution. The highest concentrations of use will continue to be found at the existing river access points. While this will not likely affect most historic and cultural sites in the corridor, camping and day use activities in the Cottonwood Creek/Beasley Flat and Red Creek areas may result in a gradual loss of site integrity as cultural sites found in these areas are subjected to increasing amounts of inadvertent damage from people camping nearby, dumping trash on them, using their stones to build fire rings, and stealing potsherds. However, most of the cultural sites are not that close to any of the favored camping areas.

With no change in the number and type of recreational facilities, opportunities for public interpretation and education will remain limited to Beasley Flat and Childs, though no interpretive developments are currently in place or planned at either location. Reduction of vandalism and looting impacts resulting from visitor education will be minimal.

This alternative will have no effect on the levels of protection and enhancement currently afforded the historic and cultural ORV.

**Alternative 2 –** The development of an interpretive plan, implementation of a river user's education program, development of an interpretive site at the Beasley Flat Cavates prehistoric site, and management and interpretation of the historic elements at Childs and Verde Hot Springs, will provide additional opportunities for public interpretation and education, increasing the effectiveness of other protection activities in the area. These developments may have a direct adverse effect on those cultural properties, depending on how they are planned and carried out. These effects may be minimized by means of mitigation measures identified during project-specific analysis. This would alleviate any issues arising from the possibility of short-term use jeopardizing long-term goals of protection and preservation.

This alternative, therefore, will provide increased levels of protection and enhancement for the historic and cultural resource over what is currently provided.

**Alternative 3 –** This alternative would result in the same impacts as Alternative 2, except that reduced access may result in fewer recreational impacts to sites and a lower rate of loss of site

integrity. However, since most historic and cultural sites are not located in the riparian areas favored for camping, and so few of them exhibit damage from these activities, any gains in protection from camping impacts are offset by the potential loss of management options and efficiency in condition monitoring and vandalism deterrence brought about by the reduction in vehicular access. In addition, reduced access will lower the effectiveness of any interpretive development at the Cavates prehistoric site by limiting the number of visitors who will be able to experience it.

Overall, then, this alternative offers no advantage over Alternative 2.

**Alternative 4 –** This alternative would result in the same impacts as Alternative 3, except that restricting access by obliterating roads without conversion to trails will further reduce the incidence of recreational impacts by severely reducing the number of visitors willing or able to access the corridor. In addition, this alternative does not propose any interpretive development at the Beasley Flat Cavates prehistoric site, or any management and interpretation of the historic elements at Childs and Verde Hot Springs.

## Livestock Grazing Issue

Historic and cultural resources, depending on their nature and composition, are subject to several different types of impact from activities associated with livestock grazing. Direct impacts from grazing are those that can result in structural material and artifacts being displaced and/or damaged. Indirect impacts can include erosion and changes in vegetative composition and density that alter the setting and geographic context of sites.

Since site condition assessments for historic and cultural resources are not available for any time prior to the introduction of European livestock species to the Southwest, some level of effect is assumed to have contributed to the current condition of all sites in the corridor.

Based on a history of observation and consultation with the State Historic Preservation Officer (SHPO), managed grazing is not considered by itself to constitute an effect on historic and cultural resources when the grazing strategy is designed to match herd size with capacity and distribute livestock as evenly as possible across the allotment, in order to avoid localized concentrations of animals and the resultant impacts to soils and vegetation associated with intense trampling. Changes in grazing strategy are likewise not considered to have an effect, provided that any new strategy does not alter these conditions. The greatest potential for direct adverse effects to historic and cultural resources is associated with the construction of range improvements and the access roads needed to build and maintain them.

From the 1870s to the early 1920s grazing of the corridor area was heavy and unregulated. This resulted in an initial reduction of vegetative cover that may have affected historic and cultural resources by soil loss, erosion, and trampling. Since the establishment of the allotment system and the implementation of restrictive grazing management, animal numbers have been steadily reduced and vegetative cover has returned, and the condition of known historic and cultural resources in the VWSR corridor has stabilized. In many cases site condition has actually improved as erosion channels and old holes from illegal excavation have filled in, and increased vegetative cover has slowed erosion and muted site signatures to the point where they do not visibly attract casual collection and vandalism.

**Alternative 1 –** Under this alternative, the forests will continue current management to protect riparian areas and match stocking rates to available conditions with optimal distribution, through modification of existing allotment management plans. Current stocking levels and distributions have no effect on historic and cultural resources. Any construction of new range improvements creates a potential for direct adverse effects. Effects on the historic and cultural resource can be minimized by means of mitigation measures identified during project-specific analysis. Protection and enhancement of cultural and historic resources are not affected.

**Alternative 2 –** Under this alternative fewer range improvements would be allowed, stocking rates would be reduced, and distributions altered, resulting in further protection and enhancement of the historic and cultural resources of the corridor. The overall effect would be a greater level of protection than Alternative 1.

**Alternative 3 –** Additional reductions and closures proposed under this alternative will have no effect on historic and cultural resources. Proposed construction of additional fences will create increased potential for direct adverse effects to individual sites, which can be minimized by means of mitigation measures identified during project-specific analysis. Expected increases in vegetative cover offer the potential for improved resistance to soil erosion but also have the potential for increases in site disturbance and deterioration from root growth. Since the protection offered by smaller herd numbers is offset to an extent by the potential for impacts derived from fence construction and maintenance, and the deteriorating effects of increased vegetation, the overall effect is similar to Alternative 1.

**Alternative 4 –** Excluding livestock from grazing in the corridor would have no effect on historic and cultural resources. If grazing is excluded from the upland portions of the corridor, grass and herbaceous cover may improve site stabilization against erosion, but this benefit must, again, be weighed against the destructive effects of root displacement from expected increases in woody vegetation. Comparing the potential for reduced erosion to potential increases in disruption of structural features and disturbance of subsurface deposits and buried features, there appears to be no net gain in protection under this alternative. The proposed removal of existing fences and construction of additional fences creates a potential for direct adverse effects, which can, again, be minimized by means of mitigation measures identified during project-specific analysis.

### Water Quantity/Quality Issue

No effects related to historic and cultural resources.

## Cumulative Effects to Historic and Cultural Resources

Given the nonrenewable nature of historic and cultural resources, particularly archaeological and historic sites, any portion of them that has been damaged or removed diminishes their cultural and scientific value permanently. Everything that affects them builds on everything that has affected them in the past. Missing parts cannot be replaced and they cannot be restored to their former condition. Therefore, all impacts to historic and cultural resources are considered cumulative.

The analysis area that has been considered for cumulative effects to historic and cultural resources includes an area 1,000 feet beyond the designated VWSR corridor. This area includes those prehistoric and historic archaeological sites, as well as significant traditional and religious use areas, within and immediately adjacent to the designated corridor. Likely events that have

been considered within the cumulative effects area and their effects are described below (see Appendix C for list of likely events).

Population growth in the Verde Watershed, as everywhere, will result in increased visitation and thus "wear and tear" effects to historic and cultural properties. While clearly cumulative, and essentially inevitable, these effects can be partially resolved through the monitoring and education actions to be undertaken through the implementation of this plan.

The Childs/Irving FERC decommissioning project has a great potential to affect historic resources in and around Childs. This will include removing most of the structural features associated with it and significantly altering what remains of the site. Upon implementation of the decommissioning project, visitors will never again be able to experience the significant events associated with this site through the features it placed in the cultural landscape. Most of these effects will occur outside of this analysis area and are addressed in a separate management plan.

Changes in the management of off highway vehicles under the five forest access EIS will probably have both positive and negative effects. Damage from roads and trails that directly impact sites will be reduced, but at the same time the accessibility of sites for monitoring and law enforcement will also be reduced. Overall, this is considered to present only a minimal potential to increase the cumulative effects to cultural and historic resources.

Cumulatively, the effects of Alternatives 1 through 4 are not expected to add to any of the effects described above. Management actions proposed under Alternatives 2 through 4 may, instead, mitigate some of these effects through public information and education.

## Water Resources

### River Access Issue

**Alternative 1 –** This alternative would maintain the existing access network. With increased recreational use expected over time, impacts to water quality would likely increase. Based on water quality monitoring within and below the VWSR corridor, existing impacts are not resulting in a general increase in turbidity within the corridor. Localized impacts occur during rain events when road-derived sediments are discharged to the river, and also occur when vehicles cross the river. Authorized and unauthorized roads on flood plains and within riparian areas prevent vegetation from reaching its full potential for providing water resource related benefits (sediment filtering, erosion protection, aquifer recharge).

**Alternative 2 –** Same effects as under Alternative 1.

**Alternative 3 –** Road related impacts to water quality would be reduced from those in Alternatives 1 and 2. Exclusion of vehicles from unauthorized river crossings at Cottonwood Basin, at the end of FR 502 above Childs, and at Childs Campground, would eliminate localized sediment impacts. Exclusion of vehicles from unauthorized roads in riparian areas and flood plains at the end of FR 16 and at other sites where vehicle use is impacting riparian and flood plain vegetation would allow vegetation in these areas to recover and restore the watershed benefits provided by vegetation on these sites. Additional water quality benefits (sediment and turbidity) may result from converting several roads (FR 9242, 9244, 500, 9709R, 57, and 16) into nonmotorized trails or Level 1 roads for administrative use. The magnitude of these benefits

would depend on the effort invested in reducing compacted surfaces, in restoring or improving drainage features along the roads/trails, and on the success of revegetation efforts at these sites. Local short-term increases in sediment would result from construction of a paved road and boat launch site at the upper end of FR 502. Implementing BMPs would limit erosion and sediment yield initially and revegetation of disturbed areas would reduce sediment yield over time.

**Alternative 4 –** This alternative would reduce erosion and sediment impacts beyond those in Alternative 3. Obliterating FR 16 from a point approximately 2 miles from the river and outside the VWSR corridor would prevent vehicle trespass into the Wild portion of the river at two additional locations. Obliterating several roads that would be converted into trails or Level 1 roads in this alternative (FR 9244, 9242, 500, and 57) would also reduce erosion and sediment impacts.

## Recreation Use/Capacities Issue

**Alternative 1 –** Existing recreation uses would continue under this alternative. Growth in recreation demand is expected to increase human use of the VWSR corridor. While water quality monitoring at the upper and below the lower ends of the VWSR corridor do not indicate that human uses within the corridor are reducing overall water quality, there are localized impacts to riparian vegetation on banks and flood plains at developed recreation sites at Beasley Flats and Childs, and at popular dispersed camping sites throughout the corridor. Human waste and litter, and destruction of vegetation on banks and flood plains evident at these sites have a negative effect on water resources. Much of Childs Campground is located within the 100-year flood plain of the river and contains stands of mature riparian trees. Human use of the site has destroyed vegetation, compacted soils, disturbed banks, and resulted in buildup of garbage, human waste, and charcoal from campfires. Under this alternative the campground may be moved out of the flood plain. Removal would benefit local water quality by allowing the site to revegetate, although complete revegetation would not be expected because the boat launch site, dispersed camping by overnight boaters and day use would continue. If the campground is not moved from the flood plain, the condition of riparian vegetation and local water quality impacts would be expected to worsen.

**Alternative 2 –** Same effects as under Alternative 1.

**Alternative 3 –** Reduced motorized access would reduce human impacts to vegetation, and reduce evidence of human wastes, litter and charcoal at campsites accessible by motorized vehicles. Requirements for overnight boaters to carry portable toilets and remove human waste from the river corridor would reduce the potential for localized water quality impacts due to bacteria. Relocation of Childs Campground out of the flood plain should reduce impacts to the riparian area and flood plain and allow partial revegetation of the site. Hike in day uses would still occur. Relocation of the boat launch to an improved site at the end of FR 502 would reduce impacts to the banks and protective vegetation at this site. However, depending on the final configuration of the relocated site, some or all of the impacts may occur at a new location. Overall this alternative would result in a reduction of water quality impacts compared to Alternatives 1 and 2.

**Alternative 4 –** Same effects as under Alternative 3.

## Livestock Grazing Issue

**Alternative 1 –** Current livestock grazing management has resulted in a variety of riparian conditions along the river. Riparian vegetation has the greatest biomass and provides the greatest bank protection and sediment trapping ability in areas where livestock have been excluded or have not grazed due to topographic constraints. In areas excluded from grazing, the greenline has extended both into the channel and up the cobble bars that line the active channel. Areas of minimal livestock grazing impacts exist from Red Creek upstream to Muleshoe Bend, from RM 44.5 upstream to RM 49.5, from the Ladders Territory to just upstream of Verde Falls, and from RM 57.7 to Beasley Flat. In areas impacted by livestock grazing, Bermuda grass and seepwillow comprise the major herbaceous and shrub species. These species provide less sediment trapping and bank protection capability than the ungrazed areas with denser emergent, herbaceous and woody vegetation.

Current grazing management has resulted in degraded riparian vegetation and highly altered streambanks in several reaches along the Wild and Scenic corridor. Although allotment management plans (AMPs) are in place, management has not been adequate to meet Forest Plan direction regarding riparian areas (see Riparian Vegetation section). Although management improvements may occur under this alternative, recovery of riparian areas and the beneficial effects of riparian vegetation on water resources would occur most slowly with this alternative. Recovery of riparian vegetation is dependent on the flood regime. Large floods scour riparian vegetation and erode and deposit cobble bars. These floods set much of the riparian vegetation exposed to scouring floods back to early successional stages. Regrowth of riparian vegetation between these scouring floods would occur most slowly under this alternative in areas where livestock grazing occurs. The beneficial effects of riparian vegetation, in terms of its sediment trapping, bank stabilizing and ground water recharge abilities, would be the lowest under this alternative.

Although water quality data indicates general water quality conditions are not declining through the VWSR corridor, localized water quality impacts from livestock wastes and bank trampling would be greatest under this alternative.

**Alternative 2 –** Development of riparian utilization standards and permitting cool season grazing only on the Skeleton Ridge Allotment, would benefit the water quality and channel stability values provided by riparian vegetation, above the levels provided in Alternative 1. Excluding livestock from the riparian corridor except at river access points on the Brown Springs and Cedar Bench Allotments would allow riparian vegetation to recover to its potential and at its greatest recovery rate. Bank alteration and localized impacts from livestock wastes would also be eliminated from the riparian zone except at river access points on these allotments under this alternative.

**Alternative 3 –** This alternative would exclude livestock from the river and riparian area except at three water access points in the Brown Springs Allotment and at one river crossing between the Ike's Backbone and Skeleton Ridge Allotments that occurs between Forest Roads 502 and 57 at the upper end of the Childs area. Riparian vegetation would improve to its full potential. Recovery of riparian vegetation and the beneficial effects of riparian vegetation on water resources would be greater and would occur more quickly than in the areas that continue to be grazed under Alternatives 1 and 2. Accelerated recovery of riparian vegetation in areas excluded from grazing may raise the level of stability of the river's banks. The dense emergent, herbaceous

and woody vegetation would provide greater bank stability than the vegetation that currently exists in heavily grazed sites. Despite the potential to raise the level of stability of the channel, large floods would still result in scouring of vegetation and result in resetting much of the riparian vegetation back to an earlier successional stage.

Water quality impacts from livestock would be reduced to impacts resulting from trampling and wastes at three river access points in the Brown Springs Allotment, and at the livestock crossing to the Ike's Backbone Allotment at the river crossing between FRs 57 and 502. Regrowth of riparian vegetation to its potential at all locations except the river access points would provide additional filtering of sediments and bacteria derived from upland sites adjacent to the river.

The permittee on the Skeleton Ridge/Ike's Backbone and Red Creek Allotments has water rights claims to water livestock along the mainstem of the Verde River as well as other tributaries to the Verde River within the Wild and Scenic corridor. These claims have not been adjudicated and may or may not be valid. Excluding livestock from the Verde River may prevent the permittee from using the Verde River water right if the claim is found to be valid at some future date.

**Alternative 4 –** The three water access points and livestock crossing retained in Alternative 3 would be eliminated in this alternative. Livestock impacts would be eliminated throughout the riparian zone of the Wild and Scenic River corridor. Riparian vegetation would recover at its maximum potential. Upland vegetation within the Wild and Scenic corridor would also recover at its maximum potential and provide watershed benefits from improved ground cover. Improved vegetative ground cover traps and filters sediments, increases infiltration, and reduces erosion. This alternative would result in the least amount of erosion and sediment yield from within the VWSR corridor of all the alternatives considered. Localized water quality impacts from livestock wastes would be the least of all alternatives.

Effects to the permittee on the Skeleton Ridge/Ike's Backbone and Red Creek Allotments regarding a claim for water rights will be the same as under Alternative 3.

## Water Quantity/Quality Issue

**Alternative 1 –** Water rights that would be claimed to protect the flow dependent ORVs would provide some protection for stream flows in the VWSR corridor. The magnitude of flows claimed throughout the year would be based on studies conducted to quantify the flows needed to protect or enhance the ORVs. These claims, once perfected, would be effective in protecting flows from injury by surface water right holders with a junior priority date, and would prevent water right transfers that would decrease flows below those claimed to sustain the ORVs. The effectiveness of these claims on protecting river flows from the effect of ground water pumping is unknown. Some diminution in flows may be expected if CAP allocations to the Yavapai Apache Tribe in Camp Verde are exercised, and a smaller decline in flows would be expected from exercise of the CAP allocations to the Tonto Apache Tribe at Payson and Pine Water Company in Pine/Strawberry. Exercise of the Tonto Apache Tribe and Pine Water Company allocations would probably only affect that portion of the VWSR below the confluence with the East Verde River.

Water quality effects of this alternative have been described in the discussions of the previous issues.

**Alternative 2 –** Same effects as under Alternative 1.

**Alternative 3 –** Same effects as under Alternative 1.

**Alternative 4 –** Same effects as under Alternative 1.

## Cumulative Effects to Water Resources

The cumulative effect of this decision when added to all the other past, current and foreseeable future actions within the analysis area is not expected to be significant. The analysis area that has been considered for cumulative effects to water resources includes the Verde River Watershed above the Wild and Scenic corridor.

Streamflows in the VWSR corridor have recently been affected by termination of the Phelps Dodge diversion from Blue Ridge Reservoir into the East Verde River. Flows are also likely to be impacted by the proposed surrender of the FERC license for the Childs Irving Project. If approved, this project would restore natural flows to the channel of Fossil Creek and shift the discharge of approximately 43 cfs downstream about 3.5 miles from Childs to the confluence with Fossil Creek. Exercise of the Camp Verde Yavapai Apache Tribe's CAP allocation could affect up to 10 cfs of flow through the entire VWSR corridor. Continued development upstream of the Wild and Scenic corridor has the potential to affect streamflow through increased ground water pumping that could reduce ground water discharge to the Verde River.

Water quality monitoring within and below the Wild and Scenic corridor does not suggest water quality is declining as it passes through the corridor. Implementing pollution reduction measures identified in the recently completed turbidity TMDL analyses for reaches of the Verde River upstream of the Wild and Scenic corridor should reduce turbidity upstream of the corridor. Numerous Water Quality Improvement and Water Protection Fund grants have been issued for improving water quality and riparian areas upstream of the VWSR corridor. Implementation of these projects should benefit water quality in the corridor.

Substantial population growth is projected for portions of the Verde Watershed, upstream of the VWSR corridor. This growth is expected to increase the nutrient loads from runoff, septic systems, and proposed new or expanded wastewater discharges (ADEQ, 2002).

Actions proposed under this EA are not expected to add to any of the described effects. Management actions proposed under this EA may, instead, mitigate some of these effects through road closures, public information and education, and improved grazing and recreation management.

## Riparian Vegetation

Effects to riparian vegetation resulting from implementation of each of the alternatives have a direct effect on wildlife habitat for riparian dependent species. Because of this direct link, effects to riparian vegetation are displayed in the Chapter 4, Wildlife section displayed earlier.

## Upland Vegetation

Some of the ecological types described in Chapter 3 will be minimally affected by livestock grazing, or are typically not assigned grazing capability. These types are: Sonoran desert scrub/semi-desert grassland (40 - 120 percent slopes), rock outcrop/pinyon pine/Utah juniper/shrub woodland (40 - 120 percent slopes), Turbinella oak/mountain mahogany/Gambel oak/New Mexico locust shrubland (40 - 120 percent slopes), and juniper/Turbinella oak woodland (40 - 120 percent slopes). Since none of the alternatives propose changing the capability of these areas, effects are not addressed in relation to these ecological types.

The Pinyon Pine/Utah Juniper/Turbinella Oak Woodlands and Alligator Juniper/Blue Grama Woodlands are entirely outside the VSWR corridor and not affected by the alternatives in this environmental analysis. The Pinyon Pine/Utah Juniper/New Mexico Needlegrass Woodlands have a very small area in the VWSR corridor and would not be measurably affected by any alternative. Conditions of these ecotypes were assessed to gain a better understanding of the ecological conditions proximate to the river and are factors in the cumulative effects.

Within the pinyon-juniper and desert grassland/desert shrub ecological types are areas where canopy thresholds have been crossed. Changes in vegetative composition and soil condition would not occur in these areas as a result of livestock management under any alternative.

### River Access Issue

No effects related to upland vegetation.

## River Use/Capacities Issue

No effects related to upland vegetation.

## Livestock Grazing Issue

**Alternative 1 –**

**Sonoran Desert Scrub (0 - 40 percent slopes)** - With continuation of winter/early spring grazing on this ecological type, soils will remain compacted on flatter slopes that are near water. Cool season grasses, primarily three awns (Aristida spp), may be reduced in abundance in areas that livestock can easily access. Warm season grasses should slowly increase in abundance, especially in areas not close to permanent water. The composition by half shrubs**22/** will remain at amounts less than TES predicted.

**Semidesert Grasslands (0 - 40 percent slopes)** - Winter/early spring grazing on semidesert grasslands would have similar effects as on Sonoran desert scrub, with suppression of half shrubs such as shrubby buckwheat and cool season grasses including squirreltail (*Elymus elymoides*) and three awns. Ground cover would continue to be dominated by curly mesquite and tobosa. On the Brown Springs Allotment ground cover will remain high but curly mesquite would dominate and more palatable grasses will continue to be underrepresented.

No alternative addresses tree and shrub canopy cover and canopy would limit the percent herbaceous ground cover on most of this ecotype.

**Juniper/Velvet Mesquite Woodlands (0 - 40 percent slopes)** - Continued existing management on Skeleton Ridge will result in slow improvement of those units not in satisfactory condition. This improvement is dependent upon management responsiveness to drought conditions so that allowable use levels are not exceeded.

Implementation of management direction in the 1999 NEPA assessment of the Thirteen Mile Rock Allotment will result in an increase in ground cover on this allotment. The Brown Springs Allotment has the greatest acreage of this ecotype. It is currently near TES predicted levels for vegetative composition and cover, and would not be expected to change under any alternative, as little of the ecotype is within the VWSR corridor.

**Juniper/Turbinella Oak Woodlands (15 - 40 percent slopes)** - Current management on the TNF may be adversely affecting density and abundance of perennial grass species within this ecotype. Canopy density may limit opportunity for increasing grass composition in all alternatives.

**Juniper/Turbinella Oak/Crucifixion Thorn Woodlands (0 - 40 percent slopes)** - Implementation of the Thirteen Mile Rock NEPA direction would increase grass cover in this ecotype. On the Brown Springs Allotment no change in species composition would be expected.

**Alternative 2 –**

**Sonoran Desert Scrub (0 - 40 percent slopes) -** Herbaceous ground cover and grass species diversity would increase with improved management where shrub canopy cover is not limiting. Even with improved management of winter/early spring livestock use, soils in these mapping units may remain compacted on flatter slopes that are near water. Warm season grasses should slowly increase in abundance, especially in areas not close to permanent water. Growing season utilization would be lowered to improve grass response. Half shrubs are preferred forage during cool season grazing and would remain underrepresented in the plant community.

Improved management could include development of waters away from the river corridor (low tech water developments only, since these mapping units are in the wilderness), and changing season of use to a shorter winter/spring season. Other options would include early removal of livestock from the pasture during dry conditions, or creation of another alternate winter/spring pasture. Soil bulk density would be reduced if livestock were better distributed.

**Semidesert Grasslands (0 - 40 percent slopes) -** This alternative would have similar effects to Alternative 1 in this ecotype. Increased grass species diversity on slopes greater than 15 percent would reduce ground cover to levels more consistent with the cover predicted by TES.

**Juniper/Velvet Mesquite Woodlands (0 - 40 percent slopes) -** Shrub canopy may limit grass cover and composition in much of this ecological type. Lower growing season utilization, and timing of grazing to ensure spring or summer growing season rest would favor grasses. Most of these areas lie within full capacity range, on higher elevation mesa tops, on the east side of the river, and on gentle slopes and basins on the west side. Improved management should result in greater grass species diversity and reduced soil bulk density.

**Juniper/Turbinella Oak Woodlands (15 - 40 percent slopes) -** This ecological type is near predicted TES levels for cover but improved management would cause a slight increase. Species diversity would increase with adjusted season of use or utilization. Where canopy exceeds predicted levels, no change would occur. Where grass cover exceeds predicted levels, increased species diversity would decrease cover and reduce soil bulk density.

**Juniper/Turbinella Oak/Crucifixion Thorn Woodlands (0 - 40 percent slopes) -** Grass species diversity would increase with adjusted season of use or utilization where canopy is not limiting. Range improvements would not be needed in the analysis area, but might be necessary elsewhere on the allotment to facilitate changes in management. Reduction in stocking without other management practices would only change distribution including distribution of effects and the size of the area affected. It would not cause improvement throughout the type. Improved distribution would increase species diversity in areas where livestock now congregate.

**Alternative 3 –**

**Sonoran Desert Scrub (0 - 40 percent slopes)** - This ecotype occurs entirely within Pete's Cabin (winter use) Pasture of the Skeleton Ridge Allotment, and in Red Hills (winter use) Pasture of the Red Creek Allotment. Under this alternative, both of these pastures would be removed from grazing. Soil compaction would gradually reduce over a period of many years, and desert grasses such as three-awns, Stipa, and bush muhly would become more common.

**Semidesert Grasslands (0 - 40 percent slopes)** – Effects to this ecotype would be similar to those discussed under Alternative 2.

**Juniper/Velvet Mesquite Woodlands (0 - 40 percent slopes)** - Effects to this ecotype would be similar to those discussed under Alternative 2.

**Juniper/Turbinella Oak Woodlands (15 - 40 percent slopes)** - Effects to this ecotype would be similar to those discussed under Alternative 2.

**Juniper/Turbinella Oak/Crucifixion Thorn Woodlands (0 - 40 percent slopes)** - Effects to this ecotype would be similar to those discussed under Alternative 2.

**Alternative 4 –**

**Sonoran Desert Scrub (0 - 40 percent slopes)** - This ecotype would experience an increase in species diversity and ground cover, and soil bulk density would reduce more quickly due to no grazing pressure.

**Semidesert Grasslands (0 - 40 percent slopes)** - This ecotype would experience an increase in species diversity and ground cover, and soil bulk density would reduce more quickly due to no grazing pressure.

**Juniper/Velvet Mesquite Woodlands (0 - 40 percent slopes)** - This ecotype would experience an increase in species diversity and ground cover, and soil bulk density would reduce more quickly due to no grazing pressure.

**Juniper/Turbinella Oak Woodlands (15 - 40 percent slopes)** - Current management on the TNF may be adversely affecting density and abundance of perennial grass species within this ecotype. Canopy density may limit opportunity for increasing grass composition in all alternatives.

**Juniper/Turbinella Oak/Crucifixion Thorn Woodlands (0 - 40 percent slopes)** - This ecotype would experience an increase in species diversity and ground cover, and soil bulk density would reduce more quickly due to no grazing pressure.

## Water Quality/Quantity Issue

No effects related to upland vegetation.

## Cumulative Effects to Upland Vegetation

The analysis area that has been considered for cumulative effects to upland vegetation includes all upland vegetation types within a 2-mile wide zone on either side of the centerline of the river.

Likely events that have been considered within the cumulative effects area and their effects are described below (see Appendix C for list of likely events).

Upland species and habitats have been or are being studied and monitored for response to grazing. Adjustments in utilization rates have been made on the Verde River allotments in response to findings on grazing effects and will continue. These adjustments may affect stocking on the allotments, which would also affect upland vegetation.

Consultation on the effects of livestock grazing on Federally listed threatened and endangered species has caused adjustments in livestock management including specified utilization rates and season of grazing. Adjustments in grazing prescriptions result from monitoring. These adjustments focus on reducing detrimental effects of grazing on vegetation and soil. Success would be indicated by a greater representation of upland grass species and in some areas by increased ground cover.

Actions proposed under this EA are not expected to add to any of the described effects. Management actions proposed under this EA may, instead, mitigate some of the detrimental effects of grazing through improved livestock grazing management including adjustments in grazing prescriptions resulting from monitoring results.

## Recreation

### River Access Issue

A project scale roads analysis was conducted to address passenger car roads at objective Maintenance Levels (ML) 3, 4 and 5, and Maintenance Level 1 and 2 roads (closed and high clearance vehicle roads). Roads were analyzed by the interdisciplinary team using the procedure in FS-643, “Roads Analysis: Informing Decisions About Managing the National Forest Transportation System.” The objective of roads analysis in the Forest Service (FS) is to provide line officers with critical information to implement road systems that are safe and responsive to public needs, are affordable and efficiently managed, are adequate for management activities, have minimal negative ecological effects on the land, and are in balance with available funding. Products are located in the project file and include:

- Maps showing forest system roads and user-created tracks.
- Tables showing road segments and maintenance levels.
- Inventory information and photographs from field reviews of all roads within the project area.
- IDT comments regarding the road system and it’s relationship with the project purpose and need.
- Forest-wide RAP for each of the three forests that manage the VWSR.
- Summary of findings –
- There are a moderate number of FS roads that provide access into the VWSR.
- About half the roads that access the VWSR area have associated user-created tracks that impact soils, vegetation, the riverbed, and wilderness.

Some road access into the VWSR is of very high value to recreationists, FS management, and permittees.

**Table 21 - VWSR Road and Trail Mileage Comparison by Alternative**

| | Alt. 1 | Alt. 2 | Alt. 3 | Alt. 4 |
|---|---|---|---|---|
| Miles of road open to public use | 9.9 | 9.9 | 8.4 | 4.3 |
| Miles of nonmotorized trail | 13.2 | 13.2 | 17.1 | 14.0 |
| Miles of road converted to nonmotorized trail | 0 | 0 | 3.9 | 0.8 |
| Miles of road converted to Level 1 – Admin. | 0 | 0 | 2.1 | 0 |
| Miles of road decommissioned | 0 | 0 | 5.7 | 17.0 |

**Alternative 1 –** Nine roads into the Scenic River corridor would remain open for public motor vehicle use (Forest Roads 334, 9242, 9244, 500, 9709R, 57, 502, 9206Y, 16, and 18). Six of these roads would continue to be managed at Maintenance Level 2, and 3 roads (Forest Roads 334, 502, 9206Y) would continue to be managed at Maintenance Level 3, for passenger car access. The segment of FR 502 past the APS housing area at Childs would remain closed to public vehicles and open for administrative use only at Maintenance Level 2 (USFS, 2003, GIS).

Persons with disabilities would be able to access the Scenic River corridor from these nine public roads. Fewer than 12 persons with disabilities each year would be expected to gain closer access to the Verde Hot Springs, under special use permit, by driving to the end of FR 502, at the river (USFS, 1994-2003, file information).

There is no legal road access into the Wild River part of the Mazatzal Wilderness. Illegal motor vehicle access into the Mazatzal Wilderness and the Wild River would likely continue from FR 16 in two locations where the road is close to the wilderness boundary, and from FR 18 (Red Creek Road). Trespass locations include a location opposite Childs Campground, within the river riparian zone where FR 16 terminates at the river's edge and is difficult to physically block at that location. Vehicles would likely continue to drive into the Wild River and wilderness, crossing the river in at least one location within wilderness downstream of Childs. A second trespass into the wilderness and Wild River is approximately one-half mile west of the river near a range permittee corral on FR 16. The third trespass is near the end of FR 18 on the Tonto NF, near Red Canyon airstrip. Approximately 4.5 miles of "track" have been created within wilderness at these three sites (USFS 2002 VWSR Road and Trail Reconnaissance).

Frequent river crossings by public motor vehicles at the Childs Campground area (linking FR 9206Y with FR 16) would likely continue, despite signs informing the public of cross-country travel restrictions which prohibit this crossing. Barriers placed at the river's edge in Childs Campground could prevent a direct crossing from the campground. However, determined drivers arriving at the river on FR 16 would likely attempt to cross by driving downstream into wilderness. Illegal cross-country travel would also likely continue to expand in scope at the end of the Cottonwood Basin roads, FR 9242 and FR 9244, including river crossings. Approximately 1 mile of "track" has been created here within the VWSR (USFS, 2002 VWSR road and trail reconnaissance).

Road access for river boat launch and take-out points would continue to be available at Beasely Flat Picnic Area and Childs Campground. Road access for boat take out and launch is also available at Gap Creek from the Gap Creek Road located outside the VWSR. A hike is required to reach the river. All three locations are expected to remain popular by boaters.

Six nonmotorized forest trails would remain open to public access within the VWSR. Nonmotorized cross-country travel would still be permitted throughout the VWSR except in areas closed for resource protection or public safety. There would be no special provisions for persons with disabilities.

Area restrictions along the river would include those currently instituted seasonally for bald eagle protection within the Scenic River. Additional restrictions for resource protection or public safety could be applied as warranted by forest supervisors.

**Alternative 2 –** Same effects as for Alternative 1.

**Alternative 3 –** Six roads would continue to allow public motor vehicle access within the Scenic River corridor. The roads into Beasley Flat (FR 334) and Childs (FR 502) would be managed at Maintenance Level 3, for passenger cars. Forest Roads 16, 9244, 500, and 9709R would be managed at Maintenance Level 2, for public use.

Persons with disabilities would have direct access to the river at Beasley Flat and access to the river upstream of Childs when FR 502 is converted to a Maintenance Level 3 road and opened to the public. Persons with disabilities would lose motorized access within the Scenic River as three roads are closed or decommissioned within the VWSR corridor (including FR 9242, 57, and 9206Y).

Illegal cross-country travel from FR 9242 (Cottonwood Basin) to several locations along and across the river would be prevented. Illegal motor vehicle access into the Mazatzal Wilderness and Wild River would be prevented by closure of a short portion of FR 16, near the river. Illegal access could still occur at a location along FR 16 approximately one-half mile from the river.

River crossings by public motor vehicles at the Childs Campground area would be prevented with the removal of a short portion of FR 16 and conversion of the Childs Campground access road (FR 9206Y) into a nonmotorized trail associated with a new day use area. Illegal motor vehicle crossings at the end of FR 502 could continue, but are not expected due to rough terrain and gates on both shores.

Three river launch points will continue to be popular, especially during high water. Road access for river boat launch and take-out points would continue to be available at Beasley Flat. A new boat launch point upstream of Childs Campground would be developed and is expected to reduce conflicts between campers and river boaters. Gap Creek would continue to be used as a river boater access, from Gap Creek Road, located outside the VWSR.

Eight nonmotorized trails would provide public access within the VWSR. Six trails currently exist and two more would be added when roads are converted to trails. Nonmotorized cross-country travel would still be permitted throughout the VWSR except in areas closed for resource protection or public safety. There would be no special provisions for persons with disabilities.

Area restrictions along the river would include those currently instituted seasonally for bald eagle protection within the Scenic River. Additional restrictions for resource protection or public safety could be applied as warranted by forest managers.

**Alternative 4 –** Effects related to motor vehicle access would be the same as described in Alternative 3.

Six nonmotorized trails would exist within the VWSR. The Verde Hot Springs Trail would be lengthened when the Childs Campground access road is converted to a trail. Nonmotorized cross-country travel would still be permitted throughout the VWSR except in areas closed for resource protection or public safety. There would be no special provisions for persons with disabilities.

Effects related to area restrictions for resource protection and public safety would be the same as described in Alternative 3.

## River Use/Capacities Issue

**Alternative 1 –** Overall, there will be more people and more motor vehicle activity within the entire VWSR under this alternative than under Alternatives 3 and 4. This is a direct effect of the number of roads available to access the VWSR. This alternative would allow for modest development at Beasley Flat and Childs recreation areas, consistent with Roaded Natural ROS. With increased population and demand for river-based recreation, contact levels and crowding are expected to increase at Beasley Flat and Childs recreation areas, including Verde Hot Springs (ADWR, 2000; ASP, 1994; USFS, 1999). It is likely that the ROS character for human contact at Childs and Beasley Flat will become more of an "Urban" setting than the current "Roaded Natural," as frequency of overall crowding and contact with groups is expected to substantially increase, especially during holidays and weekends.

Outside the Beasley Flat and Childs recreation areas, the amount of human use is expected to gradually increase but be consistent with existing ROS classifications, except during holidays and weekends, and during high water events (see Map 7, Appendix A). The area of Verde Hot Springs would continue to have a Semi-Primitive, Nonmotorized character, due to the difficult access into the site. Opportunities for solitude and primitive recreation would continue to exist in areas designated Semi-Primitive Nonmotorized and within the two wilderness areas.

This alternative would also allow for motorboats in the Scenic River, outside of the Cedar Bench Wilderness. This does not happen often because of shallow water and rocky rapids, but could continue as an infrequent occurrence on the river at Beasley Flat and Childs, and between Beasley Flat and Gap Creek.

Demand for both commercial and noncommercial group recreation events at Beasley Flat and Childs is expected to increase, especially during weekends and holidays. With a noncommercial group size limit of 75 persons, crowding would increase and conflicts between large groups and small groups are likely to increase. On the river, group size is expected to remain limited due to the more complex logistics of larger groups. Commercial group size can be regulated under permit. Most noncommercial boating groups have a small group size (average of 4 persons) and this is not expected to change (USFS, 2002-2003; VWSR Ranger Reports; USFS, 2003, Ladders Nest Watch Data).

Crowding on the Scenic River is expected to increase simply as a result of greater numbers of people boating the river over the next decade. Parking space conflicts between boaters, campers, and picnickers at Beasley Flat and Childs, during high water (estimated at 25-40 days per year, USGS 1998), would continue. During higher water (over 1,000 cfs) Beasley Flat parking area can exceed the Persons At One Time (PAOT) design capacity of 100 PAOT for the site. On the river, boaters may be in sight of other boaters during most of their trip between Beasley Flat and Childs. Due to more difficult access and a longer trip requirement during most of the year, the Wild River

is not expected to experience a level of crowding in excess of desired contact levels under WOS II.

People who enjoy camping in an undeveloped motorized setting would continue to have access to several areas within the VWSR, where roads come to the river or close to the river. As a result, there would continue to be garbage, human waste and charcoal from campfire pits associated with the area opposite Childs, at Red Creek and where roads enter the VWSR in Cottonwood Basin.

The capacity of Childs Campground would continue to be inadequate to meet camping and picnicking demand during weekends and holidays in spring and summer. The lack of established vehicle and camper capacity at the campground causes a wide range of social and environmental effects depending on the time of year or day of the week. During busy weekends and holidays, the campground would continue to be very popular and experience severe crowding and parking congestion. Over time, what little vegetation left would be crushed and killed. Soils will become more compacted. In the absence of improved parking and campsite design, the camping environment is expected to become less appealing.

The Verde Hot Springs area would continue to offer a sense of remoteness and semiprimitive character. The lack of direct vehicle access on the Coconino side and primitive road access from the TNF side of the river are the main reasons for this. Dispersed camping and campfires would remain uncommon in the vicinity of the Hot Springs. Trash, human waste and charcoal would remain light.

Boaters would continue to have a wide choice of sites for camping and campfires along the river (USFS, 2002, Verde River Campsite Condition Survey). The existing prevalence of human waste and charcoal fire pits at most river camps is likely to increase as the number of boaters increases and, in the absence of requirements for fire pans and portable toilets.

Conditions would continue on a negative trend for litter, human and cattle waste, vegetation damage, and charcoal debris.

**Alternative 2 –** Same effects as described under Alternative 1, except that there would be no motorboat use on any part of the VWSR. This would enhance the Semi-Primitive recreation character.

**Alternative 3 –** This alternative would allow for modest development at Beasley Flat and Childs recreation sites, consistent with Roaded Natural ROS setting. With increased populations and demand for river-based recreation, contact levels and crowding are expected to increase at and in the vicinity of these two areas. Over the next decade, a substantial increase in year-round recreation use can be expected. It is likely that the ROS character for human contact at these sites will become more of an “Urban” setting than the current “Roaded Natural,” as frequency of overall crowding and contact with groups is expected to increase, especially on weekends and holidays.

In most of the VWSR, outside of Beasley Flat and Childs recreation areas, the amount of human use is expected to increase but be consistent with ROS classifications under this alternative (see Map 9, Appendix D). Exception to this would be found at limited areas during holidays and weekends, and during high water events. Opportunities for solitude and semiprimitive, nonmotorized recreation would increase substantially in this alternative with the reduction in motor vehicle access within the Scenic River, elimination of motorboat use, and an increase in

trail access. The closure of roads in the Cottonwood Basin area would substantially limit illegal cross-country travel into adjacent semi-primitive nonmotorized areas of the Scenic River.

Crowding on the Scenic River would continue to be expected during high flows (estimated at 25 to 40 days per year) when day trips between Beasley Flat and Childs are popular. Most of the year, evidence of humans and management (grazing) would be much reduced over levels in Alternatives 1 and 2. Conditions for river camps would be substantially improved over Alternatives 1 and 2 for the indicators of human and cattle waste, vegetation damage, and charcoal debris. Roads and motor vehicles would be substantially less prevalent throughout the Scenic River than in Alternatives 1 and 2.

The Mazatzal Wilderness Wild River section would continue to offer outstanding wilderness dependent recreation. Conditions within Mazatzal Wilderness would be more consistent with a Class I WOS recreation setting as illegal motor vehicle entry would be substantially reduced under this alternative. This would be achieved through FR 16 and FR 9206Y closure and campsite condition improvement.

New nonmotorized recreation opportunities would be created through conversion of roads to trails in the VWSR. These opportunities would help meet a strong demand for nonmotorized trail recreation associated with a free-flowing river.

The existing remote and semiprimitive character of the Verde Hot Springs area would diminish, as access becomes more convenient from the end of FR 502. The area would meet a Roaded Natural ROS setting. Trash, human waste and charcoal would increase. This would be somewhat offset by the reduction in motor vehicle access to the beaches within and opposite Childs Campground. This beach area would gain a more SPNM character when the campground is converted to a nonmotorized day use area accessed by a trail. A new campground and parking area would be developed at or near the current APS housing area, outside of the flood plain.

Demand for group recreation events at Beasley Flat and Childs, both commercial and noncommercial, is expected to increase. However, with a noncommercial group size limit of 25 persons, crowding and conflicts between large groups and small groups is not likely to increase. On the river, noncommercial group size conflicts are likely to remain static due to the more complex logistics of larger groups. Most noncommercial boating groups have a small group size (average of 4 persons) and this is expected to remain unchanged. Commercial group size can be regulated by FS permit.

Crowding on the Scenic River is expected to increase directly as a result of greater numbers of people boating the river over the next decade. During high water events (estimated at 25 to 40 days per year), Beasley Flat parking area can exceed the Persons at One Time (PAOT) design capacity of 100 PAOT for the site. During these times, boaters on the river may be in sight of other boaters during most of their trip between Beasley Flat and Childs. Due to more difficult access and a longer trip requirement, during most of the year the Wild River is not expected to experience a level of crowding in excess of contact levels associated with WOS I.

Scenic River boater capacities set under this alternative (250 persons per day) would not reduce the level of crowding or congestion currently observed during high water, when up to 30 trips per day (average size of 8 persons per trip) could launch. At higher water, most boaters do this stretch as a day trip. It is not expected that there would be crowding or competition for the numerous

camps in the Scenic River. During most of the year, crowding on the river is not expected to be an issue.

Wild River boater capacities (60 persons per day departing Childs) could result in as many as 12 trips per day launching and result in perception of crowding downstream, depending on trip length, speed, type of boats, etc. The numerous camping locations would mitigate most camp competition or contacts. During the low flows that are common most of the year, crowding is not expected to be an issue.

Limits on commercial launches on the Scenic and Wild River sections would mitigate the conflicts between commercial and noncommercial recreationists. The majority of launches would be noncommercial.

Parking space conflicts between boaters and picnickers at Beasley Flat during high water (estimated at 25 to 40 days per year) would continue. Parking conflicts between boaters and nonboaters at Childs would be reduced by the creation of a new boat launch site upstream.

Boaters would continue to have wide choice of dispersed camping sites on the river. People who seek dispersed camping and picnicking in an undeveloped motorized setting would find motor vehicle access to the river limited. Eight roads would come within one-quarter to 2 miles of the river, requiring a hike to the river. Opportunities would increase substantially for people who desire dispersed, undeveloped, nonmotorized camping and picnicking in the VWSR.

When Childs Campground is moved, redesigned, and expanded (as feasible) its capacity (expected to be 12 to 20 sites) would still be inadequate to meet camping and picnicking demand during some weekends and holidays in spring and summer. Relocation of the campground out of the flood plain up to the APS terrace would not offer the same riverfront appeal to campers who are used to the riverside motorized access. Vehicle and camper capacities set for the new campground would mitigate a wide range of social and environmental problems that currently exist and improve recreation conditions substantially, making the area more appealing. The conversion of the riverfront area into a day use area would provide outstanding nonmotorized day use adjacent to the river.

Beasley Flat would continue to provide much needed riverside picnicking and day use recreation.

**Alternative 4 –** This alternative would allow for modest development at Beasley Flat and Childs recreation sites, consistent with Roaded Natural ROS setting. With increased populations and demand for river-based recreation, contact levels and crowding are expected to increase at and in the vicinity of these two areas. Over the next decade a substantial increase in year-round recreation use can be expected. It is likely that the ROS character for human contact at these sites will become more of an “Urban” setting than the current “Roaded Natural,” as frequency of overall crowding and contact with groups is expected to increase, especially during weekends and holidays.

In most of the VWSR, outside of the Beasley Flat and Childs recreation areas, the amount of human use is expected to gradually increase. This use would be consistent with ROS classifications under this alternative, except at some popular places (such as Gap Creek and Verde Falls) during holidays and weekends, and during high water events. See Map 9, Appendix D.

The remote and semiprimitive character of the Verde Hot Springs area would diminish, as access from the end of FR 502 becomes more convenient. The area would meet a Roaded Natural ROS setting. Trash, human waste and charcoal would increase. This would be somewhat offset by the reduction in motor vehicle access to the beaches within and opposite Childs Campground.

For river runners, evidence of humans and management (grazing) would be much reduced. Conditions at river camps would be substantially improved as a result of less human and cattle waste, less vegetation damage, and less charcoal debris. Roads and motor vehicles would be substantially less prevalent within the Scenic River than under all other alternatives. Crowding and high contact levels on the Scenic River are expected during high flows when day trips are popular between Beasley Flat and Childs.

Opportunities for solitude and primitive, nonmotorized recreation would increase substantially over the existing condition, and be similar to Alternative 3. This would be a direct result of the reduction in motorized and trail access within the Scenic River, and limits on motorboat use. Under this alternative, seven roads would be closed and restored. However, it is likely that in the absence of the designation of an “official” trail, unofficial nonmotorized “trails” would become established on many of these former roadbeds. Trail use would be reduced over the amount in Alternative 3, but hardy hikers and equestrians would still use many of these access points. The closure of roads in the Cottonwood Basin area would substantially limit illegal cross-country travel into adjacent areas of the Scenic River.

The Wild River section would continue to offer outstanding wilderness dependent recreation. Conditions within Mazatzal Wilderness would be more consistent with a WOS I recreation setting when illegal motor vehicle entry is substantially reduced through FR 16 and FR 9206Y closure, and as campsite conditions improve.

Effects related to group size and capacities would be the same as under Alternative 3, except that commercial river use capacities would be lower and contacts between commercial and noncommercial river trips would be few.

Effects related to picnicking, camping and campfires would be the same as under Alternative 3, except that there would be fewer trail access points developed within the VWSR corridor.

## Livestock Grazing Issue

**Alternative 1 -** The primary effects to recreation from livestock grazing are evaluated as they relate to "naturalness" as a contributor to the ROS classification (1990 ROS Primer and Field Guide). Naturalness refers to the degree of naturalness of the setting: it affects psychological outcomes associated with enjoying nature. Naturalness is affected by visible evidence of grazing and related management activities. Under Alternative 1 there will be visible evidence of fences and grazing, especially in the Scenic River section. Grazed grasses, forbs and shrubs and cattle waste would be visible from the river and riverbanks in the Scenic section. These elements would be consistent with the assigned ROS categories outside wilderness, but generally incompatible with the WOS within the Wild River.

**Alternative 2 -** This alternative would have less evidence of grazing (grazed plants and cattle waste) as compared with Alternative 1, as viewed from the river and banks. The concentration of cattle at the three water locations would create a more visibly trampled area in these locations in the Scenic River. There would be more fencing potentially visible to recreationists under this

alternative, than Alternative 1. The three watering places within the Scenic River would be minimally noticeable to recreationists since one would have no visible fencing and the other two would have one fence only (through use of topographic features). These elements would be consistent with the assigned ROS categories outside wilderness, but generally inconsistent with the WOS within the Wild River.

**Alternative 3 -** The effects would be similar to Alternative 2 with generally reduced signs of livestock such as cattle waste and grazed plants throughout the corridor. Some fence may be visible in this alternative as the slopes on the Coconino are open. The fence would be much less visible because of increased distance from the primary recreation area of the river. This would be consistent with the assigned ROS categories outside wilderness and with the WOS within the Wild River.

**Alternative 4 -** This alternative would produce conditions with virtually no evidence of livestock in the VWSR corridor as experienced by recreationists focused on the river. This would be consistent with the assigned ROS and WOS categories throughout the VWSR.

## Water Quality/Quantity Issue

No effects related to recreation resources or experiences.

## Cumulative Recreation Effects

The cumulative effect of this decision when added to all the other past, current and foreseeable future actions (see Appendix C) within the analysis area is not expected to be significant.

The analysis area for this cumulative effects assessment includes the VWSR corridor. Likely events that have been considered within the analysis area include: expected population growth and decisions related to the "Cross-Country Travel by Off Highway Vehicles EIS."

Verde Valley population growth will continue and result in increased numbers of recreationists on public lands, especially along natural water ways such as the Verde River. This may create more "crowded" conditions at popular recreation sites and potentially increase conflicts between recreation users who have different values and expectations. Actions under this EA are not expected to add to these effects. Management actions under this EA may, instead, mitigate some of these issues through public information and education, and improved recreation site management and development.

The "Cross-Country Travel by Off Highway Vehicles EIS" is considering the closure of lands outside the VWSR corridor to cross-country vehicular travel. Alternatives 2, 3, and 4 propose a similar closure to lands within the VWSR corridor. This would allow for consistency in management of off-road vehicular use in the area. Site specific road decisions/closures/obliterations may occur under this EA, but are not considered to be significant within the entire context of the Verde Valley.

# Livestock Grazing

## River Access Issue

No effects related to livestock grazing.

## Recreation Use/Capacities Issue

No effects related to livestock grazing.

## Livestock Grazing Issue

The effects of changing livestock grazing patterns and use levels on those allotments that include parts of the VWSR corridor are displayed below in terms of the potential economic effects on individual permittees. Ecological effects of livestock grazing in the river corridor were displayed earlier in this chapter by resource areas potentially affected.

Economic effects are typically measured by economic multipliers, which measure economic returns as money circulates through the local economy. There is no agreement on the economic multiplier for livestock sales, with values as high as 6 to1 (Gila County Cattlegrowers Association) and as low as 1.3 to 1 (Tonto NF Focus Team personal communication – R.Tronstadt, University of Arizona). For this reason only potential loss of income to permittees is displayed in this analysis.

The social environment for this analysis includes the people living in the rural, central area of Arizona, where the affected allotments are located. The relative social impacts of Alternatives 2, 3, and 4 could exceed their economic impacts because ranching plays more of a lifestyle role in rural Southwest communities than an economic role. Most rural residents of this area believe that resource utilization would be less disruptive to their chosen lifestyles than most other forms of economic development (pers. comm. E. Burge, TNF Focus Team). Actions that close allotments, particularly actions benefiting other uses at the expense of ranching, inevitably generate formal opposition.

Not all allotments included in the analysis area are affected by each alternative. Descriptions of effects below only address those allotments and range permittees directly or indirectly affected by the alternative.

**Alternative 1 –** This alternative will not change current levels of livestock grazing and presents no economic hardships.

**Alternative 2 –** Under this alternative, herbaceous utilization standards would be developed specifically for riparian species and grazing in the river's riparian zone would be limited to cool season only. Recovery of riparian vegetation from scouring floods would be provided before grazing in pastures with river riparian would be authorized. Where fencing is required, a cost of either $7,000 or $10,000 per mile is used that reflects varying costs based on difficulty of access.

The level of employment directly and indirectly supported by a livestock operation is assumed to be 1.14 jobs per 100 animal years or 0.00095 job/AUM of livestock (USDA FS, Region 3, 1995). An AUM is a cow/calf unit and is 1.28 head months. The Forest Service's Regional Office developed this index for the 1995 permit issuance project. Alternative 2 would reduce grazing by

3,996 AUMs, equating to a potential loss of 3.8 jobs. See Table 22 for a summary of changes to allotments resulting from the implementation of this alternative.

**Table 22. Summary of Allotment Changes, Alternative 2**

| Allotment | Action | Effect on Stocking | Cost 23/ | Change in Income to Allotment 24/ |
|---|---|---|---|---|
| Brown Springs | 2 miles of fence in Coldwater Pasture construct trail upslope of fence<br>1 ½ miles of fence in Rodeo Pasture<br>2 fences to create waterlanes | None predicted | $31,50025/ | None predicted |
| Cedar Bench | Exclude River Pasture from grazing | None predicted | None predicted | None predicted |
| Skeleton Ridge | Combine Black Ridge and Houston Basin to create a new winter pasture.<br>2 miles of fence in Black Ridge, ¼ mile in Hot Springs. | Reduce 1/3 to 186 cattle, natural increase for calves would be reduced comparably | $22,25026/ | Reduced $23,180/yr |
| Red Creek | Exclude Red Hills Pasture from grazing27/ | Reduce 1/3 to 348 cattle, natural increase for calves would be reduced comparably | | Reduced $42,180/yr |

**Brown Springs Allotment** - Two of three primary pastures on the allotment access the river and there is insufficient management flexibility for cool season only river grazing or effective control of utilization in dry years.

Livestock would be excluded from the riparian corridor within this allotment under this alternative. The Home Pasture (885 acres), normally grazed by the permittee's horses, would not be grazed as it is too small to justify fencing.

Fencing the riparian corridor in this alternative is feasible because the river is on the boundary of the Brown Springs Allotment. This action would require 2 miles of fencing between topographic features in Coldwater Pasture and one and a half miles of fence in Rodeo Pasture. A trail would need to be constructed upslope of the fence in Coldwater to allow livestock to be moved in the pasture instead of in the river's flood plain, as they are now.

Controlled river access for livestock watering would be needed upstream of the falls, upstream of Chasm Creek, and at the south end of Rodeo Pasture. These would be needed to enable continued grazing in the north half of the pasture. The former access points

would require some fencing, the latter is in a dry drainage and the river is too deep for cattle to cross, but a short section of fence across a stock trail would be needed to keep cattle in the drainage. Water developments would need to be maintained or improved, including cleaning stock tanks in the Cedar Bench Wilderness to support current or near current stocking.

**Cedar Bench Allotment -** The remoteness of the River Pasture on Cedar Bench Allotment makes it difficult to monitor and difficult to move cattle out of quickly. River Pasture would not be grazed in this alternative.

**Skeleton Ridge Allotment -** Improved management would consist of creation of an alternate winter/spring pasture to be grazed during dry years instead of, or in addition to, the river (Pete's Cabin Pasture). Current seasonal allocations of pastures would be changed to combine two spring/summer pastures—Houston Basin and Black Ridge—to create the new winter pasture. This would require additional improvements of fences at either end of Black Ridge and a drift fence in Hot Springs. Livestock would continue to be herded across the river twice a year between the Skeleton Ridge and Ike's Backbone Allotments. Additional control of livestock would prevent heavy grazing that has been observed on herbaceous species along the river during drought years.

The conversion of a summer pasture to a winter pasture would result in a stocking reduction of approximately one-third of the base herd and of the natural increase (a 65 percent allowance made for calves from the previous year). Summer pastures are the limitation on grazing this allotment leading to the reduced grazing capacity.

**Red Creek Allotment** - The VWSR passes through the north end of the Red Hills Pasture of the Red Creek Allotment. The pasture is being considered for exclusion of grazing under other ongoing environmental analysis and is proposed for exclusion under this alternative. This alternative would have no effect on the proposed management for the Red Creek allotment unless Red Hill Pasture is not excluded through the other environmental analysis. It would be very difficult to control grazing in this 31,000-acre pasture and remove cattle before the herbaceous utilization standards were exceeded. It is not feasible to fence the riparian corridor and provide water lanes because it would require fences to be built on both sides of the river and portions of the pasture are in the Mazatzal Wilderness. The cost of fence construction and existing restrictions on new construction in the wilderness make fencing the river in this pasture unfeasible.

**Alternative 3 –** The Thirteen Mile Rock, Hackberry/Pivot Rock and Fossil Creek Allotments on the Coconino do not access the river. Neither Ike's Backbone, administered by the Tonto, nor Squaw Peak on the Prescott, provides livestock access to the river. Effects on these allotments would be the same as Alternative 1.

The potential reduction in the number of jobs associated with livestock grazing on the Brown Springs, Cedar Bench, and Skeleton Ridge Allotments is the same as described for Alternative 2. See Table 23 for a summary of changes to allotments resulting from the implementation of this alternative.

**Brown Springs Allotment** - Rodeo and Coldwater Pastures would be fenced from the river as in Alternative 2.

**Cedar Bench Allotment -** Livestock grazing would be discontinued in the River Pasture. This is the only pasture that accesses the river. The remoteness of the pasture, which lies mostly within the Mazatzal Wilderness, makes it unfeasible to fence the river so the pasture would not be grazed.

**Skeleton Ridge Allotment** - This alternative differs from Alternative 2 in requiring additional fencing to exclude grazing from the river. In order to prevent livestock access to the riparian corridor in the Powerhouse and Hot Springs Pastures, approximately 1 mile of new fence would need to be constructed. A mile of fence at either end of the Black Ridge Pasture would be needed so this pasture could continue to be grazed. Pete's Cabin Pasture currently has livestock access to approximately 8-1/2 miles of river. The river runs near the middle of the pasture. The amount of fence required, along with restrictions affecting construction in the Matazal Wilderness, make fencing or water lanes unfeasible. Therefore, it would not be possible to graze the Pete's Cabin winter-use pasture (17,218 acres). The small pastures, Cedar Basin (103 acres), and Pipeline (330 acres) would be excluded from grazing as well.

Livestock would continue to be herded across the river twice a year between the Skeleton Ridge and Ike's Backbone Allotments. Stocking rate for the allotment would be cut by approximately 1/3 to 180 and natural increase would be reduced comparably.

**Red Creek Allotment -** As in Alternative 2, livestock grazing would not occur in the Red Hills Pasture.

**Alternative 4 –** The cost of fencing in this alternative is higher because of the inability to use natural barriers adjacent to the river. Without use of natural features, continuous fencing would be required at an estimated cost of $10,000 mile.

**Table 23. Summary of Allotment Changes, Alternative 3**

| Allotment | Action | Effect on Stocking | Cost 28/ | Change in Income to Allotment 29/ |
|---|---|---|---|---|
| Brown Springs | 2 miles of fence in Coldwater Pasture construct trail upslope of fence 1 ½ miles of fence in Rodeo Pasture 3 short fences to create water lanes in Rodeo | None predicted | $31,500 (see Alt. 2) | None predicted |
| Cedar Bench | Exclude River Pasture from grazing | None predicted | None predicted | None predicted |
| Skeleton Ridge | 1 mile of fence in Powerhouse and Hot Springs Pastures, | Reduce 1/3 to 186 cattle, natural increase would be reduced comparably | $30,000 | Reduced $23,180/yr |

| Allotment | Action | Effect on Stocking | Cost 28/ | Change in Income to Allotment 29/ |
|---|---|---|---|---|
| | 2 miles of fence in Black Ridge Pasture<br>Exclude Pete's Cabin Pasture from grazing | | | |
| Red Creek | Exclude Red Hills Pasture from grazing**30/** | Reduce 1/3 to 348 cattle, natural increase for calves would be reduced comparably | | Reduced $42,180/yr |

Alternative 4 reduces grazing by 8,303 AUMs on all 9 of the allotments included in the VWSR corridor, equating to a potential loss of 7.9 jobs. See Table 24 for a summary of changes to allotments resulting from implementation of this alternative.

**Thirteen Mile Rock Allotment –** The Wingfield South Pasture is 1,190 acres, but would be reduced to 758 acres with the corridor fencing. Little or no reduction in grazing capacity is anticipated.

**Hackberry/Pivot Rock Allotment –** These allotments have been fenced from the river, except for one emergency access point for livestock water. Ninety percent of the existing river fences are within the quarter-mile corridor. The quarter-mile corridor crosses four pastures that total 11,348 acres of this allotment. Only one of the four pastures, Lower Towel Pasture, cannot be feasibly fenced along the quarter-mile corridor. Consequently, the 4,718 acres of Lower Towel Pasture would be excluded from the allotment's grazing management. The total allotment acres ungrazed in this alternative would be 5,732 (4,718 pasture acres and 1,014 corridor acres).

Exclusion of Lower Towel Creek Pasture from grazing would reduce the allotment's capacity by about 800 animal months or 67 cattle. The permit would be reduced from 760 to 693 cattle.

**Fossil Creek Allotment –** The allotment's boundary with the Verde River was fenced in the 1980s to restrict livestock grazing within the river corridor. All of these fences are within the quarter-mile corridor. Child's Pasture would be possible to fence but at great cost. Fencing could also be done in Chalk Springs Pasture but due to remoteness and inaccessibility, it would be cost prohibitive. The loss of capacity if this pasture were not fenced would be an estimated 650 animal months or 54 cattle. This would reduce the permit from 477 cattle to approximately 414 cattle.

**Brown Springs Allotment –** Fencing the corridor is not feasible without utilizing topographic features. Coldwater and Rodeo Pastures, two of the three primary pastures, and the shipping and Horse Pasture (Home) would be excluded essentially removing the possibility of managing grazing and the allotment would not be viable.

**Cedar Bench Allotment -** As in Alternative 3, the River Pasture would be excluded from livestock grazing.

**Skeleton Ridge Allotment –** Two miles of fence would be needed for the Powerhouse and Hot Springs Pastures if the fence were to be constructed outside the quarter-mile corridor on either side of the river. Since these pastures are so small, it may not be economically feasible to construct this fence, in which case these pastures would be dropped from the system.

Two miles of fence would need to be constructed in the Black Ridge Pasture, as for Alternative 3. Also as for Alternative 3, use of Pete's Cabin Pasture would be discontinued, and stocking level cut by one-third for the allotment.

**Ike's Backbone Allotment –** Much of the Childs Pasture fence is within a quarter mile of the river (within the corridor). It would not be feasible to remove this fence and reconstruct another fence a quarter mile away. The Childs Pasture would be excluded from grazing. The other two pastures of this allotment could possibly be used in a 3-pasture spring/summer rest-rotation with what is left of the Powerhouse and Hot Springs Pastures for first-calf heifer summer pastures. In this case, stocking rate could remain the same.

**Red Creek Allotment** – As in Alternatives 2 and 3, livestock grazing would not occur in the Red Hills Pasture.

**Table 24. Summary of Allotment Changes, Alternative 4**

| Allotment | Action | Effect on Stocking | Cost 31/ | Change in Income to Allotment 32/ |
|---|---|---|---|---|
| Thirteen Mile Rock | Reduce one pasture with fencing. Construct 2 miles of fence in Wingfield South Pasture. | None Predicted | $14,0003 3/ | None Predicted |
| Hackberry/ Pivot Rock | Exclude Lower Towel Creek Pasture. About 3 miles of new fence for Bull Run, Ladders and No Name #2 Pastures. | Reduce permit by 67 cattle from 760 to 693 | $30,000 | Reduced $16,720 per year |
| Fossil Creek | 3.75 miles new fence for Chalk Springs Pasture. Exclude Chalk Springs Pasture. | Reduce permit by 54 cattle from 477 to 414. | $37,500 | Reduced $13,300 per year |
| Squaw Peak | Move one-quarter mile of fence. | Slight investment | $1,000 | |
| Brown Springs | Exclude Rodeo and Coldwater Pastures and horse holding pasture. | Allotment would not be grazed. | None Predicted | Reduced $41,900 per year |
| Cedar Bench | Exclude River Pasture. | Can be | None | None |

| Allotment | Action | Effect on Stocking | Cost 31/ | Change in Income to Allotment 32/ |
|---|---|---|---|---|
| | | compensated for with adjusted management. | Predicted | Predicted |
| Skeleton Ridge | Exclude Pete's Cabin Pasture.<br>Fence Black Ridge, Hot Springs and Powerhouse Pastures as in Alternative 3. | Permit would be reduced one-third from 280 to 186, natural increase would be reduced comparably. | $30,000 | Reduced $23,180 per year |
| Ike's Backbone | Childs Pasture excluded. | Management adjustment to continue rotation. | None Predicted | None Predicted |
| Red Creek | Exclude Red Hills Pasture from grazing34/. | Reduce one-third to 348 cattle, natural increase for calves would be reduced comparably. | | Reduced $42,180 per year |

## Water Quantity/Quality Issue

No effects related to livestock grazing.

## Cumulative Effects to Livestock Grazing

The analysis area that has been considered for cumulative effects to livestock grazing includes the aggregation of the nine grazing allotments that include parts of the designated VWSR corridor (see Map 8, Appendix D). Cumulative effects on livestock grazing are considered to be associated with population growth in the Verde Valley and its concurrent increased recreation demand, as well as Federal actions taken through the NEPA environmental analysis process or the Endangered Species Act (ESA).

Population growth in the Verde Valley has increased recreation activities and reports of vandalism on the Squaw Peak, Thirteen Mile Rock, and Hackberry Allotments. These legal and illegal activities affect permittee management effectiveness and are predicted to increase. Increased recreational demands for river access could require adjustments in allotment boundaries at the south end of the Verde Valley to accommodate higher recreation use without conflicting with livestock management. Appropriate design of new fences can mitigate problems with cattle trespass into the restricted areas, from cut fences, or from gates left open by providing for recreational access with pedestrian/equestrian friendly gates, cattleguards or walk-throughs.

The impacts on upland and riparian resources are considered as decisions on livestock grazing are made through the environmental analysis (NEPA) process. Five allotments are either being analyzed or are soon to begin that process. Environmental analysis for grazing permit issuance may result in changes in stocking or adjustments in management. The Fossil Creek Allotment is affected by the NEPA analysis of the watershed of the same name and the proposed reintroduction

of native fish to Fossil Creek. Reduced livestock access to water is expected from that analysis and stocking could be adjusted in response.

Listing of additional TE&S species, such as yellow billed cuckoo, or the designation of critical habitat for the southwestern willow flycatcher will require consultation on the effects of grazing on the species or habitat. This could result in additional restrictions on the Brown Springs, Cedar Bench, Skeleton Ridge, and Red Creek Allotments where livestock currently access the river. The action alternatives in this analysis may preclude or limit the need for additional changes in livestock management or stocking as a result of ESA decisions.

## Footnotes

**21/** Section 106 of the National Historic Preservation Act, as amended in 1992, establishes the basis for determining effects to cultural and historic sites as eligibility for inclusion in the National Register of Historic Places. Significance, the level of importance a site has in local or national culture or history, is a central concern in the evaluation of such eligibility and is determined by applying the National Register Criteria for Evaluation as defined in 36 CFR Part 60.

**22/** Half shrubs are small, perennial plants with a woody base whose annually produced stems die back each year.

**23/** Costs would be shared by the Forest Service and the affected permittees, and could possibly be funded by other sources such as grants.

**24/** Calculations only address potential income and do not consider the cost of livestock production. Change in income for each allotment was calculated as follows: For example, the natural increase allowed on Skeleton Ridge and Red Creek Allotments is 65 percent of total cattle, and is conservatively derived from the calf crop. Calf prices at the Prescott Livestock Auction, March 4, 2003, averaged $0.955/lb. for steers and $0.95/lb. for heifers in the 200 to 400 lb. weight class. Price per pound declined to $0.77/lb. and $0.785/lb. respectively for yearlings. Calf crops and livestock prices fluctuate, but at these figures a reduction in the stocking rate in the allotment of 1/3, under Alternatives 2, 3, and 4, would reduce income from calf sales to the Skeleton Ridge permittee by approximately $23,180, if calves were equally divided between sexes and averaged 400 pounds (280 x .65 = 182, 182 x 1/3 = 61 x 400 x 0.95 = $23,180).

**25/** Includes trail construction cost.

**26/** Cost based on most recent Tonto National Forest fence contract in project vicinity.

**27/** Livestock have been excluded from grazing Red Hills Pasture since 1997, pending completion of Section 7 consultation with USFWS.

**28/** Costs would be shared by the Forest Service and the affected permittees, and could possibly be funded by other sources such as grants.

**29/** Calculations only address potential income and do not consider the cost of livestock production. Change in income for each allotment was calculated as follows: For example, the natural increase allowed on Skeleton Ridge and Red Creek Allotments is 65 percent of total cattle, and is conservatively derived from the calf crop. Calf prices at the Prescott Livestock Auction, March 4, 2003, averaged $0.955/lb. for steers and $0.95/lb. for heifers in the 200 to 400 lb. weight class. Price per pound declined to $0.77/lb. and $0.785/lb. respectively for yearlings. Calf crops and livestock prices fluctuate, but at these figures a reduction in the stocking rate in the allotment of 1/3, under Alternatives 2, 3, and 4, would reduce income from calf sales to the Skeleton Ridge permittee by approximately $23,180, if calves were equally divided between sexes and averaged 400 pounds (280 x .65 = 182, 182 x 1/3 = 61 x 400 x 0.95 = $23,180).

**30/** Livestock have been excluded from grazing Red Hills Pasture since 1997, pending completion of Section 7 consultation with USFWS.

**31/** Costs would be shared by the Forest Service and the affected permittees, and could possibly

be funded by other sources such as grants.

**32/** Calculations only address potential income and do not consider the cost of livestock production. Change in income for each allotment was calculated as follows: For example, the natural increase allowed on Skeleton Ridge and Red Creek Allotments is 65 percent of total cattle, and is conservatively derived from the calf crop. Calf prices at the Prescott Livestock Auction, March 4, 2003, averaged $0.955/lb. for steers and $0.95/lb. for heifers in the 200 to 400 lb. weight class. Price per pound declined to $0.77/lb. and $0.785/lb. respectively for yearlings. Calf crops and livestock prices fluctuate, but at these figures a reduction in the stocking rate in the allotment of 1/3, under Alternatives 2, 3, and 4, would reduce income from calf sales to the Skeleton Ridge permittee by approximately $23,180, if calves were equally divided between sexes and averaged 400 pounds (280 x .65 = 182, 182 x 1/3 = 61 x 400 x 0.95 = $23,180).

**33/** This section is more accessible than downstream fences.

**34/** Livestock have been excluded from grazing the Red Hills Pasture since 1997, pending completion of Section 7 consultation with USFWS.

# Chapter 5 – Consultation with Others

## List of Preparers

Interdisciplinary Team
**Ken Anderson – Lead District Ranger, Coconino National Forest.** Ken functions as the district ranger of the Red Rock Ranger District. He has a B.S. in Forestry from Kent State University and 34 years of experience with the Forest Service, having worked in 3 regions and 4 national forests.

**Jennifer M. Burns – Team Landscape Architect, Coconino National Forest.** Jennifer functioned as the district landscape architect on the Red Rock Ranger District. She has a BS in Renewable Natural Resources and a Masters of Landscape Architecture from University of Arizona and 23 years of experience with the Forest Service and National Park Service.

**Grant Loomis – Team Hydrologist, Tonto National Forest**. Grant has a BA from University of California at Davis and has completed course work for an MS in Hydrology from the University of Arizona. He has 24 years experience with the Bureau of Land Management and Forest Service working with southwestern water resources issues.

**Doug MacPhee - Team Range, Soils, and Invasive Plants Specialist, Prescott National Forest.** Doug is the Prescott National Forest Range, Soils, Watershed and Ecological Inventory Team Leader and has a B.S. in Range Management from the University of Arizona. He has 28 years with the Forest Service and Natural Resource Conservation Service working in range, watershed, soil conservation, wildlife, fire, and planning.

**Teresa McClung – Co-Team Leader, Recreation Solutions Enterprise Team**. Teresa is the branch director for West Coast Operations of Recreation Solutions Enterprise Team, an internal Forest Service business. She has a BS in Landscape Architecture from California State Polytechnic University. Teresa has 22 years of experience in landscape architecture, recreation planning, and forest planning with the Forest Service and 3 years of experience as a landscape architect and urban planner in private practice.

**Mike Ross – Team Wildlife Biologist, Tonto National Forest**. Mike has a B.S. in Forestry and a M.S. in Wildlife Management from Louisiana State University. He has 28 years of experience in wildlife management related to rangeland and forest management on 4 national forests in Arizona and California. Prior to working with the Forest Service, Mike worked as a wildlife and fish biologist for Gulf South Research Institute and the North Carolina Wildlife Resources Commission.

**Albert Sillas – Team Fishery Biologist, Prescott National Forest**. Albert has a BS in Fisheries and Wildlife Science from New Mexico State University. He has 19 years experience in fisheries management with the Forest Service and U.S. Fish and Wildlife Service.

**Carl Taylor – Co-Team Leader, Tonto National Forest**. Carl has a BS from Colorado State University and MBA from Oral Roberts University. He has over 30 years of experience with the Forest Service working in watershed, planning, range management, recreation and lands.

**J. Scott Wood** – **Team Archaeologist, Tonto National Forest**. Scott functions as forest archaeologist and heritage program manager for the Tonto National Forest. He has a MA in Archaeology from Arizona State University and 28 years experience in managing historic and cultural resources on national forest lands.

### Technical Assistance and Support

Connie Birkland – Red Rock District Public Affairs Officer

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Jackie Diedrich – National Forest Wild and Scenic Rivers Coordinator

Katherine Farr – Coconino National Forest Planner

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### Agencies and Organizations Notified

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American Rivers - Kristen McDonald

American Whitewater - Jason Robertson, Nick Lipkowski

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Arizona Cattlegrowers

Arizona Dept. of Public Saftey - Joe Albo

Arizona Game & Fish Department- Lisa Anderson, Bob Broscheid, Kirk Young

Arizona Hang Glider Assoc. - Jerry Dalen

Arizona No Fee Coalition - Dave Sherman

Arizona Outdoor Journal - Bill Fisk

Arizona Public Service Company – Larry D. Johnson

Arizona Wilderness Coalition - Don Hoffman

Ascend Guide Service

Bar T Bar Ranch - Bob and Judy Prosser

Big Park Water Company - Beth Baker-Tate

Blue River Coalition - Jack Randall

Bodway/Gap Center - Evelyn Acothley

Center for Biological Diversity - Brian Segee

Central Arizona Paddlers Association - Nancy Patterson

Cimarron Adventures - John Colby

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Coconino County Board of Supervisors

Crooked H Ranch - Clifford and Tammy Finch

Darling Environmental and Surveying - Mary E. Darling

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Fort McDowell Yavapai Nation - Marcy Mattson

Friends of Arizona Rivers - Timothy J. Flood

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Gila County Cooperative Extension – Jim Sprinkle

Grand Canyon River Guides Association

Grand Canyon River Outfitters

Grand Canyon River Trips Expd. - Dick and Susie McCallum

Grand Canyon Trust - Brad Ack

High Sonoran Adventure

Hopi Cultural Preservation Office - Leigh Kuwanwisiwma

Hopi Tribe - Gene Kuwanquaftewa, Wayne Taylor, Jr.

Johnson Ranch Partnership - Eddie Johnson

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Montezuma Castle National Monument - Tom Ulrich

Northern Arizona Audubon Society - Peter Friederici

Northwest Rafters Association

Optimal Planetary Survival

Palo Verde Group - Fareed Abouhaidar

Phoenix Zoo - Mike Seidman

POTA - Sanford Cohen

Precision Pine and Timber - John B. Smith

Prescott College - Joel Barnes

Pueblo of Zuni - Jonathon Damp

Reevis Mountain. School and Sanctuary - Peter “Bigfoot” Busuack

Riley Carlock and Applewhite - Bill Staudenmaier

River Management Society

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The Nature Conservancy - Jean Calhoun

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Thirteen Mile Rock Ranch – William Buckles

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Tonto Apache Tribe – Vivian Burdette

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USDI Bureau of Reclamation – Robert W. Michaels

USDI National Park Service - Tom Ulrich

Verde Valley 4 Wheelers – Steve Morehouse

Verde Watershed Association - Loyd Barnett

Verde Watershed Research and Education Program - Charlie Schlinger

W. L.. Gore and Assoc. – Byron Hayes

Western Environmental Law Center - Matthew Bishop

White Mountain Apache Tribe – Ramon Riley, John Welch

Williamson Valley Concerned Citizens, Inc. - Patricia Acosta

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Schooler, Richard

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Shinn, Jessie

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Silver, Robin

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Stearman, Sam

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Thurber, Walter

Titus, Peggy

Titzck, Clemens

Towle, James

Traicoff, Donald

Traicoff, Gloria

Van Pelt, Donna

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Voight, Steve

Walapai 4 Wheelers, Inc.

Walker, Philip

Wall, George

Welsh, Frank

Western Environmental Law Center

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Witzeman, Janet

Wixom, Michael

Wolf, Roger

Yellan, D.

ZIA Interpretive Services

## Summary of Public Involvement

Public involvement for the VWSR Comprehensive River Management Plan began in October 30, 2001 with the publishing of a Notice of Intent in the Federal Register. This was followed by a scoping letter dated January 23, 2002 which was mailed to approximately 4,000 interested individuals and organizations, inviting comments on a proposed action. The project has been listed in the forests' quarterly Schedule of Proposed Actions since late 2001.

In addition to the scoping letter, update letters were sent to the individuals and organizations on the project mailing list in August 2002 and March 2003.

An internet Web site was developed and made available to the public for the purpose of sharing pertinent documents and update information on progress of the development of the CRMP. The Web site can be accessed at www.fs.fed.us/r3/verde_crmp/. Information found on the Web site includes the scoping letter, river photos, and maps. In addition, the final scoping report was posted in September 2002, the final alternatives were posted in March 2003, and the environmental assessment and draft comprehensive river management plan (EA and DCRMP) were posted in January 2004.

Throughout the planning process team members have been actively sharing information about this planning effort at a variety of venues including local river-related events and local interest group meetings. Invitations for public comment have also been posted at Beasley Flat periodically.

Letters, press releases, and legal notices were dispersed in January 2004 to notify the public of the availability of the EA and DCRMP. In addition, public open houses were held to discuss the newly released documents on January 20 and 21, 2004 in Phoenix and Camp Verde respectively. Approximately 56 people attended these open houses. During the 30-day public comment period, we received over 190 letters from individuals, organizations, and agencies. These letters, along with the Agency's consideration of them, can be found in the project record.

# Glossary

**A**

### Activity

Actions, measures, or treatments that are undertaken that directly or indirectly produce, enhance, or maintain forest outputs and rangeland outputs, or achieve administrative and environmental quality objectives. Forest Service activity definitions, codes, and units of measure are contained in the Management Information Handbook (FSM 1309.11)

### Alternative

One of several policies, plans, or projects proposed for decision-making.

**B**

### Best Management Practices (BMPs)

A practice or combination of practices that are the most effective and practical (including technological, economic and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

**C**

### Concern Levels

A measure, used in the scenery inventory process, of the degree of public importance placed on the aesthetics of landscapes. Concern levels are assigned to travelways and use areas to describe three levels of interest in scenery: High (1), Moderate (2), or Low (3).

### Corridor

The lands within the designated Verde Wild and Scenic River areas.

### Critical Habitat

For threatened or endangered species, the specific areas within the geographical area occupied by the species (at the time it is listed, in accordance with provisions of Section 4 of the Endangered Species Act) on which are found those physical or biological features essential to the conservation of the species. This habitat may require special management considerations or protection.

### Cultural/Historic Resources

Includes the remains or records of districts, sites, areas, structures, buildings, networks, neighborhoods, memorials, objects and events from the past that have scientific, historic or cultural value. They may be historic, prehistoric, archaeological, or architectural in nature. Cultural and historic resources are an irreplaceable and nonrenewable aspect of our national heritage.

### Cumulative Effects

The effects on the environment which result from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal), or person undertakes such other actions (40 CFR 1508.7).

## D

### Designated Wild and Scenic River

A river that is part of the National Wild and Scenic River system (P.L. 90-542 Wild and Scenic Rivers Act).

### Desired Condition

A portrayal of the land or resource conditions which are expected to result if goals and objectives are fully achieved.

### Developed Recreation Site

Distinctly defined or designated area where facilities are provided for concentrated public use; e.g., campgrounds, picnic areas, and boating sites.

### Dispersed Recreation

Outdoor recreation that takes place outside developed recreation sites or in a wilderness area.

### Diversity

The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan. (36 CFR 219.3)

## E

### Effects

Environmental consequences as a result of a proposed action. Included are direct effects, which are caused by the action and occur at the same time and place, and indirect effects, which are caused by the action and are later in time or further removed in distance, but which are still reasonably foreseeable. Indirect effects may include population growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects may be ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic quality, historic, cultural, economic, social, or health related, whether direct, indirect, or cumulative. Effects resulting from actions may have both beneficial and detrimental aspects, even if on balance the agency believes that the overall effects will be beneficial. (40 CFR 1508.8)

### Environment

The complex of climatic, soil and biotic factors that act upon an organism or ecological community and ultimately determine its form and survival.

### Environmental Analysis

An investigation and analysis of alternative actions and their predictable short- and long-term environmental effects, incorporating the physical, biological, economic, social, and cumulative effects. This process provides the information needed for identifying actions that may be categorically excluded or for preparing environmental documents as required.

### Environmental Assessment

A concise public document for which a Federal agency is responsible that briefly provides sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.

### Erosion

The wearing away or detachment of the land surface by running water, wind, ice, or other geological agents.

### Existing Scenic Integrity

Current state of the landscape, considering previous human alterations. See definition for scenic integrity.

## F

### Flood Plain

The lowland and relatively flat areas adjoining inland waters, including at a minimum, that area subject to a 1 percent or greater chance of flooding in any given year. (Executive Order No. 11988, May 24, 1977)

### Forage

All browse and nonwoody plants available to livestock or wildlife for grazing or harvestable for feed.

### Forbs

Nonwoody plants, other than grasses. Term refers to feed used by both wildlife and domesticated animals.

### Foreground

Detailed landscape generally found from the observer to one-half mile away.

### Forest Plan Amendment

Formal alteration of the Forest Plan by modification, deletion or addition based upon nonsignificant or significant changes. Nonsignificant changes are minor modifications of management direction. Significant changes are major alterations of specific management prescription direction or land use designations. Unlike a complete Forest Plan revision, an amendment addresses only the issues that trigger a need for a change. Amendments must satisfy both NFMA and NEPA procedural requirements, including appropriate public notification.

### Free-Flowing

As applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. (P.L. 90-542, as amended, Section 16(b))

## G

### Game

Wildlife species that are hunted for sport and regulated by State Game hunting regulations.

### Goal

A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principle basis from which objectives are developed. (36 CFR 219.3)

## H

### Habitat

The place where a plant or animal naturally or normally lives and grows.

### Habitat Component

A simple part, or relatively complex entity, regarded as a part of an area or environment in which an organism or biological population normally lives.

### Habitat Type

The collective land area which one association occupies, or will come to occupy as succession advances.

### High Quality Habitat

Habitat that completely satisfies a species' existence requirements.

### Hydrology

The scientific study of the properties, distribution, and effects of water in the atmosphere, on the earth's surface, and in soil and rocks.

## I

### Impaired Soils

See Soils, Impaired.

### Instream Flows

Water rights that are acquired to ensure streamflows are maintained within the stream channel.

### Integrated Pest Management

A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategies includes the impact of the unregulated pest population on various resources values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable. (36 CFR 219.3)

### Interdisciplinary Team

A team of people that collectively represents several disciplines and whose duty it is to coordinate and integrate planning activities.

### Interpretive Site

A developed site at which a broad range of natural or cultural history is interpreted or described for the enjoyment and education of the public.

### Invasive Species

A plant considered to be extremely destructive or harmful to agriculture and designated by law. An undesirable species that conflicts with, restricts, or otherwise causes problems with management objectives.

### Issue

A point, matter, or question of public discussion or interest to be addressed or decided through the planning process.

## L

### Land Allocation

The assignment of a management emphasis to particular land areas with the purpose of achieving the goals and objectives of that alternative.

### Landscape

An area composed of interacting ecosystems that are repeated because of geology, soils, climate, flora, fauna, and human influences throughout the

area. Landscapes are generally of a size, shape, and pattern that is determined by interacting ecosystems.

### Landscape Architecture

The art and science of environmental design, planning, or management of the land; arrangement of natural and constructed elements through the application of aesthetic principles; application of cultural and scientific knowledge with concern for resource conservation and stewardship, to the end that the resultant environment sustains human health, psychological well-being, and social progress.

### Landscape Character

Particular attributes, qualities, and traits of a landscape that give it an image and make it identifiable or unique. Landscape character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.

### Landscape Visibility

Visual accessibility of the landscape to viewers, referring to one's ability to see and perceive landscapes, and addresses the relative importance and sensitivity of what is seen and perceived in the landscape. Concern levels and distance zones are elements of landscape visibility.

### Limits of Acceptable Change (LAC)

A planning framework that establishes explicit measures of the acceptable and appropriate resource and social conditions in recreation settings as the appropriate management strategies for maintaining and/or achieving those conditions.

## M

### Maintenance Levels (Roads)

Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. (FSH 7709.58, Sec 12.3 – Transportation System Maintenance Handbook)

**Maintenance Level 1**: Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads receiving level 1 maintenance may be of any type, class or construction standard, and may be managed at any other maintenance level during the time they are open

for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for nonmotorized uses.

**Maintenance Level 2**: Assigned to roads open for use by high-clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either (1) discourage or prohibit passenger cars or (2) accept or discourage high-clearance vehicles.

**Maintenance Level 3:** Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either "encourage" or "accept." "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

### Management Area

An area with similar management objectives and a common management prescription.

### Management Direction

A statement of multiple use and other goals and objectives, the associated management prescriptions, and standards for attaining them. (36 CFR 219.3)

### Management Indicator Species

Species defined in a Forest Plan or other planning document as representative of a larger habitat or community. Management impacts and effects on other members of the community are assumed to be indicated by the selected species.

### Management Practice

A specific activity, measure, course of action, or treatment. (36 CFR 219.3)

### Middleground

The zone between the foreground and the background in a landscape. The area located from one-half mile to 4 miles from the observer.

### Mitigation

Actions to avoid, minimize, reduce, eliminate, or rectify the impact of a management practice.

### Monitoring

To watch, observe, or check, especially for a specific purpose, such as to keep track of, regulate, or control.

## N

### National Environmental Policy Act (NEPA) (1969)

An Act, to declare a National policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

### National Forest Management Act (NFMA)

An Act passed in 1976 amending the Forest and Rangeland Renewable Resources Planning Act. NFMA requires the preparation of Regional and Forest Plans and the preparation of regulations to guide that development.

### National Forest Lands

All National Forest System lands reserved or withdrawn from the public domain of the United States, all national forest lands acquired through purchase, exchange, donation, or other means, and other lands, waters or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system. (16 U.S.C. 1608)

### National Register - Eligible Property

A property that has been determined eligible for National Register of Historic Places listing by the Secretary of the Interior, or one that has not yet gone through the formal eligibility determination process but meets the National Register criteria. For management purposes, an “eligible” property is treated as if it were already listed.

### Nonnative Species

Species which occur in a given place, area, or region as the result of direct or indirect, deliberate or accidental introduction of the species by humans, and for which introduction has permitted the species to cross a natural barrier to dispersal.

### Nonpoint Source Pollution

Refers to area sources of water pollution such as a watershed in contrast to a point source such as an outlet from a factory.

## O

### Objective

A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals. (36 CFR 219.3)

### Outstandingly Remarkable Values (ORVs)

River related resource values that are rare, unique or exemplary, and are significant at a regional or National level. (Interagency Wild and Scenic River Coordinating Council)

## P

### Persons At One Time (PAOT)

A recreation capacity measurement term indicating the number of people that can comfortably occupy or use a facility or area at one time.

### Partial Retention

A visual quality objective where human activities may be evident but subordinate to the characteristic landscape.

### Perennial Stream

A stream that flows throughout the year.

### Plant Communities

A vegetation complex unique in its combination of plants that occur in particular locations under particular influences. A plant community is a reflection of integrated environmental influences on the site, which includes soils, temperature, elevation, solar radiation, slope, aspect, and rainfall.

### Preservation

A visual quality objective that allows only ecological changes to take place.

## R

### Range Allotment

A designated area containing land suitable and available for livestock grazing use upon which a specified number and kind of livestock are grazed under an approved allotment management plan. It is the basic management unit of the range resource on National Forest System lands administered by the Forest Service.

### Recreation Opportunity Spectrum (ROS)

Land delineations that identify a variety of recreation experience opportunities categorized into six classes on a continuum from primitive to urban. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs. This is measured based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area, the relative density of recreation use. (FSM 2311.1 and USDA Forest Service, 1982, ROS User Guide) The six classes are:

**Primitive** - Area is characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low, and evidence of other users is minimal. The area is managed to be essentially free from evidence of management restrictions and controls. Motorized use within the area is not permitted.

**Semi-primitive Nonmotorized** - Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but subtle. Motorized recreation use is not permitted.

**Semi-primitive Motorized** - Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but subtle. Motorized recreation use of local primitive or collector roads with predominantly natural surfaces is permitted.

**Roaded Natural** - Area is characterized by predominantly natural-appearing environments with moderate evidence of the sights and sounds of humans. Such evidence usually harmonizes with the natural environment. Interaction between users may be moderate to high, and evidence of other users prevalent. Resource modification and utilization practices are evident but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities.

**Rural** - Area is characterized by a natural environment that has been substantially modified by development of structures, vegetative manipulation, or pastoral agricultural development. Resource modification and utilization practices may be used to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. Facilities for intensified motorized use and parking are available.

**Urban** – Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are often used to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans are predominant onsite and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

### Retention

A visual quality objective where human activities are not evident to the casual forest visitor.

### Riparian Areas

Geographically delineated areas, with distinctive resource values and characteristics, which are composed of aquatic and riparian ecosystems. Riparian areas typically include areas adjacent to all streams, lakes, ponds and areas comprising seeps, springs, and wetlands.

### Riparian Ecosystems

A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. Identified by soil characteristics and distinctive vegetation communities that require free or unbound water.

### Riparian Site Potential

The combination of physical factors such as soil deposition, water table level, amount of cobble, etc. that determine the species composition, growth rate, and density of the riparian vegetation occupying a given area or site.

### Riparian Vegetation

Vegetation growing on or near the banks of a stream or body of water on soils that exhibit some wetness characteristics during some portion of the growing season.

### Road

A general term denoting a way, for purposes of travel by vehicles greater than 40 inches in width. (FSM 7710.51).

## S

### Satisfactory Soils

See Soils, Satisfactory.

### Scenery Management

The art and science of planning and designing landscape attributes relative to the appearance of places and expanses in outdoor settings.

### Scenery Management System (SMS)

An overall framework for the orderly inventory, analysis, and management of scenery. This system applies to every acre of national forests and national grasslands administered by the Forest Service and to all Forest Service activities including, but not limited to, timber harvesting, road building, stream, range, and wildlife improvements, special use developments, utility line construction, recreation developments, and fuels management. (Agriculture Handbook 701, "Landscape Aesthetics: A Handbook for Scenery Management" FSM 2380.61)

### Scenery Resource

The composite of basic terrain, geologic features, water features, vegetative patterns, and land-use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

### Scenic Attractiveness

Primary indicator of the scenic importance of a landscape based on human perceptions of the intrinsic beauty of landforms, rock forms, water forms, vegetation patterns, and cultural features. Reflects varying visual perception attributes of variety, unity, vividness, intactness, coherence, mystery, uniqueness, harmony, balance, and pattern. The frame of reference for scenic attractiveness is landscape character. Three levels of scenic attractiveness are identified during the scenery inventory process: Distinctive (A), Common or Typical (B), and Undistinguished (C).

### Scenic Classes

A numerical measure of the relative value or importance of scenery in discrete landscape areas having similar characteristics of scenic attractiveness and landscape visibility.

### Scenic Integrity

The state of naturalness or a measure of the degree to which a landscape is visually perceived to be "complete." The highest scenic integrity ratings are given to those landscapes that have little or no deviation from the landscape character valued by constituents for its aesthetic quality. (Agriculture Handbook 701, "Landscape Aesthetics: A Handbook for Scenery Management" FSM 2380.61)

**High** - Landscapes where the valued landscape character "appears" intact. Deviations may be present but must repeat the form, line, color,

texture, and pattern common to the landscape character so completely and at such a scale that they are not evident.

**Very High** - Unaltered – Very high scenic integrity refers to landscapes where the valued landscape character "is" intact with only minute, if any, deviations. The existing landscape character and sense of place is expressed at the highest possible level.

**Moderate** – Landscapes where the valued landscape character appears slightly altered but noticeable deviations remain visually subordinate to the landscape character begin viewed.

### Scenic Integrity Objectives

Definitions of the degrees of deviation from the landscape character that may occur at any given time as established by using the process described in Agriculture Handbook 701, "Landscape Aesthetics: A Handbook for Scenery Management" (FSM 2380.61). Scenic integrity objectives are an integral part of Forest Plan revisions, environmental assessments, environmental impact statements, and project level planning.

### Scoping Process

Determining the extent of analysis necessary for an informed decision of a proposed action. The process includes: (1) reviewing present management direction as it relates to the analysis; (2) contacting those publics interested or affected by the proposed action to get their opinions and surface the issues; and (3) determining local management concerns.

### Sediment

Solid material, both mineral and organic, that is in suspension and is being transported from its site of origin by air, water, gravity, or ice, or has come to rest on the earth's surface either above or below sea level.

### Sensitive Species

Those species of plants or animals that have appeared in the Federal Register as proposed for classification and are under consideration for official listing as endangered or threatened species, that are on an official State list, or that are recognized by the Regional Forester as needing special management to prevent their being placed on Federal or State lists.

### State Historic Preservation Officer (SHPO)

The official appointed or designated pursuant to Section 101(b)(1) of the National Historic Preservation Act to administer the State historic preservation program or a representative designated to act for the SHPO. Among other duties, the SHPO advises and assists Federal agencies and

others to ensure that historic properties are considered at all levels of planning and development.

### Site Potential

See Riparian Site Potential.

### Soil Productivity

The capacity of a soil to produce a specified crop such as fiber or forage under defined levels of management. Productivity is generally dependent on available soil moisture and nutrients, and length of growing season.

### Soils

Per FSH 2509.18-99-1, R3 Supplement:

**Impaired –** Indicators signify a reduction of soil function. The ability of soil to function properly has been reduced and/or there exists an increased vulnerability to degradation. An impaired category indicates there is a need to investigate the ecosystem to determine the cause and degree of decline in soil functions. Changes in land management practices or other preventative measures may be appropriate.

**Satisfactory –** Indicators signify that soil function is being sustained and soil is functioning properly and normally. The ability of soil to maintain resource values and sustain outputs is high.

**Unsatisfactory –** Indicators signify that loss of soil function has occurred. Degradation of vital soil functions result in the inability of soil to maintain resource values, sustain outputs, and recover from impacts. Unsatisfactory soils are candidates for improved management practices or restoration designed to recover soil functions.

### Streamflow

The flow of water, generally with its suspended sediment load, down a well defined watercourse.

### Suitability

The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone.

## T

### Threatened Species

Any species of animal or plant which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the Federal Register by the Secretary of Interior as a threatened species.

### Turbidity

The degree of opaqueness, or cloudiness, produced in water by suspended particulate matter, either organic or inorganic. Measured by light filtration or transmission and expressed in Jackson Turbidity Units (JTU).

## U

### Understory

Vegetation growing under a higher canopy.

### Unsatisfactory Soils

See Soils, Unsatisfactory.

### Upland Vegetation

Vegetation in the corridor that is not riparian, and is generally categorized as desert scrub, desert grassland, or mixed woodlands. (See Chapter 3, Upland Vegetation section for more detailed definitions.).

### Utility and Transportation Corridors

A strip of land designated for the transportation of energy, commodities, and communications by railroad, state highway, electrical power transmission (69 KV and above), oil and gas and coal slurry pipelines 10 inches in diameter and larger, and telecommunication cable and electronic sites for interstate use.

## V

### Viewshed

The total landscape seen or potentially seen from all or a logical part of a travel route, use area, or water body.

## W

### Water Quality

The biological, physical, and chemical properties of water that make it suitable for given specified uses.

### Watershed

The line separating head streams which flow to different river systems; it may be sharply defined (crest of a ridge), or indeterminate (in a low undulating area).

### Wetlands

Areas that are inundated by surface or ground water with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction (Executive Order 11990). Under normal circumstances the area does or would support a prevalence of vegetative or aquatic life.

### Wild and Scenic Rivers

Those rivers or sections of rivers designated as such by congressional action under the 1968 Wild and Scenic Rivers Act (P.L. 90-542), as supplemented and amended, or those sections of rivers designated as wild, scenic, or recreational by an act of the Legislature of the State or States through which they flow. Wild and Scenic Rivers may be classified and administered under one or more of the following categories:

**Wild River Areas -** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

**Scenic River Areas -** Those rivers or sections of rivers that are free of impoundments, with watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

**Recreational River Areas -** Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

### Wilderness

Areas designated by congressional action under the 1964 Wilderness Act. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, and generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable.

### Wilderness Opportunity Spectrum (WOS)

Land delineations that identify a spectrum of wilderness experience opportunities categorized into four classes on a continuum from most primitive to least primitive. Each class delineates varying degrees of resource and social conditions for the management of an area. (FSM 2311.12) The four classes are:

**Class 1** – The most primitive setting, characterized by an unmodified natural environment. Class 1 areas provide an outstanding opportunity for isolation and solitude free from evidence of human activities and with very infrequent encounters with users. Management strategies strongly emphasize sustaining and enhancing the natural ecosystem.

**Class II** – Characterized by an essentially unmodified natural environment. There is high opportunity for exploring and experiencing

isolation from the sights and sounds of humans with the probability of encountering other users being low. Management strategies emphasize sustaining and enhancing the natural ecosystem.

**Class III** – Characterized by an essentially unmodified natural environment where ecological and natural processes are moderately affected by the action of users in a few areas. There are moderate opportunities for exploring and experiencing isolation from the sights and sounds of humans, with the probability of encountering other users being low to moderate. Management strategies emphasize sustaining and enhancing the natural ecosystem.

**Class IV** – The least primitive setting, characterized by a predominantly unmodified natural environment where ecological and natural processes are substantially affected by the actions of users in many locations. There are moderate to low opportunities for exploring and experiencing isolation from the sights and sounds of humans, with the probability of encountering other users being moderate to high. Management strategies are oriented to sustaining and enhancing the natural ecosystem.

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“***Wild rivers are earth's renegades, defying gravity, dancing to their own tunes, resisting the authority of humans, always chipping away, and eventually always winning.”***

Richard Bangs, *River Gods*

# Appendix A – Special Status Species List

**Special Status Species List for the Verde Wild and Scenic River (Coconino, Prescott and Tonto National Forests)**

| Species Name | Species Status Designations | | | Suitable Habitat Present | Suitable Habitat Occupied |
|---|---|---|---|---|---|
| | Federal | State | Forest Service | | |
| **Mammals** | | | | | |
| 1 Southwestern River Otter, *Lutra canadensis sonora* | SC | WC | S | H | Y |
| 2 Western Red Bat, Lasiurus blossevillii | | WC | HP | X | |
| 3 Townsend's Big-eared Bat, *Corynorhinus townsendii* | | | HP | X | |
| 4 Mule Deer, *Odocoileus hemionus* | | | M | Y | Y |
| 5 Lesser Long-nosed Bat, *Leptonycteris curosoae yerbabuenae* | E | WC | S | F, R | |
| **Birds** | | | | | |
| 6 Bald Eagle, Haliaeetus leucocephalus | T | WC | S, M | Y | N, F, W |
| 7 American Peregrine Falcon, Falco peregrinus anatum | | WC | S | Y | F, W |
| 8 Common Black-hawk, Buteogallus anthracinus | | WC | S, M | N, F | F |
| 9 Mexican Spotted Owl, Strix occidentalis lucida | T | WC | S | Y | |
| 10 Southwestern willow flycatcher, Empidonax traillii extimus | E | WC | S | N, F | M |
| 11 Western Yellow-billed Cuckoo, Coccyzus americanus occidentalis | C | WC | S | N, F | N, F |
| 12 Bell's Vireo, Vireo bellii | | | S, M | N, F | N, F |
| 13 Yuma Clapper Rail, Rallus longirostris yumanensis | E | WC | S | N, F, W | N, F, M |
| 14 Cactus Ferruginous Pygmy Owl, Glaucidium brasilianum cactorum | E | WC | S | Y | |
| 15 Northern Gray Hawk, Asturina nitida maxima | | WC | S | N, F | N, F |
| 16 Yellow-breasted Chat, Icteria virens | | | M | N, F | N, F |
| 17 Lincoln's Sparrow, Melospiza lincolnii | | | M | N, F, W | N, F, W |
| 18 Lucy's Warbler, Vermivora luciae | | | M | N, F | N, F |
| 19 Cinnamon Teal, Anas cyanoptera | | | M | N, F, M | M |
| 20 Spotted Towhee, Pipilo maculatus | | | M | Y | Y |
| 21 Hooded Oriole, Icterus cucullatus | | | M | N, F | N, F |
| 22 Summer Tanager, Piranga rubra | | | M | N, F | N, F |
| 23 Black-chinned Sparrow, Amphispiza bilineata | | | M | N, F | N, F |
| 24 Savannah Sparrow, Passerculus sandwichensis | | | M | W | W |
| 25 Horned Lark, Eremophila alpestris | | | M | Y | Y |
| 26 Black-throated Sparrow, Spizella atrogularis | | | M | Y | Y |
| 27 Canyon Towhee, Pipilo fuscus | | | M | Y | Y |
| 28 Ash-throated Flycatcher, Myiarchus cinerascens | | | M | N, F | N, F |

| Species Name | Species Status Designations | | | Suitable Habitat Present | Suitable Habitat Occupied |
|---|---|---|---|---|---|
| | Federal | State | Forest Service | | |
| 29 Gray Vireo, Vireo vicinior | | | M | N, F | N, F |
| 30 Northern Flicker, Colaptes auratus | | | M | Y | Y |
| 31 Juniper Titmouse, Baeolophus ridgwayi | | | M | Y | Y |
| **Fish** | | | | | |
| 32 Colorado pikeminnow, *Ptychocheilus lucius* | E/ENE | WC | S | X | Y |
| 33 Razorback sucker, *Xyrauchen texanus* | E | WC | S | CH | Y |
| 34 Roundtail Chub, *Gila robusta* | | WC | S | X | Y |
| 35 Loach Minnow, *Tiaroga cobitis* | T | WC | S | CH | |
| 36 Spikedace, *Meda fulgida* | T | WC | S | CH | |
| **Invertebrates** | | | | | |
| 37 Tiger Beetle, *Cicindela hirticollis corpuscula* | | | S | X | |
| 38 Maricopa Tiger Beetle, *Cicindela oregona maricopa* | | | S | X | X |
| 39 Obsolete Viceroy Butterfly, *Limenitis archippus obsoleta* | | | S | X | |
| 40 Early Elfin, *Incisalia fotis* | | | S | X | |
| 41 Comstock's Hairstreak, *Callophrys comstocki* | | | S | X | |
| 42 Freeman's Agave Borer, *Agathymus baueri freemani* | | | S | X | |
| 43 Neumogen's Giant Skipper, *Agathymus neumoegeni* | | | S | X | |
| 44 Aryxna Giant Skipper, *Agathymus aryxna* | | | S | X | |
| 45 Cow Path Tiger Beetle, *Cicindela purpurea cimarrona* | | | S | X | |
| 46 Tiger Beetle, *Cicindela praetextata pallidofemora* | | | S | X | |
| 47 Evansi Brigadier, *Agathymus evansi* | | | S | X | |
| 48 Macroinvertebrates | | | M | X | X |
| **Snails** | | | | | |
| 49 Brown Springsnail, *Pyrgulopsis sola* | | | S | X | X |
| **Reptiles and Amphibians** | | | | | |
| 50 Narrow-headed Gartersnake, *Thamnophis rufipunctatus* | SC | WC | S | X | |
| 51 Mexican Gartersnake, *Thamnophis eques* | SC | WC | S | X | X |
| 52 Lowland Leopard Frog, *Rana yavapaiensis* | SC | WC | S | X | X |
| 53 Arizona Toad, *Bufo microscaphus microscaphus* | SC | | S | X | X |
| 54 Arizona Night Lizard, *Xantusia vigilis arizonae* | | | S | X | |
| 55 Sonoran Desert Tortoise, *Gopherus agassizii* | | WC | S | X | |

| Species Name | Species Status Designations | | | Suitable Habitat Present | Suitable Habitat Occupied |
|---|---|---|---|---|---|
| | Federal | State | Forest Service | | |
| 56 Gila Monster, *Heloderma suspectum* | | | S | X | X |
| **Plants** | | | | | |
| 57 Ripley Wild Buckwheat, *Eriogonum ripleyi* | SC | | S | X | |
| 58 Heathleaf Wild-buckwheat, *Eriogonum ericifolium var. ericifolium* | | | S | X | |
| 59 Verde Valley Sage, *Salvia dorrii mearnsii* | SC | | S | X | |
| 60 Hualapai Milkwort, *Polygala rusbyi* | | | S | X | |
| 61 Tonto Basin Agave, *Agave delamateri* | SC | | S | X | |
| 62 Hohokam Agave, *Agave murpheyi* | | | S | X | |
| 63 Arizona Giant Sedge, *Carex ultra* | | | S | X | |

## Legend - Species Status Designations

**E** = Federally Endangered

**T** = Federally Threatened

**C** = Federal Candidate

**SC** = Federal Species of Concern

**ENE** = Reintroduced populations designated as Experimental Nonessential under ESA

**WC** = State Wildlife Species of Concern

**S** = Forest Service Sensitive

**HP** = High Priority Species; "at high risk of imperilment" (Western Bat Species Regional Priority Matrix, 1998)

**M** = Forest Service Management Indicator Species

## Legend - Habitat Types

**CH** = Critical habitat

**F** = Foraging

**H** = Historic

**M** = Migrating

**N** = Nesting

**R** = Roosting

**S** = Spawning

**W** = Wintering

**X** = Suitable habitat or species present

**Y** = Year round

# Appendix B – Birds of Conservation Concern

Prepared by
U.S. Fish and Wildlife Service, Division of Migratory Bird Management
Arlington, Virginia

**Sonoran and Mojave Deserts (U.S. portion only)***

Peregrine falcon
Yellow-billed cuckoo
Elf owl
Burrowing owl
Gila woodpecker
Loggerhead shrike
Bell's vireo
Gray vireo
Bendire's thrasher
Crissal thrasher
Le Conte's thrasher
Yellow warbler (*sonorana* ssp. only)
Black-chinned sparrow
Lark bunting
Lawrence's goldfinch

**Sierra Madre Occidental (U.S. portion only)***

Northern goshawk
Gray hawk
Common black-hawk
Ferruginous hawk
Peregrine falcon
Yellow-billed cuckoo
Flammulated owl
Elf owl
Broad-billed hummingbird
Costa's hummingbird
Elegant trogon
Northern beardless-tyrannulet
Greater pewee
Buff-breasted flycatcher
Bell's vireo
Gray vireo
Bendire's thrasher
Crissal thrasher
Black-throated gray warbler
Red-faced warbler
Black-chinned sparrow
Lark bunting
Chestnut-collared longspur

*Adapted to Tonto, Prescott, Coconino National Forest's Verde Wild and Scenic River

*Preferred citation*:

U.S. Fish and Wildlife Service. 2002. "Birds of conservation concern 2002." Division of Migratory Bird Management, Arlington, Virginia. 99 pp

# Appendix C – Past, Present, and Reasonably Foreseeable Future Actions

The interdisciplinary team identified the following past, present, and reasonably foreseeable future actions that may contribute to cumulative effects related to the alternatives. The cumulative effects analysis in the environmental assessment evaluates the impacts of the proposed alternatives on the environment when taken into consideration along with these actions. Each specialist on the interdisciplinary team identified and described cumulative effects areas that are appropriate for the analysis of the particular resource they assessed. The actions considered and when they are to take place (or took place) are as follows:

- Population growth in the Verde Watershed – ongoing
- Childs/Irving FERC decommissioning project – 2004
- Cross-Country Travel by Off Highway Vehicles on the Apache-Sitgreaves, Coconino, Kaibab, Prescott, and Tonto National Forests EIS – 2004
- Coconino, Prescott, and Kaibab Invasive Plants EIS – 2004
- Blue Ridge Phelps Dodge water diversion – 2002
- Native fish restoration projects on Fossil Creek – 2004
- Territory expansion of southwest willow flycatcher and critical habitat designations – estimated 2005
- Allotment management plans for five allotments within the VWSR corridor – 2004 and beyond

Potential listing of yellow-billed cuckoo - unknown

# Appendix D - Maps

See Map section on CD startup page.