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Final Environmental Impact Statement for the Land Management Plan

Tonto National Forest

Volume 4: Appendix B – Appendix H

Coconino, Gila, Maricopa, Pinal, and Yavapai Counties, Arizona

Cover photo: Prickly poppy, credit: Mary Lata

Final Environmental Impact Statement for the Land Management Plan

Tonto National Forest

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Appendix B. Description of the Analysis Process

This appendix describes the methods used to analyze the effects of the alternatives on the individual resource areas documented in this environmental impact statement. This section also discloses the assumptions made that were necessary to do this analysis.

Overall Assumptions

In developing the environmental impact statement, the assumptions captured in table 1 were applied across all resources.

Table 1. Analysis assumptions applied across all resources

Assumption Topic Considered for Analysis	Assumption Description
Forest Service Budget	The budget for the Tonto National Forest will continue to decline annually; however, the level of decrease is unknown and cannot be quantified. Because of expected decreasing budgets, field staff levels will continue to be at a minimum.
Land Management Planning	The land management plan provides a programmatic framework for future site-specific actions. Implementation of the land management plan would facilitate progress toward attainment of desired conditions.
Plan Components	Plan components (desired conditions, objectives, standards, guidelines, and management actions) would be followed as site-specific projects and activities are designed and implemented.
Monitoring	Monitoring will occur to measure the effectiveness of plan direction, and the land management plan will be amended, as needed, if changes in plan direction are needed.
Resources	Resources to implement management actions in the forest plan would be available.
Law, Regulation, and Policy	Law, policy, and regulations will be followed when planning or implementing site specific projects and activities.
Partnerships and Volunteers	Partnerships and volunteer programs will continue to be priorities due to declining budgets for additional field staff and maintenance or project contracts. Appropriated budgets will not vary by alternative.
Economic Condition	For this analysis, it is assumed that the economic condition will remain constant. Although economic conditions fluctuate, it is impossible to analyze quantitatively for future increases and decreases.
Population of Phoenix Metro Area	The population of the Phoenix Metropolitan area will continue to grow.
Climate Change	Recent climate changes will continue and the need for resource protection may increase. It is assumed that as these changes happen over time, there will be a need to modify management of recreation activities and uses.
Management Activities	Management activities could occur across all NFS lands, including designated wilderness.
Presence of Resource	If a resource does not exist in an area, any possible impacts to the resource from management decisions on those lands may be minor or negligible.

Resource Assumptions and Methods

Recreation

Methods used for this analysis include utilizing data from recent national visitor use monitoring surveys, recreation opportunity spectrum maps and papers, and antidotal information from recreation field staff and law enforcement officers on the Tonto National Forest. This analysis is also based on many influencing factors, such as the Forest budget and current public demands for recreation opportunities.

Some analysis assumptions include:

- The amount of recreation fees collected annually will vary by alternative, 95 percent of the money collected through recreation programs returns directly to the Forest and must be obligated for future recreation maintenance, supplies, staffing, etc.
- Areas of high visitation will remain busy and areas of low visitation will remain slow. Trending recreation activities will continue to change and evolve as technology and public behaviors change.

Water-based recreation will continue to be a high-demand recreation activity on the Tonto National Forest.

- A high volume of winter visitors will continue to visit the Tonto National Forest seasonally with demands for activities such as, but not limited to, sightseeing, recreational vehicle (RV) overnight camping, heritage tourism, hiking, and boat excursions.
- Between the draft and final environmental impact statement, the Travel Management Plan Record of Decision was signed; the motor vehicle use map will be forthcoming. This decision requires recreationists to stay on designated routes and within designated areas; the decision amended the current forest plan to remove all language about cross country travel and also identified additional permit zones.

In addition to what is listed above, we assume that carrying capacities of different recreation activities across the forest have and will continue to change due to fluctuating wildlife concerns, wildfire and watershed conditions, public demand for given activities, and other resource concerns. We also assume that the outfitter and guide user day allotments listed in the forest plan are outdated and no longer reflect the carrying capacities of the areas and given management areas. It is also assumed that advances in technology will result in modification to current recreation activities and creation of new ones. For this analysis we will not consider these changes as they are unknown.

The alternatives are analyzed by recreational activities that the public indicated, through meetings and outreach, were important to them—developed, dispersed, motorized, non-motorized, and water-based recreation, and special uses—and by different types of planning areas identified in the proposed forest plan—management areas and designated areas. Each alternative (alternatives A, B, C, and D) will be evaluated to determine if it would move the forest toward the desired conditions described for recreation in the proposed forest plan.

Where national visitor use monitoring surveys are utilized for this analysis, the most recent survey (2016) for the Tonto National Forest was not used when referencing quantities of visitors due to inconsistencies during data collection and unreliability of the data. Instead, the visitation values from the 2013 survey and trends from the 2013 and 2008 surveys were used. For any other recreation data such as satisfaction rates, purposes of visitation to the national forest, etc., both the 2013 and 2016 data were considered and used for this analysis unless noted otherwise.

For the purpose of this analysis, it is assumed that visitor satisfaction rates can be directly related to fee compliance. In general, if visitors are satisfied with the developed recreation services and amenities provided, they pay the required user fee at the site they are recreating in. This creates an on-going circle of developed recreation management; as funding is available, the Forest maintains developed sites and improves services and facilities; these actions satisfy users and they pay user fees; the fees then become available again for more maintenance and improvements. On the other hand, if maintenance and adequate services and facilities are not provided, users are not as obliged to pay user fees; then the Forest has less funds to provide the maintenance and improvements to increase user satisfaction. This model does not assume that every satisfied visitor pays fees or every dissatisfied visitor does not pay fees; it is merely a general observation and assumption used for this analysis. The status of facility maintenance (directly affected by user satisfaction and fee compliance) also affects natural resource conditions. See the Developed Recreation section for more information.

Recreation Opportunity Spectrum

Following the release of the draft environmental impact statement for forest plan revision the travel management final record of decision was signed and the recreation opportunity spectrum was amended, by management area, in the current 1985 forest plan. The desired recreation opportunity spectrum is a continuum used for managing recreation opportunities based on a combination of physical, biological, social, and managerial settings, ranging from primeval to paved (Clark and Stankey 1979). The recreation opportunity spectrum represents management objectives and not actual user experience. The physical setting is defined by the absence or presence of human sights and sounds, size of area, and the amount of environmental modification caused by human activity. The social setting reflects the amount and type of contact between individuals or groups. The managerial setting is distinguished by the amount and kind of restrictions placed on people's actions by the respective administering agency or private landowner (USDA Forest Service 1986).

The recreation opportunity spectrum scale encompasses recreation opportunities ranging from less to more developed settings. The recreation opportunity spectrum uses the following descriptors for recreation settings ranging from least to most developed:

- Primitive areas are characterized by essentially unmodified natural environments 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 human-induced restrictions and controls. Motorized use and mechanized equipment within primitive areas is not permitted.

- Semi-primitive non-motorized areas are 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 on-site controls and restrictions may be present but are subtle.

- Semi-primitive motorized areas are 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 on-site controls and restrictions may be present but are subtle.

- Roaded natural areas are characterized by predominantly natural-appearing environments with moderate evidences of the sights and sounds of people. Such evidences usually harmonizes with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

- Rural areas are characterized by a substantially-modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of people are readily evident, and the interaction between users is often moderate to high. Many facilities are designed for use by large numbers of people. Facilities are often provided for special activities, such as amphitheaters, group pavilions, group fire rings and cooking units, and so forth. Facilities for intensified motorized use and parking are available. Some facilities may be designed primarily for user comfort and convenience. Some synthetic but harmonious materials may be incorporated. Design may be more complex and refined.

- Urban areas are characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of people on-site are predominant. Large numbers of users can be expected, both on-site 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. Large numbers of users can be expected, both on-site 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.

Recreation opportunities represent the diversity of recreation activities that occur on the Tonto National Forest. The level of user satisfaction when participating in recreation activities is also a component of recreation opportunity. Management activities can impact recreation opportunity diversity and user satisfaction. In particular, vegetation treatments, which affect the overall natural setting of the Tonto National Forest, and the road system, which affects the way the forest is accessed and used for recreation, were considered in the analysis of alternatives. The recreation opportunity spectrum is a tool that can also be used to evaluate the diversity and extent of availability of various recreation opportunities on the forest.

The Tonto National Forest offers visitors a multitude of opportunities for motorized and non-motorized recreation activities in recreation opportunity spectrum settings from primitive to rural (table 2 and figure 1)

Table 2. Forest-wide recreation opportunities on the Tonto National Forest

ROS Character	Acres on the Tonto National Forest	Percent of the Tonto National Forest
Primitive	605,084	20
Semi-Primitive Non-Motorized	693,924	23
Semi-Primitive Motorized	1,071,789	36
Roaded Natural	529,063	18
Rural	39,264	1
Urban	30,980	1

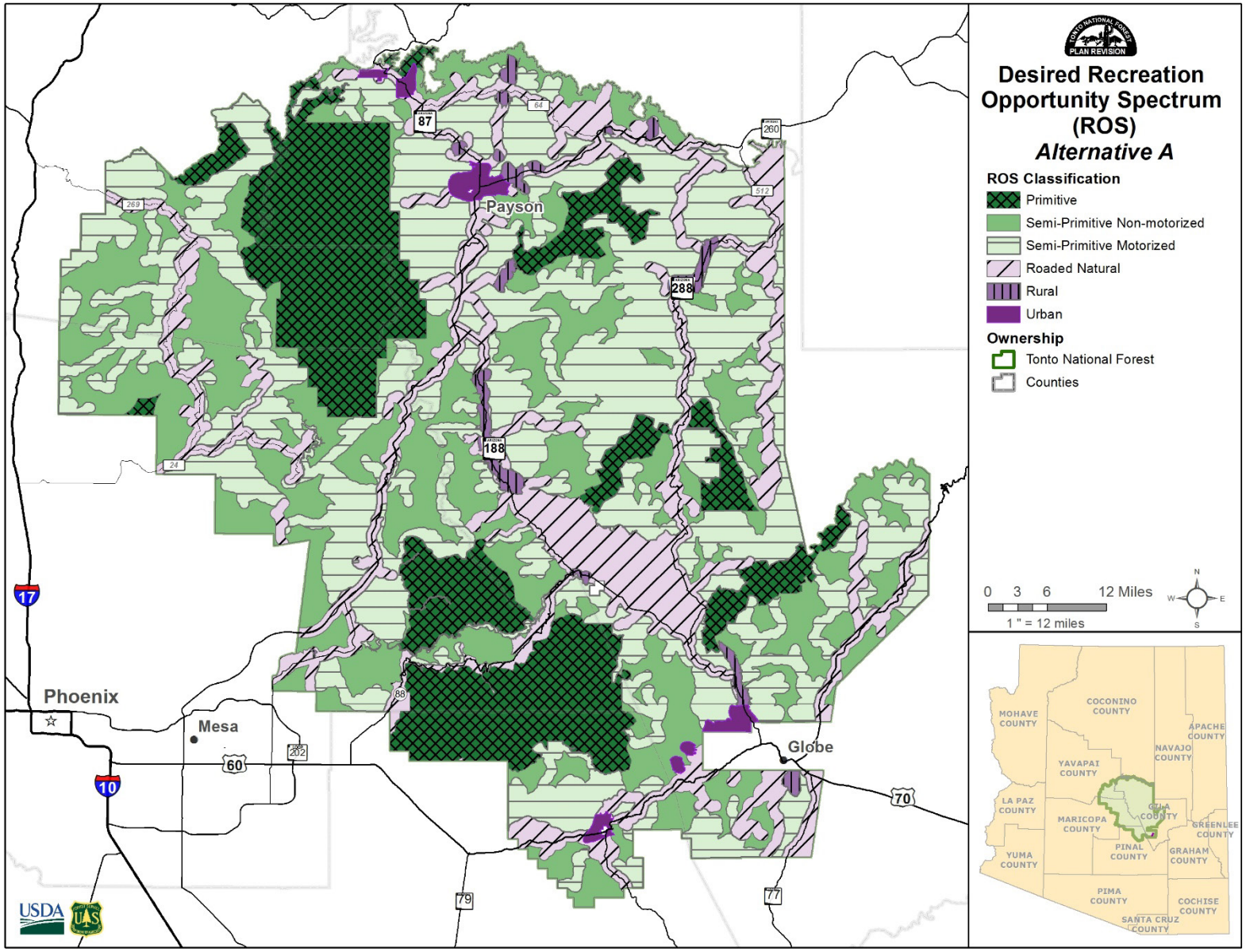

Figure 1. Recreation opportunity spectrum in the current forest plan

Wildlife Related Recreation

All alternatives contain forest wide desired conditions, objectives, standards, and guidelines to support the long-term persistence of species listed as threatened or endangered or species of conservation concern and to support key ecosystem characteristics for species of interest for hunting, fishing, trapping, viewing, and subsistence.

Wilderness

Designated wilderness areas provide for primitive, undeveloped, and non-motorized recreation opportunities that emphasize a visitor experience of solitude. Recreation management is a key objective in the eight designated wildernesses on the Tonto National Forest: Pine Mountain, Mazatzal, Hellsgate, Salome, Sierra Ancha, Salt River Canyon, Four Peaks, and Superstition Wildernesses. Wilderness areas have effects to motorized wildlife related recreation and the ability of the Arizona Game and Fish Department to manage the fish and wildlife, which is consistent with all alternatives. Based on a high level of development in these areas, wilderness areas do not meet desired conditions for all fish and wildlife based recreation; however, wilderness areas do help meet desired conditions non-motorized wildlife related recreation.

Recommended wilderness areas contain the characteristics for potential designation as a wilderness area and therefore were included in the analysis. These areas are analyzed by alternative.

Wild and Scenic Rivers

These designated areas, Fossil Creek and Verde Wild and Scenic Rivers, and eligible wild and scenic rivers would have similar effects as designated wildernesses on fish and wildlife related recreation site specifically as management changes could include less available sites and motorized access to recreational activities. Alternative C would have effects on non-motorized fish and wildlife related recreation.

Much like recommended wilderness areas, eligible segments for potential designation are included in the analysis and are analyzed by alternative.

Inventoried Roadless Areas

Inventoried roadless areas are managed with no additional development of roads. These areas would not affect the desired conditions of wildlife related recreation covered in this analysis, with the exception of motorized wildlife related recreation. No new off-highway vehicle routes would be constructed for recreational purposes within these designated areas regardless of need (rerouting for sustainability, completing a “loop,” etc.); this does not meet desired conditions of motorized recreation, including “Areas providing opportunities for hunting, fishing, and wildlife watching are accessible to a variety of users.” Management of inventoried roadless areas would not change per alternative. Inventoried roadless areas are not analyzed further.

National Trails

National trails are widely-known by the public and have unique values making them desirable. All alternatives analyzed here have the same national trails, no changes would occur between alternatives and is not further analyzed for effects to fish and wildlife related recreation.

Designated and Proposed Research Natural Areas and Botanical Areas

Management of these areas are focused on research and education and/or to maintain biological diversity on National Forest System lands. A botanical area is an area that contains plant specimens, plant groups,

or plant communities that are significant because of their form, color, occurrence, habitat, location, life history, arrangement, ecology, rarity, or other features. In all alternatives where these areas are proposed, a decrease in access and dispersed camping for fish and wildlife related recreation opportunities would be expected. This decrease would not meet the desired condition, "Areas providing opportunities for hunting, fishing, and wildlife watching are accessible to a variety of users." The proposed new areas are further analyzed for effects to wildlife related recreation.

Significant Caves

The definition of significant caves includes caves that possess recreational or recreational educational features, characteristics, values, or opportunities. In all four alternatives, these designated areas remain the same. Alternative D may provide for some significant caves may become more visible to the public and advertised as popular recreation destinations which would draw in those wildlife viewers. Alternative C may close public access to significant caves with sensitive features and values, thus not supporting or meeting the desired condition, "Areas providing opportunities for hunting, fishing, and wildlife watching are accessible to a variety of users."

There are several of the designated, management and special areas that are both common to all alternatives and/or are not anticipated to have any effects to fish and wildlife related recreation.

For this analysis, the three types of planning areas identified in the proposed forest plan—management areas, areas recommended for designation, and currently designated areas; along with the forest plan components included in those areas —were used to determine the effects to fish and wildlife related recreation. In addition, the plan components driving change in the alternatives were analyzed.

The alternatives were mapped against the Arizona Game and Fish Department prioritized resources layers that included streams and lakes, dispersed campsites, existing wilderness, roadways, and hunt value mapping. Point features included in the alternatives were summed and compared, as were areal and linear summations of included features. The unweighted summations were compared across alternatives and results were presented in tables and interpreted.

Motorized Travel

For the purposes of this analysis, wildlife related recreation is defined as hunting, fishing and wildlife viewing. Wildlife related recreation is inherently tied to motorized recreation as all three activities generally either require the use of motor vehicles to reach a destination to participate in each respective activity. This is especially true on public lands, like the Tonto National Forest. Motorized vehicles often provide the means for hunters and anglers to reach hunting or fishing areas as designated by the Arizona Game and Fish Department. Therefore, the use of motorized vehicles by fish and wildlife related recreationists often contributes meet wildlife conservation objectives. Specifically, the use of hunting as a wildlife management and wildlife conservation tool arose out of a movement, led by prominent hunters near the turn of the last century, to stop over-exploitation of wildlife by market hunters and the desire to have wildlife accessible to all people. Since then, hunters have contributed billions of dollars to wildlife management that benefit countless wildlife species. These funds support wildlife management agencies which manage all wildlife species, not just those that are hunted. This unique and successful conservation paradigm is responsible for supporting a wide variety of conservation activities, including law enforcement, research, information and education, habitat management and acquisition, as well as wildlife population restoration and management. The importance of hunting to wildlife conservation in the broad sense is not tied simply to population control. Game populations are renewable resources that literally pay the bills for a far-reaching, comprehensive system of sustainable wildlife conservation that has proven itself superior to any other widely implemented model (Heffelfinger et al. 2013, Mahoney 2013).

For the analysis the following assumptions were made:

- Wildlife managed by the Arizona Game and Fish Department would be managed according to existing laws, regulations, and policy to protect these resources according to biological and societal conditions.
- Motorized use on the Tonto National Forest would continue to increase consistent with growth in Arizona's population and such increases would affect wildlife and wildlife related recreation.
- Big game hunter harvest and subsequent motorized big game retrieval occurs equally across all land ownerships, habitat types, and topography within each game management unit.
- All areas within each game management unit on Tonto National Forest lands are open and available to hunting and motorized big game retrieval as detailed in the recently Travel Management Plan Record of Decision and will be depicted on the forthcoming motorized vehicle use map.
- Hunters have equal opportunity to harvest animals and use motorized big game retrieval.
- The proportion of animals harvested by species is similar to the proportion of each game management unit that is available for motorized big game retrieval.
- With signing of the Travel Management Plan Record of Decision, the forest plan was amended to prohibit cross-country travel forestwide. However, areas were designated for motor vehicle use for retrieval of specific big game.
- In regards to motorized dispersed camping, recreationists would continue camping in existing motorized dispersed camping sites for any restrictions placed on this activity that are greater than 100 feet from identified legal roads.
- Trends and numbers published in various surveys and publications about wildlife related recreation at the statewide level are similar to trends observed on the Tonto National Forest (e.g. 2006 and 2011 United States Fish and Wildlife Service National Survey of Fishing, Hunting and Wildlife-Associated Recreation).
- The number of hunting and fishing licenses sold directly represents participation in the respective activity.
- Current levels of motorized travel on the Tonto National Forest have detrimental effects on wildlife populations particularly on fragile desert habitats.

The following assumptions were used for the hunting/angling motorized access analysis:

- There are no barriers to connectivity of Tonto National Forest roads and motorized trails open to the public with those outside of the Tonto National Forest boundary.
- There are no barriers to connectivity of Tonto National Forest roads and motorized trails within the Tonto National Forest boundaries.
- One mile is a reasonable distance for a hunter/angler to walk to access hunting/fishing areas from Tonto National Forest roads and motorized trails that are open to the public.
- Private lands within the Tonto National Forest boundary do not allow hunting.
- Hunters/anglers have equal access to alternative types of motor vehicles to allow motorized travel on all roads and motorized trails proposed to be open for the public
- Hunting/angling motorized travel demands are distributed evenly across the Tonto National Forest.

- Hunter/angler satisfaction in regard to reasonable motorized access on Tonto National Forest lands is highly variable on an individual basis and survey instruments are not available to provide quantitative estimates of such.
- Hunter/angler satisfaction in regard to dispersed motorized camping on Tonto National Forest lands is highly variable on an individual basis and survey instruments are not available to provide quantitative estimates of such.

General assumptions include hunting and fishing management and the number and types of habitat improvement projects aimed at improving health and vitality of game animals would affect local economies in terms of influencing the number and types of hunters coming onto the Tonto National Forest and the numbers of success of professional outfitters. This assumption means that the amount of quality of habitat for hunting and fishing species would increase the amount of people participating in hunting and fishing on the forest, along with the success of professional outfitters. We are making the same assumption for wildlife viewing. In addition, the prevalence and location of motorized routes effects accessibility for recreation. This effects both motorized and non-motorized trail based recreation, including off-highway vehicle driving, mountain biking, hiking. Generally, more access leads to more recreation, which leads to more potential for recreation-related income/revenue and more overall recreational opportunity, especially for those that need a motor vehicle to participate in or gain access to their chosen activity. Recreation demand on the Tonto National Forest is tied to population changes in the major metropolitan areas of Arizona. Approximately 70 percent of the forests' Arizona visitors are from the Phoenix and Tucson metropolitan areas (Kocis et al. 2002).

It is assumed that fish and wildlife related recreational use across all alternatives would continue to increase at rates similar to those in the adjacent counties and across Arizona. The capacity for recreational resources would ultimately be limited by the quality of the recreation opportunity. Since these demands and uses are expected to increase at a rate that is unknown, additional analysis may be warranted at some point in the future.

Recreation users would be displaced by mechanical vegetation treatments for several years because of the need to pile and burn slash after treatment. Mechanical treatments would also remove more trees than the prescribed fires. Although impacts would be intermittent, the assumption for our analysis is that impacts are cumulative.

Visitors to the forests have different preferences for their fish and wildlife related recreation setting and the activities in which they want to participate. Recognizing the differences in user preferences, such as those hunters wanting a more primitive experience to gain satisfaction or those anglers that don't mind fishing off the crowded shoreline; the primary goal of managing fish and wildlife related recreation is to provide an environment and opportunity in which visitors can have a satisfying experience, while protecting the natural and cultural resources integral to that experience. Because user preferences are so diverse, it is assumed that not all user preferences can be accommodated on every acre of the Tonto National Forest. What is the implication upon our analysis of this statement? The implication of this assumption on our analysis might suggest that our conclusions might not include all potential influences on recreation.

Economic Effects Methods

The methods used to describe effects on wildlife related recreation and associated economic effects include noting baseline economic data from the State and National Economic Effects of Fishing, Hunting and Wildlife-Related Recreation on US Forest Service-Managed Lands report (American Sportfishing Association 2006). A review of the Tonto National Forest Visitor Use Report was also included as it

pertains to wildlife related recreation on the Tonto National Forest (USDA Forest Service 2013). In addition, data from the 2006 and 2011 United States Fish and Wildlife Service National Survey of Fishing, Hunting and Wildlife-Associated Recreation was used to infer trends from the state level to the Tonto National Forest.

Within each game management unit, the Arizona Game and Fish Department collects information about wildlife populations through wildlife surveys; information collected includes age and sex ratios, juvenile recruitment, population trends, etc. The Arizona Game and Fish Department uses a hunter harvest questionnaire program to collect data such as harvest, hunter success, hunter demand, hunter days, etc. The game management units that include portions of the Tonto National Forest are GMU 21, 22, 23, 24A, 24B, and 37B. Most of this data is summarized annually in the Hunt Arizona report.

For hunter and angler participation rates, data was collected from various survey instruments including the Statewide survey of 2001 Arizona Anglers (Pringle 2004), Arizona Game and Fish Department Small Game Participation Questionnaire, 2013 Statewide Comprehensive Outdoor Recreation Plan (Arizona State Parks 2013), Hunt Arizona -2012 Edition (Arizona Game and Fish Department 2012), and personal communication with Arizona Game and Fish Department wildlife professionals.

This analysis used geospatial data for a quantitative and qualitative review of the alternative to determine the potential impacts on fish and wildlife related recreational activities (resource features). As such several assumptions had to be made related to each proposed management area by alternative unless the management for an area was the same throughout all of the alternatives as previously explained. The data used combined the Tonto National Forest data sets for the three areas and utilized the Sportsmen's Values mapping dataset. The Sportsmen's Values Mapping was developed to assist in prioritizing areas and to ensure access; promote highly valued areas for conservation and restoration efforts; provides sportsmen a voice in wildlife management. The data was gathered through a survey effort reaching over 7500 hunters/anglers with a return of 1200 participants providing areas on the map that they highly valued for these activities and the reasons why these areas were important to them. The areal measure of high sportsman's value polygons within each alternative were summed, and the sums were compared across alternatives to compare effects.

Recreational Shooting

Recreational shooters generally use a motor vehicle to access a shooting site on the forest, as observed by Forest staff and law enforcement officers. Thus, the vast majority of recreational shooting occurs within 100 feet from a road, and more often than not, within a few miles of a paved road. Since there is currently no requirement for shooting to be a set distance from a road, most shooters choose not to walk or carry their equipment very far from where their vehicle is parked. Currently, driving cross-country is not permitted on the southern part of the Tonto National Forest per the Forest Plan. The signed Travel Management Plan Record of Decision amends the current forest plan to prohibit cross-country travel forestwide. For this analysis, it is assumed that most shooters prefer to travel on roads to access shooting sites. Additionally, recreationists commonly make use of unauthorized user-created routes across the forest, recreational shooters included. Since it is unlawful to shoot across a road, it is assumed for this analysis that shooters would then shoot away from the road at their chosen target. As most shooters would not travel more than one quarter mile from a road, that will be the road buffer used for this analysis. This buffer does not attempt to consider the distance the bullets would travel from the shooting location.

For each alternative, using a geographic information system (GIS) analysis, an area was calculated showing all areas within the forest boundaries that are available for recreational shooting and are within one quarter mile from an open road. For the indirect effects analysis, the roads layer represents roads as

currently authorized on the forest. For the cumulative effects analysis, the roads layer from the recently signed Travel Management Plan Record of Decision was used.

An area will be considered open to recreational shooting if there is currently no permanent closure order prohibiting it. Some areas of the forest may be closed under temporary closures or may be closed to shooting during times of fire restrictions or for certain group events such as clean ups. For the purposes of this analysis, these temporary closure areas will be shown as available for target shooting since they could be opened during the duration of a new forest plan. If the alternative includes a proposed management area that would exclude recreational shooting within it, that area would be excluded in the resulting polygon for that alternative. For example, recreational shooting would be prohibited within the Lakes and Rivers Management Area (43,206 acres) proposed in alternatives B and D, and the four botanical areas (total of 3,949 acres) proposed in alternatives B, C, and D. In addition, all private and non-National Forest System land is excluded from the analysis area.

This methodology has some limitations. First, the data used to map existing open roads is the most accurate data available to the forest. However, we are aware this data is not perfectly representative of the roads on the ground. This data does not include many of the user-created routes we know to exist on the forest. We must assume for this analysis that recreational shooters will only use open routes to access their chosen shooting area.

Additionally, we must assume that shooters are and will follow all applicable state and federal shooting regulations, including not shooting across a body of water or into a cave. For all action alternatives, (alternatives B, C, and D), we will also assume shooters will adhere to the standards and guidelines proposed in the forest plan. The area shown as available to shooting under each alternative does not account for small areas where shooting would not be permitted such as a certain distance from occupied structures, developed recreation sites, or administrative sites.

Although recreational shooting would continue to be allowed within designated wilderness areas, recommended wilderness areas, natural areas, inventoried roadless areas, and most special areas, any area that would limit or prohibit construction of new roads would limit future expansion of access for motorized recreation, including recreational shooters that choose not to walk very far from their vehicle.

Lands, Special Uses, and Access

The number of acres of National Forest System lands currently administered by the Tonto and the number of special-use authorizations currently in effect were compared to potential changes that might result from implementation of any of the alternatives considered.

The official acreage for National Forest System lands comes from the Forest Service's Land Status Record System. The data source for the number of special-use authorizations is the national special-uses database system.

The Forest Service uses the Land Status Record System as the repository for all realty records and land title documents. The Land Status Record System includes accurate information on ownership acreages, condition of title, administrative jurisdiction, rights held by the United States, administrative and legal use restrictions, encumbrances, and access rights on land or interests in land in the National Forest System.

The Forest Service uses the special-uses data system to create and administer special-use authorizations. This data is supported by hard-copy files held at the ranger district and Forest Supervisor's offices.

Rangelands, Forage, and Grazing

The land management plan sets the framework for later site-specific determinations relating to allotment management, such as the grazing systems to meet desired conditions and the range developments needed to implement those systems.

Under all alternatives, allotment-level analysis, including season of use, permitted livestock numbers, and forage use levels occur at the project-level.

Conflict or beneficial interactions between livestock, and wild animal populations are managed at the allotment level.

Vegetation treatments contribute to the amount and condition of rangelands. All alternatives provide direction to move rangelands toward desired conditions.

Most of the active grazing allotments have been assessed for resource conditions and undergone NEPA analysis to balance permitted livestock numbers with available forage production and to maintain or move toward desired conditions. Management and monitoring are being used to maintain and improve the rangeland resource.

For alternatives A, B and D, all currently open allotments (active or vacant) are assumed to stay open[1]. Open vacant allotments in alternative C would be closed. Closed allotments would have all range infrastructure (fences, water developments, etc.) removed or decommissioned.

Under all alternatives, various activities (e.g., dispersed recreation, firewood gathering, road use, off-highway vehicle use, and elk grazing) may affect the forage resource. The effects from these activities vary depending on their intensity and location. When conflicts arise from these uses that threaten the long-term range condition and trend, the Forest would look for multiple-use solutions that balance uses.

Under all alternatives, desired conditions were developed to provide guidance for site-specific allotment management determinations.

Cultural and Historic Resources

Assumptions Regarding Future Project Planning

Effects to cultural resources would be considered when determining the objectives and management response to emergency situations (e.g., wildfire).

Under the provisions of the National Historic Preservation Act (NHPA 1966, as amended; 54 USC §306108), adverse effects to cultural resources include a variety of criteria affecting the potential eligibility of cultural resources for inclusion on the National Register of Historic Places. Specifically, effects may be deemed adverse according to the following:

- An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include

1 Vacant allotments in Alt B may be closed following additional analysis.

reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.

Prior to making a project-level decision that is subject to the National Historic Preservation Act, the forest would complete cultural resource surveys to locate and evaluate sites for the National Register of Historic Places (NRHP) and analyze the effects of the proposed use or activity in compliance with the First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities among New Mexico Historic Preservation Officer and Arizona State Historic Preservation Officer and Texas State Historic Preservation Officer and Oklahoma State Historic Preservation Officer, and the Advisory Council on Historic Preservation and United States Department of Agriculture Forest Service Region 3 (R3 PA) (USDA Forest Service et al. 2003). Following the identification and recording of cultural resources, mitigation measures appropriate to the proposed undertaking would be implemented. Such measures would most likely include avoidance of cultural resources by redesigning the project boundaries, modifying construction plans, or excluding site areas from treatments. In cases where specific activities would constitute an adverse effect and avoidance could not be accomplished, the adverse effects would be resolved in accordance with 36 CFR §800.

Table 3. Archaeological prehistoric site types

Type	Description
Artifact Scatters	Artifact scatters can contain lithic artifacts, ceramic artifacts, or both. These scatters can be the result of activities at resource procurement sites, habitation sites with either ephemeral or buried structures, or by the reuse of sites by individuals with different artifact types at their disposal.
Petroglyphs and Pictographs	These are human-created images that are found on rock faces, often on rock outcroppings or in rock shelters. Petroglyphs are images pecked, incised, or carved into the rock's surface, while pictographs are painted images.
Agricultural Fields and Features	These include canals, check dams, grids, and terraces designed to control the flow of water and/or facilitate the retention of soil moisture for agriculture. These sites may or may not be associated with permanent or semi-permanent habitation sites or fields.
Shrines	Shrines are usually small circular or rectangular structures, often occurring at high elevation. Artifacts, such as beads or ceramics, are sometimes associated with these features.
Rock Shelters and Caves	Rock shelters and caves are naturally occurring cavities or overhangs in rock formations that were used by people primarily for habitation or burial. Many rock shelters or caves were used by groups or individuals of several cultural periods and have multiple, successive layers of occupation. These sites are a primary source of perishable artifacts such as basketry and textiles normally absent from open air sites.
Pithouse Sites	Pithouse sites are habitation sites that predominantly date prior to A.D. 1000 and may consist of a single pithouse structure or multiple pithouses organized as a village. These sites range in size, depth, and construction, but they are all structures dug into the ground with a superstructure of wood branches and/or beams and dirt or adobe walls.
Pueblo Sites	Pueblo sites are habitation sites constructed of above ground masonry that dominate the settlement system after A.D. 1000. Three different types of sites are categorized under the label 'pueblo': field houses commonly evidenced as a boulder pile over a small area; U-shaped structures with one or two rooms; and pueblos (room blocks) with four walls consisting of two or more rooms.
Cliff Dwellings	Cliff dwellings are habitation sites that are constructed in naturally occurring niches and caves in high cliffs of above ground masonry. Most of the examples on the Forest were constructed between 1250 and 1400 AD. Like other sites found in rock shelters and caves, these sites are a primary source of perishable artifacts such as basketry and textiles.
Great Kivas	Great kivas are large circular ceremonial structures commonly evidenced on the surface as a circular depression. Kiva sites may contain this feature type singularly or can be associated with a larger pueblo or pithouse village site.

Type	Description
Ballcourts	A ballcourt is an oval, bowl-shaped depression in the ground that can greatly vary in size. They are constructed by excavating the interior of the oval and piling the dirt up in a berm around the perimeter, providing a sloping wall up to nine feet in height. They were constructed and used over a 500-year period from about AD 750 to 1200, roughly corresponding to the Colonial and Sedentary periods (Hohokam).
Compounds	Compounds are walled enclosures measuring up to 100m^2. The function of these sites is unclear, but they often have a very different artifact assemblage from neighboring sites.
Defensive Sites	Defensive sites are characterized by defensive walls and locations with restricted access such as a hilltop.

Assumptions Regarding Cultural Resources

As noted above, most of the lands on the Tonto National Forest (92 percent) have not been surveyed for cultural resources. Given that there are approximately 12,000 archaeological sites within the surveyed portion of the forest, one might assume that there are roughly 138,000 additional unknown sites located on the forest. There are, however, certain variables within the environment that can either limit or intensify the likelihood of human use and occupation. This is especially evident in regard to prehistoric archeology. Most archaeologists agree that long-term occupation sites usually require flat ground that have needed resources in close proximity. This can include such resources as water, food sources (hunting locales and fishing areas) and shelter. Smaller sites, usually interpreted as short-term occupations or hunting camps, can also be present due to the availability of resources. Access to other types of resources can also cause an increase in the likelihood of archaeological sites; this can include geological features that are higher than the surrounding environs (for lookouts and forts), easy defensibility or management of pinch points in the topography, or access to major trade routes. While there are always exceptions, most of the prehistoric site types listed above (table 3) fit this analytical model. The only prehistoric site types that do not seem to favor this model are the locations of petroglyphs, pictographs, rock shelters and caves. Inversely, when needed resources are unavailable or inaccessible in an otherwise favorable setting, the likelihood of archaeological sites decreases. Much of the areas previously surveyed on the Forest focus on these areas mostly likely to contain available resources, thus it is unlikely that the number of unrecorded prehistoric archaeological sites would increase as much as the overall lack of archaeological survey would suggest.

Historic sites, on the other hand, only follow these assumptions on a very basic level. Sites like dams, reservoirs, recreation areas, and mines, relate enormously to the accessibility of a specific resource (i.e., water or minerals). Yet there are other sites whose locations cannot be explained simply based on resource accessibility. Advances in technology and changes in transportation methods often de-emphasized the need for resources to be close by. Additional factors, such as locations of resource processing (i.e., sawmills), settlement patterns (i.e., ranching and farming), and access to current transportation systems (i.e., railroads, roads), can have a bigger influence than resource location on the placement of historic sites on the landscape. Thus, of the two general site types, locating historic archaeological sites is much more complex and requires the survey of geological locations that would not otherwise contain archaeological sites. Because previous efforts have focused on proximity to resources such as water, food items, and transportation corridors, it would be like that the number of unrecorded historic archeological sites would increase. However, given that much of the forest that has not been surveyed is located within a desert ecosystem (an ecosystem that is not particularly habitable to humans), the likelihood of additional cultural resources located on National Forest System lands would increase, but not as much as the lack of archaeological survey would suggest.

Assumptions Regarding Effects to Cultural Resources

Analysis of the specific effects to cultural resources can be complex and the potential effects may seem contradictory. The solutions typically reflect that situation. Access can be both beneficial and detrimental depending on what aspects of preservation, management, and use of cultural resources are under discussion. The relationship between cultural resources – archaeological and historic sites, sacred sites and traditional use areas – to forest management has always been one of balancing positive and negative effects. The effects can be direct impacts from the construction or use of a road or trail, or they can be indirect, resulting from activities allowed or enhanced by project implementation. In turn, these can be foreseeable and legitimate (such as hunting and camping) or unforeseeable and illegal (such as the vandalism and looting of archaeological sites). Benefits are generally indirect, and derive from the enhanced ability to monitor, manage, and protect archaeological and historic sites and provide access for Tribal people to sacred and traditional use sites. Balancing the unforeseeable against the intangible, however, is not a straightforward task and requires continual monitoring to maintain any kind of equilibrium. In many ways, the management of cultural resources on public land is a matter of risk assessment against two competing philosophies and a choice as to whether these resources, the legacy of all Americans, should be accessible to the people who pay for their protection or protected from the public and accessible only to a privileged few.

Cultural resources, depending on their nature and composition, are subject to several different types of impact from activities. All archaeological and historic sites are irreplaceable and individually unique. Their integrity is wholly dependent on the contextual relationship between artifacts, architecture, and the environment in which they are found, something that cannot be recreated or restored once disturbed. They are also, by their very nature, previously affected, reduced by the transformation processes of erosion and decay from their original pristine state. Any effect to such sites, therefore, is cumulative; they can't grow back and their populations cannot rebound.

Indirect effects to cultural resources, especially archaeological sites, can be generally defined as anything that results in removal of, displacement of, or damage to artifacts, features, or stratigraphic deposits of cultural material. In the case of cultural resources which are considered eligible for inclusion in the National Register of Historic Places, indirect effects can also include alterations of a property's setting or context. In the case of traditional cultural properties and sacred places, additional considerations may include alterations in the presence or availability of particular plant species.

Indirect impacts to cultural resources come from activities associated with the use of the forest. The most commonly cited indirect effects are site contamination with modern trash and surface artifact displacement associated with camping and site visitation and the actual destruction of features, cultural deposits, and archaeological context by vandalism and looting. Basically, every type of site from rock shelters to pithouse villages to single room fieldhouses to multi-room masonry structures to cliff dwellings has been targeted by pothunters at one time or another. Pot hunting and other forms of site vandalism and looting remain a persistent problem for managing the cultural resources of the Tonto National Forest.

Assumptions Regarding Cultural Site Vandalism/Looting

Vandalism and looting, dating back to the 1880s, has been seen throughout the forest, though it can be argued that such episodes are more widespread in association with motorized access since some motor vehicles allow visitors to bring in more trash and remove more resources than they would normally be able to on foot or horseback. Vandalism in wilderness and roadless areas – though on-going – is only rarely reported because fewer people are able to visit sites in those areas. The relationship between access and looting over the last century or so has been neither constant nor straightforward.

Reporting vandalism, a key aspect of protection and law enforcement, is often a direct reflection of vehicular access. Forest Service personnel and volunteer monitors from the Arizona Site Stewards program report incidents as they find them. Because of the change in attitudes, Forest visitors also report violations on a regular basis. The direct result of increased visitation and access by heritage professionals, law enforcement officers, volunteer monitors, and a concerned public has been a sharply reduced incidence of looting and vandalism of archaeological sites on the Tonto National Forest since the passage of Archeological Resources Protection Act in 1979.

However, the attitude persists that making archaeological sites difficult to find or access is the best way to protect them, even going so far as to suggest that if it is difficult to monitor a site, then it would also be more difficult for vandals and looters to disturb that site. This is a fundamentally incorrect assumption for two reasons. First of all, pothunters and Site Stewards – the majority of our volunteer monitors, who are generally retired seniors – do not have the same levels of motivation and physical ability. Second, if it is more difficult to observe a site, it is therefore easier for a pothunter to avoid detection at that site. Limiting the ability to monitor sites merely guarantees the pothunter exclusive access to an area where they will have relative assurance of not being observed. Along the Verde River Wild and Scenic corridor, within designated wilderness, where there has never been motorized access even of the illegal kind – the only ways into this area are by foot, horseback, or river-running watercraft - every large ruin has been looted, some of them quite extensively. Most of this activity appears to have taken place early in the last century, with little or no activity noted in these sites over the last 30 years.

Given this history, it would appear that both concepts of accessibility and attitudes toward vandalism and looting archaeological sites have changed over the years. Sites have been looted everywhere on the forest, even in those areas perceived as inaccessible today. In the last 30 years, the only new road the Tonto National Forest has found that was created specifically to access an archaeological site was not created for looting, but for access to a secluded place that just happened to have an archaeological site present. Despite any apparent correlation between access and vandalism, the fact remains that cross-country travel has always been and remains a much greater threat to archaeological sites. Indirect effects additionally can include a reduction in the agency's ability to protect sites from vandalism and looting. They can also reduce accessibility of traditional resources and sacred areas to Tribal people.

Methodology and Assumptions Regarding Available Data

The analysis for forest plan revision was completed by the forest archeologist using the spatial, digital, and hardcopy records currently located within the archives of the Tonto National Forest heritage program. This analysis followed current professional standards. Hard-copy survey and site records were catalogued manually through 2016. The corporate database of record for the USDA Forest Service (known as Heritage Natural Resource Manager (NRM)) has been consistently updated since its inauguration in 2016. For these reasons, it was assumed during analysis that any available information regarding previously conducted cultural resource surveys and recorded archaeological sites would be located somewhere within the archives (although not necessarily in the same format). The analysis found that approximately 92 percent of the Tonto National Forest remains unsurveyed for cultural resources with approximately 12,000 previously recorded archeological sites. The analysis also found that while further temporal and cultural information is likely to be gained through additional survey, it is unlikely that new, as yet unidentified, site types will be located during new projects.

Per Section V.C.2 of the First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities among New Mexico Historic Preservation Officer and Arizona State Historic Preservation Officer, and Texas State Historic Preservation Officer, and Oklahoma State Historic Preservation Officer, and the Advisory Council for Historic Preservation and United State Department of

Agriculture Forest Service Region 3[2], the Forest Service may determine that further inventory will not be necessary for the area of potential effect if "…a 100% inventory has been previously performed and if the fieldwork and documentation are consistent with current professional standards. Inventories more than ten years old will be reviewed and evaluated for consistency with current standards and knowledge levels" (PA:6). Given that 81 percent of the current archival survey records date prior to 1999, it can be assumed that at least a majority of currently surveyed areas on the forest would require a professional standards and methodology review prior to use on current undertakings.

Economic Contributions

Methods

An economic contribution analysis estimates the role of Forest Service resources, uses, and management activities on employment and income in the communities that surround the Tonto National Forest.

Economic contribution to counties local to the Tonto National Forest was estimated with input-output analysis using the IMPLAN (IMpact analysis for PLANning) modeling system (Minnesota IMPLAN Group 2016). The modeling system allows the user to build regional economic models of one or more counties for a particular year and estimates the economic consequences of activities, projects, and policies on a region. IMPLAN uses Forest Service data on expenditures and resource was used to estimate the economic consequences of Forest Service management.

Input-output analysis represents linkages between sectors in an economy. IMPLAN not only examines the direct contributions from the Tonto National Forest but also indirect and induced effects. Indirect employment and labor income effects occur when a sector purchases supplies and services from other industries in order to produce their product. Induced effects are the employment and labor income generated as a result of spending new household income generated by direct and indirect employment. For example, visitors to the Tonto National Forest spend money on accommodation and food. Accommodation and food service businesses buy supplies from other businesses. The employees of these firms spend their earnings on a variety of goods and services. These transactions result in indirect and induced effects, respectively, in the regional economy. Indirect, and induced effects are combined in the discussion of effects.

Potential economic impacts are assessed using the Forest Economic Analysis Spreadsheet Tool developed by the U.S. Forest Service Inventory and Monitoring Institute in Fort Collins, Colorado. This tool uses a Microsoft Excel workbook as an interface between user inputs and data generated using the IMPLAN input-output modeling system.

The FEAST analysis assesses the economic impacts of the resource outputs projected under each alternative. Resource outputs in this context are the amount of a resource (forest products, AUMs, recreation visits, etc.) that would be available for use under each alternative. Quantitative inputs (for example, animal unit months, recreation visits, and forest products) were obtained from Tonto National Forest program areas for this analysis, unless otherwise cited. The model for this analysis used 2016 IMPLAN data, which is the latest available dataset.

2 Programmatic Agreement signed on December 24, 2003.

Assumptions

Recreation

Total annual recreation visits were obtained from the National Visitor Use Monitoring program. For this analysis, an estimated 2.6 million recreational visits annually were assumed based on the most recent round of monitoring that occurred in 2016 (USDA Forest Service 2018b). The distribution of visitor type (i.e., local or non-local visitor) and use type (e.g., was the visit wildlife-related?) from the most recent round of monitoring are used to estimate visitor spending. Average visitor expenditures by type were obtained from the Forest Service's National Visitor Use Monitoring program (White 2017).

Tonto National Forest resource specialists provided a range of estimates of changes in visitation across different activities. The average of these ranges when aggregated into the categories used for the economic impact model. Actual changes in recreation are not known, and will vary.

The estimated recreation-related impacts capture the expenditures of local and non-local visitors. This analysis examining the economic significance of outdoor recreation on planning area lands to the local economy includes the effects of spending by all visitors, both those who reside in the planning area and those who do not. The analysis shows the size and nature of economic activity associated with these recreational experiences to show relative importance to the local economy.

Timber

Fuelwood, post and poles remain relatively constant in the estimates used in this analysis. This is because the amount sold is based on public demand and availability. Annual volumes have varied widely, but appears to be on an upward trend. The volumes may vary in the future, but is based on public demand. These timber volumes are used to estimate the economic impact of timber-related activities on the Tonto National Forest.

Grazing

The economic impact of grazing in alternative A, current management, was estimated using an average of authorized use between 2015 through 2018, during periods of which the forest was experiencing drought. The average annual animal unit months (AUMs) are estimated at 191,396. No changes in AUMs are estimated across alternatives. Actual use is permitted annually based on a number of factors, such as current forage and market conditions. For consistency, the analysis assumes that current market demand for livestock products would continue throughout the next several decades with a continuing demand for grazing of the forest lands. While new plan direction is designed to improve vegetation condition, periods of drought are also expected to continue into the future.

Minerals

Copper, as well as molybdenum and silver by-products and mineral materials such as stone, road base and landscape rock are removed from the Tonto National Forest. Some mineral materials are extracted from the forest under free use permits in support of county and Arizona Department of Transportation needs, as well as Forest Service road maintenance. Copper mining is the driving factor behind the economic contribution of the minerals program to the regional economy. Two of the currently operating copper mines are in stages of closure and therefore production will decrease over time. For this analysis the Carlota Copper Mine production is not included as final closure is expected in 2020. The remaining production is assumed constant. While mineral production and associated revenues (and therefore actual economic impact) will fluctuate based on global market conditions and the lifecycle of the mine, this is outside the control of forest management. No quantitative variation in mineral production across

alternatives is modeled. Qualitative discussion of recommended areas removed from mineral entry is included in this analysis.

Forest Expenditures

The Tonto National Forest's annual budget (including expenditures and salaries) was approximately $33 million in fiscal year 2016. Approximately 50 percent of the budget was spent on salaries in fiscal year 2016. The remainder was spent on equipment and other non-salary expenditures that contribute to land management. The Tonto National Forest's operational expenditures contribute to economic activity in the communities that surround the lands. Forest Service employees live in these communities and spend their income on housing, food, and a variety of other local goods and services. The Tonto National Forest's non-salary expenditures generate economic activity in businesses that supply goods and services to support Forest Service programs. Forest budgets may fluctuate over the life of the management plan, but are not dictated by the management plan or alternatives. Forest budgets are distributed by an act of Congress. Therefore, no variation across alternatives is modeled.

Payments to States and Counties

The Forest Service makes payments to states and counties that contain National Forest System lands. These payments fall into two categories: Payments in Lieu of Taxes and Secure Rural Schools and Community Self-Determination Act payments.

Federal agencies do not pay property taxes; therefore, Payments in Lieu of Taxes is distributed to counties to compensate for the local services, such as law enforcement, road maintenance, and fire departments that support activities on federal lands. Table 4 lists the Payments in Lieu of Taxes attributable to the Tonto National Forest lands for fiscal years 2014 through 2017. The analysis uses an average of the payments in fiscal years 2014 through 2017. Forest management as directed by the forest plan has no impact on payments and therefore, they do not vary across alternatives.

Historically, counties have received revenue sharing payments from commercial activities on Federal lands, such as oil and gas leasing and timber harvesting. For national forests, beginning in 1908 the payment was 25 percent of the money received annually. Since 2008, the payments are based on 25 percent of the 7 year rolling average annual receipts. These payments are commonly called 25 percent payments. However, in response to declining timber receipts, the Secure Rural Schools and Community Self-determination Act was passed in 2000 which offered a guaranteed source of payments that was not tied to annual commercial revenue on national forests. All Arizona counties with Tonto National Forest lands elected to receive the Secure Rural Schools Act State Payment share in fiscal years 2014 through 2017 and not the 25 percent payments. Secure Rural Schools and Community Self-determination Act payments are intended to improve public schools, maintain infrastructure, improve the health of watersheds and ecosystems, protect communities, and strengthen local economies. Table 4 lists the Secure Rural Schools and Community Self-Determination Act payments from the Tonto NF for fiscal years 2014 through 2017. The analysis uses an average of the payments in 2014, 2015 and 2017. Congress did not authorize the Secure Rural Schools and Community Self-determination Act and no payments were made in 2016. Because Secure Rural Schools and Community Self-determination Act payments are not responsive to changes in USDA Forest Service receipts, no variation in these payments occur across alternatives.

Table 4: Payments to state and counties from the Tonto National Forest

Year	Payments in Lieu of Taxes*	Secure Rural Schools and Community Self-determination Act Payments
2014	$4,850,575	$2,544,652
2015	$4,801,865	$2,400,225
2016	$4,901,475	Act not re-authorized by Congress
2017	$5,024,928	$2,305,531

*Portion of Payments in Lieu of Taxes attributable to Tonto National Forest managed acres within four county analysis area. Additional payments to the analysis area are made as a result of other Federal land management (for example, BLM).
Source: USFS 2018a and DOI 2018

Scenery

In the development of the 1985 Tonto National Forest Plan, all lands were inventoried to determine the landscape scenic attractiveness (variety class inventory) and the public's visual expectations (sensitivity level inventory). Based on these inventories, all Tonto National Forest lands were assigned a visual quality objective. Table 5 represents the distribution of visual quality objectives on the Tonto National Forest.

Table 5. Forest-wide visual quality objectives comparison of standards and 2006 GIS dataset

Visual Quality Objective	1985 Forest Plan Standards (acres)	Percent of Forest	GIS Dataset from 2006 Digitized VQO Maps (acres)	Percent of Forest
Preservation	593,000	21	975	0
Retention	319,00	11	291,743	10
Partial Retention	918,000	32	953,902	32
Modification	484,000	17	504,779	17
Maximum Modification	559,000	19	466,283	16
Unknown	0	0	748,010	25
Total	2,873,00	100	2,965,692	100

When the forest visual resource inventory and mapping process was completed for the forest plan, geographical information systems (GIS) did not exist. All maps were completed by hand and with overlays of mylar. Paper copies of the original mylar overlays were digitized and integrated into the GIS system in 2006. As seen in table 5, the acreage of forest wide visual quality objective prescribed in the current forest plan does not match the current 2006 visual quality objective GIS dataset from digitized visual quality objective maps. The discrepancies are due to numerous factors. One major contributing factor is 748,010 acres or 25 percent of the Tonto National Forest had no visual quality objective assigned on the visual quality objective maps (and the majority of these were wilderness areas; shown as unknown visual quality objective in table 5). Another indicator of the data gap is according to the 1985 forest plan, there are 593,000 acres or 21 percent of the Tonto assigned a visual quality objective of preservation, while the 2006 GIS dataset indicated less than 1,000 acres. Thus, the 2006 GIS dataset was not an accurate reflection of the current condition.

Both the visual management system and the scenery management system, which are used in the environmental impact statement for all alternatives, establish a spectrum of levels or objectives to determine the acceptable level of alternation in the landscape. The crosswalk from visual quality objectives to scenic integrity objectives is outlined in table 6 (USDA Forest Service 1995).

Table 6. Scenic integrity objective, visual quality objective, and perception crosswalk

Scenic Integrity Objective	Visual Quality Objective	Public Perceptions of Scenery
Very High	Preservation	Unaltered; scenic character is intact; naturally evolving
High	Retention	Appears Unaltered; alterations to scenic character may be present but are not evident; naturally appearing
Moderate	Partial Retention	Slightly altered; alterations are subordinate to scenic character being viewed (scenic character is dominant, not the alteration); relatively naturally appearing
Low	Modification	Moderately altered; alterations begin to dominate the valued scenic character being viewed.
Very Low	Maximum Modification	Heavily altered; alterations may strongly dominate the valued scenic character

Scenery is not expected to be a primary driver in selecting one alternative over another, because predicted impacts between alternatives regarding scenery are not dramatically different. The analysis for scenic resources include the following assumptions:

- Scenery across all alternatives is anticipated and assumed to increase as vegetation restoration treatments over the long term improve the visual landscape. As such, the capacity for improving scenery resources would ultimately be limited by the ability to maximize restoration treatments.
- None of the alternatives have specific objectives to reduce or increase scenic integrity objectives, but resource activities can affect and/or reduce scenic integrity objectives over the short-term. The short-term and long-term environmental consequences to scenery as a result of resource projects and activities would be made at the time of the site-specific decision.
- None of the alternatives prohibit future, site-specific scenery project planning.
- The principles of scenery management and environmental design will be applied in project-level planning in all National Forest System activities.
- Scenery management techniques and principles will be used, where practicable, to mitigate future site-specific, land-altering activity or introduced elements on the land to achieve and maintain desired visual quality objectives. The principles of scenery management and environmental design will be applied in project-level planning in all National Forest System activities.
- Changes in scenery and changes in public expectations related to landscape aesthetics and scenery will be monitored and documented (FSM 2382 – Scenery Management). Changes in public expectations related to landscape aesthetics and scenery would most likely be monitored at a regional or national level but may also be assessed during scoping for site specific projects and review of current research when completing scenery analyses for site specific projects.
- Managing for natural-appearing scenery is important to the public.
    - Research has shown that high-quality scenery especially that related to natural-appearing forests enhances people's lives and benefits society (USDA Forest Service 1995, page 17).
    - Research shows that there is a high degree of public agreement regarding scenic preferences. This research indicates that people value most highly the more visually attractive and natural-appearing landscapes (USDA Forest Service 1995, page 30).
- Scenery management system GIS data layers will be reviewed during future project-level analysis and updated as ground-truthing occurs to keep the data layers accurate and relevant.

Mining, Minerals, and Abandoned Mines

For analysis, direction that affects locatable minerals activities comes from the Forest Service Manual and Handbook. The laws, regulations, and policies governing minerals are independent from forest plan direction and do not change across alternatives. Therefore, mining, minerals, and abandoned mines analysis is not expected to be a primary driver in selecting one alternative over another, because predicted impacts between alternatives with regard to mining, minerals and abandoned mines are not dramatically different.

The three types of planning areas identified in the proposed forest plan, management areas, and designated areas; along with the plan components included in those areas were used to determine the effects to mineral material extraction. In order to make broad comparisons between alternatives, this programmatic analysis uses Geographic Information System for management area and designated area acreages. The number of acres of National Forest System lands available for mineral material extraction were compared to potential changes that might result from implementation of any of the alternatives considered. For example, alternative C would be the most restrictive for mineral material extraction, because it has the most acres of management areas and designated areas.

In the analysis for this resource, the following assumptions have been made:

- The agency has the capacity to screen, process, and administer mineral activities.
- The economy will fluctuate and influence mineral exploration and mining.

Roads

This analysis concentrated on the effects of inventoried transportation and road system networks. This analysis does not attempt to analyze the effects of user created roads and trails, unauthorized roads or roads not included in National Resource Management databases. Roads were reviewed and analyzed based on spatial location, maintenance levels, and various plan objectives, which may have altered the transportation and road system from existing condition

It is assumed that existing roads within the analysis area may be affected due to a variety of activities. It is important to include engineering management throughout development of these activities to further define potential affects. Nearly all of the Forest System roads within the analysis area are maintenance level 1, 2 or 3 roads. This analysis does not attempt to address opening, existing closed roads (ML-1), to utilize them for the time period that they are needed to for access. These roads are generally opened for necessary work and closed upon completion of work in the area they access returned to a closed status (ML-1). It is therefore assumed that the existing operational maintenance is the currently active managed condition. In similar fashion this analysis does not attempt to address closing of roads that are open for public use (downgraded to ML-1). Furthermore this analysis does not attempt to define potential affect. It is also assumed that all roads under this analysis are being maintained or improved in order to meet road management standards under National Best Management Practices for Water Quality Management on National Forest System Lands.

Information used to conduct the analysis generally comes from the Natural Resource Management database. This database is a collection of web-based data entry forms, reporting tools, and mapping tools (geographic information system) that enables the Forest to manage and report accurate information about the Forest's inventory of roads.

The number of miles of private, nonsystem, county, State and Federal highways within and outside of the project area that provide some forms of access to the project area; and connect it with other private and

municipal road systems are not estimated as part of this analysis. Since the location of all roads adjacent to the project areas is unknown it is not possible to designate all roads which may or may not be used for accessing the area.

Temporary roads are primitive roads that are minimally engineered; examples of which may be user created off highway vehicle access routes, timber sale landings; or old skid trails. Temporary roads may occur where permanent system roads are not available or required for management prescriptions. These roads are considered un-needed for long term use as Forest roads. They are considered unneeded and "decommissioned" from any future use. These roads may negatively affect watershed, stream conditions, and wildlife habitat and connectivity during the time of operation. These roads are not included in Forest infrastructure databases.

Current direction from the 1985 Tonto Land Management Plan instructs providing a serviceable road and trail transportation system to meet public access, land management, and resource protection needs. Roads are currently continuing to receive annual maintenance according to existing Forest budget and schedule within available resources.

For purposes of analysis it is assumed that variations in all aspects of road maintenance and management can occur throughout the year due to equipment breakdown, budget constraints, personnel fluctuations, and weather events. These were not included in the development of analysis.

Facilities

The analysis of the Tonto facilities including administrative site buildings, dams, water and wastewater systems, lookout and communication towers, and dams, was performed using GIS, Natural Resource Management facility location data, and Forest Service visitor maps as well as the 2016 Tonto Facilities Master Plan which guides acquisition, maintenance, and disposal of administrative site facilities. Proposed special areas and management area guidelines were analyzed for all alternatives. The location of the expansion areas were determined using GIS and then compared to existing administrative facility locations in order to determine if any facilities would be affected by the proposed alternatives. The facilities infrastructure is not expected to be the primary driver in selecting one alternative over another because predicted impacts with regard to the facilities are not dramatically different among alternatives.

In the analysis of the facility resource area the following assumptions were made:

- The amount of facilities infrastructure is anticipated and assumed to remain constant, while maintenance needs of the facility is anticipated and assumed to increase across all alternatives as the structures age.
- All alternatives are expected to achieve the desired conditions for all the facilities.
- The plan decisions with regard to facilities (desired conditions, objectives, standards, guidelines, management areas, monitoring) will be followed when planning or implementing site-specific projects and activities.
- All projects implemented on the forest would require a site-specific analysis of their potential impacts to the facilities resources and verification of the need for mitigation to meet or exceed the desired conditions.
- Law, policy, and regulations will be followed when planning or implementing site-specific projects and activities.

Vegetation Ecological Response Units and Fire and Fuels

Description of alternatives for vegetation and fire

Alternative A is the Tonto National Forest's current 1985 forest plan, which has few articulated desired conditions for vegetation or fire, so it uses the desired conditions from the forest plan (modified version of the preliminary proposed plan). There would be no changes in current management and the current forest plan would continue to be implemented. Alternative A is the point of reference for assessing action alternatives B through D. There is an emphasis on reintroducing fire into fire dependent ecosystems and allowing it to resume its natural role, but no clear objectives for frequent fire systems. Objectives for fire are only specific in regard to 'providing a mosaic of age classes within the total type which would provide for a mix of successional stages, and to allow fire to resume its natural ecological role within ecosystems." Standards and guidelines for much of the vegetation are focused on habitat and increasing forage production. Objectives for vegetation management are not clearly identified as 'objectives', though specifics are given for allowable treatments in specific vegetation types. Mainly there are specific vegetation objectives related to wildlife (e.g., Mexican spotted owls and goshawks), but there are no objectives for specific vegetation types/ ecological response units. There are no clear objectives for restoration in desert ecosystems, though there is direction for active fire suppression, or if fire is identified as being able to meet resource needs.

Alternative B is the forest plan (a modified version of the preliminary proposed plan) and was developed to respond to key issues identified in the assessment, needs to change, and public engagement. Alternative B includes plan direction that allows for adaptive management to address changing conditions while managing for sustainable multiple uses. Vegetation management would focus on restoring fire as a key ecosystem process in frequent-fire ecological response units, with a particular emphasis on forested frequent fire ecological response units. This would be accomplished through a balance of mechanical treatments and wildland fire (wildfire and prescribed fire). Depending on the ecological response unit, a variety of other treatments, such as invasive species treatments, or reseeding native species, may be necessary to meet plan objectives. Fire would be actively suppressed in desert ecological response units, and plan objectives/restoration for deserts is primarily focused on reducing disturbance to sensitive soils and treating invasive species (specifically exotic and invasive grass species). Objectives would be established for frequent fire ecological response units to restore herbaceous surface vegetation and ground cover. The majority of the floral species diversity in these systems comes from the herbaceous surface vegetation, which is also the fuel for the frequent, mostly low intensity surface fires that are characteristic in these ecological response units. Objectives include a wide range of average, annual acres to be treated. These ranges were developed to incorporate both ecological and management realities. The high end of the ranges given for fire represents the acres that would be expected to burn each year if a specific ecological response unit was able to be managed based mostly on ecology, with no constraints. The lower end represents the incorporation of the constraints described under 'Assumptions and Methods, and in some cases may not be sufficient to maintain current conditions. The high and low ranges given for mechanical treatments represents the most optimistic and the most pessimistic outcomes, based on the constraints described under 'Assumptions and Methods', and the last decade of mechanical treatments on the Tonto National Forest.

Alternative C was developed in response to public comments that expressed a desire to reduce human impacts on the forest. Based on feedback to the Notice of Intent, preliminary plan, and public engagement, this alternative emphasizes primitive recreation opportunities, increased protections to natural resources, use of natural processes for restoration, limiting some aspects of grazing, and prioritizing natural resources over some economic development opportunities. Vegetation management in

frequent-fire ecosystems/ ecological response units relies on wildland fire as the primary restoration tool. Mechanical thinning would only be used in limited situations (e.g., wildland-urban interface areas or invasive species treatments). As a result, fewer commercial forest products would be available, and fewer suitable timber acres would be treated. Alternative C places more emphasis on restoring frequent fire woodland ecological response units through an increase in plan objectives for fire than the other alternatives. Objectives to restore grass and herbaceous cover for highly departed ecological response units pinyon-juniper grass (PJG), and juniper grass (JUG) are similar to alternative B. Objectives for desert ecosystems are the same as alternative B. Fire is actively suppressed, and restoration is primarily focused on reducing disturbance to sensitive soils and treating invasive species (specifically exotic and invasive grass species). Acres of recommended wilderness would be significantly increased under this alternative. On those acres that were designated, there could be changes in the options for the management of wildland fires for resource benefit, decreases human starts in those areas, decreased the potential for mechanical treatments, and complications to the implementation of prescribed fire in those areas.

Alternative D was developed to address public comments that expressed a desire for easier access and multiple-use opportunities on the Tonto National Forest. Related comments received on the Notice of Intent, preliminary proposed plan, and public engagement focused on providing more accessible recreation opportunities, having fewer restrictions on land uses, and including no additional recommended wilderness acres. Alternative D also emphasizes active restoration techniques to achieve desired conditions and provides for more economic opportunities on the forest including grazing and mining. Vegetation management in frequent-fire ecosystems/ ecological response units focuses on restoring conditions primarily through mechanical treatments and focuses on increasing the supply of forest products. Prescribed burning is mainly focused in areas that have been previously thinned, and there would be fewer opportunities to use wildfires to meet resource objectives. Objectives to restore grass and herbaceous cover for highly-departed ecological response units pinyon-juniper grass (PJG), and juniper grass (JUG) are similar to alternative B, however there would be fewer treatment objective acres (more treatment objective acres are allocated to forested ecological response units). Objectives for desert ecosystems are the same as alternative B, however there would be fewer treatment objective acres. Due to the increased use and limited restrictions in this alternative, treatment objectives would be mainly focused at highly impacted areas or high risk areas.

See table 7 and 1 – ppf = ponderosa pine forest, ppe = ponderosa pine-evergreen oak, mcd = mixed conifer-frequent fire, pjg = pinyon-juniper grass, jug = juniper grass, mew = madrean encinal woodland, mpo = madrean pinyon oak
table 8 for a summary of alternatives analyzed and objectives related to fire and vegetation.

Table 7. Summary of objectives related to fire and vegetation by alternatives for forest and woodland ecological response units[1] (ERUs)

ERUs	Alternative B	Alternative C	Alternative D
Forested	Restore or maintain conditions in frequent-fire forested ERUs (PPF, PPE, and MCD), emphasizing treatments within PPE by: Treating 50,000 to 122,000 acres over a 10-year period with mechanical thinning, and fire. (Assume about 22 percent prescribed fire) Treating 105,000 to 325,000 acres over a 10-year period with fire. (Assume about 22 percent prescribed fire)	Restore or maintain conditions in frequent-fire forested ERUs (PPF, PPE, and MCD) primarily using fire and emphasizing treatments within PPE by: Treating 11,000 to 22,000 acres over a 10-year period with mechanical thinning and fire. (Assume about 22 percent prescribed fire) Treating 144,000 to 423,000 acres over a 10-year period with fire. (Assume about 22 percent prescribed fire)	Restore or maintain conditions in frequent-fire forested ERUs (PPF, PPE, and MCD) through more intensive mechanical treatments (forest products focus): Treating 50,000 to 190,000 acres over a 10-year period with mechanical thinning and fire. (Assume about 22 percent prescribed fire) Treating 16,000 to 62,000 acres over a 10-year period using fire. (Assume about 22 percent prescribed fire)
Woodland	Restore or maintain conditions in woodland ERUs with frequent fire (PJG, JUG, MEW, MPO) by: Treating 400 to 2,000 acres over a 10-year period with mechanical thinning and fire. Treating 20,000 to 200,000 acres over a 10-year period with fire. (assume about 22 percent prescribed fire)	Restore or maintain conditions in woodland ERUs with frequent fire (PJG, JUG, MEW, MPO) by: Treating 230,000 to 410,000 acres over a 10-year period with fire. (assume about 22 percent prescribed fire)	There are no objectives for woodland ERUs – treatments are prioritized for frequent-fire forested ecological response units and forest products (including commercial timber harvest).

1 – PPF = ponderosa pine forest, PPE = ponderosa pine-evergreen oak, MCD = mixed conifer-frequent fire, PJG = pinyon-juniper grass, JUG = juniper grass, MEW = Madrean encinal woodland, MPO = Madrean pinyon oak

Table 8. Summary of objectives related to fire and vegetation for semi-desert grasslands and desert ecological response units

Ecological Response Unit	Alternatives B, C, and D
Semi-desert grasslands[1]	Restore at least 500 acres of semi-desert grasslands, over a 10-year period
Desert	Reduce the impact of invasive species (e.g., buffelgrass, fountain grass, and red brome) by surveying, inventorying, and treating 10,000 to 15,000 acres in desert ecological response units[2] (MSDS, SDS) over a 10-year period

1 - Due to the challenge of restoring semi-desert grasslands, management approaches were developed for semi-desert grasslands and include working with partners and research institutions to develop effective management approaches for restoring semi-desert grasslands, developing and refining state-and-transition models to explore potential restoration pathways, and site specific analysis of restoration potential to inform management.

2 – MSDS = Sonoran Mid-elevation desert scrub, SDS = Sonora-Mojave mixed-salt desert scrub

Needs for Change and Development of Resource Indicators

The Forest has a limited capacity, in the anticipated 15-year lifespan of the revised plan to reverse trends in all vegetation types, and move them all toward desired conditions. Therefore, it was necessary to prioritize the needs for change that were identified in the Tonto National Forest's Needs to Change analysis (USDA Forest Service 2017b). This allows efforts and resources to be focused on the greatest needs during the planning and implementation periods. Three areas that were identified during the needs for change specifically related to vegetation and fire include.

Needs for Change Topic 1: Restore Frequent Fire Ecosystems

The ponderosa pine forest and ponderosa pine – evergreen oak are the most highly departed ecosystems on the forest. Current conditions of high stand densities, closed canopies, and high fuel loads are some of the major factors influencing the high departure. Current conditions mean that these systems, and those they interface with, are at risk of undesirable effects from disturbances, such as fire, insects, and/or disease at temporal and/or spatial scales that would be uncharacteristically severe for the ecological response units identified.

Needs for Change Topic 2: Restore Herbaceous Cover and Grasslands

Most ecological response units on the forest have low ground cover, herbaceous grass cover, and low species diversity. Semi-desert grasslands are highly departed both on the forest and regionally in the Southwest. In all ecological response units on the Tonto National Forest, it is the herbaceous surface vegetation that provides the majority of the floral diversity. In many ecological response units, particularly the frequent fire ecological response units, herbaceous surface vegetation should also be contributing significantly to ground cover.

Needs for Change Topic 3: Restore Ecological Integrity of Desert Ecosystems

The desert ecological response units on the Tonto National Forest are sensitive to climate change, so additional stressors, such as invasive species, or unnatural disturbances, threaten the ecological integrity and sustainability of these ecological response units. Extensive ground disturbance has occurred throughout much of the Sonoran Desert ecosystem on the forest. Ground disturbance can lead to soil compaction and loss (as little as 5-10 cm at soil surface), hinders the recovery of plants, potentially eliminates long-lived dominates such as creosote and shifts dominance to short-lived disturbance adapted species (including natives and exotics). Past land management along with exotic grass invasion has supplied many areas with a contiguous fuel source producing larger more frequent fires. The cacti and succulent component is most negatively affected following fires, generally shifting dominance to the grass component. For example, the Cave Creek Complex Fire in 2005, fueled by red brome, killed a significant proportion (estimated 20 percent) of the cacti and succulent vegetation of the Sonoran Desert on the forest.

Vegetation objectives in the revised plan alternatives are designed to address these priority needs for change, see table 9. Specific objectives were developed for frequent fire ecological response units (ponderosa pine forest, ponderosa pine/evergreen oak, mixed conifer-frequent fire, juniper grass, pinyon-juniper grass, Madrean encinal woodland, Madrean pinyon-oak, semi-desert grasslands, and desert ecological response units (Mojave-Sonoran Desert scrub). For the other ecological response units, treatments could occur when surrounding ecological response units are treated, or as needs and resources are identified, however, there are no specific objectives included in this forest plan.

Ecological integrity is simple in concept to define, but can be difficult to assess. Ecosystem characteristics

are specific components of ecological conditions that sustain ecological integrity (Forest Service Handbook 1909.12 chapter 14). Examples include, but are not limited to, species composition (flora and fauna), soil type and condition, ground cover, fire frequency, and canopy cover. Key ecosystem characteristics describe the composition, structure, connectivity, and function of an ecosystem that are dominant. In the context of this analysis, it represents classifications of vegetation size class, canopy cover, and dominance type (USDA Forest Service 2017c).

Table 9. Key vegetation theme, ecosystem characteristics, and resource indicators/analysis elements used in the effects analysis

Prioritized needs for change	Ecosystem characteristics and indicators associated with needs for change used in the effects analysis
1. Restore frequent fire ecosystems	Seral state distribution/open-closed states, patch size, fire regime
2. Restore herbaceous cover and grasslands	Ground cover, species composition
3. Restore ecological integrity of desert ecosystems	Fire regime, Ground cover, species composition, patch size

Analysis Approach

Current conditions and departure from reference conditions was assessed for ecological response units/ecosystem types. Ecological response units have unique seral stages that capture succession, species associations, structure and process/disturbance. The assignment of current state class proportions uses regional satellite-imagery-based classifications of vegetation size class, canopy cover and dominance type at a 1:100,000 scale, with extensive photo interpretation and field data collection (Midscale Vegetation Mapping Project) (Mellin et al. 2008). Existing vegetation is assigned to an ecological response unit and then acres are cross-walked/assigned to appropriate state classes within that ecological response unit according to state class descriptions and model developed by the Forest Service Southwestern Regional Office, LANDFIRE, The Nature Conservancy, and the Integrated Landscape Assessment Project. Reference conditions are based on best available scientific information. The resulting seral state distributions are then compared against reference conditions for highly-valued resource and asset to obtain departure (low, moderate, or high). Table 10 shows an example of how reference and current seral state distributions were compared to assess departure. The example shows that there is an overall low to moderate departure because the differences between the desired/reference seral state proportions and the current seral state proportions are moderately different.

Table 10. Example seral state distributions (reference and current) for the interior chaparral ecological response unit

Seral State	Reference	Current	Difference between reference and current seral state proportions
Grass/Forb/Shrub	2 percent	10 percent	Small-moderate; over by 8 percent
Mid development; open 10-30 percent shrub cover	5 percent	26 percent	Small-moderate; over by 21 percent
Mature; closed shrub canopy	93 percent	63 percent	Moderate; under by 30 percent

Using current conditions as a baseline (described above), state-and-transition models were used to predict seral state distributions under current management (annual mechanical and fire treatment averages) for alternative A. Trend analysis was based on the continuation of current levels of management indefinitely under alternative A. State-and-transition modeling builds from transition matrix models that represent

vegetation development as a set of transition probabilities among various vegetation conditions/seral states. In addition to management treatment inputs, transition probabilities incorporate both natural vegetation growth/succession and disturbances such as insects, diseases, and severe weather events. Projected trends in the movement of vegetation (ecological response units) between states (or transitions) were derived through the use of the Vegetation Dynamics Development Tool. The Vegetation Dynamics Development Tool is a software program that provides a state-and-transition modeling framework to examine the role of various transition agents and management actions in vegetation change (ESSA Technologies Ltd. 2006).

The analysis approach for the action alternatives was qualitative and assesses the ability of each alternative and proposed treatments to move conditions towards desired conditions. The required treatment intensity to move ecological response units towards their natural fire regime was compared against the proposed treatment acres by alternative. The required treatment intensity to move ecological response units towards reference conditions estimated by dividing ecological response unit acres by the minimum, average, and maximum fire return interval (based on reference conditions). The resulting acres would need to be treated annually to meet the fire return interval for ecological response units. Table 11 displays an example of how treatment intensities to restore the natural fire regime for the semi-desert grassland ecological response unit (340,983 acres on the forest) was derived.

Table 11. Example of deriving required treatment intensities needed to restore natural fire regime for the semi-desert grassland ecological response unit

Deriving Required Treatment Intensities	Minimum fire return interval	Average fire return interval (desired)	Maximum fire return interval
Reference fire return interval in years	3	12	30
Necessary treatment intensity (acres) to meet reference fire return interval	340,983 / 3 = 113,661	340,983 / 12 = 28,415	340,983 / 30 = 11,366

For all action alternatives the analysis of the departure and status of key ecosystem characteristics was qualitatively assessed using baseline conditions and modeled changes expected under current management (alternative A) from the Tonto National Forest Ecological Sustainability, Risks, and Trends report (USDA Forest Service 2017a). For each of the action alternatives, each of the resource indicators described below was evaluated by considering the modeled trends with no changes, and the expected trends under the management options proposed for each action alternative, including treatment intensity, type, extent, timing, and methods, as well as the management constraints described in the assumptions section.

For all alternatives, it was assumed that the closer key ecosystem characteristics trended towards desired conditions, and the more of them that did, indicated how well an ecological response unit was trending towards desired conditions. The following section describes the key ecosystem characteristics that were used as resource indicators in the effects analysis for all alternatives, as well as references for the assumptions made.

Resource Indicators

Vegetation structure/seral state distribution, closed versus open conditions

Seral state refers to the series of biotic communities formed through the succession of changes in a plant community after a significant disturbance, such as fire, drought, or disease. Seral state distribution describes the percent of an ecological response unit in each seral state. There are specific distributions of

seral states that represent different phases of succession that are characteristic of an ecosystem (Weisz et al. 2009). These phases are grouped into seral state classes with unique vegetation characteristics (composition and structure) that allow the evaluation of the dynamics of the reference conditions for each ecological response unit. These phases can be further parameterized to incorporate current natural disturbances and management regimes and used to develop projections of future conditions. Reference conditions are based on Forest Service Southwestern Regional Office guidance (TNC 2006, Landfire 2010), research and findings more recent than that in the Regional Office guidance when available and, when there is no information that is specific to an individual ecological response unit, expert opinion. In this analysis, 'seral state' is used to represent the distribution and structure of mostly woody species.

In most of the ecological response units on the Tonto National Forest, a characteristic of late seral states is high canopy cover of woody species. This decreases the amount of sunlight and precipitation that can reach the surface, influencing the species mix, diversity, and cover of herbaceous surface vegetation. Decreasing woody canopy cover and reintroducing fire to frequent fire systems would be expected to increase understory species diversity, cover, composition, and production (Archer et al. 2001, Archer et al. 2017, Havrilla et al. 2017, Matonis and Binkley 2018, Strahan et al. 2015, Wilims et al. 2017). In forested and non-forest systems, herbaceous surface vegetation provides habitat, hiding and thermal cover, nesting sites, and food sources for a myriad of plant and animal species. In addition, understory vegetation provides the fine fuels that maintain and support frequent fire regimes needed to renew forested, woodland, and grassland ecological response units. Data from different forest types in northern Arizona found a greater than 2 to 3-fold increase in understory vegetation production between open (30 percent or less) and closed (greater than 30 percent) canopy sites in ponderosa pine forests, and about a 2 fold increase in pinyon/juniper types (Jameson 1967). Tree canopy closure in southwestern ponderosa pine old growth stands ranges from 17 to 30 percent (Laughlin et al. 2006), which suggests that understory patches may have comprised greater than 70 percent of the forested landscape. They found that overstory density effects on understory production were most predictable for the herbaceous plants (i.e., grasses, sedges, forbs) while shrubs showed only a slight response to changing overstory density (Griffis et al. 2001) found that thinning in combination with prescribed burning in ponderosa pine forest showed greater positive impacts (increases in native herbaceous plant cover and diversity) to native understory plants than just thinning alone. The extent that understory vegetation responds to overstory removal also depends on the health and condition of the existing understory community and its ability to respond, and it depends on available seed bank and local site conditions (soil productivity, climate).

Grasslands, herbaceous, and ground cover

Grasslands are a unique type of ecosystem that is dominated by grasses and other herbaceous species, and has less than 10 percent cover of trees. Forbs are always a component of grasslands, and provide most of the plant diversity. Shrubs may be a component in healthy grasslands, but would not be dominant. Fire is a key ecosystem processes that maintain grasslands in the southwest. When fire is removed from grassland systems, there is a shift in species, most often an increase in woody species.

Herbaceous species include grasses and grass-like plants, and forbs. These provide the majority of plant species diversity in most ecological response units on the Tonto National Forest. There are individual species and groups of species that are characteristic to an ecological response unit. Some species, or groups of species, can indicate, by their presence or absence, certain conditions. Most often, there is a matrix of grass, though in some ecological response units (interior chaparral and desert in particular), native grasses are not the dominant matrix. Herbaceous surface vegetation is also the light, flashy fuel component that supports the mostly low intensity / low severity fire that is characteristic of frequent fire ecological response units.

Vegetative groundcover is the combined cover of basal vegetation and litter, and is usually described by the percent cover. Groundcover provides soil stability, increases water capture, and improves moisture retention. Reduction of groundcover can lead to decreased productivity, changes in runoff timing and quantity, increased erosion, and increased sedimentation. Loss of effective vegetative groundcover adjacent to riparian areas can pose serious risks by increasing erosion, sedimentation, and degradation aquatic ecosystems. Vegetation loss can also increase soil loss by wind and water erosion, especially among areas with high erosion hazard (among steep slopes). Vegetative groundcover has a strong influence on soil erosion potential.

Fire regime

Disturbance regimes, such as fire or insects, can be both stressors and drivers of an ecosystem. A stressor can be a driver that is new to the system (e.g., invasive species or climate change) or a driver that is uncharacteristic or has a disproportionately undesirable outcome (e.g. uncharacteristic wildfire or insect infestations and disease). A fundamental component of most landscapes, and in the descriptions of the ecological response units referenced throughout the forest plan, is a 'fire regime'. A simple definition for 'fire regime' is the role/s fire plays in an ecosystem. Fire interacts with other disturbances, such as insects, drought, wind and other weather related events to create spatial and temporal patterns that maintain an ecosystem within a certain range of conditions. Table 12 describes commonly referenced fire regimes that are used in this analysis (Barrett et al. 2010).

Table 12. Fire regimes and representative ecological response units (ERUs)

Group	Frequency	Severity	Severity Description[1]	Representative ERUs and general descriptions
I	0 - 35 years	Low to mixed	High severity in the dominant overstory vegetation is less than 25 percent.	Ponderosa pine forest, most ponderosa pine/evergreen oak, juniper grass; in these systems, it is primarily the herbaceous surface vegetation that carries the fire, but trees are the dominant overstory species.
II	0 - 35 years	High	High severity in the dominant overstory vegetation is more than 75 percent.	Semi-desert grassland; herbaceous surface fuels, sometimes with a shrubby component, are what carries the fire, and are more vigorous and healthy with frequent fire.
III	35 - 100 years	Mixed to Low	Generally mixed-severity; may also include low severity fires.	Some mixed conifer with frequent fire, Madrean pinyon/oak woodland; fire intervals and severity are more variable than in fire regimes I and II.
IV	35 - 200 years	High	High severity.	Pinyon-juniper evergreen shrub, some mixed conifer with aspen; this fire regime is similar to III, but with longer return intervals, higher average severity, and usually larger patch size.
V	200+ years	High or any severity	Any severity may be included, but mostly high severity; may include any severity with this frequency	All desert ecological response units; in some areas, pinyon-juniper woodland has no known fire history, and may be considered to have a fire regime V

[1] Note: "severity" is not a reference to mortality, though there is often a correlation. Severity is a description of the ***effects*** of a fire, while intensity describes the ***behavior*** of a fire (see page 39 for description).

Fire regimes are adapted from Barrett et al. 2010.

Patch size

In the environmental effects section of this analysis, patches were combined with fire regime because patch size is a fundamental characteristic of a fire regime. However, patch size is also an important component outside of fire ecology, so it is defined here apart from fire regimes. A patch is a contiguous

area of the same system type in the same structural state. Patch size plays a significant role in ecosystem integrity, species establishment, and wildfire behavior. Human activities, (such as fire suppression and historic timber harvesting), decreased fire frequency, and increased fire severity have large impacts on patch characteristics (size, shape, and composition) and dynamics. In fire-adapted systems, many of these activities have created uncharacteristically large patches of contiguous tree canopies, susceptible to large severe wildfires (Schoennagel et al. 2004). Disturbances (mainly fire) create forest openings that ultimately shape patch development. Patch structure and composition depends on site conditions, species life history traits (for example, dispersal mode and shade tolerance), and characteristics of the forest opening. Patches near wetlands or lakes provide valuable seed sources for burned upland sites following catastrophic fires. Light and wind can extend 200 to 300 meters inward at patch perimeters (edge effects), producing distinct habitat at edges generally high in biodiversity relative to the interior. The shape and size of patches affect wildlife use (interior species versus edge species) and available habitat. Species may be at risk among highly fragmented habitat when there are great distances between nearby patches (many amphibians will not move between patches with distances greater than 300 meters).

Patch size influences wildfire behavior, insect and disease spread and persistence, and wildlife habitat. Larger patches mean there is less diversity in a system than there was historically. This may mean disturbances can spread more continuously, species composition is more uniform, and there is less edge habitat. In general, the reduction in heterogeneity as patch size increases lowers the resiliency of an ecosystem.

Ecosystem function

The integrity of an ecosystem is based on all of its components and parts interacting and functioning as they should. In the context of this analysis, ‘ecosystem function’ is a summary of the other metrics described above, combined with how they all function together to maintain a health ecological response unit.

Assumptions

The anticipated lifespan of this revised plan is 10-15 years (USDA Forest Service 2017c). During that period, the Tonto National Forest has a limited capacity to reverse undesirable trends everywhere in all vegetation types, and move them all toward desired conditions. The discussion of effects assumes that all best management practices, design features, and mitigations for this project are applied during project design and implementation.

Management constraints include, but are not limited to:

- Periodic seasonal limitations on available resources: this happens almost yearly when national fire planning levels are high, making it difficult or impossible to get fire on the ground when the burn windows are good in the Southwest and when, ecologically, fire is the most beneficial. This is both from policy requirements and lack of resources (when they are needed elsewhere in the country).
- Burn windows: These do not always occur at times when the resources are available, and include fuel moisture, weather, other fires in the area, socio-political values (such as the first day of hunting season, community events, holidays), expected smoke effects (public health, visibility, compliance with the Clean Air Act).
- Air quality issues (related to, but not the same as, burn windows). Burn permits are issued by the Arizona Department of Environmental Quality, and are approved based, in part, on how much smoke is expected from any and all sources of smoke that could affect a specific airshed. Smoke effects are part of the burn window as described above.

- The current limited market for small-diameter biomass to offset the cost of mechanical treatments
- The length of time required to accomplish and approve planning for treatments (NEPA)
- Constraints from other uses (grazing, fire, wildlife, recreation, timber, etc.)
- Concerns about impacting major infrastructure, such as interstates, powerlines (must be shut down to burn certain areas), structures, and communities

Ecological constraints include, but are not limited to:

- The response time of an ecosystem to disturbances resulting from natural causes, or from management actions. For example, in ponderosa pine-evergreen oak, it will generally take a minimum of three entries to get a given very close to desired conditions. Fire entries need to be 3 to 10 years apart, mechanical thinning entries need to be 20 to 30 years apart.
- In some areas, soils have been significantly impacted by disturbances such as high-burn severity, over grazing, or unmanaged recreation (mostly off-road vehicles). This can change the potential vegetation on a given site, but we won't know what the current potential is until these areas can be identified and evaluated to determine if/what can be done to restore them.
- In some systems, such as chaparral, mixed to high severity fire is what the ecosystem is adapted to. The juxtaposition of these areas to values at risk, combined with the fire behavior that would be needed to maintain or restore these areas make it highly unlikely that such a prescribed fire would be feasible.
- Some areas are not accessible for mechanical treatments, and would be very difficult for prescribed fire as well. In some remote, steep, inaccessible areas that have supported frequent fire ecological response units historically, suppression has had an effect, and fuel loads have accumulated that, under conditions that occur every year on the Tonto National Forest, have the potential to produce uncharacteristically large areas of uncharacteristically severe fire effects.

Wildland Fire

Throughout this analysis, there are references to 'undesirable fire behavior and effects'. While this may initially appear to be an arbitrary way of determining what is to be deemed acceptable, it is necessary to allow that flexibility because of the juxtaposition of some high-severity fire regimes to values at risk both on- and off-forest. Where it is legally and practically possible, 'desirable' fire behavior and effects align with reestablishing natural or sustainable fire regimes, which is the intent across the majority of the forest. Examples of where it is not possible to restore the natural fire regime include, but are not limited to, the following:

- Mexican spotted owl habitat: Where there are nest cores, in particular, there is often a need, legally and biologically, to manage those areas for denser vegetation than would have existed there historically. That means that, in these cases, fire will be managed to be less frequent than it would have been historically, while at the same time trying to prevent high-severity fire in those areas.
- Proximity to infrastructure for some vegetation types: Some of the ecological response units on the forest, such as chaparral, pinyon – juniper woodland, Madrean pinyon – oak, pinyon- juniper evergreen shrub, historically would have had components of high severity fire as part of their natural fire regimes. Where these cover types occur in close proximity to vulnerable infrastructure, homes or other structures, or other values at risk, it may be necessary to manage at least some of the area for low or mixed fire severity.

When fire is reintroduced into frequent fire-adapted ecosystems from which it has been withheld for decades, the objectives of the first entry burn, usually the second, and maybe even the third, will be different from maintenance burning (which is not the same as the Maintenance Fire Return Interval described below). Maintenance burning is when an ecological response unit is not very departed from its historic range of variability, and wildland fire can play its natural role in the system, with seasonality, severity, patch size, and other fire regime characteristics all within the historic range of variability or desired conditions.

In an area that has missed several burn cycles, the primary objective of a first entry burn is to begin to restructure the fuel profile. Even if the area was thinned before the burn, surface fuel loading, canopy base heights, and ladder fuels are likely to still be highly departed from what would be healthy and sustainable. The first entry burn will kill or topkill most ladder fuels (shrubs and/or small trees), lethally scorch a lot of needles and leaves in the lower canopy, consume much of the fine fuels and litter at the surface, and may torch some trees or shrubs. Within a year or two, most scorched needles and leaves, along with some twigs and branches, will fall and produce a litter layer that is sometimes thicker, and often more contiguous than would be natural (though less than before the first burn). Over the year or two following the first burn, some surface vegetation may begin to grow, but some may also still be suppressed from the litter cover (see figures 30 and 31 in volume 1). Additionally, within a few years there is likely to also be a slightly higher load of woody debris from the killed and top-killed ladder fuels. If the initial entry burn included some mixed severity, there may also be some areas with higher than desired accumulations of dead/down woody debris. Note the almost 100 percent cover of needles in figure 31 (see volume 1) resulting from the shedding of needles from the lower canopy being shed. The second entry burn will more completely reset the fuel structure, consuming much of the newly fallen scorched needles and decreasing excessive woody debris that will be produced as branches and trees killed by the fire fall to become part of the surface fuel loading. In an area that was highly departed, it may take more than two burns to reset the fuel structure, particularly where mechanical treatments are not available. If fire is used as a thinning mechanism for a forested system, the dead/down fuel load may take repeated burns to consume coarse woody debris effectively without producing undesirable burn severity (fire effects to soil).

Because of the focus on fuel structure for the first two or three burns, the timing/seasonality of those burns is less important than for maintenance burns. Once an area is ready for maintenance burning, seasonality is more important because of the timing of the rainfall, temperatures, photoperiods, and interactions with other flora/fauna to which native vegetation is adapted.

Fire Return Interval

Fire return interval is a characteristic of a fire regime that can be quantified based on spatial and temporal data. It is the typical length of time between fires for a given area over a period of time. Frequent fire regimes are more common in areas, such as ponderosa pine, where dead biomass, (such as pine needle litter) is produced faster than it can decompose and/or where plant populations depend on frequent fire to regulate distribution and density (such as seedlings and woody species). Departure from the fire return intervals to which ecosystems are adapted produces somewhat predictable results for both fire behavior and fire effects. As such, it is a characteristic of a fire regime that can be useful on a landscape scale for evaluating the health of an ecosystem.

Maintenance Fire Return Interval

There is evidence that shows that, under some conditions, in ponderosa pine, a fire return interval that is longer than what is generally considered historical, or natural can maintain a relatively open, crown-fire resistant forest structure (Fulé 2012-2013, Fulé and Laughlin 2007), although other components of the

area, such as species composition, or surface cover would be affected. A 'maintenance' fire return interval does not represent a fully restored ecosystem; as referenced here, it represents a minimal level of fire that is needed to keep woody growth and fuel loading below a level at which they are likely to produce undesirable fire effects and behavior, including controlling woody species encroachment into grasslands and shrublands, or shrubs from encroaching into forests. It is not intended to represent a fire return interval that would maintain historic habitat/plant communities. Its true range would vary with precipitation, masting years, sprouting species, ecological response unit, and the coincidence of growing conditions with seed production. Some level of maintenance with surface fire is critical to retaining open forest conditions and a low risk for undesirable fire effects and behavior into the future for frequent fire ecosystems (Roccaforte and Fulé 2008).

Fire Intensity versus Fire Severity

Fire intensity and fire severity are often confused, though both are commonly used in descriptions of fire regimes, behavior, and effects. Fire *severity* refers to the effects of a fire while fire *intensity* refers to the behavior of a fire. Fire intensity is a *quantitative* measure of the fire itself that defines energy release rates. Fire severity is a *qualitative* evaluation of the effects of a fire as produced by the heat pulse on the biotic and abiotic components of an ecosystem (Keeley 2009), and is evaluated after fire has burned though an area (Andariese and Covington 1986).

Flame length is a good surrogate for fire line intensity. Above the flames of the surface fire in a forest, there is a zone within which foliage will be scorched and killed by hot gasses rising from the flames without being consumed. To die by cambial damage alone, a tree must be girdled, and any fire intense enough to girdle a large tree is usually intense enough to scorch all of its foliage as well, even without any crown fire. Death usually follows quickly from complete crown scorch in ponderosa pine, but may take several years following girdling (Van Wagner 1972).

Figure 2 Lethally scorched trees from a high-severity, low-intensity surface fire; note the lack of crown fire

Crown fire is always high intensity fire, but high intensity fire is not always crown fire. A low- intensity fire that is creeping slowly across a forest floor that has decades of accumulated fuels may produce high severity effects because the residence time is sufficient to allow lethal levels of heat to transfer into the soil, tree and shrub cambiums, and roots/seeds/biota in the upper layer of soil, (Lata 2006, Valette et al. 1994) and/or heat is trapped under a closed canopy, producing a lethal level of crown scorch (see Figure 2).

Mechanical treatments

"Mechanical treatments" include a broad range of management actions, that include (but are not limited to) mowing, mastication, thinning, logging, and chipping. Mechanical treatments are used for restoration, fuel breaks, timber sales, range improvement, invasive species control, and a variety of other resource objectives. In the forest and woodland ecological response units of the Tonto National Forest, mechanical treatments are most often used for restoration of frequent fire ecological response units (ponderosa pine forest, ponderosa pine-evergreen oak, mixed conifer-frequent fire, juniper grass, Madrean pinyon oak, and pinyon-juniper grass).

Mechanical treatments often involve the use of heavy equipment which can have significant impacts to other resources and short term undesirable visual effects. For this reason, mechanical treatments are limited to areas where soil, slope, and watersheds will not be irreversibly damaged. Protection must also be provided for streams, streambanks, riparian areas, shorelines, lakes, wetlands, other waterbodies, fish, wildlife, recreation, cave and karst formations, cultural, and long term aesthetic resources.

Mechanical treatments are based on the current conditions of the vegetation and are designed to move the vegetation toward desired conditions, or meet other resource objectives. These treatments mimic natural processes in that they can be designed to remove vegetation that would have been killed and consumed by fire, insects, or disease under historical conditions. As a management tool mechanical treatments are more precise than prescribed or natural fire and can move vegetation toward a desired condition faster, but in frequent fire forests and woodlands no treatment is complete without fire. After a mechanical treatment it can take from 3 to 5 years for the fine fuels required to carry a prescribed fire to develop, depending on the level of surface disturbance caused by the treatment itself, the time for grasses to establish, grazing pressure, and weather patterns. Once the fuel structure has been reset by mechanical treatment and/or fire, maintenance burning can be used to keep the area on a trajectory toward desired condition. If sufficient fire cannot be maintained in these areas, mechanical treatments may be needed to manipulate fuel structure, though there are tens of thousands of acres on which mechanical treatments would not be practicable.

Rarely are current condition such that desired conditions can be met with a single mechanical treatment. Initial treatments can open canopies, improve remaining tree vigor, establish groups and appropriate patch sizes. Opened canopies allow more light to reach the ground thus stimulating herbaceous surface vegetation and increasing vegetative ground cover. When mechanical treatments are implemented before fire, it removes most of the potential for crown fire by opening the canopy and reducing ladder fuels (see figure 3 and figure 4). Once the grass, forbs and other fine fuels have responded sufficiently, fire can remove excess coarse woody debris, prepare a seed bed for regeneration within openings created by the treatments, recycle nutrients, scarify seeds, and numerous other effects. If an area is burned in advance of mechanical treatments, it can remove much of the ladder fuel, litter, coarse woody debris, and sometimes some of the saplings, depending on conditions when burned. Mechanical treatments can follow in the next few years, cleaning up what the fire left, and allowing surface vegetation to begin to establish in the interim.

Figure 3. Ponderosa pine-evergreen oak ecological response unit before treatment depicting a closed canopy, brush, and tree encroachment and lack of herbaceous ground cover

Figure 4. Ponderosa pine-evergreen oak ecological response unit one year after treatment, depicting an open canopy, restructured fuel profile, reduced fuel load and increased light reaching the ground

Mechanical treatments can quickly address many of the characteristics that contribute to ecosystem function, but cannot fully address seral state distribution in a single treatment. Treatments can open up space for the establishment of regeneration and fire can prepare a receptive seed bed, but in many systems

the production and germination of tree seed is highly variable and dependent on many factors including available moisture and timing of precipitation events. Some species may only produce a good seed crop once every two to ten years, adding to the time needed to establish a new generation of trees. Once seedlings are established it can take five to fifteen years for the seedlings to reach four or five feet in height depending on specific site conditions.

Once a second generation has been established, a second mechanical treatment may be necessary to thin and release the developing small trees from competing vegetation and open up additional space for more regeneration. In some systems mechanical treatments may be needed every twenty to thirty years to maintain a trajectory towards the desired conditions, unless frequent fire can be maintained in the system. In systems that have a multistoried component to their desired condition (mixed conifer-frequent fire, ponderosa pine forest, ponderosa pine-evergreen oak) it may take three or more mechanical treatments over the span of 60 to 90 years to develop the structure and seral state distribution found in the desired condition, depending on the existing condition. Old and large trees take time to develop, and fire needs multiple entries to create a natural mosaic.

Riparian Areas

Description of Alternatives for Riparian Areas

Alternative A has few standards, guidelines, and plan objectives. Plan objectives are narrowly described for riparian areas – mostly aimed to obtain desired vegetation structure and less on desired ecological conditions. Alternative B addressed the need to prioritize riparian resource protection primarily through plan objectives for riparian restoration, aquatic habitat restoration, and invasive species treatments within riparian areas – aimed to restore and maintain ecological integrity. Plan components provide clear management direction on the acceptable level of use and types of activities permissible to manage for healthy and resilient riparian ecosystems. Alternative C provides similar protection to riparian areas as Alternative B but with an additional standard to restrict uses at non-functioning riparian areas until riparian recovery is achieved. Alternative D emphasizes increasing opportunities for uses, such as recreation, and maximizing forest products. Therefore, there would be fewer resources available for restoration and less overall objective treatment acres for riparian areas. There are no objectives for aquatic habitat restoration, instead these projects occur opportunistically as resources are available or through other projects.

Analysis Approach

The following three analysis indicators form the framework for the analysis of riparian resources: riparian restoration objectives, which includes both active and passive means of restoration, riparian management direction (standards and guidelines), and areas (management areas, recommended research natural areas, etc.) managed to preserve riparian conditions. They were chosen because they represent planning direction and management areas that are specifically focused at moving riparian conditions toward desired conditions. This qualitative analysis assumes that treatment objectives, additional standards and guidelines, improved upland conditions (watershed level effects), and areas managed to preserve riparian conditions would result in overall improvement in riparian conditions over the lifecycle of the forest plan. Conversely, fewer treatment objectives, fewer standards and guidelines, static to no improvement in upland conditions, and fewer areas managed to improve riparian conditions would likely lead to less improvement in riparian conditions over the lifecycle of the forest plan. The specifics on how each resource indicator is assessed and evaluated is described below.

Resource Indicators

Resource Indicator 1: Riparian Plan Components

Plan objectives help set the basis for priority areas and are designed to make progress towards attaining desired conditions. Riparian restoration objectives include both passive and active means of restoring impaired conditions (stream channel, vegetation, etc.), aquatic habitat restoration, spring restoration, and invasive species treatments in riparian areas. Treatment objectives include (but are not limited to) planting vegetation, restoring stream channel conditions, alleviating stressors (passive and active), and invasive species treatments. Treatment objectives for aquatic habitat restoration (e.g., enhancing pool habitat and maintaining stream temperature for species) also benefits riparian conditions by improving species diversity, plant cover, and biotic integrity. Treatment objectives for invasive species in riparian areas improve species diversity, ecological function, and riparian health. Table 13 displays the key plan objectives for riparian areas and changes by alternative.

The plan objective to treat 200-500 acres of riparian areas rated as non-functioning and functioning-at-risk was modified between draft and final. After public comments and internal review, it was determined that miles treated would be a more meaningful target. It should be noted that this does not change the analysis because the approximate acre to mile conversion commonly used is roughly equal to 1 to 2 acres per mile. So, the revised objective to complete active and passive restoration projects on at least 125 miles of streams is still in line with the original objective and therefore analysis.

The target for riparian objectives was based on the number and extent of impaired riparian areas, considering a desired rate of progress, and the staff capacity and fiscal capability of the forest to accomplish plan objectives. Plan objectives are designed to make progress toward attaining desired conditions and help set the basis for priority areas or activities. However, plan objectives must be attainable within the fiscal capability of the unit, determined through a trend analysis of the recent past budget obligations for the unit (3 to 5 years) (36 CFR 219.1(g)). We have determined the target of “at least 125 miles restored” would make a meaningful progress towards desired conditions over a 10-year period with current staff and resources, and that a target greater than this would be outside the fiscal capability of the Forest.

Table 13. Key plan objectives for riparian areas and changes by alternative

Plan Components	Alternative A	Alternative B	Alternative C	Alternative D
Objectives for riparian areas	Fifty percent of cottonwood-willow and mix broadleaf acreage will be in structural Type1 in fifty years with the objective that 25 percent will be in structural Type IV in ten years and 50 percent in structural Type IV in 20 years. Coordinate with range to achieve at least 50 percent of the cottonwood-willow and mixed broadleaf acres in structural Type 1 by 2030.	Complete active and passive restoration projects on at least 125 miles of streams every 10 years to improve the ecological integrity of perennial and intermittent riparian ecosystems rated as nonfunctioning and functioning-at-risk.	Same as alternative B	No objective

Plan Components	Alternative A	Alternative B	Alternative C	Alternative D
Objectives for aquatic habitat restoration	No objectives for aquatic habitat restoration	Complete at least 4 aquatic habitat restoration projects (e.g., increase pool quantity, provide stream cover, bank stabilization, etc.) every 10 years	Same as alternative B	No objective
Objectives for spring restoration	No objectives for spring restoration	Improve 10 to 15 individual springs during each 10-year period.	Same as alternative B	No objective
Objectives for invasive species treatments	No invasive species treatment objective	Treat and or control invasive species on 2-10 stream reaches every 5 years.	Same as alternative B	Same as alternative B

Riparian management and ability to achieve desired conditions is primarily measured by standards and guidelines. Standards and guidelines establish the sideboards and set management priorities that can constrain, limit, or encourage specific projects and activities that happen on the forest. This can have an impact on riparian conditions and the rate of achieving desired conditions over the lifecycle of the forest plan. Table 14 displays the key standards and guidelines for the effects analysis and differences by alternative.

Table 14. Key standards and guidelines for riparian areas and changes by alternative

Plan Components	Alternative A	Alternative B	Alternative C	Alternative D
Guideline for riparian areas	No guidelines specifically for riparian ecosystem characteristics	In riparian areas (RMZ), project and management activities should be designed and implemented to **maintain or restore** natural streambank stability, native vegetation, and riparian, floodplain, and soil function.	Same as alternative B	In riparian areas, project and management activities should be designed and implemented to **maintain** natural streambank stability, native vegetation, and riparian, floodplain, and soil function.
Standard for riparian areas	No standard for non-functioning riparian areas	No standard	If a riparian area is non-functioning, as identified in the Proper Functioning Condition Assessment framework or similar protocol, all permitted and allowed uses will be removed until riparian recovery is achieved.	No standard

Resource Indicator 2: Upland Conditions

Upland condition is the condition of the surrounding areas and vegetation outside of the riparian management zone. As forest conditions become denser and more prone to uncharacteristic fire – adverse second order fire effects, such as accelerated erosion and excessive sedimentation to connected stream courses, changes in overland flow, and uncharacteristic flooding become more common and impair

riparian conditions. Riparian areas that are vulnerable to uncharacteristic high-severity fire (due to unnaturally high fuel levels, tree densities, and seasonal dry conditions) may benefit from upland fuel reduction treatments to promote resilience to wildfire across the landscape. Furthermore, treatments that reduce tree density and allow more light to reach the forest floor can have positive effects on understory plant diversity and aquatic productivity in some riparian areas. Other beneficial effects of treating adjacent upland areas include increased spring discharge due to the removal of dense vegetation at areas above spring heads, and thinning woody species encroaching within the riparian management zone. Forest management activities in uplands and within the riparian management zone such timber harvesting, prescribed burning, road decommissioning, and invasive species treatments have the potential impact riparian areas (both positive and negative) and are described in the effects analysis.

Resource Indicator 3: Management Areas, Recommended Research Natural Areas, and Recommended Botanical Areas with Special Riparian Management Emphasis

The Tonto National Forest has some of the most diverse vegetation and ecosystems, including rare and unique riparian ecosystems, in the region and in the state. Special management through recommended special areas or management areas not only protects the rarity and uniqueness of these ecosystems but provides increased resource protection in the form of additional standards and guidelines. The following areas were analyzed:

Blue Point Cottonwoods Natural Area (management area)

The Blue Point Cottonwoods natural area is located in a half-mile transect along the Salt River in the Mesa Ranger District. The area was proposed by the Arizona State Park's board for its diversity of plants and animals, including a desert marsh owned by the Fort McDowell Indian Reservation. This area was included as a management area in the existing 1985 forest plan (alternative A).

Fossil Springs Recommended Botanical Area

The recommended Fossil Springs Botanical Area is located in the Payson Ranger District. The area serves as a benchmark example of a rare spring ecosystem in Arizona – one with a highly diverse riparian deciduous forest, a large and complex spring system, and travertine geology. The springs in Fossil Creek are situated in the bottom of a wide, deep canyon. The springs are responsible for the formation of extensive travertine beds about 1 mile long and on-half mile wide. The springs issue from Redwall limestone and as a result contain moderate amounts of dissolved solids, primarily calcium, magnesium, and bicarbonate. The springs and these geologic features produce the "fossilized" appearance of debris that collects at the bottom of the stream bed. The floral diversity is high due to the combination of water, elevation and both north and south facing slopes. The vegetation changes markedly from pine forest to more xeric, lower elevation species as one descends into Fossil Creek Canyon. Luxurious, dense growth of riparian plants are found in the immediate area of the springs. A dense understory of annual and perennial plant species is found throughout the area – over two feet tall in some places. The stream, riparian area, and vegetation also support a high diversity of aquatic and wildlife species. The area is being recommended in alternatives B and C.

Fossil Springs Natural Area (management area)

This area includes the same area described under the Fossil Springs Recommended Botanical Area – with the exception that it includes additional surrounding upland vegetation. The area was proposed by the Arizona State Park's board and was included as a management area in the existing 1985 forest plan (alternative A).

Little Green Valley Fen Recommended Botanical Area

The recommended Little Green Valley Fen Botanical Area is located in the Payson Ranger District. The recommended Little Green Valley Fen botanical area serves as a benchmark example of a rare and sensitive wetland meadow with peat soils that are rare in Arizona. Additionally, the alternating layers of peat and gravel (observed in the headcut) reveal the evolutionary sequence of landform processes which has allowed researchers to reconstruct past climate, vegetation, and disturbances. The boundary was delineated to capture the wetland meadow and portions of Green Valley creek. This area includes the wetland and southern portion of Green Valley Creek where the tributary enters the creek from the southeast. The meadow is about 0.25 miles wide but narrows down to a small outlet of less than 100 feet at the southwestern end where Green Valley Creek leaves the meadow. The lower end of the meadow is constantly wet at the lower end and drier at the upper end. The organic layer is about 7 meters thick at the outlet end of the fen. The meadow supports a diversity of grasses, sedges, and wetland herbaceous species. The surrounding vegetation is ponderosa pine oak forest with scattered occurrences of pinyon and juniper. The area is being recommended in alternatives B and C.

Mesquite Wash Recommended Botanical Area

The recommended Mesquite Wash Botanical area is located along Sycamore Creek in the Mesa Ranger District. The recommended Mesquite Wash botanical area is a unique desert riparian area within Sycamore Creek – rare on the forest and within the state. The boundary was delineated to capture the riparian area, mesquite stands along the northern side of the creek (bounded by the existing pipe rail), and portions of the southern side of the creek where the riparian area transitions into desert scrub. The western extent ends where the channel becomes intermittent along Sycamore Creek. Arizona Walnut and willows are abundant along the channel with mesquite occupying the terraces and upper banks. The more or less permanent water source and spring at Mesquite Wash produce a striking level of plant diversity and a stark difference to the surrounding vegetation outside the riparian area. There are also many important birds, other wildlife, and aquatic species in the area. There is high public interest in the area for its botanical values and the area is regularly visited by botany students, botanists, researchers, and recreationists. The area is being recommended in alternatives B and C.

Picket Post Mountain Recommended Research Natural Area

The recommended Picket Post Mountain Research Natural Area is located in the Globe Ranger District. The recommended Picket Post Mountain research natural area contains excellent examples of the Sonoran Desert in many of its varied plant community associations on foothill and piedmont topography. The eastern piedmont, bounded by cliffs along Telegraph Canyon and Arnett Creek, represents the Sonoran Desert on gentle upland slopes. Stretches of Arnett Creek are included in the area and have perennial flow that supports a riparian gallery forest (which is rare in the state and on the forest). The varied topography and soils around Picket Post Mountain display a number of unique plant communities within a small area and also represents the limiting cold temperature boundary of the Saguaro cactus distribution. Arnett Creek and the adjacent uplands serve as excellent benchmark examples for Sonoran Desert plant communities and deciduous riparian forests. The area also serves as an important gene pool for Sonoran flora (especially cacti) and fauna, and as a control to study the effects of grazing management (at areas excluded from livestock grazing). The area is being recommended in alternatives A, B, and C.

Sycamore Creek Natural Area (management area)

The Sycamore Creek Natural Area (management area) is located in the Mesa Ranger District. The Sycamore Creek natural area was proposed by the Arizona State Park's Board for its representative example of an intermittent stream that supports good growth of deciduous riparian vegetation within the

Sonoran Desert scrub community. The area was included as a management area in the existing 1985 forest plan (alternative A).

Upper Forks Parker Creek Recommended Research Natural Area

The recommended Upper Forks Parker Creek Research Natural Area is located in the Pleasant Valley Ranger District. The recommended Upper Forks Parker Creek research natural area contains excellent examples of canyon bottom forests consisting of mixed broad-leaf riparian forests – ranging from sycamore-walnut-Arizona alder forests near the headquarters to White fir-big-toothed maple forests at higher elevations. Riparian vegetation is present along both upper and lower forks within chaparral and mixed conifer forests on canyon side slopes and summits. The absence of Arizona cypress from the canyon above the headquarters makes this area unique compared to other mixed broad-leaf canyon bottom riparian forests typically found below the Mogollon rim (such as what is commonly found on the Coronado National Forest). There is a long record of research in and around the area and opportunities for continued study or educational use are available in a wide range of biological and environmental fields. The area is being recommended in alternatives A, B, and C.

Not all areas are included in every alternative. There would be less management emphasis of rare or unique riparian ecosystems under alternative D and therefore the areas described above in this section would not be included. Instead, alternative D would rely on forest-wide desired conditions, standards, and guidelines (in the riparian areas section) to manage these resources. Table 15 displays the special areas and management areas with special riparian emphasis and areas included by alternative.

Table 15. Special areas and management areas with special riparian emphasis and areas included by alternative

Area name	Ecosystem type	Type of area[1]	Acres	Ranger District	Areas included by Alternative
Blue Point Cottonwoods Natural Area	Sonoran Desert riparian	SA	312	Mesa	A
Fossil Springs Natural Area	Rare spring ecosystem and riparian area	SA	186	Payson	A
Fossil Springs	Rare spring ecosystem and riparian area	BA-R	9	Payson	B, C
Little Green Valley Fen	Rare wetland meadow	BA-R	53	Payson	B, C
Mesquite Wash	Sonoran Desert riparian	BA-R	10	Mesa	B, C
Picket Post Mountain	Sonoran Desert riparian	RNA-R	1,164	Globe	A, B, C
Sycamore Creek Natural Area	Sonoran Desert riparian	SA	91	Mesa	A
Upper Forks Parker Creek	Canyon bottom mixed broadleaf riparian	RNA-R	1,441	Pleasant Valley	A, B, C

1 - BA-R = recommended botanical areas,

RNA-R = recommended research natural areas,

SA = management areas in the 1985 forest plan that are proposed Arizona State Natural Areas (but were never officially designated).

The following areas were not analyzed. The area description and rationale is provided below.

Horseshoe Recommended Botanical Area

The proposed Horseshoe Botanical Area does include a small amount of riparian vegetation; however, the effects cannot be measured at the scale of this analysis. Since the primary management emphasis of this

area is to protect the endemic and rare upland plant communities located around Horseshoe Lake, it is assumed that the effects to riparian resources within this management area would be positive but not a significant contributor to overall riparian conditions forest-wide.

Recommended Wilderness Areas

Riparian areas within recommended wilderness areas and the management direction for recommended wilderness areas would not have measurable effects to riparian conditions. It is assumed there would be positive effects to riparian areas within recommended wilderness areas from restrictions on motorized use and negative effects from not treating high risk areas adjacent to riparian areas to reduce associated wildfire effects such as increased flooding and sedimentation. However, these effects are generally localized and effects would only be measurable at the project level. Therefore, an attempt to quantify how these areas would contribute to overall riparian conditions is not possible. Additionally, riparian areas within these recommended wilderness areas never make up more than ten percent of all mapped riparian areas under any alternative[3].

Lakes and Rivers Management Area

The management emphasis of the Lakes and Rivers Management Area is to prioritize and manage high-used developed and dispersed recreational opportunities in and around the portions of Roosevelt Lake, Apache Lake, Canyon Lake, Saguaro Lake, Horseshoe Lake, Bartlett Lake, the Verde River (below Bartlett Lake), and the Lower Salt River (below Saguaro Lake). Many of the riparian areas within this management area are highly altered from their natural condition (e.g., lower Salt River); however, there are some stretches of riparian vegetation along the Verde River that are in relatively good condition (where flows more or less follow the natural hydrography). While active restoration is not the primary emphasis of the area, there is a desired condition that natural resources in the Lakes and Rivers Management Area are resilient to disturbances. The following guideline would ensure that projects and permitted uses maintain or mitigate negative impacts to riparian vegetation within this management area:

- Native riparian vegetation, natural streambank stability, floodplain and wetland function, and soil heath and stability should be maintained or impacts mitigated from high-use recreation opportunities in the Lakes and Rivers Management Area.

Riparian areas within the Lakes and Rivers Management Area experience high levels of use and there is a potential that riparian conditions could become impaired at some locations. However, management would be more focused in this area to actively mitigate such effects. Additionally, the Lakes and Rivers Management Area also represents a much lower proportion of riparian areas capable of supporting self-sustaining ecosystems (i.e., areas that have the site conditions to support healthy riparian vegetation; some areas along the Verde) compared to other areas of the forest. Therefore, the effects of Lakes and Rivers Management Area are not anticipated to have measurable effects to overall riparian conditions on the forest.

Assumptions

For estimating the effects of alternatives at the programmatic forest plan level, the assumption has been made that the kinds of resource management activities allowed under the prescriptions will occur to the extent necessary to achieve the goals and objectives of each alternative. The actual location, design and extent of these prescriptions is not known at this time and will be a site specific (project by project) decision. Therefore, this analysis refers to the potential of the effect to occur, realizing that in many cases,

3 There are no recommended wilderness areas in alternatives A and D. Alternative C has the greatest amount of recommended wilderness areas and has less than ten percent of all mapped riparian areas on the forest. Alternative B has the least amount of recommended wilderness areas and has less one percent of all mapped riparian areas on the forest.

these are only estimates. The effects analysis is useful in comparing and evaluating alternatives on a forest-wide basis but is not to be applied to specific locations on the forest. For these reasons, effects are only described for overall riparian conditions and not specifically for riparian communities (only possible for site specific project analysis). The analysis applies to areas that are captured in the riparian management zone (riparian zones)[4] and includes riparian areas/vegetation, stream ecosystems, springs, seeps, and wetlands.

Watersheds and Water Resources

To estimate the impacts of alternatives for the type of programmatic action represented by forest plan revision, this analysis assumes that management activities will be implemented to achieve the objectives and move toward or achieve the desired conditions for each of the resources described in the plan. Such an analysis is useful in comparing and evaluating revised plan alternatives on a forest wide basis, but is not appropriate for evaluating and comparing site-specific actions on the Tonto.

Assumptions used for analysis of the alternatives include:

- Watershed condition assessment is based on the components described in the Watershed Condition Framework.
- Water quality is assessed based on the Water Quality Standards identified by the Arizona Department of Environmental Quality.
- Salt River Project will continue to manage the operation of the reservoirs on Salt and Verde Rivers.
- The recently signed Travel Management Plan Record of decision will be implemented.

Methods for analysis

Following is a brief description of the methodologies and/or approaches used to evaluate direction of the alternatives related to watershed condition, water quality, and water yield and availability (quantity). The analysis was focused on how alternatives would either improve or impair the ability of the Forest to achieve desired conditions based on the initial assessment of the Forest's 6th code watersheds in 2011 and by the types of ecological response units within watersheds impacted by each alternative. Effects on water resources are not site specific because of the programmatic nature of this environmental impact statement. Much of the background information is excerpted from the Final Assessment Report of Ecological Conditions, Trends, and Risks to Sustainability for the Tonto National Forest (USDA Forest Service 2017a).

Water Quality

Water quality data reported in this environmental impact statement was obtained from the results of analysis reported by Arizona Department of Environmental Quality (2017). Water quality information provided by the state was updated from that in the Final Assessment Report of Ecological Conditions, Trends, and Risks to Sustainability due to the availability of more recent information. Water quality impacts will be discussed qualitatively.

4 The forest plan establishes riparian zones around all lakes, stream ecosystems (perennial and intermittent), springs, seeps, and wetlands. Riparian zones will be identified for land and vegetation within approximately 100 feet from the edges of these features. Other areas of identified riparian vegetation will also be included within riparian zones. Riparian zone width may vary based on ecological or geomorphic factors or by type of water body. These widths may be replaced by site-specific delineations during project planning/implementation.

Water Quantity – Surface Water

Information reported in chapter 3 about water yield and availability is primarily excerpted from the Final Assessment Report of Ecological Conditions, Trends, and Risks to Sustainability report USDA Forest Service 2017a). Some additional data has been incorporated into the trend discussion of chapter 3. Water quantity impacts will be discussed qualitatively.

Water Quantity – Groundwater

Groundwater use and quality is regulated by the State of Arizona. No modeling was conducted for the environmental consequences analyses.

Watersheds

An initial assessment of watershed conditions was made using the national watershed condition framework and assessment tool. Watershed condition was determined in accordance with direction in Forest Service Manual 2521.1. No modeling was conducted for the environmental consequences section.

Description of Alternatives and Plan Objectives for Water Resources

Features Common to Action Alternatives

The forest plan contains desired conditions that are common to all action alternatives. These desired conditions seek to:

- Support multiple uses on watersheds and high quality water for local and downstream communities without decline in long-term ecological condition.
- Meet or exceed applicable state water quality standards for ground and surface waters.
- Achieve properly functioning watershed conditions that exhibit high geomorphic, hydrologic and biotic integrity.
- Ensure the ecological components of watersheds are resilient to human and natural disturbances, including climate change.
- Ensure watershed conditions support groundwater recharge and discharge, and that groundwater discharge maintains water table elevations, supports base flows and water temperature in groundwater dependent ecosystems within their natural range of variability.
- Surface waters provide habitat for aquatic and riparian species.
- Water rights are acquired to provide for the needs of livestock, wildlife, recreation, and administrative uses and to maintain instream flows for streams flowing through the forest.

Watershed Objectives Common to Action Alternatives

- Ensure that at least two priority watersheds are identified at all times and develop Watershed Restoration Action Plans (WRAPs) to improve or maintain watershed condition.
- Implement at least one project identified in Watershed Restoration Action Plans developed for priority watersheds every year.
- Complete at least four aquatic habitat restoration projects every 10 years.
- Restore the function of 200 to 500 acres of nonfunctioning and functioning-at-risk riparian areas over a 10-year period, with emphasis on priority 6th code watersheds.

- Acquire state-based water rights for instream flow support for at least two streams threatened with dewatering, supporting highly valued resources (e.g. threatened or endangered species, species of conservation concern) or containing unique qualities (e.g. a perennial stream in the Sonoran Desert) within each ten-year period.

Wildlife, Fish, and Plants

In evaluating whether plan components from various alternatives provide the ecological conditions necessary to support at-risk species, we have focused on the following:

- Relevant information derived from the status of at-risk species (FSH 1909.12, ch. 10, sec. 12.55), as well as limiting factors, threats, and stressors to each at-risk species.
- The key habitat relationships of the species.
- Effects, influences, and contributions from other land ownerships and actions outside of the plan area in addition to those within the plan area.

In addition to disclosing potential future conditions, analyses may address current conditions within a context of historical ecological conditions.

In evaluating whether alternatives contribute to the recovery of federally listed species, we evaluate whether projected scenarios (1) maintain or restore habitats in the plan area to provide the ecological conditions necessary to contribute to recovery of threatened and endangered species, and (2) contribute to preventing candidate species from becoming federally listed in the future. Where possible, we have referred to recovery plans to determine what ecological conditions and management actions best contribute the recovery of threatened, endangered, proposed, or candidate status under the Endangered Species Act.

Analyses of species of conservation concern will use groupings, including by vegetation type and other ecological features, or conditions that threaten the viability of populations on the forest. When designing plan components (ecosystem and species-specific) to provide for ecological conditions that contribute to the recovery of threatened and endangered species that occur within the plan area, the forest has considered:

- Conservation measures and actions identified in the recovery plan for each threatened and endangered species.
- Limiting factors (for example, naturally small and isolated populations, climate change) and key threats to each threatened and endangered species.
- Guidance and suggestions from the U.S. Fish and Wildlife Service in the evaluation of existing conditions for threatened and endangered species and in the development of plan components that contribute to their recovery.
- Recovery efforts and partnerships beyond the plan area; this includes work with U.S. Fish and Wildlife Service, National Marine Fisheries Service, States, Tribes, other partners, landowners, and land managers to support an all-lands approach to species recovery.
- Supporting the reintroduction of listed species into historical habitat on National Forest System lands where appropriate, consistent with recovery plan objectives.
- Effects to aquatic threatened and endangered species downstream of the plan area that could be affected by actions within the plan area.

The development of or changes to plan components to provide for ecological conditions for threatened and endangered species should be based on a need to change the plan identified from the assessment of the ecological conditions necessary to contribute to their recovery and maintaining or restoring critical habitats (FSH 1909.12, ch. 10, sec. 12.55), or from information brought forward during the public and governmental participation process.

Coarse- and Fine-filter Approach

The 2012 Rule develops a species conservation model from the fundamental idea that species occurrence, species recovery, and population viability are determined largely by characteristics of the environment as expressed by features such as composition, structure, function, and connectivity of ecosystems, and the status of key ecosystem drivers. The Rule's species conservation model expands Hunter's (Hunter et al. 1989, 1990) coarse filter/fine filter approach and evaluates the capability of broad landscapes to support the occurrence of species and the recovery/persistence of populations based on the integrity of associated ecosystems.

The premise behind the coarse-filter/fine-filter approach is that native species evolved and adapted within the limits established by natural landforms, vegetation, and disturbance patterns prior to extensive human alteration. In addition, habitat loss and degradation are primary threats to many at-risk species. Consequently, species conservation is accomplished largely by restoring and maintaining the array of ecosystems across the planning area.

For many at-risk species (which tend to be rare, largely understudied, and difficult to observe), specific habitat components or threats to persistence are only vaguely understood, if not unknown entirely. In such situations, broad scale patterns in habitat constitute the only substantive information available on the status of species. Despite a lack of information on direct population consequences, habitat evaluation is often useful to suggest that a species status is likely to decline, improve, or remain unchanged.

Because most (if not all species) have strong relationships with the habitats they inhabit, we have included a broad analysis of ecosystem characteristics associated with at-risk species. Full, in-depth analyses of general habitat trends can be found in the environmental impact statement in the Vegetation and Fire, Riparian Areas, Watersheds, and Soils sections (volumes 1 and 2); however, key aspects are referenced and summarized in corresponding sections of this appendix. For some species, however, the coarse-filter alone may not be adequate, either because the reference condition is not achievable or because of non-habitat risks to species viability. In cases where coarse-filter, habitat related plan direction is insufficient to provide necessary ecological conditions, then additional, species-specific (or fine-filter) plan components, including standards or guidelines, have been included in the plan to provide such ecological conditions. On the Tonto National Forest, such plan components are rarely relevant to only a single species, but threats to species persistence and their accompanying plan components generally apply to groups of species.

Evaluating viability

In evaluating the effects of forest plan direction on population viability or persistence it is not feasible to conclude that a population simply is or is not viable. Populations of any size have an unknown probability of going extinct at some point in the future, and ecological conditions and dynamics, nature of threats, dynamics of particular species, and management actions all influence probability of persistence. Given the unknown probability of persistence (and therefore viability), the goal of this evaluation is to estimate the probability of persistence. Consequently, viability is best expressed through varying levels of risk. The risk assessment employed to evaluate species status is most strongly framed with a focus on limiting

factors and threats which demands a keen understanding of ecosystem dynamics and species natural history.

Comparison of alternatives

While providing ecological conditions that support at-risks species is required of all proposed alternatives, not every alternative will achieve this goal with the same level of certainty. Thus, our evaluation of effects consists of comparing the likelihood that each alternative will maintain viable populations of each species of conservation concern and contribute to the recovery of federally listed species.

Uncertainty

Generally, as time frames or spatial scales increase so does uncertainty. The analyses here assess risks and uncertainty with regards to the projected scenarios anticipated under each alternative, rather than providing an either/or determination of whether ecological conditions support viable populations.

For the vast majority of species identified as species of conservation concern, analyzing ecological conditions is principally a qualitative exercise. Quantitative analyses generally focus on habitat (extent, distribution, condition, etc.). Where known, we have considered species distribution.

In some cases, the ecological conditions to promote species persistence are not likely to be achieved. In such cases, we describe the potential outcomes of plan direction based upon resulting ecological conditions and estimate the probability that the amount, quality, distribution, and connectivity of environmental features will support a viable population of species of conservation concern.

Spatial Scale

In assessing whether projected conditions provide “sufficient distribution” will be based on the species natural history and, to the extent possible, historical distribution, the potential distribution of its habitat, and recognition that habitat and population distribution are likely to be dynamic over time.

Generally the scale of interest for this report focuses on populations that occur within the planning area and the threats to these species. However, because species are not constrained to forest boundaries, this evaluation will reflect the scale at which biological populations operate, considering the influence of population dynamics (immigration, emigration), and influences beyond the plan area. Similarly, some threats to species are also not tied to forest boundaries (e.g., disease, watershed condition, fire). These environmental conditions may also consider larger, regional scales, especially in cumulative analyses.

Temporal Scale

While an individual land management plan has an expected span of 10 to 20 years, this report will work to focus on timeframes that are biologically meaningful for the long-term persistence of species. Because the 2012 Planning Rule requires that plan components provide ecological conditions to support populations “with sufficient distribution to be resilient and adaptable to stressors” (36 CFR 219.19), it is not adequate in Forest Service evaluations to simply project species persistence until some arbitrary point in time. As such, this report will strive to assess both short-term and long-term risks that are relevant based on ecosystem dynamics, ecology of species, and on the time needed for conditions to respond to proposed management.

General Assumptions

- The forest plan provides a programmatic framework that guides site-specific actions but does not authorize, fund, or carry out a project or activity (including ground-disturbing actions). As a result, it

does not result in effects to wildlife but may result in indirect or cumulative environmental consequences from managing the Forest under this programmatic framework; these consequences are assessed in this final environmental impact statement.

- Land management plans may have implications, or environmental consequences, of managing the forests under a programmatic framework.
- Before ground-disturbing actions take place, they must first be authorized in a site-specific environmental analysis. Therefore, none of the alternatives would cause unavoidable adverse impacts or an irreversible or irretrievable commitment of resources.
- The forest plan's desired conditions, objectives, standards, guidelines, management area allocations, and suitability will be followed when planning or implementing new site-specific projects and activities.
- Laws, regulations, and policy regulations will be followed when planning or implementing new site-specific projects and activities.
- Section 7(a)(2) consultations: Terms and conditions and reasonable and prudent measures resulting from the U.S. Fish and Wildlife Service consultation on the programmatic framework of the forest plan will be followed when planning or implementing new site-specific projects and activities, unless modified by site-specific consultation.
- If a species is associated with a particular habitat, then the quality and quantity of habitat elements available to the species helps to predict its distribution and abundance within that habitat.
- Habitat abundance and distribution similar to that which supported associated species during conditions as a consequence of evolutionary time, will likely contribute to their maintenance in the future (Haufler et al. 1996). Therefore, habitat abundance and distribution similar to reference conditions will likely contribute to associated species maintenance in the future and the farther a habitat departs from those conditions, the lower the likelihood that it is sustainable and the greater the risk to viability of associated species.
- Risks to some species are the same as the risks to the habitats in which they occur. It was assumed that actions to address the risks or departures in these habitats would benefit the species as well.
- In general, the farther a habitat is departed from desired conditions (i.e., from reference or reference adjusted conditions), the greater the risk to viability of associated species and the less the alternative's viability effectiveness. Conversely, the closer a habitat is to desired conditions, the lower the risk to viability of associated species and the greater the alternative's viability effectiveness.
- Models of future conditions or consequences are probabilistic and show predicted changes given a particular set of assumptions, as discussed in detail in this final environmental impact statement.

Invasive species

Assumptions

All invasive species on the Tonto National Forest have the potential to increase beyond any reasonable efforts to offer some sort of control. History has repeatedly demonstrated that most invasive (weeds, aquatics, etc.) populations do not remain small for long. Growth rates can be exponential with an apparent lag time between initial infestation and subsequent extent. In order to meet the desired conditions and objectives for invasive species, targeted populations and organisms will need to be controlled through a coordinated forest wide approach using integrated pest management. The Tonto National Forest has a limited capacity in the anticipated 15-year life span of the revised plan to resolve many problematics

issues regarding invasive species (weeds, aquatics, etc.), moving the landscape forward toward the desired condition. The following are assumptions common to this report:

- Under all alternatives, there would a risk of infestation and spread of invasive plants and animals. Invasive plants compete with native plants; poison or injure livestock, wildlife, and people; reduce forage for wildlife and livestock; change natural fire regimes; and reduce recreation enjoyment because of many factors (such as thorns and allergies).
- Under all alternatives, project level analysis including but not limited to methods of treatment, survey work, and restoration occur at the project level.
- As new invasive organism(s) are detected, they are treated as they become established or even further established; as well as surveyed. A forestwide approach as directed by the desired conditions and other plan components will have a great benefit in controlling the spread of invasive plants. Regarding invasive species that are not plants coordinated efforts with municipal, county, state and federal agencies is a must to achieve desired conditions.
- Regarding ecological response units (terrestrial and aquatic) invasive species (e.g., Lehman's love grass, fountain grass, buffelgrass, tamarisk, arundo), once removed or treated to reduce impacts to ecosystem function, may be a short-term fix in many cases without some sort of integrated pest management intervention.
- Roads can serve as a key indicator for the risk of invasive plant species spread. Vehicles driven through populations of invasive plants often pick up seeds or other plant parts and transport these items to previously uninfected areas.
- Aquatic-based recreation has the potential to spread aquatic invasive in much the same way as other vehicular use, as well as fishing, boating, walking, and playing in streams and ponds.
- The Environmental Assessment for Integrated Treatment of Noxious and Invasive Plants (USDA Forest Service 2012b) has set parameters and methods of treatment to manage existing infestations of invasive plants at the forest level.
- Areas where ground-disturbing activities take place can serve as a risk indicator for invasive plant species as well as problematic species which can spread and become established. Logging equipment driven through populations of invasive plants can pick up seeds and/or other unwanted components and transport them to previously uninfected areas. Areas of disturbed and exposed soil are ideal locations for the establishment of invasive plants. Logging debris and slash disposal also produces disturbed sites with little or no native ground cover that could provide locations for the establishment of new infestations of invasive plants.
- There are potential effects from treatments used to mitigate damage caused by uncharacteristic wildfire. Burned areas may require some form of treatment to minimize flooding and soil loss. Primarily these treatments consist of mulching (covering the ground with some form of straw) and seeding. Both the introduction of straw and seed pose risk for the spread and establishment of invasive weeds. In all alternatives the use of certified weed-free straw and seeds has to be a requirement because of the potential level of risk.
- Under all alternatives, grazing contributes to the risk of invasive plant infestation and spread. Grazing and trampling cause (1) the removal of native plants, clearing vegetation, (2) destruction of soil crust and preparation of weed seedbeds through hoof action by establishing openings and uncovering soil, and (3) the transport and dispersal of seeds from one area to another .All of these actions favor the establishment and spread of invasive plants; current levels of infestations are not expected to be reduced by livestock grazing.

- In wilderness areas, although the Tonto National Forest has an invasive species inventory system, weeds and other invasive/ undesirable species have not been intensively surveyed. For infestations within these areas the ability to use integrated pest management tactics available to the forest (such as chemical, cultural, and mechanical treatments) could be restricted or prohibited; or would be unfeasible. This would also limit cost-effective options for current and potential future weeds and other invasive / undesirable species treatments in these areas, many of which are unknown at this time.
- In the face of climate change the forests may be more vulnerable to invasive species, including insects, plants, fungi, and vertebrates. Ecosystem change may arise from large-scale high-severity wildfires that lead to colonization by invasive species (Joyce et al. 2009).
- When acquiring or conveying non-federal lands by purchase or exchange, assume invasives are present within the new area. Many of these areas were once private and natural resource management wasn't a priority. That can bring a high-risk potential for invasive and undesirable species.
- In the Salt River Horses Management Area, there will be disturbance and opportunities for weed introduction and establishment. In order to move towards the desired condition for invasive weeds in this unique management area, there need to be integrated pest management plans for treatment where there are horses.
- Where horses and livestock conflict, interactions between methods of treatment and resource are managed at the project level.

Methods

The Invasion Curve

Regardless of the alternative, invasive species would continue to be introduced and spread, and the Forest would continue its programmatic survey and treatment of invasive species. Disturbances (such as wildfire) would continue to occur, creating areas where invasive species can become established. An adequate understanding of what and where to treat and survey for invasive species becomes a critical component for an invasive species program. For strategic planning and types of action against invasives, we use the invasion curve (figure 5). The invasion curve shows the feasibility of managing an invasive plant, insect, disease (fungi, bacteria, virus), or animal starting from the time the invasive species is introduced. Over time, the feasibility of eradication decreases, and the cost increases, until it is no longer possible; and restoration becomes a necessity.

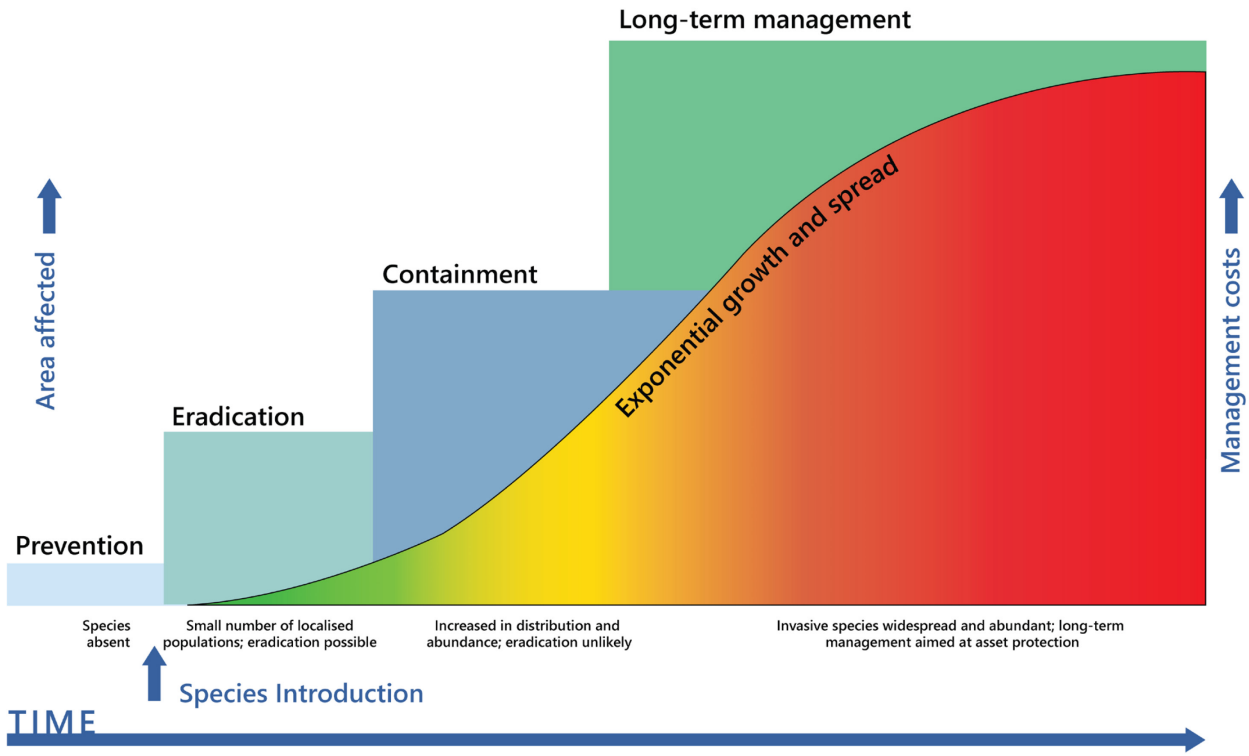

Figure 5. The invasion curve for invasive species
(source: Invasive Species Council https://invasives.org.au/invasion-curve/)

The following characterization of the three phases of the invasion curve is taken from the Cornell Cooperative Extension Office for Chautauqua County (http://chautauqua.cce.cornell.edu/environment/invasive-nuisance-species/invasion-curve)

Green: The invasive species is introduced to an ecosystem.

Green-yellow: The invasive is detected soon after its introduction making prevention and complete eradication possible if steps towards eradication are taken promptly. Public awareness usually begins later. If no action is taken before this point, eradication is unlikely and intense efforts are needed to eradicate and prevent further spreading of the invasive.

Orange-red: The plant is detected too late or effective management plans are not implemented in time, making eradication impossible. This leaves local control and management as the only options.

Early Detection and Rapid Response

Traditionally, new weed invasions are not detected or addressed until they are so dense and widespread that eradication is not feasible. Early detection and rapid response is an approach to weed control that emphasizes controlling new, invading weeds while the populations are localized and small enough to be contained or eradicated. Costs for early detection and rapid response are typically far less than the cost of containing and managing a well-established large population of weeds. Early detection of new weed species involves diligent monitoring for new invasions, and requires the ability to correctly identify existing weeds and potential invaders. Once a new, high priority weed has been detected in an area, eradication (complete elimination with no weeds persisting in the area) of the weed is the goal. Research indicates that eradication efforts are most successful for infestations less than 1 hectare (2.47 acres) in

size. If the weed is not likely to be eradicated due to a constant source of weed invasion, containment and reduction of spread of the weed can reduce the damage caused using an integrated pest management strategy specific to the weed.

Integrated Vegetation Management and Integrated Pest Management

Integrated pest management is a decision-based process involving coordinated use of multiple tactics for optimizing the control of all classes of pests (insects, pathogens, weeds, vertebrates) in an ecologically and economically sound manner. For the integrated pest management practitioner, this implies the following: simultaneous management of multiple pests; regular monitoring of pests, and their natural enemies and antagonists as well; use of economic or treatment thresholds when applying pesticides; and integrated use of multiple, suppressive tactics (Ehler 2006).

Invasive species treatment measures (table 16) are a part of a broad strategy of integrated vegetation management. It should be noted that this broad strategy of management can be applied to other invasive species outside of plants at certain outlooks (Integrated Pest management). Treatment of existing populations of other invasive species (non-plants) would /or may require cooperation from other agencies, as well as additional National Environmental Policy Act (NEPA) analysis.

Table 16. Invasive species treatment measures

Goal	Strategy
Prevention and Detection	Conduct fire management activities in such a manner that invasive species are not introduced or spread during fire suppression or prescribed burn projects. Educate the public, employees, and permittees to identify and report invasive species. Ensure all contractors and permittees operating on the National Forest understand and comply with the Forest's Noxious Weed Policy. Conduct weed surveys, as funding allows. Conduct invasive species assessments
Treatment of existing populations	Implement an integrated vegetative management strategy using cultural, physical, mechanical, biological, or chemical methods of control. Treatments have to be in aliment with forest NEPA for actions to be performed.
Monitoring	Monitor effectiveness of control methods for a duration of time following treatment. Monitor all known populations, noting density and area of infestation.
Restoration	In areas where there are large infestations of an invasive species, where treatment would result in expanses of bare ground, restore native vegetation following treatment. Restoration efforts would mainly involve erosion control and planting of native species. Restoration may also be needed after large disturbance events such as floods or fire, to prevent invasive plants from establishing.
Coordination, Cooperation and Education	Continue ongoing cooperation efforts with other agencies and landowners, and encourage new cooperative efforts as appropriate. These efforts should include lands of all ownerships and jurisdictions to ensure overall weed control. Continue to develop and implement educational and public awareness materials.

Adaptive Management Strategy

Weed infestations are dynamic; even the most complete inventory can never cover all infested areas and will quickly be out of date. During the life of this plan, invasive organisms are likely to be introduced to new locations by various vectors of spread. It is also likely that additional species of invasive plants (not limited to) not identified in tables above may be discovered on the forest over the term of the project. Therefore, an adaptive management strategy will be used in the proposed invasive species management program to provide direction for invasive species management activities on the forest. An adaptive management strategy allows decision makers to take advantage of new information, as it becomes available for improvement of planning and management. The Forest will respond to new infestations of invasives by completing site-specific reviews to determine impacts to proposed, threatened, endangered and sensitive plants, wildlife and fish, as well as the public, heritage resources, or plant species of significance to local tribes. New populations of invasive plants are treated when they are found as directed by the Tonto National Forest Environmental Assessment for Integrated Treatment of Noxious or Invasive Plants (USDA Forest Service 2012b). If a new or improved treatment product becomes available, it may be considered for use following National Environmental Policy Act analysis.

Project Monitoring

Monitoring is the process of collecting information to determine the effectiveness of management actions in meeting prescribed objectives. Weed management monitoring on the Tonto National Forest focuses on the density and rate of spread of invasive exotic plant species (not limited to) and the effects these aggressive plants have on natural resources. Also of interest is the effectiveness of prescribed actions on the target plant and the responses of nontarget vegetation. Monitoring will help determine if our prescriptions and activities are accomplishing the goals established for each species.

Implementation monitoring

Implementation monitoring tracks at a minimum, target species, treatment type, location, acres, timing of actions, and mitigation; and other metrics as needed. Every project with an invasive species element is monitored prior to and during each project. Monitoring reports are part of all contracts, and contractors are required to report on such items as: method used, name and amount of herbicide used, dates sprayed, and situation and weather conditions during herbicide application. This information is part of the Forest's annual reporting.

Environmental Effects Monitoring

Effects on human health resulting from exposure to daily treatment operations, accidents, and long-term exposure are monitored through documentation in project records, including worker and public health complaints.

Potential non-target or offsite effects, from treatment types expanding beyond the treatment area, leaching, runoff, or aerial drift in the case of herbicide. Best management practices are applied to minimize predicted undesirable environmental effects. Projects will be monitored after completion for unintended effects.

Monitoring will be used to determine if biocontrol agents are adversely impacting native plants and if biocontrol agents are able to survive and successfully reproduce under the environmental conditions of the project area.

Desired Conditions and Objectives for Invasive Species

Table 17 describes the desired conditions and objectives for invasive species management.

Table 17. Desired conditions and objectives for invasive species

Management Direction	Description
Desired conditions	Invasive and undesirable species at population levels do not disrupt ecological functionality, affect the sustainability of native species, cause economic harm, or negatively impact human health.
Objectives	Treatment and control of invasive species on 200 – 1500 acres should occur annually.
Objectives	Treat and control invasive species on 2 – 10 stream reaches every five years. Maintain follow-up treatments to prevent regrowth, establishment, or spread of treated and other invasive species.

Soils

Methods

Soil condition and soil erosion hazard are directly linked to the ability of the soil to withstand disturbances from management activities and natural events, while maintaining site productivity and sustainability of the soil resource. These characteristics are used to analyze the reference and current conditions and future trends of the soil resource. The soil erosion hazard rating reflects inherent site and soil characteristics. Soil condition rates soils as they exist currently and reflects the effects of management and disturbance history. Soils were generally assumed to be in satisfactory soil condition under reference conditions.

Soil Condition

Soil condition is an evaluation of soil quality based on an interpretation of factors which affect vital soil functions. Soil quality is the capacity of the soil to function within ecosystem boundaries to sustain biological productivity, maintain environmental quality, and promote plant and animal health (Doran and Parkin 1994). The interrelated functions of soil hydrology, soil stability, and nutrient cycling are evaluated to assess soil condition.

- Soil hydrology: This function is assessed by evaluating or observing changes in surface structure, surface pore space, consistency, bulk density, and infiltration or penetration resistance. An Increase in bulk density or decrease in porosity results in reduced water infiltration, permeability, and plant-available moisture.
- Soil stability: Erosion is the detachment, transport, and deposition of soil particles by water, wind, or gravity. Vascular plants, soil biotic crusts, and litter cover are the greatest deterrents to surface soil erosion. Visual evidence of surface erosion may include rills, gullies, pedestalling, soil deposition, erosion pavement, or loss of the “A” (surface) horizon. Erosion models are also used to predict on-site soil loss.
- Nutrient cycling: This function is assessed by evaluating plant community composition, litter, coarse woody material, root distribution, and soil biotic crusts. These indicators are directly related to soil organic matter, which is essential in sustaining long-term soil productivity. Soil organic matter provides a carbon and energy source for soil microbes and provides nutrients needed for plant growth. Soil organic matter also provides nutrient storage and capacity for cation and anion exchange.

Soil condition was evaluated using Terrestrial Ecosystem Unit Inventory data for the Tonto National Forest in conjunction with the Technical Guide for Soil Quality Monitoring in the Southwestern Region (2013). A soil condition category rating (described below) was determined for each Terrestrial Ecological Unit Inventory map unit based on the three soil functions listed above; the Terrestrial Ecological Unit

Inventory soil condition classes were aggregated for the respective ecological response unit (USDA Forest Service 2014a, Wahlberg et al. 2013).

Soil Condition Categories

Ecological response units are assigned a soil condition category which is an indication of the status of soil functions. Soil condition categories reflect changes in soil function resulting from both planned and unplanned disturbances. Current management activities (such as adaptive management for grazing, use of soil quality guidance, etc.) provide opportunities to maintain or improve soil functions that are critical in sustaining soil productivity. The following is a brief description of each soil condition category:

- 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.
- Impaired: Indicators signify a reduction of soil function. The ability of soil to function properly has been reduced or there exists an increased vulnerability to degradation. An impaired rating should signal to land managers a need to further investigate the ecosystem to determine causes and degrees of decline in soil functions. Changes in management practices or other preventative actions may be appropriate.
- Unsatisfactory: Indicators signify that loss of soil function has occurred. Degradation of vital soil functions results in the inability of soil to maintain resource values, sustain outputs, and recover from impacts. Soils with an unsatisfactory rating are candidates for improved management practices or restoration designed to recover soil functions.
- Unsuited: Areas rated unsuited are those where geologic erosion rates are greater than soil formation rates. Soils are inherently unstable and may occur on steep slopes. These soils are generally associated with badlands and other miscellaneous areas.

Soil condition is influenced by management. Existing management activities need to be evaluated to determine if the current management activity is contributing to the loss of soil function. In some cases, current management activities may not have caused the loss of soil function but may be preventing recovery. Management activities that slow or prevent recovery of soil function should be avoided. Satisfactory soil condition (soil quality) is important in maintaining long-term soil productivity, which is key to sustaining ecological diversity. Unsatisfactory and impaired soil conditions have resulted in the reduced ability of the soil to grow plants and sustain productive, diverse vegetation.

Very little quantitative data exist to measure historical soil condition. However, some qualitative and quantitative inferences can be made, providing insight into historical soil condition by using knowledge about present disturbances and their effect on soil stability, soil compaction, and nutrient cycling (table 18). Reference conditions generally estimate pre-European settlement conditions. Historically (without anthropogenic disturbance), soil loss, soil compaction, and nutrient cycling would probably have been within functional limits to sustain soil function and maintain soil productivity for most soils that are not inherently unstable; the exception being during cyclic periods of drought and possibly local areas impacted through non-domestic herbivory. Natural flood disturbance would have had a limited effect on the extent of soil loss, only causing accelerated erosion adjacent to stream channels or floodplains. Drought may have reduced the amount of protective vegetative groundcover resulting in accelerated erosion during prolonged rainstorms. Most areas that are currently impaired and unsatisfactory for soil condition would probably have been historically satisfactory for soil condition.

Table 18. Estimated historic versus current soil condition percentages on the Tonto National Forest

Soil Condition Class	Historical Percentage	Current Percentage	Difference between Historical and Current
Satisfactory	88 percent	35 percent	53 percent
Impaired	Low	32 percent	32 percent
Unsatisfactory	Low	16 percent	16 percent
Unsuited	16 percent	16 percent	16 percent

The most productive soils (satisfactory soil condition) historically and currently are within the interior chaparral, mixed conifer-frequent fire, ponderosa pine-evergreen oak, ponderosa pine forest, Fremont cottonwood-conifer, and ponderosa pine/willow ecological response units. These ecological response units produce high amounts of biomass and organic matter to maintain soil cover to ensure stability of the soil and support nutrient cycling.

Ecological response units that historically were very productive and assumed to have satisfactory soil condition, but are now impaired through a reduction in soil function, include the narrowleaf cottonwood/shrub and the Sonoran paloverde- mixed cactus desert scrub ecological response units. The lack of effective vegetative groundcover and organic matter tell rather a complex story. In pre-settlement times organic matter and effective ground cover would have been low, but soil condition would have been satisfactory.

The pinyon-juniper grass, Fremont cottonwood/shrub, sycamore-Fremont cottonwood and Sonoran-Mojave creosote-bursage desert scrub ecological response units are all at least 40 percent unsatisfactory (figure 6). In these ecological response units, lack of vegetative groundcover (observed mainly as insufficient litter, basal area, and subsurface roots) may be contributing to decreased hydrologic function and stability.

Additionally, some soils are considered unsuited-inherently unstable. Unsuited-inherently unstable soils are those in which their geologic formation and geomorphic properties (for example: steep slopes) are naturally active, and soil erosion has existed historically and will continue. Unsuited-inherently unstable soils are dispersed across the landscape and occur primarily in the juniper grass and Madrean encinal woodland ecological response units.

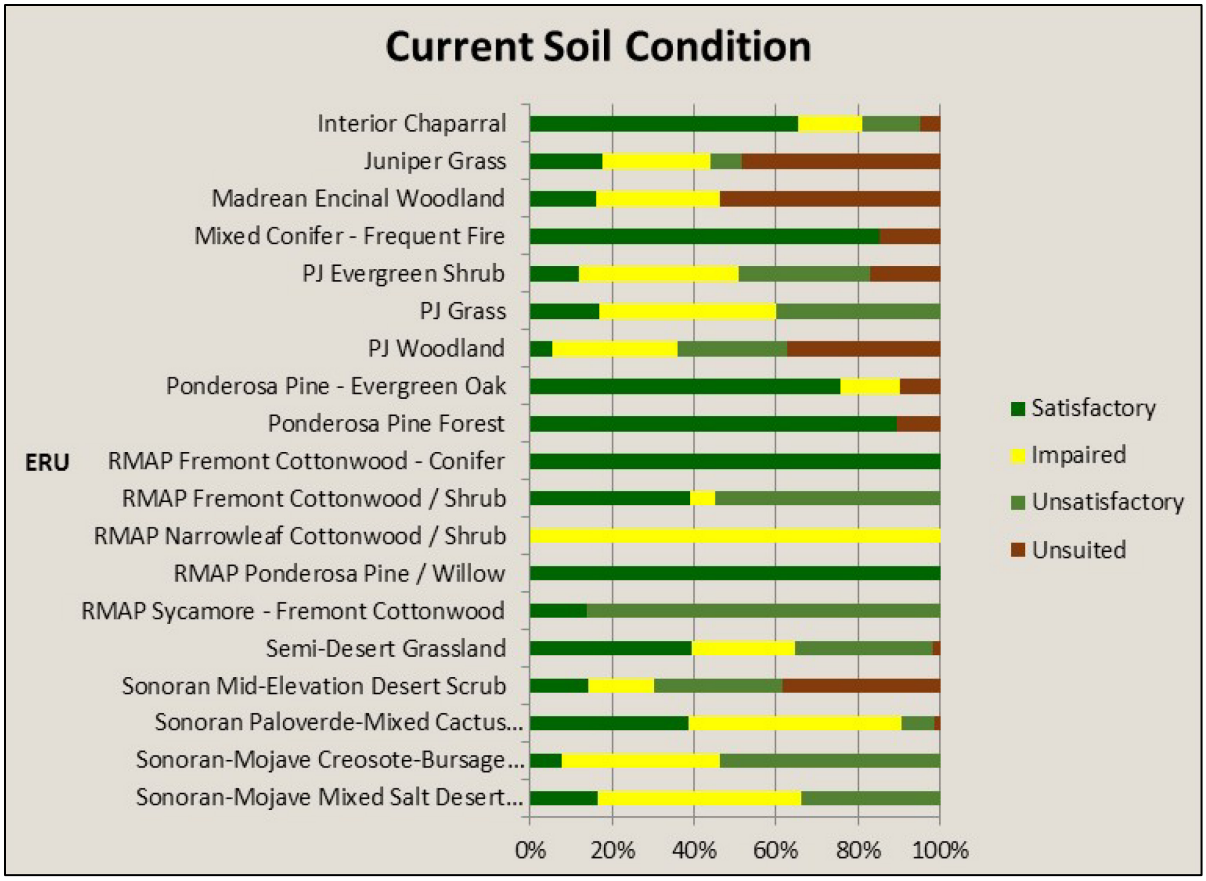

Figure 6. Current soil condition on the Tonto National Forest for the major upland and riparian ecological response units

The data show at least 50 percent impaired and unsatisfactory soils in over half (53 percent) the ecological response units, indicating a need for change in current management, particularly in the pinyon-juniper, Sonoran Desert, and the majority of the riparian ecological response units.

Until unmanaged herbivory is controlled and the frequency and magnitude of disturbances occur within the historic range of variation (Schussman and Smith 2006), the trend will continue to move away from reference condition at the same, or at an increased, rate. This will affect soil productivity, which will in turn affect forage production and other resources on the Tonto National Forest. As with erosion hazard, soil condition trends are similar on both private and public lands. However, on adjacent National Forest System lands, soil condition is improving to satisfactory due to changes in management. With a change in current management, some factors of soil condition (like overstory canopy and groundcover) may improve quickly. Other factors take a long time to improve (recovery of lost topsoil) and could impact resources for quite some time.

Soil Erosion Hazard

Soil erosion hazard is the predicted soil loss resulting from the complete removal of vegetation and litter. Slope, soil texture, and vegetation type greatly influence soil erosion hazard rating. It is an interpretation based on the relationship between the maximum soil loss and the tolerable (threshold) soil loss at a site. Soils are given a slight, moderate, or severe erosion hazard rating.

- A rating of slight indicates the maximum soil loss does not exceed the threshold; therefore, the loss of the soil production potential is of low probability.
- A moderate erosion hazard indicates that the loss in soil production potential from erosion is probable and significant if unchecked.
- A severe erosion hazard rating indicates that the loss of soil production potential from erosion is inevitable and irreversible if unchecked.

These ratings are useful in identifying areas where erosion control measures should be evaluated before the soil surface has been exposed by management activities including fuel wood cutting, timber harvest, thinning, grazing, prescribed burning, mining, or other disturbances. These ratings are also useful in identifying areas where soil disturbance should be minimal, and where there would be the best response to seeding after wildfire.

Erosion hazard was determined based on percent slope for this assessment. The severe erosion hazard class includes ecological response units occurring on steep landforms with a slope of greater than 40 percent (mountain slopes, escarpments, hills), primarily interior chaparral, juniper grass, mixed conifer-frequent fire, pinyon-juniper woodland and ponderosa pine forest (figure 7). Where these systems occur in watersheds with excessive fuel loadings and uncharacteristic disturbance regimes, the potential risk for accelerated soil erosion exceeding thresholds and subsequent runoff is high. Sites of predominantly moderate erosion hazard on moderately sloping (15 to 40 percent) landforms support the pinyon-juniper evergreen shrub, ponderosa pine - evergreen oak, semi-desert grassland, and Sonoran Mojave mixed salt desert scrub ecological response units. Sites with predominantly slight erosion hazard ratings occur on moderately sloping to nearly level landforms (0 to 15 percent slope) including piedmont plains, alluvial fans, valley plains, stream terraces, and floodplains and support the pinyon-juniper grass, Sonoran-Mojave creosote-bursage desert scrub and all riparian ecological response units. Although these ecological response units have low erosion hazard potentials, soil loss from lack of vegetative groundcover contributes to unsatisfactory and impaired soil conditions.

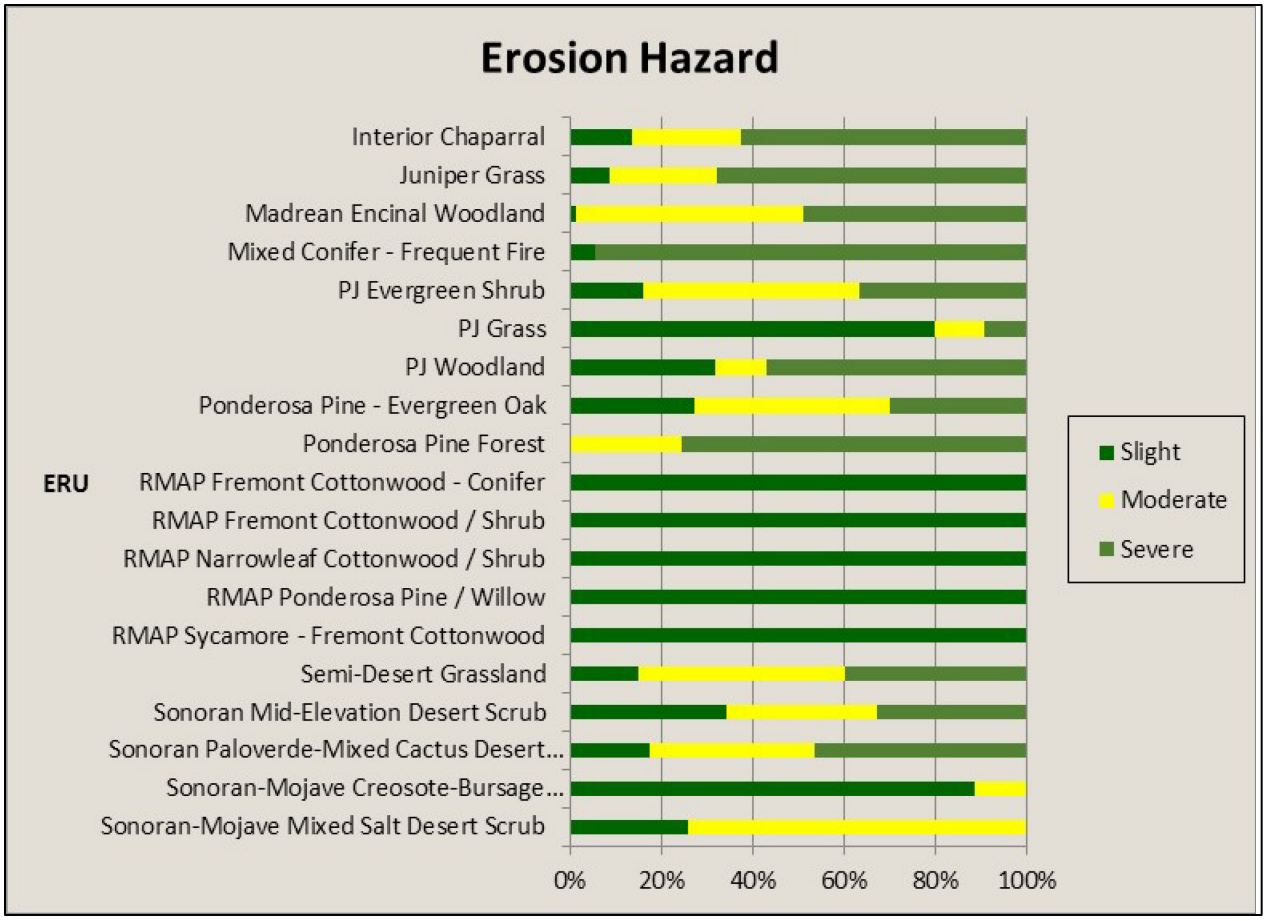

Figure 7. Erosion hazard on the Tonto National Forest for the major upland and riparian ecological response units

Assumptions

Under all alternatives, project level analysis will be used to determine exact ground disturbance. Ground-disturbing projects, with respects to soils, under all alternatives will be analyzed and explored at the project level.

The magnitude and extent of soil disturbance associated with these areas, settings or activities would be very limited in extent and the magnitude of soil disturbance would be limited at the forest and ecological response unit level. Consequently, implementation of these proposed activities is not expected to pose risks to soil condition or long-term soil productivity.

Soil conditions within riparian areas are tied closely to proper functioning condition. Riparian areas that are functioning properly have satisfactory soil condition. These soils have adequate vegetation to withstand bank erosion from high flows and trap sediment to form stable floodplains. Functioning-at-risk or not functioning riparian areas generally do not have stable, productive soils. During high flows, ground cover and vegetation are generally not adequate to protect soils; the result is impaired soil condition. Soil condition trends in riparian areas are tied directly to the predicted riparian area trends.

Macrobiotic crusts are affected directly through physical damage and alteration of habitat. Compressional forces reduce pore space, reducing hydrologic function, which could provide less water and nutrients to biological crusts. Across all alternatives, it is estimated that ongoing, improved cattle management on the

forests would benefit biological crusts through decreased trampling as allowable use is aligned with available forage and capacity of the land.

Mechanical treatments may impact soil hydrologic function, soil stability, and nutrient cycling through soil compaction and removal of ground cover. Soil compaction, which reduces the soil's ability to absorb water and nutrients, could result from timber harvesting operations. The amount of soil compaction is dependent on harvest methods, amount of slash in traffic lanes, operator technique, and soil conditions and properties.

Air Quality

Air quality analyses depend on an understanding of both its regulatory and policy-driven aspects and of the nature of air pollutant emissions and their consequent airborne concentrations. All such analyses, including this one, rely on this twin understanding. For example, a through air quality analysis for the Tonto National Forest was completed in 2015 (AES 2015). This work is an example of the knowledge of and the exposition of the air pollutant emissions and air pollutant concentrations that affect the forest. Various important regulatory aspects, contained in that report, have been presented here as necessary, such that a general-audience reader will be able to navigate the air quality landscape.

For this analysis, air pollutants were separated into two categories: pollutants from sources outside the Tonto National Forest and pollutants from sources within the Tonto National Forest. Sources contributing some of the six regular (aka "criteria") pollutants from outside the Tonto National Forest all air pollutant emissions from the Phoenix urban area, nearby copper mining and smelting emissions, motor vehicle emissions from highways in or near the Tonto National Forest, and regional haze contributors (particulate matter emissions), including road dust and smoke from prescribed fires and road use. By far the most important source area is the Phoenix urban area, whose emissions are transported into the forest by prevailing daytime winds from the west and southwest.

The analysis is based on current air quality conditions, as described in the 2017 Final Assessment Report of Ecological Conditions, Trends, and Risks to Sustainability (USDA Forest Service 2017a). The current conditions are used as a baseline to measure effects and trends to air quality from the proposed management activities for each of the four alternatives analyzed in the environmental impact statement. An examination of air pollutant emissions and measured concentrations of air pollutants within and near the Tonto National Forest is also considered. Emission estimates are made by both public and private sector entities on a regular basis, sometimes as a condition of an air pollution permit, sometimes as part of a technical analysis that forms part of what is called a State Implementation Plan, and sometimes for other reasons. Sources of data, such as inventories of emissions of ozone precursors (volatile organic compounds and nitrogen oxides) and of particulate matter from the Maricopa County Air Quality Department, were referenced. These emission reports enable one to gage the extent of Phoenix urban emissions, some of which are transported into the forest. As for measuring air pollutant concentrations, most of this work is done by government agencies, but private-sector entities also perform these measurements, often as a condition of an air pollution permit. This data provides convincing evidence of exactly how clean or dirty the air actually is. These measurements are done at fixed sites on the land surface and depend on two types of instruments: continuous electronic instruments and filter-based instruments, the latter of which are serviced by trained technicians. These agencies, after reviewing the concentrations in a quality assurance process then report the data to the Environmental Protection Agency's national archive of air pollutant concentration data. The analyst can also obtain the concentration data from the relevant monitoring sites, interprets the data, and then explains it in such a way that the general public can understand it.

In the analysis for this air quality resource for the Tonto National Forest, two assumptions have been made:

- Outside emissions of air pollutants would either stay constant or would decrease during the planning period.
- Proposed forest restoration activities would occur to the extent necessary to achieve the desired conditions and objectives of each alternative and would adhere to air quality regulations and standards as set forth by the Arizona Department of Environmental Quality.

Pollutants from urban Phoenix and from near-by copper mining facilities have been adversely impacting air quality and visibility on the Tonto National Forest for decades. Because of these emissions, many of which are transported into the Tonto National Forest, air quality within and near the forest does not meet four federal standards. The first is ground-level ozone, whose precursor emissions of hydrocarbons and nitrogen oxides come from the Phoenix area, and which has exceeded the standard in recent years at Queen Valley and at the Tonto National Monument. The second, third, and fourth standards are for sulfur dioxide, lead, and PM_{10}, which have been exceeded some 20 km south of the nearest forest property at the copper smelting facility in Hayden. This region surrounding Hayden is nonattainment for these three pollutants as of 2021 (EPA, 2021). In addition to Hayden, the copper mining and smelting activities in the Miami-Globe area have also led to this region being a nonattainment area for sulfur dioxide and PM_{10}. The area is a moderate nonattainment area for PM_{10} in 1992 – 2021 and for sulfur dioxide in 2013 – 2021 (EPA, 2021). Unlike Hayden, these mining activities take place within the domain of the Tonto National Forest, so their effects are much more immediate and substantial

Our assumption is that sources of air pollution from outside the Tonto National Forest, such as the emissions from copper mining and smelting would likely remain the same or decrease in all alternatives, as would emissions from all the activities of urban Phoenix. Some contributors to regional haze related to wildfire, road dust, and windblown dust would increase. The State's source emission projections describe decreases in sulfur dioxide, nitrogen oxides, elemental carbon, and volatile organic compounds. Increases are projected in organic carbon, ammonia, and fine and coarse particles (ADEQ, 2011). As discussed above, these haze pollutants are monitored at Queen Valley, Tonto National Monument, and in the Sierra Ancha Wilderness area by the IMPROVE, 2021 (IMPROVE, 2021) program.

Timber Suitability Analysis and Planned Timber Sale Program

Timber production is the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 CFR 219.19). Timber production activities can contribute to social, economic, and ecological sustainability. The National Forest Management Act requires that the agency determine the suitability of National Forest System lands for timber production and has specific requirements for timber suitability analysis in land management plans. Note that there is a distinction between timber harvest as a resource use (that is, timber production) and timber harvest as a management tool to achieve desired conditions. Timber production is a land management strategy to manage forests for perpetual sustained yield, yielding a periodic production of timber products. It does not imply maximizing timber yield, only that periodic harvest and regeneration of forestlands will be planned and scheduled on a periodic perpetual basis. Timber production can also be used as a tool to develop and maintain desired conditions on lands identified as suitable for timber production. On lands classified as not suitable for timber production, timber harvest may be used as a tool to achieve desired conditions.

Phase 1: Lands that may be suited for timber production

Identifying land that may be suited for timber production is the first phase in the process of determining lands that are suited for timber production. This preliminary classification is made prior to the consideration of objectives and desired conditions considered as part of the forest plan revision process, and excludes National Forest System lands that are not suitable for timber production based on the following criteria:

A. Land that is not forested, identified by having less than 10 percent canopy cover potential at maturity occupation by conifer trees of any size or having a non-forest uses (powerline clearings, residential or administrative sites, and improved pasture).

B. Known environmental factors (e.g., poor site conditions) exist that preclude reasonable assurance that restocking can be achieved within 5 years of final regeneration harvest.

C. Technology to harvest timber is not currently available without causing irreversible damage.

D. Timber production is prohibited by statute, executive order, regulation or where the Secretary of Agriculture or the Chief of the Forest Service has withdrawn the land from timber production. Examples include designated wilderness areas, designated wild river segments, research natural areas or other designated areas where timber production is specifically prohibited.

Forest lands that remain after this initial screening (following criteria A-D) are termed “lands that may be suited for timber production,” and do not vary by alternative.

Forested and Non-forested Lands (Criteria A)

The total forest service acres on the forest is 2,864,080. The terrestrial ecological unit inventory (TEUI) data for the Tonto National Forest was used to filter forested and non-forested areas and to assess the ecological capability for timber production on the forest. This was done by compiling a list of all terrestrial ecological unit inventory units that intersect the forest boundary. Warm and dry climate classifications that represented marginal growth conditions for ponderosa pine production were filtered out by removing terrestrial ecological unit inventory map units with a climate class 5 (-1) and below. While not always ideal conditions for preferred timber species, cool and wet climate classes (above 5 (-1)) were included because they have the potential to support other tree species and represented forested

areas. Based on the plant community composition and canopy cover, terrestrial ecological unit inventory map units that had less than 10 percent tree cover potential at maturity were removed from the analysis. In applying the above criteria, the resultant acres of non-forested land on the Tonto National Forest is 2,519,484 acres.

Lands not Suitable for Timber Production due to Technical Reasons (Criteria B and C)

The forested terrestrial ecological unit inventory map units remaining after the first screening were professionally evaluated by forest specialists to determine final suitability based on soil and site productivity attributes/interpretations in the terrestrial ecological unit inventory reports. See table 19 below for a list of the terrestrial ecological unit inventory map units determined to not be suitable for timber production. In general, the following conditions resulted in the exclusion of terrestrial ecological unit inventory map units from the suitable timber base (most of the time through a combination of factors and conditions):

- The presence and dominance of lithic soils suggest lower restocking potential due to shallow soils.
- Not easily reforested within 5 years following final regeneration harvest due to low reforestation potential, soil conditions, and climate factors.
- Low site indices (in general values lower than 70) suggest inadequate restocking potential and low site productivity.
- Severe erosion potential and mass wasting suggest timber harvest may cause irreversible damage.
- Irreversible damage to the site and soil productivity due to highly erosive or unstable soil conditions.
- Areas susceptible to irreversible damage; generally areas with sensitive soil types and steep slopes.

Table 19. Terrestrial ecological unit inventory (TEUI) map units not suited for timber production

Forested TEUI Map Unit	Inadequate restocking (criteria B)	Irreversible damage (criteria C)	Reason not suited for timber production
502	No	Yes	Highly erodible soils, cobbly, and very steep slopes.
512	No	Yes	Highly erodible soils and very steep slopes.
613	No	Yes	Highly erodible soils, and very steep slopes.
5103	Yes	Yes	Highly erodible soils, low productivity, and very steep slopes.
5252	Yes	Yes	Highly erodible soils, low productivity (clayey soils), and very steep slopes.
5452	Yes	Yes	Highly erodible soils, low productivity, and very steep slopes.
6252	No	Yes	Steep slopes and cobbly soils.
6368	No	Yes	Poorly developed soils and very steep slopes.
6405	No	Yes	Very steep slopes and many rock outcrops
6652	No	Yes	Poorly developed soils and very steep slopes.
9459	No	Yes	Poorly developed soils and very steep slopes.

In applying the above criteria, the resultant acres of lands not suited for timber production due to technical reason on the Tonto National Forest is 136,542 acres.

Lands Withdrawn from Timber Production (Criteria D)

Following criteria D (lands withdrawn from timber production), designated wilderness areas and designated wild segments of wild and scenic rivers were removed from the suitable timber base. This resulted in 8,692 acres of lands withdrawn from timber production on the Tonto National Forest.

Phase 1 Summary: Lands that May Be Suited for Timber Production

Based on this initial suitability analysis, the Tonto National Forest includes 199,362 acres that may be suited for timber production (see table 20 below). These National Forest System lands are termed "lands that may be suited for timber production," and do not vary by alternative in the environmental impact statement.

Table 20. Timber production suitability classification from phase 1

Land Classification Category	Acres
A. Total National Forest System lands in the plan area	2,864,080[1]
B. Lands not suited for timber production due to legal or technical reasons (including non-forested lands)	2,664,718
C. Lands that *may* be suited for timber production (A-B)	199,362

1 This number reflects only National Forest System lands within the administrative boundary of the Tonto National Forest. All lands of other ownership have been removed, therefore there are fewer acres than land within the Tonto National Forest boundaries.

Phase 2: Lands suited and not suited for timber production based on compatibility with desired conditions and objectives

The second and final phase of the timber suitability analysis determines which of the lands that *may be suited* for timber production (identified in phase 1) *are* suited for timber production based on the forest plan or an alternative. This is done by assessing the compatibility of timber production with desired conditions, objectives and other areas recommended by alternative. Lands and areas that met the following criteria were defined as suitable for timber production:

- Timber production is a desired primary or secondary use of the land.
- Timber production is anticipated to continue after desired conditions have been achieved.
- A flow of timber can be planned and scheduled on a reasonably predictable basis.
- Regeneration of the stand is intended.
- Timber production is compatible with the desired conditions or objectives for the land.

On lands not identified as suitable for timber production in this phase, harvest may still occur to protect or enhance multiple-use values other than timber production. Common examples include salvage, sanitation, public health, or safety, but may also include various other restoration activities. For example, meadow restoration may require cutting encroaching trees. While this activity may produce timber, but the area treated would have objectives other than timber production (e.g., keeping the meadow open as per desired conditions for that vegetation type) and would not be identified as part of the suitable land base.

For some special areas (e.g., recreational segments of wild and scenic rivers), sustainable timber harvest is not inconsistent with the law, regulation, policy, or plan direction that directs management of these lands. For these areas, site specific analyses during project planning will determine the appropriate timber harvest prescriptions to develop or maintain desired conditions for these areas.

Table 21 shows lands and areas considered in at least one of the alternatives and whether they are considered suitable or not suitable for timber production.

Table 21. Lands and areas suited and not suited for timber production

Area	Timber Production
All eligible wild segments of Wild and Scenic Rivers	Not Suitable
Inventoried Roadless Areas	Not Suitable
Fossil Springs Natural Area	Not Suitable
Recommended Wilderness Areas	Not Suitable
Apache Leap Special Management Area	Not Suitable
Mexican Spotted Owl critical habitat and protected lands (except 100 acres core/nest)	Suitable
All eligible scenic and recreational segments of Wild and Scenic Rivers	Suitable
All Proposed and Designated Research Natural Areas	Not Suitable
All Proposed and Designated Botanical Areas	Not Suitable

The Tonto National Forest includes 199,362 acres that may be suited for timber production (table 20). Since management areas vary by alternative (based on alternative theme), the resultant acres identified as suitable for timber production also varies. Table 22 displays the resulting acres considered to be suited for timber production by alternative.

Table 22. Land classification summary for timber suitability from phase 2

Summary	Alt A	Alt B	Alt C	Alt D
D. Total lands suited for timber production (compatible with desired conditions and objectives	189,295	188,851	184,224	189,517
E. Lands not suited for timber production (not compatible with desired conditions and objectives (C – D)	10,067	10,511	15,138	9,845
F. Total lands not suited for timber production (B+E)	2,674,785	2,675,229	2,679,856	2,674,563

Maps by Alternative

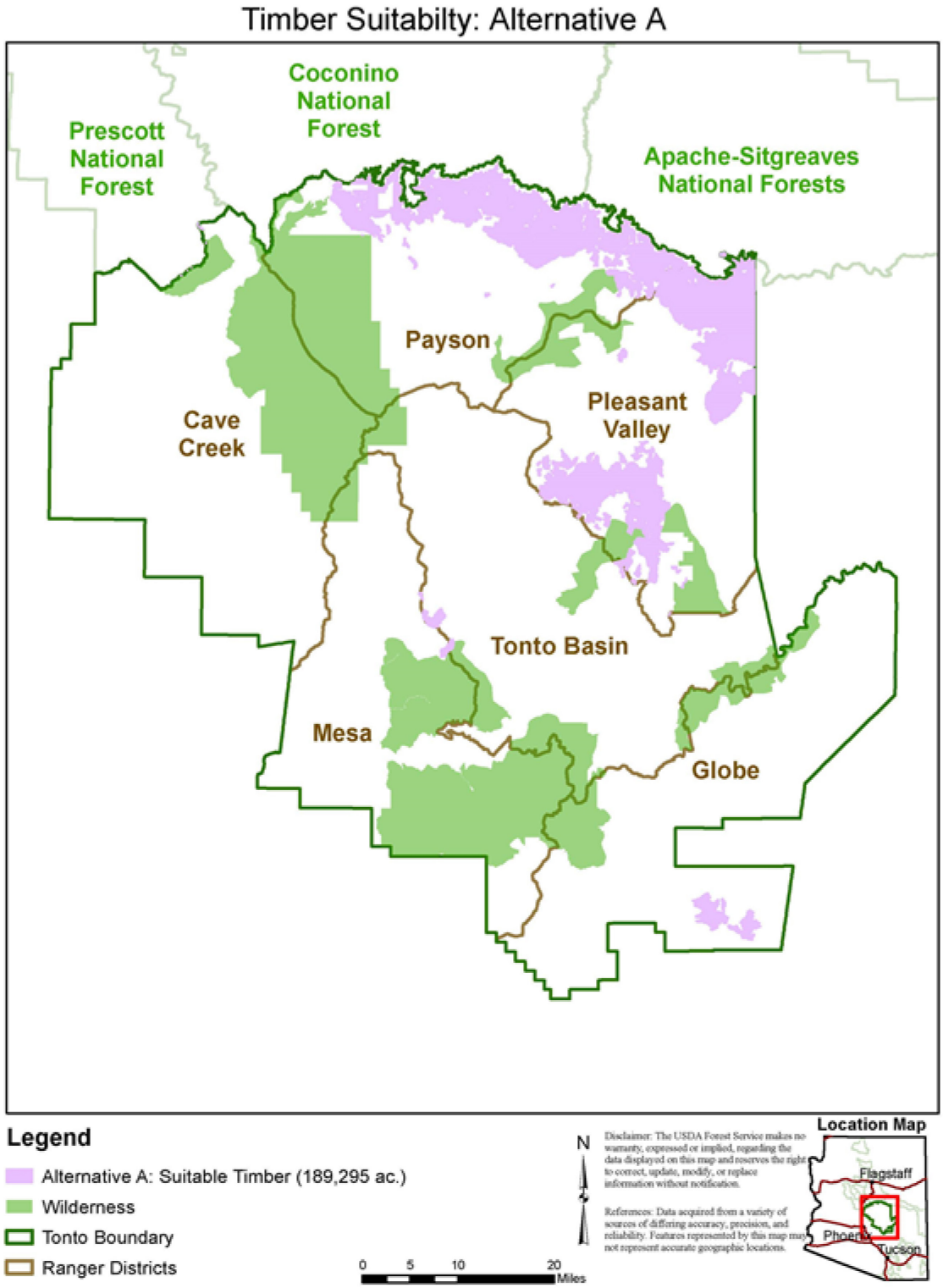

Figure 8. Suitable timber acres for alternative A

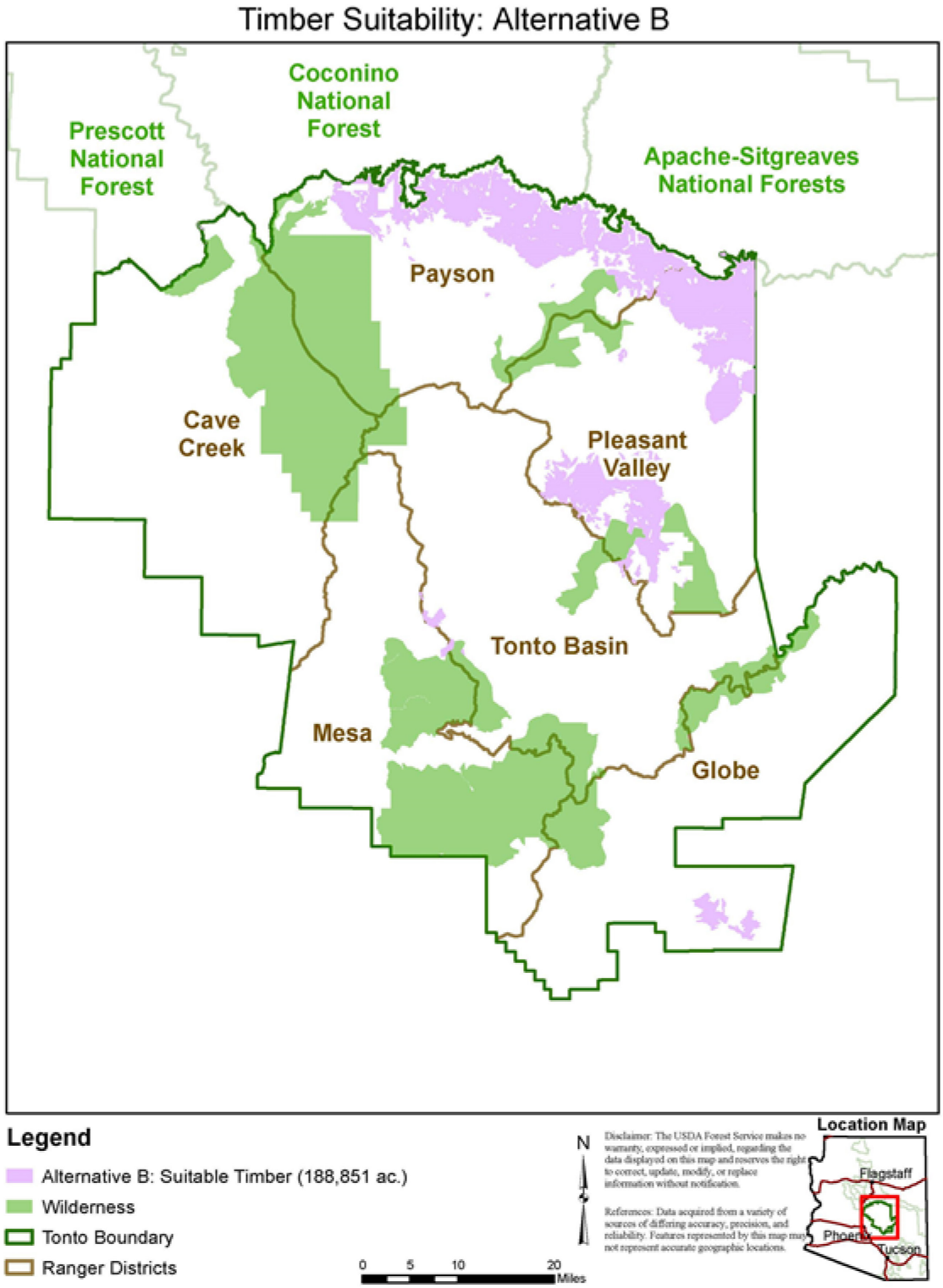

Figure 9. Suitable timber acres for alternative B

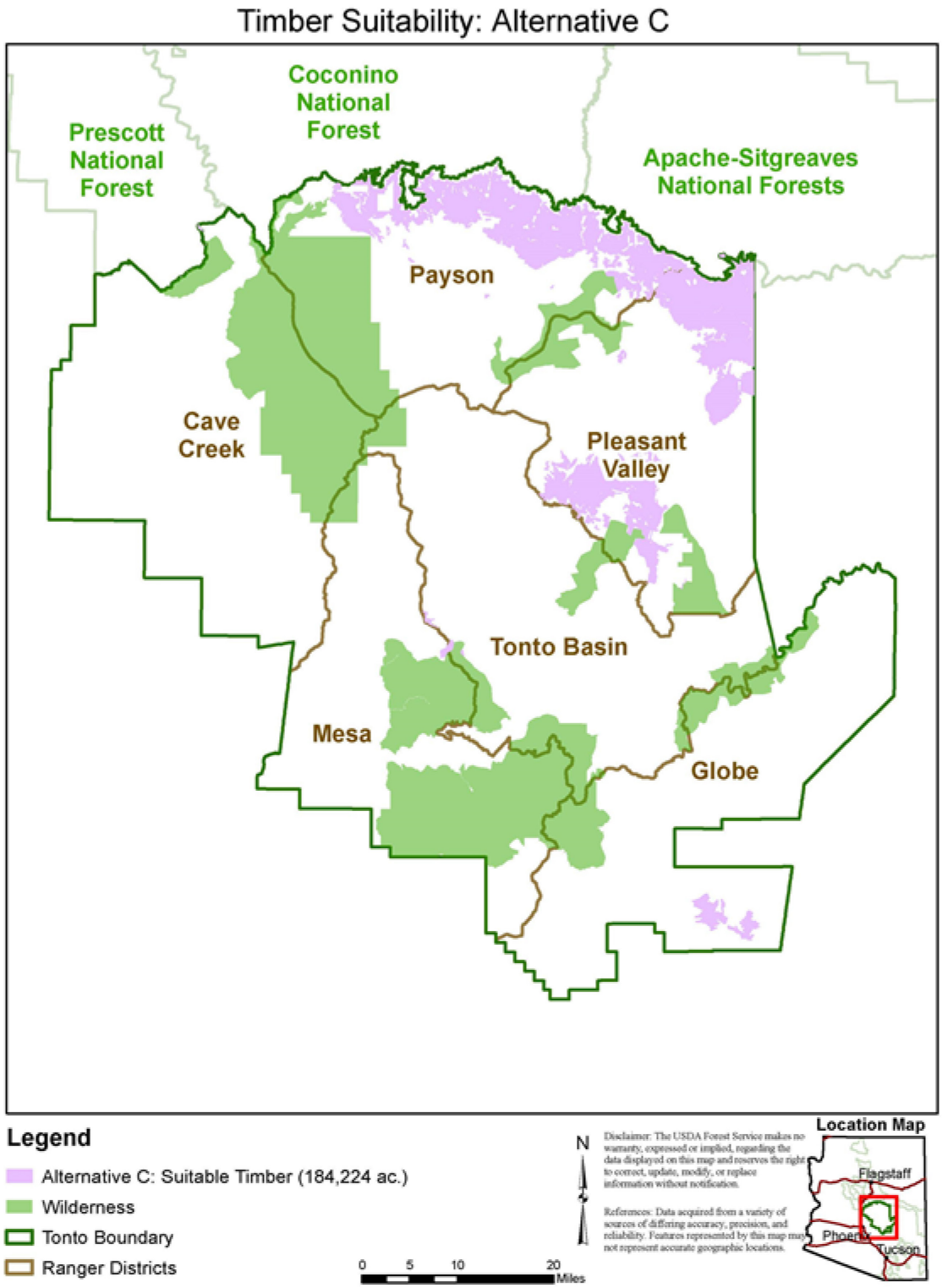

Figure 10. Suitable timber acres for alternative C

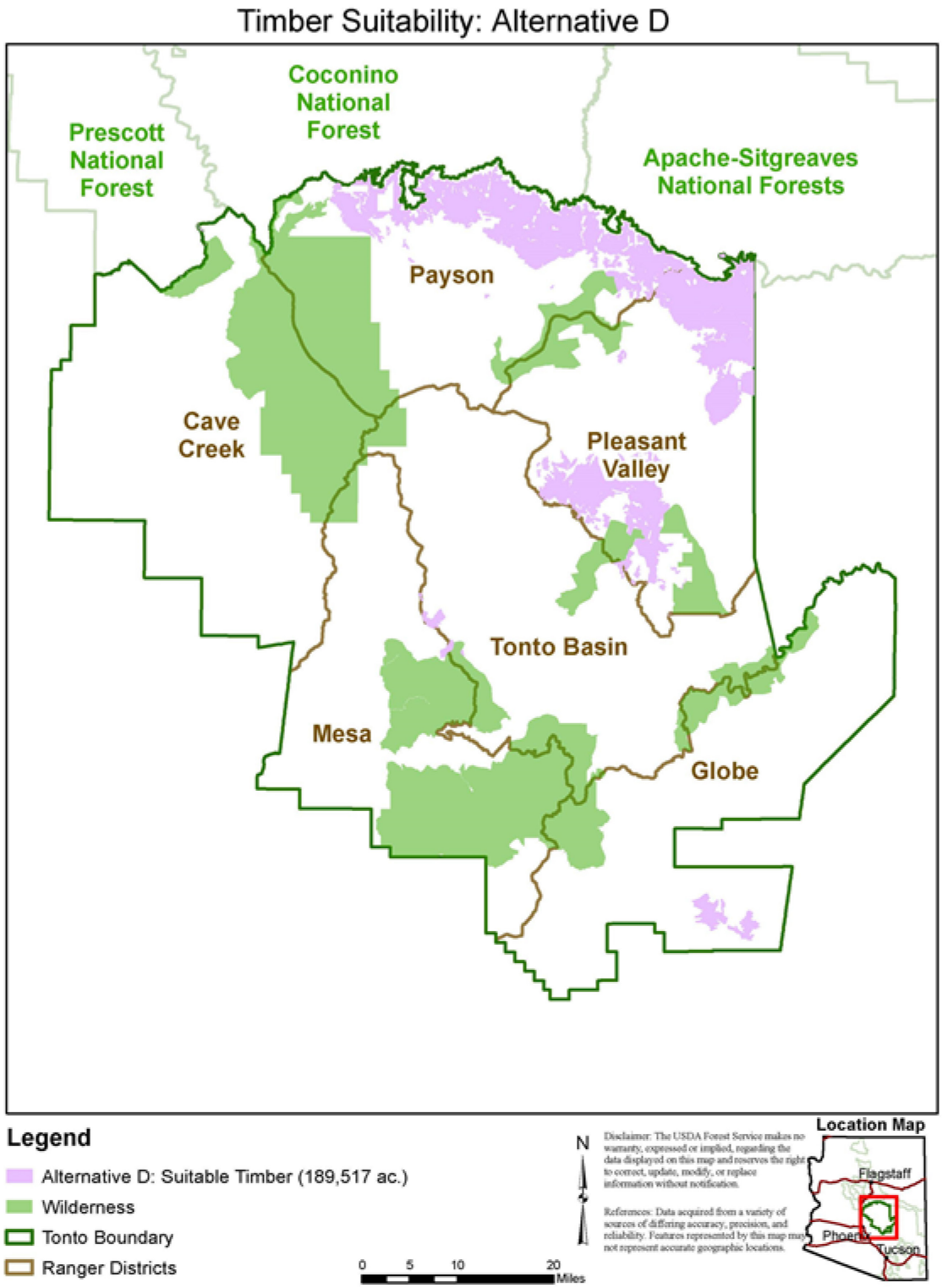

Figure 11. Suitable timber acres for alternative D

Planned Timber Sale Program

The planned timber sale program is an estimate of forest product yields associated with projects designed to contribute to the accomplishment of the plan's desired conditions and objectives, consistent with the other plan components during the plan period (by decade). These estimates are based on the projected fiscal capability and organizational capacity of the planning unit. They do not require any specific actions to be taken, rather, they are estimates of actions taken to accomplish the intent of the revised plan.

The timber sale program contributes to economic sustainability through the production of timber, pulp for paper, specialty woods for furniture, and fuel as a renewable energy source. Timber harvest, whether for wood production, restoration, or other reasons, can support local businesses and employment.

Sustained Yield Limit

The sustained yield limit is the amount of timber, meeting applicable utilization standards, "which can be removed from [a] forest annually in perpetuity on a sustained yield basis" (National Forest Management Act at section 11, 16 USC 1611; 36 CFR 219.11(d)(6)). The classification of lands that may be suitable for timber production provides the basis for calculating the sustained yield limit for a national forest (36 CFR 219.11(d)(6) and FSH 1909.12, chapter 60, section 64.31). The sustained yield limit should be calculated using vegetation management strategies and assumptions that are appropriate for the forest type and that achieve and maintain a regulated forest condition for lands suitable for timber production based on compatibility with desired conditions and objectives. The calculation of the sustained yield limit is not limited by land management plan desired condition, other plan components, or the planning unit's fiscal capability and organizational capacity. The sustained yield limit is not a target but is a limitation on harvest.

The sustained yield limit assumes that forest vegetation is structured in a desired, fully stocked condition (balance of tree age/structural stages by area) that facilitates repeated, regulated harvesting. In reality, the forest vegetation on most lands is departed from the desired condition, so planners use growth simulation models to estimate sustainable harvest levels. For the purpose of calculating the sustained yield limit, these same management assumptions are applied to those lands not suitable for timber production based on compatibility with desired conditions and objectives, even though regulated forest production is not planned or appropriate on these lands. On lands suitable for timber production, short-term harvest levels would tend to fluctuate until those lands are at a desired, regulated condition and then remain steady around that level. For lands not suitable for timber production based on compatibility with desired conditions and objectives, a regulated forest vegetation condition is not likely to be a desired objective, but the potential sustained yield of these lands is estimated by assuming a regulated condition.

For the purposes of this analysis, sustained yield limit was calculated based on the ponderosa pine and mixed conifer with frequent fire ecological response units. The wet mixed conifer ecological response unit was not included in the calculation of sustained yield limit, as it represents only a minor component of the land that may be suitable for timber production (under 1 percent). Timber harvest was modeled using the forest vegetation simulator (FVS) to estimate the sustained yield limit using region-wide forest inventory analysis (FIA) plot data, sorted by ecological response unit and site index. Calculations are based upon uneven-aged forest management systems for ponderosa pine forest and ponderosa pine-evergreen oak (assumes management favors dominance of ponderosa pine) and mixed conifer-frequent fire (assumes management favors dominance of shade intolerant species). The length of the simulation was extended through stand regulation and the associated cubic feet per acre value were identified for each forest type.

Uneven-aged management analysis assumptions:

- Group selection cutting method
- In ponderosa pine types, a 30-year cutting cycle, 6 age classes, group/patch sizes and density increase by vegetation type as forest conditions become progressively more mesic.
- In mixed conifer dry, a 30-year cutting cycle, 5 age classes, group/patch sizes and density increase by vegetation type as forest conditions become progressively more mesic.
- Target matrix density 60 basal area.
- In ponderosa pine forest, a site index below 70 is considered low.

Forest vegetation simulator modeling produced coefficients of sustained timber volume output based on forest type and site index (table 23). The sustained yield limit is calculated by applying those coefficients to the number of acres that may be suitable for timber production on the Tonto National Forest. The Tonto National Forest's sustained yield limit across all forest types is 17.1 million board feet per year (3.7 million cubic feet per year).

Table 23. Production coefficients and acres that may be suitable for timber production used to calculate the sustained yield limit for the Tonto National Forest

Forest Type (Ecological Response Unit)	Uneven-aged yield (per acre/year) Board feet (9"+ dbh)	Uneven-aged yield (per acre/year) Cubic feet (5"+ dbh)	Acres of "may be suitable" timber
Ponderosa pine/grass (high site index)	116	23.6	3,734
Ponderosa Pine/Gambel oak (high site index)	113	23.7	33,604
Ponderosa Pine Evergreen Oak (high site index)	82.6	17.8	135,309
Dry mixed conifer (all site index)	93.8	22.9	19,052

Source: Youtz and Vandendriesche, 2015

Projected Timber Sale Quantity (PTSQ) and Projected Wood Sale Quantity (PWSQ)

The projected timber sale quantity is the estimated quantity of timber meeting applicable utilization standards that is expected to be sold during the plan period. As a subset of the projected wood sale quantity, the projected timber sale quantity includes volume from timber harvest for any purpose from all lands in the plan area based on expected harvests that would be consistent with the plan components. The projected timber sale quantity is also based on the planning unit's fiscal capability and organizational capacity. Projected timber sale quantity is neither a target nor a limitation on harvest.

The estimated quantity of timber and all other wood products expected to be sold from the plan area for the plan period is called the projected wood sale quantity. The projected wood sale quantity consists of the projected timber sale quantity as well as other woody material such as fuelwood, firewood, or biomass also expected to be available for sale. The projected wood sale quantity includes volume from timber harvest for any purpose based on expected harvests that would be consistent with the plan components. The projected wood sale quantity is also based on the planning unit's fiscal capability and organizational capacity. The projected wood sale quantity is neither a target nor a limitation on harvest.

Although the National Forest Management Act provides that the plan period is at least every 15 years, it limits the sale of timber to less the sustained yield limit for each decade of the plan (16 U.S.C. 1611). Providing estimates in the plan of the annual projected wood sale quantity and the annual projected timber sale quantity for the each of first 2 decades aligns with the National Forest Management Act decadal

periods limiting the sale of timber and provides estimates to cover a second decade if revision of the plan is delayed beyond the 15-year limit.

Planned treatment types and management levels were developed consistent with the theme and objectives for each alternative. Volumes for the projected timber sale quantity and projected wood sale quantity were calculated using a combination of outputs from the vegetation dynamics development tool[5] and the forest vegetation simulator. The vegetation dynamics development tool was used to project trends in the distribution of vegetation between state classes (or transitions) under each alternative for each ecological response unit into the future. These were combined with regionally developed coefficients that relate acres treated to volume outputs by state class, treatment type, and vegetation community (ecological response unit) from the forest vegetation simulator. Volumes were derived by multiplying the simulated harvest volumes per acre by the anticipated area treated (plan objectives for mechanical treatments). These estimates for output volumes are from the cutting of live trees only. Dead and down fuelwood volumes are not included. Dead and down fuelwood volume in this environmental analysis is assumed constant and is based on the recent average volume removed (3,817,900 cubic feet per decade).

That volume may vary in the future but is based on public demand. Total fuelwood volume by alternative (dead and down plus green fuelwood) is summarized in table 28 and includes a constant estimate of dead and down fuelwood (3.8 million cubic feet (MMCF)) plus projected green fuelwood (5" + other non-industrial softwood fuelwood, and hardwood fuelwood). Projected timber sale quantity (PTSQ) and projected wood sale quantity (PWSQ) for each alternative are displayed in the following tables (table 24 through table 27).

Table 24. Planned timber sale program, decadal volume outputs for alternative A (sustained yield limit is 37.0 MMCF/decade)

Timber Products[1] and other estimated wood products[2]	First Decade MMCF[3]	First Decade MMBF[3]	Second Decade MMCF	Second Decade MMBF
Lands suitable for timber production A1. Sawtimber	0.6	2.7	0.7	3.6
Lands suitable for timber production A2. Other products	0.08	NA	0.09	NA
Lands not suitable for timber production B1. Sawtimber	1.0	4.7	1.6	7.7
Lands not suitable for timber production B2. Other products	0.1	NA	0.1	NA
C. Projected timber sale quantity (PTSQ) (A1+A2+B1+B2)	1.8	7.4	2.6	11.4
Other estimated wood products[2] D. Fuelwood	0.47	8,772 tons	0.52	9,689 tons
E. Projected wood sale quantity (PWSQ) (C+D)	2.2	NA	3.1	NA

1 - Timber products include volumes other than salvage or sanitation volumes that meet timber product utilization standards, while other estimated wood products include fuelwood, biomass, and other volumes that do not meet timber product utilization standards.

2 - Fuelwood, biomass, and other volumes that do not meet timber product utilization standards

3 - MMCF: Millions of cubic feet. MMBF: Millions of board feet.

5 The Vegetation Dynamics Development Tool is a software program that provides a state-and-transition modeling framework to examine the role of various transition agents and management actions in vegetation change into the future (ESSA Technologies Ltd. 2007).

Table 25. Planned timber sale program, decadal volume outputs for alternative B (sustained yield limit is 37.0 MMCF/decade)

Timber Products[1] and other estimated wood products[2]	First Decade MMCF[3]	First Decade MMBF[3]	Second Decade MMCF	Second Decade MMBF
Lands suitable for timber production A1. Sawtimber	0.9	4.8	1.0	5.3
Lands suitable for timber production A2. Other products	0.1	NA	0.1	NA
Lands not suitable for timber production B1. Sawtimber	2.2	10.6	2.9	14.2
Lands not suitable for timber production B2. Other products	0.2	NA	0.2	NA
C. Projected timber sale quantity (PTSQ) (A1+A2+B1+B2)	3.4	15.4	4.2	19.6
Other estimated wood products[2] D. Fuelwood	0.64	11,982 tons	0.66	12,496 tons
E. Projected wood sale quantity (PWSQ) (C+D)	4.1	NA	4.9	NA

1 - Timber products include volumes other than salvage or sanitation volumes that meet timber product utilization standards, while other estimated wood products include fuelwood, biomass, and other volumes that do not meet timber product utilization standards.

2 - Fuelwood, biomass, and other volumes that do not meet timber product utilization standards

3 - MMCF: Millions of cubic feet. MMBF: Millions of board feet.

Table 26. Planned timber sale program, decadal volume outputs for alternative C (sustained yield limit is 37.0 MMCF/decade)

Timber Products[1] and other estimated wood products[2]	First Decade MMCF[3]	First Decade MMBF[3]	Second Decade MMCF	Second Decade MMBF
Lands suitable for timber production A1. Sawtimber	0.7	3.6	0.8	3.9
Lands suitable for timber production A2. Other products	0.1	NA	0.1	NA
Lands not suitable for timber production B1. Sawtimber	1.5	7.0	1.6	7.6
Lands not suitable for timber production B2. Other products	0.2	NA	0.2	NA
C. Projected timber sale quantity (PTSQ) (A1+A2+B1+B2)	2.4	10.6	2.6	11.5
Other estimated wood products[2] D. Fuelwood	0.55	10,331 tons	0.57	10,714 tons
E. Projected wood sale quantity (PWSQ) (C+D)	3.0	NA	3.2	NA

1 - Timber products include volumes other than salvage or sanitation volumes that meet timber product utilization standards, while other estimated wood products include fuelwood, biomass, and other volumes that do not meet timber product utilization standards.

2 - Fuelwood, biomass, and other volumes that do not meet timber product utilization standards

3 - MMCF: Millions of cubic feet. MMBF: Millions of board feet.

Table 27. Planned timber sale program, decadal volume outputs for alternative D (sustained yield limit is 37.0 MMCF/decade)

Timber Products[1] and other estimated wood products[2]	First Decade MMCF[3]	First Decade MMBF[3]	Second Decade MMCF	Second Decade MMBF
Lands suitable for timber production A1. Sawtimber	1.0	5.2	1.0	5.2
Lands suitable for timber production A2. Other products	0.1	NA	0.1	NA
Lands not suitable for timber production B1. Sawtimber	2.7	13.4	3.0	15.0
Lands not suitable for timber production B2. Other products	0.2	NA	0.2	NA
C. Projected timber sale quantity (PTSQ) (A1+A2+B1+B2)	4.0	18.6	4.3	20.2
Other estimated wood products[2] D. Fuelwood	0.65	12,217	0.66	12,388
E. Projected wood sale quantity (PWSQ) (C+D)	4.7	NA	5.0	NA

1 - Timber products include volumes other than salvage or sanitation volumes that meet timber product utilization standards, while other estimated wood products include fuelwood, biomass, and other volumes that do not meet timber product utilization standards.

2 - Fuelwood, biomass, and other volumes that do not meet timber product utilization standards

3 - MMCF: Millions of cubic feet. MMBF: Millions of board feet.

Total fuelwood volume per decade (table 28) includes a constant estimate of dead and down fuelwood (3.8 MMCF) plus projected green fuelwood which can be found in row D Fuelwood in table 24 through table 27 which describe other non-industrial softwood fuelwood and hardwood fuelwood.

Table 28. Total fuelwood volume per decade by alternative

Alternative	Decade 1 Fuelwood (MMCF/decade)[1]	Decade 2 Fuelwood (MMCF/decade)[1]
A	4.27	4.32
B	4.44	4.46
C	4.35	4.37
D	4.45	4.46

Vegetation Management Practices

Forest management on the Tonto National Forest consists of restoration and fuels reduction treatments designed to achieve desired conditions for the associated ecological response unit on suitable timber lands.

The projected management approach uses an uneven-aged management system. All alternatives would propose various mixtures of four basic vegetation treatments during the planning period to move toward desired conditions. These include:

- Tree thinning forested/overgrown areas using free thinning, thinning from below or a combination of thinning treatments, followed by low severity fire to reduce ground fuels;
- Group selection regeneration cut, followed by low severity fire to reduce ground fuels and prepare seedbed;

- Single tree selection regeneration cut, followed by low severity fire to reduce ground fuels and prepare seedbed;
- Uneven-aged group selection with 55-70 percent open interspace, followed by low severity fire to reduce ground fuels and prepare seedbed;

Thinning would be used to increase individual tree vigor, increase horizontal heterogeneity, and reduce fuel hazards. Group selection would be used to regenerate tree groups, to develop or maintain uneven aged forest conditions (increasing vertical structure heterogeneity and tree species diversity). Uneven-aged single tree selection would be used to regenerate forest stands where evergreen oak or shrub understory exceeds 40 percent cover or when habitat type indicates that an undesirable shrub response would likely result from using other regeneration methods. Uneven-aged group selection with 55 to 70 percent open interspace would be used to regenerate areas with severe mistletoe infections, where greater than 80 percent of the susceptible trees per acre are infected, and reduce the level of infection to manageable levels. More diverse silvicultural practices, including even-aged regeneration methods (shelterwood and seed cuts) may occasionally be utilized to achieve site-specific objectives such as those related to severe insect and/or pathogen concerns. Forest management activities on lands not suitable for timber production are likely to be responsive to safety concerns or disturbance agents such as wildfire, windthrow, insect and disease, or other restoration/management objectives and use similar treatment approaches.

All four forms of treatment indirectly impact the amount and availability of sustainable wood products. The number of total annual cutting and burning treatment acreages by alternative (regardless of timber suitability classification) are displayed in table 29.

While only one decade is displayed in table 29, the second decade is projected to be comparable to the first decade. As the Forest accomplishes projects already in the planning stages, and move toward designing new projects, it is anticipated that productivity will increase, provided industry is willing and able to handle the mix of products.

Table 29. Acres of vegetation management practices implemented per decade

Forest-wide Vegetation Management Practices	Alternative A	Alternative B	Alternative C	Alternative D
Thinning (intermediate harvest)	42,500	30,000–72,000	6,600–13,200	30,000–114,000
Regeneration (group selection)	7,000	5,000–12,000	1,100–2,200	5,000–19,000
Regeneration (single tree selection)	7,000	5,000–12,000	1,100–2,200	5,000–19,000
Regeneration (Uneven-aged group selection with 55-70 percent open interspace)[1]	14,000	10,000–24,000	2,200–4,400	10,000–38,000

1 - More diverse silvicultural practices, including even-aged regeneration methods (shelterwood and seed cuts) may occasionally be utilized to achieve site-specific objectives such as those related to severe insect and/or pathogen concerns.

Appendix C. Public Engagement and Coordination with Other Planning Efforts

Public Engagement

The Tonto National Forest is revising their forest plan under the new Forest Planning Rule (2012). The new forest planning rule entails great emphasis in collaboration and public involvement during the planning process and the plan's implementation. Since kicking off the forest plan revision process in January 2014, the Tonto National Forest plan revision team has been working to involve, and collaborate with, the public during the various phases of the planning process including development of the assessment, need for change, initial plan components, draft plan, and plan alternatives.

Public participation for the assessment has included listening sessions, workshops, and a series of public meetings to gather local knowledge to understand how the public values the Tonto. In addition, the Tonto National Forest plan revision team has interacted with others through presentations and meetings with county planners, tribes, stakeholders, and other government entities. It is the view of the Tonto National Forest staff that shared knowledge and understanding between the Forest Service personnel and the public needs to be a continual and dynamic part of the planning effort.

The Notice of Intent was published in the Federal Register on April 6, 2017, with a comment period from April 6, 2017 – May 22, 2017. The Notice of Intent asked for public comment on the needs to change statements developed based on key trends and risks identified in the assessment (USDA Forest Service 2017a). The Tonto National Forest received over 1,500 comments. These comments were used to develop the Tonto National Forest preliminary proposed plan (USDA Forest Service 2017c) and offered an additional 45-day comment period. This allowed the Tonto National Forest as well as the public and partners to better understand how the assessment and needs to change work together to develop plan direction to feed into the draft forest plan. Additional meetings and discussions were held to refine desired conditions, discuss issues, and develop alternatives. See the Public Participation section below for more information about these meetings. Each public engagement and collaboration opportunity helped the Forest Service to develop the draft land and resource management plan (forest plan) and associated environmental impact statement. The Notice of Availability was published in the Federal Register on December 13, 2019, for a 90-day comment period ending March 12, 2020. The Notice of Availability asked for public comment on the draft forest plan) and draft environmental impact statement. Additional meetings and discussion (e.g., a series of open houses public meetings, two technical partner meetings, and district office working days) were held during the comment period. Information was widely available online, at all Tonto National Forest offices, and hard copies at many of the libraries in and around the Forest. The Tonto National Forest received 4,299 comments during the comment period, of which 181 were unique comments and 4,060 were form comments. Comments were organized and aggregated into concern statements and responded to as appropriate.

The Tonto National Forest has engaged in over 100 outreach events to raise awareness and build connections with individuals of all ages. From these personal connections, we have been able to constantly acquire new members for our mailing list and been able to promote working groups already occurring on the Tonto to help collaborate with our plan revision efforts. These groups consist of members of the public working with the Forest Service to accomplish a shared vision of recreation, restoration, or both in an area of the forest. This wide variety of individuals and groups have been added to the forest plan revision mailing list, which now has well over 2,000 people on it. The mailing list

includes local, regional, and national groups; Federal, State, and local governments; federally recognized tribes and pueblos; rural historic communities; rural historic communities; non-profit organizations; private landowners; and the general public including youth.

Public Participation and Engagement Opportunities

Public participation has been an integral component of the Tonto's plan revision process. Listed below is a brief description of some of our efforts to date. For more updated information including details, dates and notes of specific events please visit our website at http://www.fs.usda.gov/goto/tontoplan.

- January 2014: One-hour listening sessions with 91 community members and stakeholders were conducted on January 22-23, 2014 in Scottsdale, Globe, Payson, and Mesa, Arizona. These listening sessions provided information about existing collaborative potential and limitations and helped the Tonto National Forest plan revision team organize the public participation effort for the forest plan revision effort.
- March 2014: The Tonto National Forest hosted two all-day workshops attended by Tonto staff and key stakeholders on March 6, 2014, in Tempe, Arizona and March 8, 2014 in Tonto Basin, Arizona. The purpose of these workshops was to build relationships, share learning, and begin working together on a public participation strategy for forest plan revision. The Tonto Forest plan revision public participation and collaboration strategy document is available on the www.tontoplan.org website and can be updated as needs change.
- March 2014: An internet-based collaboration tool was developed and posted to our www.tontoplan.org website (Public Involvement). The link displayed questions that helped the plan revision team develop parts of the social, cultural, and economic sections of the assessment.
    - What benefits do you receive from the Tonto National Forest? Have these benefits changed over time? How do you think these benefits will change in the next 15-20 years?
    - What is unique and special about the Tonto National Forest? If you could take only one picture of the national forest, what would it be?
    - What are your favorite places to recreate on or near the Tonto National Forest?
    - Are there other issues in your community or on the Tonto National Forest that should be considered in the Assessment Report?
    - Please share any relevant datasets, research or information related to the Tonto National Forest that could be helpful to the Assessment Report or plan revision process (please include contact organization or contact person, if known).
- May-July 2014: The Tonto staff hosted eight community forums in Mesa, Payson, Roosevelt, Globe, Cave Creek, and Young, Arizona. The forums involved presentations from Tonto National Forest staff and partners on key forest plan topics, followed by small group discussions to bring forth technical and local knowledge about these topics. These topics and discussions were used to help us generate our key ecosystem services (see Volume II Assessment Report of Social and Economic Conditions, Trends, and Risks to Sustainability for more information). Some examples of discussion topics were concerns of a decrease in watchable wildlife opportunities across the Tonto as well as an understanding that adaptive management is important for the health of the ecosystem and to continue moving in this direction.
- October 6-10, 2014: Voces, LLC, a New Mexico corporation contracted to help build relationships with our Latino Communities, conducted an assessment of the surrounding Latino community and

their knowledge of and connection to the Tonto National Forest. They interviewed 28 people in the Phoenix and Globe-Miami and Superior areas and 22 of them were key leaders in the Hispanic and Latino community. Based on information gathered during that week, they generated a summary report with suggestions on how the Tonto National Forest could better reach and engage the Latino community. Voces, LLC took these interviews and identified four main barriers of use. They presented this information to members of the Tonto National Forest leadership and planning teams. Based on this feedback, an internal all-day workshop was held on July 21, 2015. The goal was to help build the Tonto's collaborative capacity with Latino communities and the organizations that serve them.

- November 2014 and February 2015: Information was supplied at community bulletin boards throughout the valley and across the Tonto National Forest. Our goal was to share information and direct the public to our website where continuously updated material is presented.
- December 8, 2014: A letter was sent out to the entire mailing list asking recipients to share relevant datasets, research, or information related to the Tonto National Forest that would be helpful to include in the assessment report. It also provided an updated status, reintroduced the plan revision website, and discussed ways to participate moving forward.
- January 2016 – December 2016: Frequent email updates were sent to our mailing list to introduce new members of the forest plan revision team and inform the public of our next steps. The updates reinforced the plan revision website and mentioned ways to participate moving forward.
- September – October 2016: The Tonto National Forest hosted seven "Needs for Change" public meetings to discuss the key findings from the draft assessment and collaborate on needs for change. This discussion was focused on eleven key themes ranging from ecological sustainability; social, cultural, and economic sustainability; and forest wide management. Discussion from these meetings helped shape the "Needs for Change" statements.
- June 2017: The Tonto National Forest hosted eight plan revision public meetings to discuss development and ideas for revising the land and resource management plan (forest plan) and the wilderness recommendation process. The purpose of the June 2017 meetings was to inform partners about where the Tonto National Forest is in the plan revision process, and to begin developing strategies and actions that could address the issues identified in the assessment and needs to change. Topics discussed at the meeting included recreation, restoration, other forest uses, and the wilderness recommendation process.
- November 2017: The Tonto National Forest hosted eight plan revision open house public meetings to discuss the preliminary proposed plan and any further ideas for revising the land and resource management plan (forest plan). At the open house style meetings, participants gave valuable input on forest plan revision topics, such as camping near water, important resources on the Forest, and special areas. They also communicated their perspectives on issues important to individuals, groups, and communities.
- November 2017: The Tonto National Forest also held an all-day technical partner meeting focused on the preliminary proposed plan, the next critical step in the forest plan revision process. This workshop facilitated technical in-depth discussion on topics such as: rangelands and grazing, forests and fuels, restoration, recreation, wildlife, invasive species, and more. Partners spent time working side-by-side with resource specialists and plan revision team members to discuss and provide feedback on the content of the preliminary proposed plan.
- April 2018: Tonto National Forest convened partners to gather input on the draft issues and draft alternatives for the forest plan revision process. The purpose of the workshop was for partners to gain

an understanding of the draft alternatives for the draft forest plan and draft environmental impact statement, work together with Tonto National Forest staff on areas of interest, and discuss issues and solutions for management of multiple uses on the Forest. Utilizing notes from the November 2017 Partner Workshop and public comments, resource specialists developed elements of the draft alternatives. Due to public/partner interest, the alternative development workshop was focused on recreation and restoration.

- April 2018: Tonto National Forest convened partners following the draft issues and draft alternatives workshop at a field trip to Granite Reef Recreation Area. The field trip allowed partners and stakeholders to discuss different types of management actions that could be implemented at this site, and similar sites on the forest. Discussion centered around restoring native vegetation, changing the amenities to encourage different types or levels of recreational use, managing habitat for wildlife, and mitigating wildfires.
- May 2018: The Tonto National Forest, along with Trout Unlimited and Arizona Game and Fish Department, hosted a stream restoration field trip. The field trip brought together staff and partners of the Tonto National Forest to discuss the future management of streams across the forest. It was co-convened by the Tonto National Forest, Arizona Game and Fish Department, and Trout Unlimited. The following were the field trip objectives:
    - Establish a shared understanding of stream restoration as a tool to achieve desired conditions.
    - Share examples of successful projects and the range of effective tools and techniques.
    - Identify how partners can support the Tonto National Forest in achieving desired conditions for streams.
- January 2019: The Tonto National Forest hosted plan revision working days in each of the five ranger district offices and at the supervisor's office to discuss the draft forest plan and draft environmental impact statement. These meetings provided an opportunity to sit down with members of the planning team and discuss the draft forest plan and future management of the forest. Additionally, these meetings offered the opportunity to bring specific questions to the planning team at the various locations in and around the forest. These meetings took place during the comment period so there was an emphasis on making sure meeting attendees submitted formal comments.
- January 2019: The Tonto National Forest convened partners following the release of the notice of availability of the draft forest plan and the draft environmental impact statement. The purpose of this meeting was for partners to gain an understanding of changes since the preliminary proposed plan and walk through the alternatives. Partners spent time working side-by-side with forest leadership, resource specialists, and plan revision team members to clarify questions, discuss concerns, and suggest improvements to the draft forest plan and draft environmental impact statement.
- January 2019 – February 2020: The Tonto National Forest hosted six plan revision open house public meetings to discuss the draft forest plan and draft environmental impact statement. There were educational materials and resource specialists available at these meetings to answer questions and talk about different pieces of the draft forest plan and draft environmental impact statement. These meetings took place during the comment period so there was an emphasis on making sure meeting attendees submitted formal comments.
- February 2020: The Tonto National Forest convened partners following the release of the notice of availability of the draft forest plan and the draft environmental impact statement. The purpose of this meeting was for partners to gain an understanding about forest plan monitoring. Forest plan monitoring is to test assumptions, track changes, and measure management effectiveness and progress

towards achieving or maintaining the plan's desired conditions or objectives. At this meeting partners worked with resource specialists to discuss and provide feedback on the monitoring plan, look for opportunities to design and carry out multi-party monitoring, learn of other monitoring information, data sources, and other relevant monitoring protocols.

- May 2020 – Ongoing: The Tonto National Forest met with various partners and stakeholders to review formally submitted comments on the draft forest plan and associated draft environmental impact statement.
- November 2014 – Ongoing: The Tonto National Forest has staffed a forest plan revision information booth at over 100 fairs, farmers markets, conferences, and other events. The focus of these events was to educate and inform the public about the plan revision process and ways to get involved. These outreach efforts have continued throughout the planning process in various locations in and around Tonto National Forest communities.
- November 2014 – Ongoing: The Tonto National Forest worked with stakeholders and partners on specific areas of interest related to the plan in order to develop plan direction. Topics discussed in these meetings include topics such as recreational aviation, rock climbing, riparian areas, management of lakes and rivers, wilderness (designated and recommended), and wildlife.

Tribal Consultation

Tribal engagement efforts for the Tonto National Forest plan revision process has been conducted with various approaches since the initial kick-off. Consultation with tribes consisted of formal letters and phone calls to all tribal groups with ancestral ties to the national forest (see list below). This was followed up with in-person meetings with the forest tribal relations liaison, forest planner, forest archaeologist, forest supervisor and/or deputy forest supervisor along with various Tribal members in the thirteen Tribes with whom we consult. The goal was to begin discussions with the Tribes to seek their engagement and understand their concerns about forest management.

Many of the Tribes who consider the Tonto National Forest an important place, both spiritually and culturally, have a strong interest in the management of the Tonto's natural resources. Tonto National Forest personnel continuously seek to engage with Tribes through the plan revision process.

- December 16, 2013: Letters went out to initiate early engagement with each tribe.
- January 23, 2014: Meetings with the White Mountain Apache, Tonto Apache, and Yavapai Apache Tribes.
- January 30, 2014: Meeting with members of the Salt River Pima-Maricopa and Gila River Indian communities.
- April 1, 2014: Meeting with the Pueblo of Zuni.
- July 23, 2014: Meeting with the Hopi Tribe.
- December 8, 2014: Letters went out to request relevant data that would help the assessment and link the Tribes to our forest plan revision webpage for more information.
- August 8, 2016: Meeting with members of the Salt River Pima-Maricopa and Gila River Indian communities.
- November 8, 2016: Letter went out to gather input into the wild and scenic rivers process from the Tribes.

- November 29, 2016: Meeting with the Fort McDowell Yavapai Nation and Yavapai – Prescott Indian Tribe.
- December 9, 2016: Meeting with the White Mountain Apache, Tonto Apache, San Carlos Apache, Mescalero Apache, and Yavapai Apache Tribes.
- December 13, 2016: Meeting with the Pueblo of Zuni
- December 30, 2016: Meeting with members of the Salt River Pima-Maricopa and Gila River Indian communities.
- January 6, 2017: Email with a request for information related to Wild and Scenic Rivers from the San Carlos Apache Tribe.
- September 18, 2017: Letter went out to gather input into the inventory and evaluation steps of the Wilderness Recommendation Process from the tribes.
- April 27, 2018: Meeting with members of the Salt River Pima-Maricopa and Gila River Indian communities.
- May 1, 2018: Meeting with the White Mountain Apache, Tonto Apache, San Carlos Apache, Mescalero Apache, and Yavapai Apache Tribes.
- May 3, 2018: Meeting with the Hopi and the Pueblo of Zuni.
- June 7, 2018: Meeting with Yavapai Apache Nation, Fort McDowell Yavapai Nation, Yavapai Prescott.
- December 2, 2019: Letter went out to formally invite each tribe to review and comment on the draft forest plan and draft environmental impact statement.

Coordination with Other Planning Efforts

The Forest Service reviews relevant planning and land use policies of other public agencies to understand and consider those agencies' goals and objectives where relevant to the plan area. The Forest Service is not required to ensure that a Forest Service land management plan (forest plan) is in accord with State, local, or Tribal resource and land management plans, as the management is specific to the planning area. In the course of considering those agencies' objectives, however, the Forest Service considers ways the Forest Service land management plan could contribute to common goals and objectives, address impacts, resolve or reduce conflicts, and contribute to compatibility between Forest Service and other agencies' plans.

The Tonto National Forest invited Federal, Tribal, State, and local entities from around the region to participate in each stage of the plan revision process. See the public engagement section above for detailed information. The process enabled the forest plan to be developed in a way to be consistent, where possible, to other plans and coordinate on areas where there was a potential for concern.

Individual sections of the Tonto National Forest's final environmental impact statement for the revised forest plan may evaluate more specific components of the plans evaluated in this appendix or may evaluate additional plans specific to that resource.

Federal Agencies

Management concerns across boundaries were considered when working with other Federal agencies. Federal management plans were reviewed for compatibility with the revised forest plan. In addition, the Forest coordinated information with the regional office of the Environmental Protection Agency during all phases of the process. The Tonto regularly coordinates with the multiple Federal agencies including but not limited to: Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, Park Service, and U.S. Army Corps of Engineers. The agencies below have management connections with the Tonto National Forest and have engaged closely throughout the plan revision process.

National Forests:

Land management plans for national forest system lands adjacent to the Tonto National Forest that were considered during the analysis include: Apache-Sitgreaves National Forest, Coconino National Forest, and Prescott National Forest. Consideration of management concerns across boundaries (e.g., national scenic trails, utility corridors, designated wilderness, designated wild and scenic rivers, and landscape scale projects) were discussed to ensure consistency. Regionally consistent (national forests of Arizona and New Mexico) desired conditions were also incorporated for many of the common resources (e.g., ecological response units, wildlife, fish, and plants, air quality) and includes similar management for the recreation opportunity spectrum and scenery management system.

Bureau of Reclamation:

The Bureau of Reclamation's mission is to manage, develop, and protect water and related resources in an environmentally and economically sound manner. They manage much of the surface water on the Tonto National Forest. Of interest during the development of the forest plan was the management related to the lakes and rivers management area, watersheds and water resources, and eligible wild and scenic rivers. They were also very engaged during the wild and scenic rivers eligibility process and the wilderness recommended process and ensured future water management and management of the forest were consistent. In addition to the events listed in the public engagement section above the Forest meets annually with the Bureau of Reclamation, with Salt River Project included, to discuss future management concerns and work together to ensure open communication and understanding about future management needs and concerns. These meetings have helped to shape the language in the revised forest plan to be consistent with best management practices where our management might overlap.

Bureau of Land Management:

The purpose of a Bureau of Land Management resource management plan is to provide a single, comprehensive land use plan to guide management of public lands administered by each field office. This type of plan is very similar to the forest plan with plan direction focusing on goals and desired conditions. The Phoenix and Gila district offices of the Bureau of Land Management have the closest ties to the Tonto National Forest. The Hassayampa and Lower Sonoran field offices have participated in various public and partner meetings for the plan revision process. This participation has allowed collaboration between the agencies to develop land management plans with consistent language to support the broader landscape.

Fish and Wildlife Service:

Throughout the plan revision process fish and wildlife service has been a partner in the development of the materials related to wildlife, fish and plants. The mission of the Fish and wildlife service is to work with others to conserve, protect and enhance fish, wildlife and plants and their habitats for the continuing benefit of the American people. Recovery plans for threatened, endangered, and candidate species were

considered in the development of habitat desired conditions and specific standards and guidelines needed for protection of species.

Tribal Governments

Tonto National Forest personnel have continuously sought to engage with federally recognized Tribes throughout the plan revision process, including the wilderness recommendation process, and wild and scenic rivers eligibility study. The revised forest plan was developed based on information shared with us during the assessment (USDA Forest Service 2017a) and the preliminary proposed plan (USDA Forest Service 2017c). During tribal consultation meetings there were additional opportunities to provide feedback on the forest plan and the associated environmental impact statement. Of great interest were the cultural and historic resources and Tribal relations and areas of Tribal importance sections of both documents. Table 30 captures some of the Tribal concerns shared to the Forest and how it was incorporated into the revised forest plan.

In addition to the meetings outlined in the Tribal Consultation section above, a cultural and archeology employee from the Salt River-Pima Maricopa Indian Community attended the district working days and technical partner meetings during the last comment period. He asked clarifying questions about the documents available for comment, participated in group resource discussions, shared concerns about future forest management, and expressed ideas about how to move forward.

Table 30. How tribal concerns were incorporated into the revised forest plan

Summary of Tribal concerns	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component6
Tribal members access sacred sites, traditional cultural properties, and Forest lands for individual and group prayer and traditional ceremonies and rituals. There is a need for privacy during ceremonial and traditional activities on the forest. Activities and use that decrease visitor solitude cause conflicts with traditional practices, which are degraded if interrupted or affected by vehicular noise and other intrusions from the modern world. The temporary closure authority should be used to accommodate traditional use.	Tribal Relations and Areas of Tribal Importance, Cultural and Historic Resources	TRB-DC-02 TRB-S-04, TRB-G-02
Any activities that have the potential to adversely impact archeological sites or change traditional landscapes are of concern. The desired condition for archaeological sites is preservation in situ. Disturbance is considered an adverse effect.	Cultural and Historic Resources	CUH-DC-07, CUH-G-04
Tribes have concerns for management of springs, seeps, riparian areas and other waters. Water is sacred/holy. Many of these places have tribal place names and are related to tribal histories. Tribal members conduct ceremonies at many of these locations. Many traditionally important plants and animals are found at these waters.	Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones	RIP-DC-05, RIP-DC-07
Traditionally used resources should be considered during Forest activities. Important traditional use resources should be monitored to ensure healthy sustainable plant populations are available for traditional uses.	Tribal Relations and Areas of Tribal Importance	TRB-DC-01, TRB-DC-02, TRB-DC-04, TRB-G-02

6 Plan component coding is outlined in the forest plan, Chapter 1. Introduction, Forest Plan Framework and Organization

Summary of Tribal concerns	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component6
Tribes are interested in the preservation of Emory oak stands. Acorns are a staple subsistence resource for the Apache people that is slowly becoming scarce.	Tribal Relations and Areas of Tribal Importance, Vegetation and Ecological Response Units, Forest Products	TRB-DC-04, ERU-PPE-G-01, FP-DC-04
Agave, mesquite, and saguaro fruit are important subsistence items. These staple items supplement the small amounts available on their reservations.	Tribal Relations and Areas of Tribal Importance	TRB-DC-04, TRB-G-02
The forest should work with tribes to find ways to form partnerships (economic and otherwise) and provide employment/volunteer opportunities.	Tribal Relations and Areas of Tribal Importance	TRB-MA-01, TRB-MA-02, TRB-MA-04, TRB-MA-05, TRB-MA-09
Sacred Sites and Traditional Cultural Properties need to be managed to avoid adverse effects whenever possible. Adverse effects include ground disturbance	Cultural and Historic Resources, Tribal Relations and Areas of Tribal Importance	CUH-DC-02, CUH-DC-07, CUH-G-04, TRB-G-01
Ethnographies, oral history studies, and traditional cultural property investigations should be conducted on all large projects to preserve information and inform project management	Tribal Relations and Areas of Tribal Importance	TRB-G-03
Tribal members need to be provided the opportunity to visit project areas early during scoping processes	Tribal Relations and Areas of Tribal Importance	TRB-MA-11
Tribes are concerned about the effects of public recreation on Traditional Cultural Properties.	Cultural and Historic Resources	CUH-DC-07, CUH-G-04, CUH-G-05, CUH-MA-02, TRB-S-02
The Mining Law is a great threat to tribal resources.	Tribal Relations and Areas of Tribal Importance, Mining, Minerals, and Abandoned Mines	TRB-S-02, TRB-G-04, MMAM-DC-01
Tribes would like more opportunities for youth to become involved in natural resource careers.	Tribal Relations and Areas of Tribal Importance	TRB-DC-05, TRB-MA-07
Tribes would like more economic opportunities to partner towards the preservation of natural resources.	Tribal Relations and Areas of Tribal Importance	TRB-MA-02, TRB-MA-05, TRB-MA-08

State Agencies

Several state of Arizona agencies are affected by, or affect, Forest Service management. Each of these agencies have their own management goals and plans in place. The Tonto National Forest has coordinated regularly with various state agencies throughout the plan revision process. These include but are not limited to: Arizona Department of Agriculture, Arizona Department of Environmental Quality, Arizona Department of Transportation, Arizona Department of Water Resources, Arizona Game and Fish Department, and Arizona State Parks.

As such, Arizona Department of Agriculture and Arizona Game and Fish Department are formal cooperating agencies and have participated in the development of the Tonto National Forest plan. More specifically they helped to develop the plan direction and associated analysis for wildlife-related recreation and the Salt River Horse management area. They were active members of the plan revision interdisciplinary team and helped to provide resource management ideas where their agency is one of the subject matter experts.

Various state agency plans were first reviewed and considered during the assessment phase of the plan revision process (USDA Forest Service 2017a) to evaluated trends, risks to sustainability, and think about what might need to change to better manage forest resources. A more complete accounting of state plans is included, where applicable, in the resource specific sections of the environmental impact statement. Table 31 highlights some, but not all, specific state plans that were considered in the plan revision process and the development of the forest plan.

Table 31. State plans considered in the Tonto National Forest plan revision process

State Plans	Consideration in the plan revision process	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component7
Arizona State Wildlife Action Plan (SWAP), 2012	This plan provides a framework for helping to set the State's wildlife conservation priorities. Considered in the development of the species of conservation concern (USDA Forest Service 2021). The species of greatest conservation need identified in the SWAP were included in the process even if they did not meet the initial 2012 planning rule criteria for species of concentration concern. The State Wildlife Action Plan was also considered during the development of habitat desired conditions.	Wildlife-Related Recreation and Wildlife, Fish, and Plants	WFP-G-08, WFP-G-09, ERU-DC-11, ERU-DC-13, ERU-DC-14, REC-WR-MA-05
Arizona Statewide Comprehensive Outdoor Recreation Plan (SCORP)	The Statewide Comprehensive Outdoor Recreation Plan identifies the major impacts and trends related to outdoor recreation in Arizona. It prioritizes public lands for outdoor activities (e.g., picnicking, hiking, camping, mountain biking, and off-highway vehicle use). These priorities connect directly to many forest resource desired conditions and is a component of partnership and volunteer efforts.	Recreation, Dispersed Recreation, Developed Recreation, Lakes and Rivers Management Area	REC-DC-10, REC-DEV-DC-02, REC-DIS-DC-02, REC-DIS-WB-DC-01, REC-DIS-WB-DC-03, LRMA-DC-01, LRMA-DC-02
Arizona Forest Action Plan, 2015	A report on the strategic plan to address forest-related conditions, trends, threats, and opportunities. It was considered in the findings of the assessment and in the development of desired conditions, objectives, and management approaches for vegetation and ecological response units.	Incorporated into the findings in the assessment	N/A
Arizona Forest Resource Assessment and Strategy, 2010	The assessment and strategy documents address national private forest conservation priorities and provides the basis for future work in Arizona to address forest resource issues. It was considered in the findings of the assessment and in the development of desired conditions, objectives, and management approaches for vegetation and ecological response units.	Incorporated into the findings in the assessment	N/A
Arizona's Long-Range Transportation Plan, 2011	The plan includes goals and objectives to improve mobility and accessibility, link transportation and land use, support economic development, promote natural,	Roads	RD-DC-01, RD-DC-02, RD-O-02, RD-MA-01, RD-MA-03, RD-MA-04

7 Plan component coding is outlined in the forest plan, Chapter 1. Introduction, Forest Plan Framework and Organization

State Plans	Consideration in the plan revision process	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component7
	cultural, and environmental resources, and strengthen partnerships. It was considered in the development of desired conditions and management approaches for roads and forest infrastructure.		
Arizona Bat Conservation Strategic Plan, 2003	This strategy provides consistency for bat conservation throughout Arizona. It was considered in the development of the species of conservation (USDA Forest Service 2021) and the development of plan components for bat relevant resources	Mining, Minerals, and Abandoned Mines, Caves and Karsts	MMAM-G-06, CVK-DC-03, CVK-G-02
Arizona Partners in Flight Bird Conservation Plan, 1999	This plan identifies priority bird species and habitats and establishes objectives for bird populations and habitats in Arizona. Considered in the development of the species of conservation (USDA Forest Service 2021) and the development of plan components for bat relevant resources.	Wildlife-Related Recreation, Vegetation and Ecological Response Units, Wildlife, Fish, and Plants	REC-WR-DC-01, REC-WR-MA-02, REC-WR-MA-05, ERU-G-06, ERU-DES-DC-07

County Plans

Beginning with the initiation of the plan revision process, local government officials from the counties that have lands within the Tonto National Forest boundaries (Gila, Maricopa, Pinal, and Yavapai Counties) were invited to participate in the process. Both Gila and Maricopa counties were active participants in the technical partner meetings and other engagement opportunities held throughout the process. Gila County Board of Supervisors, Yavapai County District 2 supervisor, and Maricopa County Air Quality Department submitted formal comments on the draft forest plan and draft environmental impact statement.

The related and equivalent county plans were considered and evaluated for consistency with the forest plan during the planning process. There are a number of similarities between the goals and objectives of the county plans and the desired conditions and management approaches of the forest plan. The Forest has determined that the forest plan is generally compatible with the associated county plans including the growth policies and future management planning. Table 32 through table 35 below outline some specifics of each county plan and how they are compatible to the Tonto National Forest land and resource management plan.

The Tonto National Forest plan sets forth a vision through desired conditions, and then specifies standards, guidelines, objectives, and suitable uses to achieve this vision. This review focuses on the higher-level desired conditions (DC), rather than the more specific plan components, except where needed to show additional connections to agency plans or provided by a cooperating agency. The review is structured to display the relevant agency goals and objectives and the corresponding Tonto National Forest plan components. Not all elements of another agency's plan are relevant to a Forest Service land management plan and each section only discusses management related to forest service resource management.

Table 32. Gila County Comprehensive Plan, November 2003 (as amended in 2018)

Gila County Comprehensive Plan Element	Goal or objective related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component8
Land Use Element	Goal 1: A balanced residential, economic and natural resource land use program designed to promote the efficient and effective use of the County's limited private land base.	Lands and Access	LA-DC-02
Land Use Element	Goal 2: A high level of community quality with a clean, safe and healthy natural environment that provides multiple-use opportunities for both residents and non-residents.	Recreation, Dispersed Recreation, Wildlife-Related Recreation	REC-DC-01, REC-DC-02, REC-DC-09, REC-DC-10, REC-DIS-DC-01, REC-WR-DC-01, REC-WR-DC-03
Land Use Element	Objective 2.0: Pursue the achievement of a high standard of air quality within the County.	Air Quality	AQ-DC-01, AQ-DC-02
Land Use Element	Objective 2.1: Pursue the achievement of a high standard of water quality within the County.	Watersheds and Water Resources	WAT-DC-01, WAT-DC-02, WAT-O-02
Land Use Element	Objective 2.2: Encourage the preservation of significant natural, cultural and historical features.	Cultural and Historic Resources, Tribal Relations and Areas of Tribal Importance	CUH-DC-01, CUH-DC-02, CUH-DC-04, CUH-DC-05, TRB-DC-01
Land Use Element	Objective 2.3: Utilize the adopted Land Use Resource and Policy Plan for public lands as a vehicle to encourage the consideration of County issues in the management of public lands.	Lands and Access, Partnerships and Volunteers	LA-MA-03, PV-DC-04, PV-DC-05
Land Use Element	Objective 2.4: Protect and improve the scenic resources and qualities of the County.	Scenery	SC-DC-02, SC-DC-03, SC-DC-04, SC-DC-05
Land Use Element	Goal 3: A rural County that actively seeks to strengthen its strong cultural and social history and identity.	Cultural and Historic Resources, Rangelands, Forage, and Grazing	CUH-DC-04, GRZ-DC-01
Transportation Element	Goal 5: A safe, efficient and cost effective multi-modal circulation system that provides for adequate mobility and access.	Lands and Access, Roads	LA-DC-06, RD-DC-01, RD-DC-02, RD-O-02, RD-MA-03
Transportation Element	Objective 5.3: Encourage the formation of informal partnerships to coordinate mutually beneficial transportation improvements.	Roads, Partnerships and Volunteers	RD-MA-03, RD-MA-01, PV-DC-02, PV-DC-04
Transportation Element	Objective 5.4: Actively work to reduce fugitive dust levels due to vehicular traffic on unimproved roadways.	Air Quality	AQ-DC-02, AQ-G-01, AQ-MA-01
Community Facilities Element	Goal 6: A functional public facilities program that can provide a high level of service to existing and future residents.	Facilities	FC-DC-01, FC-DC-07
Community Facilities Element	Objective: 6.0: Ensure adequate public facilities for full-time and seasonal residents.	Facilities	FC-DC-01, FC-DC-07

Table 33. Maricopa County Comprehensive Plan, 2016

8 Plan component coding is outlined in the forest plan, Chapter 1. Introduction, Forest Plan Framework and Organization

Maricopa County Comprehensive Plan Element	Goal or policy related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component
Land Use Element	Goal 3: Protect public health, safety and well-being.	Recreation, Special Uses, Invasive Species, Air Quality	REC-DC-01, SU-DC-05, INS-DC-01, AQ-DC-01
Land Use Element	Policy 7: Maricopa County supports coordinating land use and infrastructure planning with state agencies, counties, and municipalities.	Roads, Energy Production and Delivery, Partnerships and Volunteers	RD-DC-02, RD-MA-03, EG-DC-01, EG-DC-02, PV-DC-04
Land Use Element	Policy 10: Maricopa County supports coordinated planning efforts between local, state and federal agencies.	Partnerships and Volunteers	PV-DC-01, PV-DC-03, PV-DC-04, PV-DC-05
Land Use Element	Policy 15: Where necessary Maricopa County supports wildfire prevention and mitigation measures in the design of development.	Fire and Fuels	FF-DC-06, FF-DC-07
Land Use Element	Policy 22: Maricopa County supports reducing the impacts of new development on environmentally sensitive areas, including native wildlife (flora and fauna) habitat and corridors.	Wildlife, Fish, and Plants	WFP-DC-02
Transportation Element	Goal 2: Contribute to a safe, seamless and effective transportation system.	Lands and Access, Roads	LA-DC-06, RD-DC-01, RD-DC-02, RD-O-02, RD-MA-03
Transportation Element	Goal 4: Have a comprehensive transportation system that focuses on transportation systems management and operations to help reduce air pollution and promote efficient traffic movement and economic growth.	Lands and Access, Roads, Air Quality	LA-DC-06, RD-DC-01, RD-DC-02, RD-O-02, RD-MA-03, AQ-DC-02
Transportation Element	Policy 11: Maricopa County supports national ambient air quality standards (NAAQS) compliance.	Air Quality	AQ-DC-02
Transportation Element	Policy 12: Maricopa County supports improving low volume dirt roads as directed by its PM-10 dust abatement program.	Air Quality	AQ-DC-02, AQ-G-01
Transportation Element	Policy 13: Maricopa County support public education efforts that assist in reducing air pollution.	Air Quality	AQ-MA-01
Transportation Element	Policy 14: Where necessary, Maricopa County supports roadway planning that promotes identified scenic corridors, wildlife connectivity and linkages.	Roads, Scenery, Wildlife, Fish, and Plants	RD-DC-04, SC-DC-03, WFP-DC-05
Environment Element	Policy 4: Maricopa County supports innovative project design and development techniques that protect important plant and animal habitat and migration corridors.	Wildlife, Fish, and Plants	WFP-DC-01, WFP-DC-02, WFP-DC-05, WFP-MA-01
Environment Element	Policy 5: As directed by the State Historic Preservation Office (SHPO) and Arizona Game and Fish Department, Maricopa County supports cultural resource and biological surveys being completed – and needed mitigation measures established – prior to new development.	Cultural and Historic Resources, Tribal Relations and Areas of Tribal Importance, Wildlife, Fish, and Plants	CUH-DC-08, TRB-DC-01, WFP-DC-06, WFP-O-01, WFP-MA-08

Maricopa County Comprehensive Plan Element	Goal or policy related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component
Economic Growth Element	Goal 1: Contribute to an effective regional economy.	Partnerships and Volunteers, Recreation, Dispersed Recreation, Wildlife-Related Recreation, Rangelands, Forage, and Grazing, Forestry and Forest Products	PV-DC-04, REC-DC-01, REC-DIS-DC-, REC-WR-DC-01, GRZ-DC-01, FP-DC-01, FP-DC-05
Open Space Element	Goal 3: Build the Maricopa Trail and the Maricopa County Regional Trail System. Work with municipalities to connect this trail system to their park and preserve systems.	Recreation, Dispersed Recreation	REC-DC-05, REC-DC-09, REC-DIS-DC-05
Water Resources Element	Goal 1: Promote and protect public health with a clean water supply.	Watersheds and Water Resources	WAT-DC-02, WAT-DC-04, WAT-DC-06
Water Resources Element	Policy 6: Maricopa County supports informing the public about the importance and benefits of water conservation.	Watersheds and Water Resources	WAT-MA-04
Energy Element	Policy 1: Maricopa County supports energy efficient design and construction of new development.	Facilities	FC-DC-04

Table 34. Pinal County Comprehensive Plan, 2019

Pinal County Comprehensive Plan Element	Goal or objective related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component9
Land Use Element	Objective 3.1.4: Promote a balance between conservation of natural environment and development.	Recreation, Lands and Access, Watersheds and Water Resources	REC-DC-01, LA-DC-02, WAT-DC-01
Land Use Element	Objective 3.1.7: Communicate and collaborate with Native American communities on planning and development issues of joint concern.	Tribal Relations and Areas of Tribal Importance	TRB-DC-01, TRB-MA-01, TRB-MA-02, TRB-MA-04,
Cultural Resources Element	Goal 3.10: Conserve cultural resources throughout Pinal County.	Cultural and Historic Resources	CUH-DC-01, CUH-DC-02, CUH-DC-06, CUH-DC-07
Cultural Resources Element	Objective 3.10.1: Compline a list of highly significant Pinal County cultural resources and encourage the protection of significant concentrations of archeological, historical and other cultural resources.	Cultural and Historic Resources	CUH-DC-01, CUH-DC-02, CUH-DC-08
Cultural Resources Element	Objective 3.11.1: Foster education and outreach partnerships with public agencies and private organizations whose goals and objectives promote preservation of the region's heritage.	Cultural and Historic Resources, Tribal Relations and Areas of Tribal Importance	CUH-MA-02, TRB-MA-08
Mobility and Connectivity Element	Objective 4.1.1: Develop a balanced transportation system.	Roads	RD-DC-01, RD-DC-02, RD-O-01

9 Plan component coding is outlined in the forest plan, Chapter 1. Introduction, Forest Plan Framework and Organization

Pinal County Comprehensive Plan Element	Goal or objective related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component9
Economic Development Element	Objective 5.1.2: Increase the economic impact of visitors and seasonal residents in the County through wildlife watching and passive outdoor recreation.	Wildlife-Related Recreation, Recreation, Special Uses	REC-WR-DC-01, REC-WR-DC-02, REC-WR-DC-03, REC-DC-10, SU-DC-03
Open Spaces and Places Element	Goal 6.1: Develop a connected system of open space areas that protect and conserve natural, physical and social resources.	Designated Wilderness, Recommended Wilderness	DWMA-DC-01, RWMA-DC-02,
Open Spaces and Places Element	Objective 6.1.1: Identify, preserve, protect or conserve areas of critical habitat and high habitat value and wildlife movement corridors.	Wildlife, Fish, and Plants	WFP-DC-01, WFP-DC-02, WFP-DC-05
Open Spaces and Places Element	Objective 6.1.1.2: Explore implementation of flexible zoning techniques that promote open space preservation and protection of natural resources and critical habitat.	Wildlife, Fish, and Plants	WFP-DC-05
Open Spaces and Places Element	Objective 6.1.3: Identify, preserve, and protect cultural resources that have cultural significance and provide a link to this historical record.	Cultural and Historic Resources	CUH-DC-01, CUH-DC-06, CUH-DC-07
Open Spaces and Places Element	Objective 6.2.1: Provide for a wide range of nonmotorized and motorized trail usages including hiking, equestrian, mountain biking and off-highway vehicles.	Recreation, Dispersed Recreation	REC-DC-04, REC-DIS-DC-01, REC-DIS-DC-02, REC-DIS-DC-05
Open Spaces and Places Element	Goal 6.3: Develop an accessible, comprehensive park system that provides a balance of passive and active recreational opportunities for County residents and visitors.	Dispersed Recreation, Recreation	REC-DIS-DC-01, REC-DIS-DC-05, REC-O-03, REC-O-04
Open Spaces and Places Element	Goal 6.5: Encourage coordination and cooperation between adjacent municipalities, agencies, jurisdictions and the public in open space, park and trail development.	Recreation	REC-DC-05
Open Spaces and Places Element	Objective 6.5.1: Build relationships among municipalities, County, state and federal agencies, landowners/managers to provide recreation and open space opportunities.	Recreation	REC-DC-05, REC-MA-05, REC-MA-06,
Environmental Planning Element	Objective 7.1.2: Protect Pinal County's vibrant natural ecosystem.	Vegetation and Ecological Response Units	ERU-DC-01
Environmental Planning Element	Objective 7.1.3: Improve the County's air quality.	Air Quality	AQ-DC-02
Environmental Planning Element	Objective 7.1.7: Support efforts that increase public awareness of Pinal County's valuable natural environment.	Partnerships and Volunteers	PV-DC-01, PV-DC-03, PV-DC-04
Water Resources Element	Goal 7.2: To protect the long-term water supply for Pinal County.	Watersheds and Water Resources	WAT-DC--8
Energy Element	Goal 7.4: Improve the energy efficiency of structures in Pinal County.	Facilities	FC-DC-04

Pinal County Comprehensive Plan Element	Goal or objective related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component9
Energy Element	Goal 7.6: Expand renewable energy in Pinal County.	Energy Production and Delivery	EG-DC-02
Energy Element	Objective 7.7.1: Identify and protect potential sites and corridors for new energy generation and transmission facilities.	Energy Production and Delivery	EG-DC-01, EG-DC-03
Energy Element	Objective 7.7.4: Maintain cooperative working relationships with energy providers.	Energy Production and Delivery	EG-MA-01

Table 35. Yavapai County Comprehensive Plan, 2012

Yavapai County Comprehensive Plan Element	Goal or objective related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component10
Land Use Element	Objective 2b: Identify sites of scenic interest and recreational opportunities.	Recreation, Scenery	REC-DC-01, REC-DC-03, SC-DC-01, SC-DC-03
Land Use Element	Objective 2c: Discourage undesirable and incompatible land uses along scenic corridors.	Scenery	SC-DC-02, SC-DC-04
Land Use Element	Objective 3d: Encourage mitigation of impacts that are undesirable but necessary land uses.	Mining, Minerals, and Abandoned Mines, Rangelands, Forage, and Grazing, Forestry and Forest Products	MMAM-DC-02, MMAM-DC-03, GRZ-DC-03, FP-DC-02
Land Use Element	Goal 4: Maintain coordination with existing Local, State and Federal entities.	Lands and Access	LA-DC-02, LA-MA-03
Land Use Element	Objective 4b: Support local jurisdictions and encourage intermediary communication with multiple agencies.	Lands and Access, Partnerships and Volunteers	LA-MA-03, PV-DC-03, PV-DC-05
Land Use Element	Goal 5: Maintain public participation criteria for land use decisions.	Lands and Access	LA-DC-02, LA-MA-02
Land Use Element	Objective 5b: Support better public understanding as to the importance of necessary land uses that serve the greater community need.	Partnerships and Volunteers	PV-DC-04, PV-DC-05,
Water Resources Element	Goal 1: Promote conservation and reuse of water	Watersheds and Water Resources	WAT-MA-04
Water Resources Element	Objective 1e: Encourage the preservation of the Verde River and all other major waterways in Yavapai County and support the protection of riparian resources.	Watersheds and Water Resources, Riparian Areas, Seeps, Springs, Wetlands, and the Riparian Management Zone	WAT-DC-03, WAT-MA-04
Water Resources Element	Goal 2: Continue County-wide education on water resources management.	Watersheds and Water Resources	WAT-MA-04, WAT-MA-07
Water Resources Element	Objective 2b: Educate the public about existing knowledge of water resources management and the emerging scientific studies.	Watersheds and Water Resources	WAT-MA-04

10 Plan component coding is outlined in the forest plan, Chapter 1. Introduction, Forest Plan Framework and Organization

Yavapai County Comprehensive Plan Element	Goal or objective related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component10
Open Space Element	Goal 1: Enhance open space and recreational opportunities.	Recreation	REC-DC-01, REC-O-03, REC-O-04
Open Space Element	Objective 1a: Continue participating in Sustainable Recreation Planning in conjunction with the Prescott National Forest to reserve desirable public lands for recreation, open space protection of wildlife habitats and buffering of residential uses.	Recreation, Wildlife, Fish, and Plants	REC-MA-01, WFP-DC-05
Open Space Element	Objective 1c: Encourage the preservation and connectivity of existing trails in new developments for multi-use and motorized trails.	Dispersed Recreation	REC-DIS-DC-02, REC-DIS-DC-04, REC-DIS-DC-05, REC-DIS-DC-06, REC-DIS-MO-DC-01
Open Space Element	Objective 1d: Promote wildlife corridor connectivity between open spaces in new and existing developments.	Wildlife, Fish, and Plants	WFP-DC-05
Open Space Element	Goal 2: Preserve the open space character of the county.	Scenery	SC-DC-04
Open Space Element	Objective 2a: Protect scenic views and mountain vistas by encouraging new development to adapt sensitively to natural areas and by protecting wildlife corridors.	Scenery, Wildlife, Fish, and Plants	SC-DC-03, WFP-DC-05
Open Space Element	Objective 2b: Encourage the protection of riparian areas, watercourses and associated floodplains in new developments.	Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones	RMZ-DC-05
Open Space Element	Objective 2d: Encourage property owners to maintain and protect historic access to public lands through their property	Lands and Access	LA-MA-02
Energy Element	Objective 1a: Identify areas that could be conducive to large scale renewable energy production.	Energy Production and Delivery	EG-DC-02
Energy Element	Goal 3: Encourage education of the public regarding renewable energy.	Partnerships and Volunteers	PV-DC-05, PV-MA-02
Energy Element	Objective 3a: Promote and encourage education to County residents regarding types of renewable energy and potential benefits of renewable energy.	Partnerships and Volunteers	PV-DC-05, PV-MA-02
Environmental Element	Goal 1: Support programs which educate the public on maintaining a high level of water quality and conservation.	Partnerships and Volunteers	PV-DC-05, PV-MA-02
Environmental Element	Objective 1e: Enhance partnerships with watershed protective organizations.	Watersheds and Water Resources	WAT-MA-01, WAT-MA-03, WAT-MA-05
Environmental Element	Goal 2: Encourage programs to maintain and improve air quality standards.	Air Quality	AQ-DC-02
Environmental Element	Objective 2b: Encourage the use of dust-free surfaces or pursue dust control measures on unpaved maintained roadways.	Air Quality	AQ-DC-02, AQ-G-01
Environmental Element	Objective 2c: Maintain clean air by mitigating sources of pollution (e.g., traffic congestion,	Air Quality	AQ-DC-02, AQ-MA-01

Yavapai County Comprehensive Plan Element	Goal or objective related or connected to the management of the Tonto National Forest	Related Section of the Tonto National Forest Plan	Related Tonto National Forest Plan Component10
	open burning and heavily travelled unpaved roads).		
Environmental Element	Objective 3b: Encourage land use strategies that conserve important wildlife habitat and environmentally sensitive lands.	Wildlife, Fish, and Plants	WFP-DC-05
Environmental Element	Objective 3c: Encourage projects that maintain wildlife connectivity and do not contribute to the habitat fragmentation.	Wildlife, Fish, and Plants	WFP-DC-05

Cities

Various city plans were reviewed and considered during the assessment phase of the plan revision process (USDA Forest Service 2017) to evaluated trends, risks to sustainability, and think about what might need to change to better manage Tonto National Forest resources. There is a strong connection with their plans and the national forests, but the jurisdictions do not overlap and thus city plan were mostly considered when thinking about broad landscape management and in developing desired conditions. Some resources have including specific analysis for the connection of city plans, where applicable, in the resource specific cumulative effects sections of the environmental impact statement.

Throughout the plan revision process, many city representatives were met with in addition to the public participation opportunities listed above. This includes meetings with town councils, mayors, and community managers. The Forest also attended dozens of community events held in cities surrounding and adjacent to the Tonto.

The Tonto National Forest also participated in collaboratives in multiple cities and counties, such as Central Arizona Conservation Alliance, to help create desired conditions and management approaches. These meetings have helped to ensure management concerns and ideas could be incorporated into future management for the Tonto National Forest.

Some cities have also participated in the technical partner meetings hosted during the development of the forest plan. That partnership has helped the Forest understand how potential future management actions could benefit cities in and around the forest.

Appendix D. Wilderness Recommendation Process

Introduction

When revising the forest plan, the Tonto National Forest is required to identify and evaluate lands that may or may not be suitable for inclusion in the National Wilderness Preservation System and determine whether to recommend to Congress any such lands for wilderness. A description of this process can be found in Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12.[11] This process includes the following four steps:

> Inventory: Identify and create an inventory of all lands that may or may not be suitable for inclusion in the National Wilderness Preservation System using a given set of criteria.
>
> Evaluation: Evaluate the wilderness characteristics of all lands included in the inventory that may be suitable for inclusion in the National Wilderness Preservation System using a given set of criteria and assign a ranking of high, moderate, low, or no for their wilderness character.
>
> Analysis: Based on the above rankings, the forest supervisor will determine which areas to further analyze through the National Environmental Policy Act process.
>
> Recommendation: Based on the above analysis the forest supervisor will decide which areas, if any, to recommend to Congress for inclusion in the National Wilderness Preservation System.

Lands evaluated and analyzed through this process and the resulting National Environmental Policy Act analysis are only preliminary administrative recommendations. Recommended wilderness is distinct from designated wilderness and is managed in accordance with forest plan direction as opposed to the Wilderness Act. Congress has reserved the authority to make final decisions on wilderness designation.

The detailed description and rationale of each step in the Tonto National Forest Wilderness Recommendation Process can be found in full within the project record or on the Tonto National Forest website: www.fs.usda.gov/goto/tontoplan (Wilderness Recommendation Process).

Step 1: Inventory

The primary function of the inventory step was to identify all lands on the Tonto National Forest to be evaluated for wilderness characteristics as defined in the Wilderness Act of 1964. The inventory was broad and inclusive, based on the inventory criteria identified in the Forest Service Handbook (FSH 1909.12 Chapter 70, Section 71.2; 71.21 thru 71.22b) and further defined by the Tonto National Forest through resource specialists and public engagement. This section outlines the final inventory criteria that was developed.

The intent of the inventory step was to identify lands that may or may not have wilderness characteristics, and to allow for public input and feedback on the inventoried areas. Areas that may have wilderness characteristics were included in the inventory, and those that did not have wilderness characteristics were not. Inclusion in the inventory is not a designation that conveys or requires a particular kind of management; rather, inclusion in the inventory means an area will go on to be evaluated for wilderness characteristics in step 2 of this process.

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11 Accessible on the USDA Forest Service 2012 Planning Rule website: https://www.fs.usda.gov/detail/planningrule/home/?cid=stelprd3828310.

The inventory step had a given set of criteria—size of area, roads, and other improvements—which are explained and identified in the following sections. The inventory criteria are then applied to all the lands on the forest using Geographic Information Systems (GIS) to develop an inventory map. The inventory map was released for public review using a collaborative mapping tool called story maps. This tool allowed the public to provide input, based on the criteria, of all the lands included in the inventory step. following the final inventory map, all areas included in the inventory were evaluated for their wilderness characteristics in the evaluation step.

Inventory Criteria

Chapter 70, Sections 71.21 thru 71.22b, of the Forest Service Land Management Planning Handbook 1909.12 outlines criteria to develop an inventory of lands that may be suitable for inclusion in the National Wilderness Preservation System. There are two broad categories of criteria: 1) size and 2) improvements. The "improvements" category includes 1) roads and 2) substantially noticeable improvements.

Though the Land Management Planning Handbook outlines the broad categories of criteria, the Tonto National Forest had the flexibility to further define the criteria. Areas with this flexibility included the definition of substantially noticeable, the types of improvements that would or would not be considered substantially noticeable, and the buffers surrounding improvements that are substantially noticeable. The Tonto National Forest used a collaborative process to establish the criteria definitions in this document, allowing for two rounds of public review and comment in June and August 2017. The final criteria, as defined by the Tonto National Forest through resource specialist review and public engagement, are outlined in the following sections.

Size

Areas to be included in the inventory must be federal lands and must meet one of the following size criteria:

1. The area contains 5,000 acres or more.
2. The area contains less than 5,000 acres but is of sufficient size as to make practicable its preservation and use in an unimpaired condition, including but not limited to areas adjacent to an existing wilderness, administratively recommended wilderness, wilderness study area, or wilderness inventory of other Federal ownership.

For areas less than 5,000 acres that are not adjacent to the above, the forest supervisor considered and determined whether such areas could be managed as recommended wilderness and preserved in an unimpaired condition based on factors such as topography.

Areas smaller than 5 acres, but adjacent to existing wilderness, administratively recommended wilderness, wilderness study area, or wilderness inventory of other Federal ownership, was removed from the inventory to account for mapping errors.

Improvements

Improvements are things that show evidence of human activities such as roads, structures, or past management activities. The presence of such improvements did not necessarily eliminate areas for consideration in the inventory, however the criteria eliminated areas from consideration if improvements were substantially noticeable. The definition of substantially noticeable and information on improvements considered for removal is outlined in the following sections.

Road Improvements Criteria

Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12 outlines criteria for what road improvements should and should not be included in the inventoried areas. A forest road is defined as a road wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the System and the use and development of its resources (36 CFR 212.1). The Tonto National Forest has further defined these criteria in table 36.

Table 36. Road improvements criteria

Inventory Criteria Identified in Planning Handbook	Inventory Criteria Further Defined by Tonto National Forest
Roads	**Roads eliminated from inventory**: Permanently authorized roads with a valid easement. Forest roads maintained to levels 2, 3, 4, or 5 according to the recently signed Record of Decision for the Travel Management Plan. For Forest Service road maintenance level definitions, please see Guidelines for Roads Maintenance Levels. *Note: Potentially eliminated roads will also have a buffer of approximately 100 feet on either side of the road centerline, to include room for the road width, right-of-way, and potential geospatial data inaccuracies.* **Roads carried forward in inventory and considered in evaluation**: Forest roads maintained to level 1 (closed to all motor vehicles); Level 2 roads that do not meet the exclusion criteria of 71.22a 2. (c). in Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12; Routes that are decommissioned, unauthorized or temporary, or forest roads that are identified for decommissioning in a previous decision document; Forest roads that will be reclassified to level 1 through a previous decision document; Historical wagon routes, historical mining routes, or other settlement era transportation routes considered part of the historical and cultural landscape of the area; Motorized trails or other user created routes. These are not considered roads and will be kept in the inventory and considered in evaluation.

Other Improvements Criteria

Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12 outlines the required criteria for other improvements that should and should not be included in the inventoried areas. One such criterion allows the exclusion of improvements that are substantially noticeable to the area as a whole.

The term “substantially noticeable” is not directly defined in Chapter 70 of the Forest Service Land Management Planning Handbook. This allowed for flexibility in determining what improvements would be considered substantially noticeable on the Tonto National Forest. The following definition of “substantially noticeable” for the other improvements criteria was developed and refined through resource specialist and public engagement.

Substantially noticeable improvements to the forest landscape shall be those improvements that are judged by the interdisciplinary team to negatively affect the predominantly natural appearance of the surrounding landscape due to any single or combination of the following traits:

- They are obtrusive in size, shape, or contour creating noticeable difference in the form, line, color, texture and/or pattern that contrasts with the surrounding natural landscape;
- They are reflective or of unnatural coloration (and cannot be easily made a natural coloration);
- They are not shielded from general view by location, or sheltered by landscape features or vegetation;
- They are not similar in type or appearance to improvements that exist in current Tonto National Forest wilderness;
- They are highly concentrated in an area or widespread in the landscape, reflecting pervasive past human influence,
- They are not likely to appear more natural over time;
- Or they do not contribute significantly to the historical character and cultural context of the area by their presence and preservation.

For each improvement that is substantially noticeable, a buffer was added around the feature in GIS to account for its impact on the ground. These buffers were determined thorough resource specialist review and public feedback. Substantially noticeable improvements and their buffers were removed from the inventory. These buffers include:

- 50 foot buffer around substantially noticeable improvements with an impact on the ground of less than one acre.
- 100 foot buffer around substantially noticeable improvements with an impact on the ground greater than 1 acre.
- 100 foot buffer on either side of the centerline on all linear improvements (for example: powerlines, pipelines, etc.) unless a larger right-of-way is associated with the improvement's permit.
- 300 foot buffer around private property.

Not all improvements that are substantially noticeable were eliminated during the inventory. For example, an improvement that fits the definition of substantially noticeable, but has a small footprint not impacting the larger area considered, was retained in the inventory. Those substantially noticeable improvements not eliminated during inventory, as well as other improvements not considered substantially noticeable, were considered during evaluation (step 2).

The categories of substantially noticeable improvement are directly from chapter 70 of the Land Management Planning Handbook. The Tonto National Forest further defined the criteria for substantially noticeable improvement categories in table 37. The definitions and examples listed below were considered when reviewing improvements, but field knowledge and subject matter expertise was also used in final determinations on whether an improvement was included or eliminated from the inventory.

Table 37. Other improvements criteria

Inventory Criteria Identified in Planning Handbook	Inventory Criteria Further Defined by Tonto National Forest
Airstrips and Heliports	'Substantially noticeable' improvements that may be eliminated from inventory: Surfaced runways, landing pads, or heliports with permanent structures. Improvements carried forward in the inventory and considered in evaluation: Any unsurfaced runways, landing pads, or heliports and without permanent structures.
Vegetation treatments and Timber harvest areas	'Substantially noticeable' improvements that may be eliminated from inventory: Treatments in which there is a noticeable difference in form, line, canopy cover, and texture found in the surrounding natural landscape and vegetation regeneration is minimal. Concentrations of treatments that create an unnatural pattern across the landscape. Improvements carried forward in the inventory and considered in evaluation: Vegetation treatments such as prescribed fire use and non-commercial fuels reduction treatments that are not substantially noticeable. Areas with legacy (closed) logging roads, fuelwood, or other thinned areas and other timber harvest areas where logging and prior road construction are not substantially noticeable.
Permanently installed vertical structures, such as electronic installations that support television, radio, telephone, or cellular communications	'Substantially noticeable' improvements that may be eliminated from inventory: Vertical structures that have one or a combination of the following traits: • Require regular access (at least once a year) for maintenance, • Have an associated ground disturbance of 1 acre or greater, • Are taller than the surrounding tree or shrub height, • And/or occur in a concentration. Improvements carried forward in the inventory and considered in evaluation: Permanently installed vertical structures in which the impacts on the ground, as well as their maintenance and access needs, are minimal (less than once a year) and not substantially noticeable.
Areas of mining activity	'Substantially noticeable' improvements that may be eliminated from inventory: Areas of commercial open pit mining that have not undergone reclamation, active mining operations, tailing piles, and areas of active mine reclamation. Improvements carried forward in the inventory and considered in evaluation: sand and gravel pits, permit rock collection areas, small mining claims, or historic mining evidence or structures, and other areas of mining activity where impacts are not substantially noticeable (as defined on page 3).
Range improvement areas	'Substantially noticeable' improvements that may be eliminated from inventory: Range improvements that have one or a combination of the following traits: • Require regular access (at least once a year) for maintenance, • Have an associated ground disturbance of 1 acre or greater, • Are taller than the surrounding tree or shrub height, • And/or occur in a concentration. Improvements carried forward in the inventory and considered in evaluation: fences, agricultural water pipelines, water troughs, earthen tanks, corrals, or trick tanks. All improvements that can be altered to appear more natural on the landscape will be carried forward to evaluation.

Inventory Criteria Identified in Planning Handbook	Inventory Criteria Further Defined by Tonto National Forest
Recreation improvements	'Substantially noticeable' improvements that may be eliminated from inventory: Developed recreation sites (for example campgrounds, day-use areas, or interpretive sites of a permanent nature) or special use permit boundaries. Improvements carried forward in the inventory and considered in evaluation: Areas with easily removable recreation developments that are not substantially noticeable as defined on page 3. For example: areas with dispersed camping sites and outfitter camps as they are temporary and easily removed. Areas with small bridges that contribute to primitive recreational uses. Existing non-motorized, mechanized (bike), or motorized trails, or any user created trails are included in the inventory. Trails are not considered to be a developed recreational improvement in the inventory criteria.
Ground-return telephone lines, electric lines, and powerlines	'Substantially noticeable' improvements that may be eliminated from inventory: Powerlines or other utilities with cleared rights-of-way and permanent above ground pipelines over 6 inches in diameter (typically industrial grade pipelines). Improvements carried forward in the inventory and considered in evaluation: ground return lines and electric lines if a right-of-way has not been cleared and pipelines under 6 inches in diameter.
Watershed treatment areas (such as contouring, diking, channeling)	'Substantially noticeable' improvements that may be eliminated from inventory: Non-earthen dams, reservoirs, post-fire flood control improvements (i.e., filter dams made of non-natural materials), and terraced areas. Earthen dams may be eliminated if they are considered substantially noticeable to the area as a whole. Improvements carried forward in the inventory and considered in evaluation: Earthen dams, other in-stream structures, historic watershed treatments, fish barriers, and other watershed improvements (including improvements for wildlife) that are not substantially noticeable.
Structures, dwellings, and other relics of past occupation	'Substantially noticeable' improvements that may be eliminated from inventory: Concentrations of permanent building structures including administrative buildings and developed recreation improvement structures. Improvements carried forward in the inventory and considered in evaluation: Areas with structures, dwellings and other relics of past occupation when they are considered part of the historical and cultural landscape of the area. For example: structures such as log cabins, split rail (post and log) fences, or orchards are considered positive cultural elements when looking at landscape character.
Lands adjacent to development or activities that impact opportunities for solitude.	'Substantially noticeable' areas that may be eliminated from inventory: N/A Areas carried forward in the inventory and considered in evaluation: Areas adjacent to development or activities will be included in the inventory. Boundaries will be extended to the edge of adjacent development defined by the ground disturbance footprint.

Inventory Criteria Identified in Planning Handbook	Inventory Criteria Further Defined by Tonto National Forest
Areas with improvements that have been proposed by the Forest Service for consideration as recommended wilderness as a result of a previous Forest planning process or that the Responsible Official merits for inclusion in the inventory that were proposed for consideration through public or intergovernmental participation opportunities	'Substantially noticeable' areas that may be eliminated from inventory: N/A Areas carried forward in the inventory and considered in evaluation: Include if identified.

Inventory Results

Based on public comment, the Tonto National Forest developed the recommended wilderness inventory map (figure 12). The different colored shapes each represent individual areas that were part of the inventory, and evaluated for wilderness character in the evaluation step. The purpose of assigning them a variety of colors is to make it easier to differentiate the boundaries of each inventoried area. There is no difference between the colors on this map. The inventory resulted in 134 individual polygons (totaling about 1,618,850 acres) to be evaluated in step 2 of the wilderness recommendation process. The wilderness inventory areas by district are shown in figure 13 through figure 18.

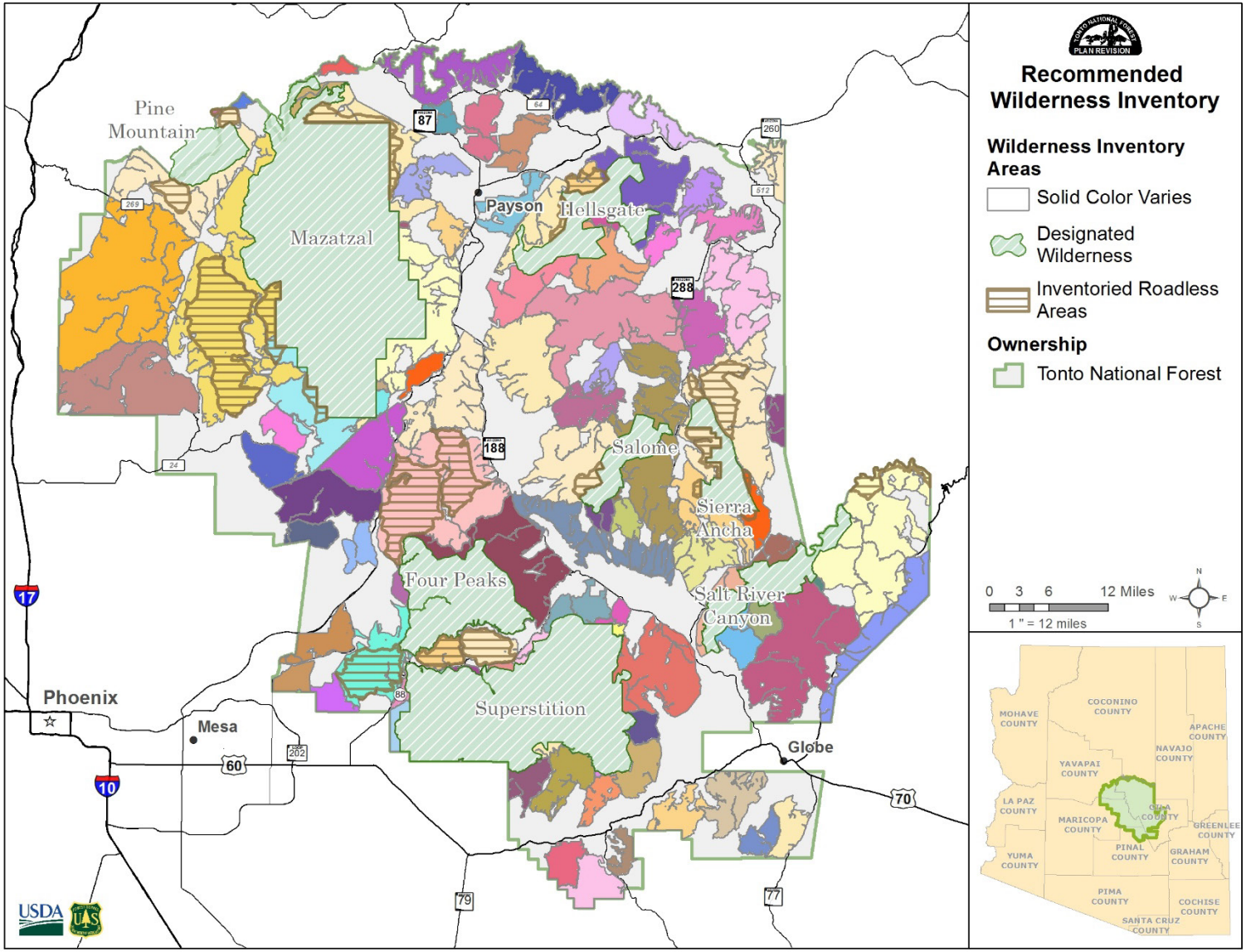


Figure 12. Areas inventoried for recommended wilderness on the Tonto National Forest

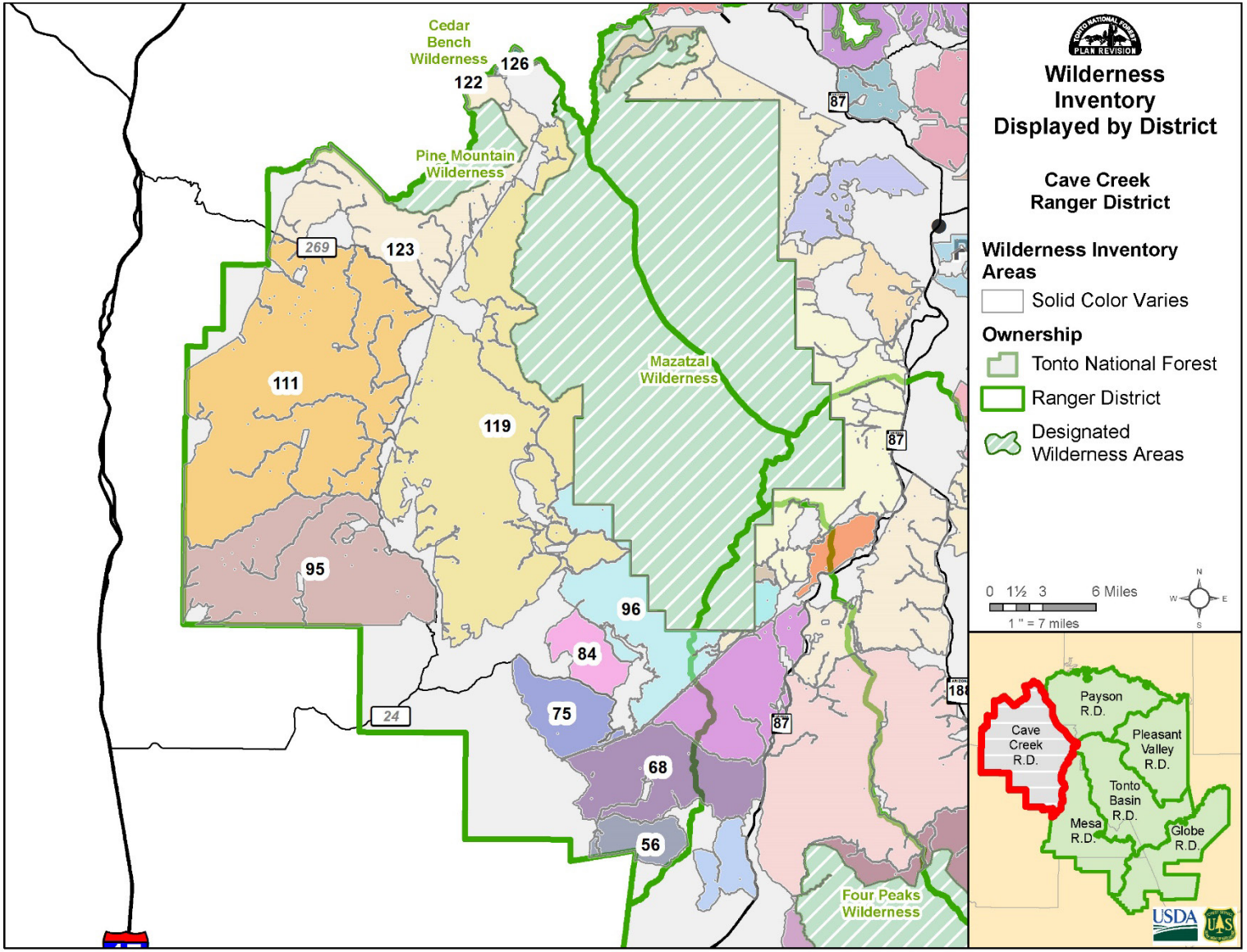


Figure 13. Recommended wilderness inventory for the Cave Creek Ranger District

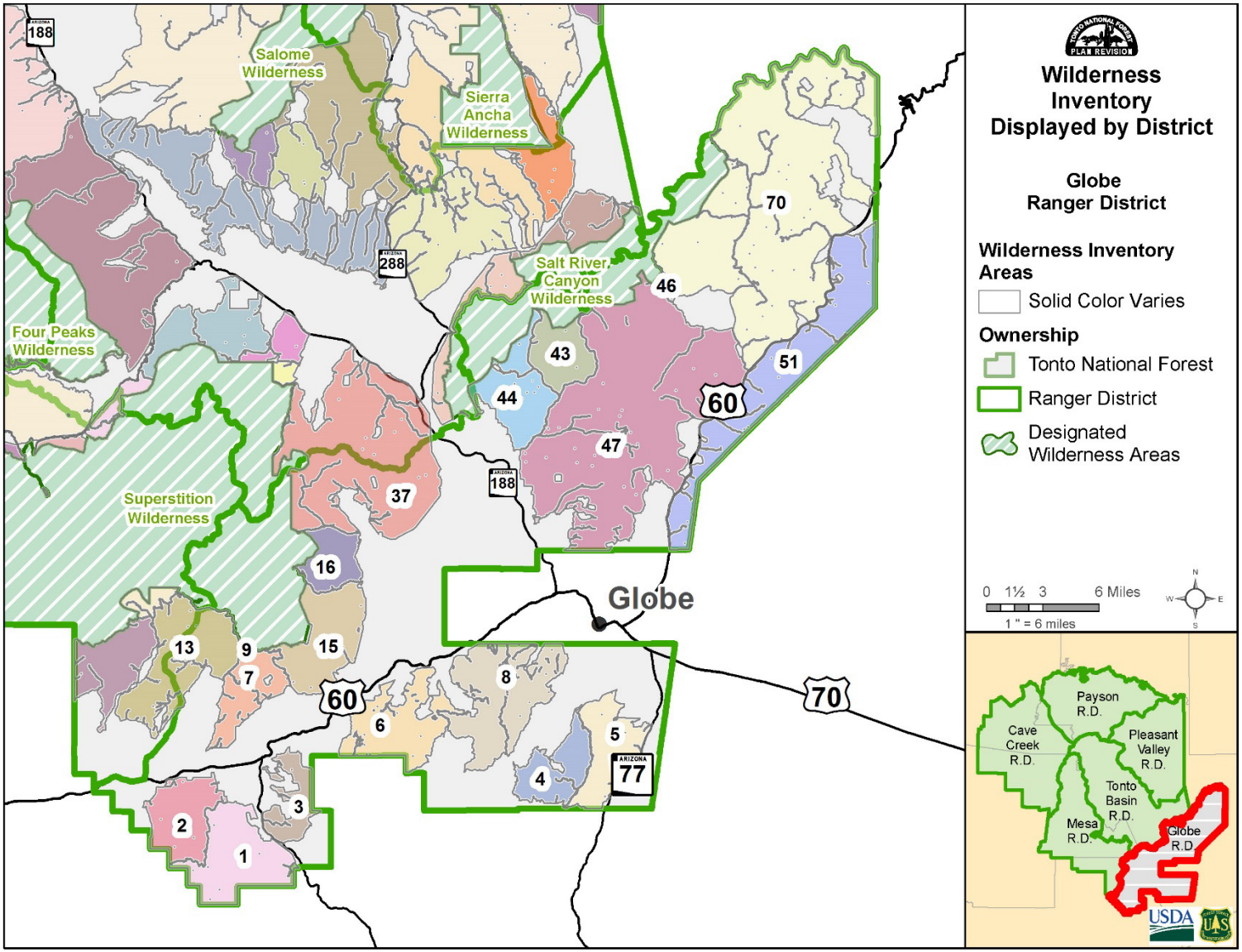


Figure 14. Recommended wilderness inventory for the Globe Ranger District

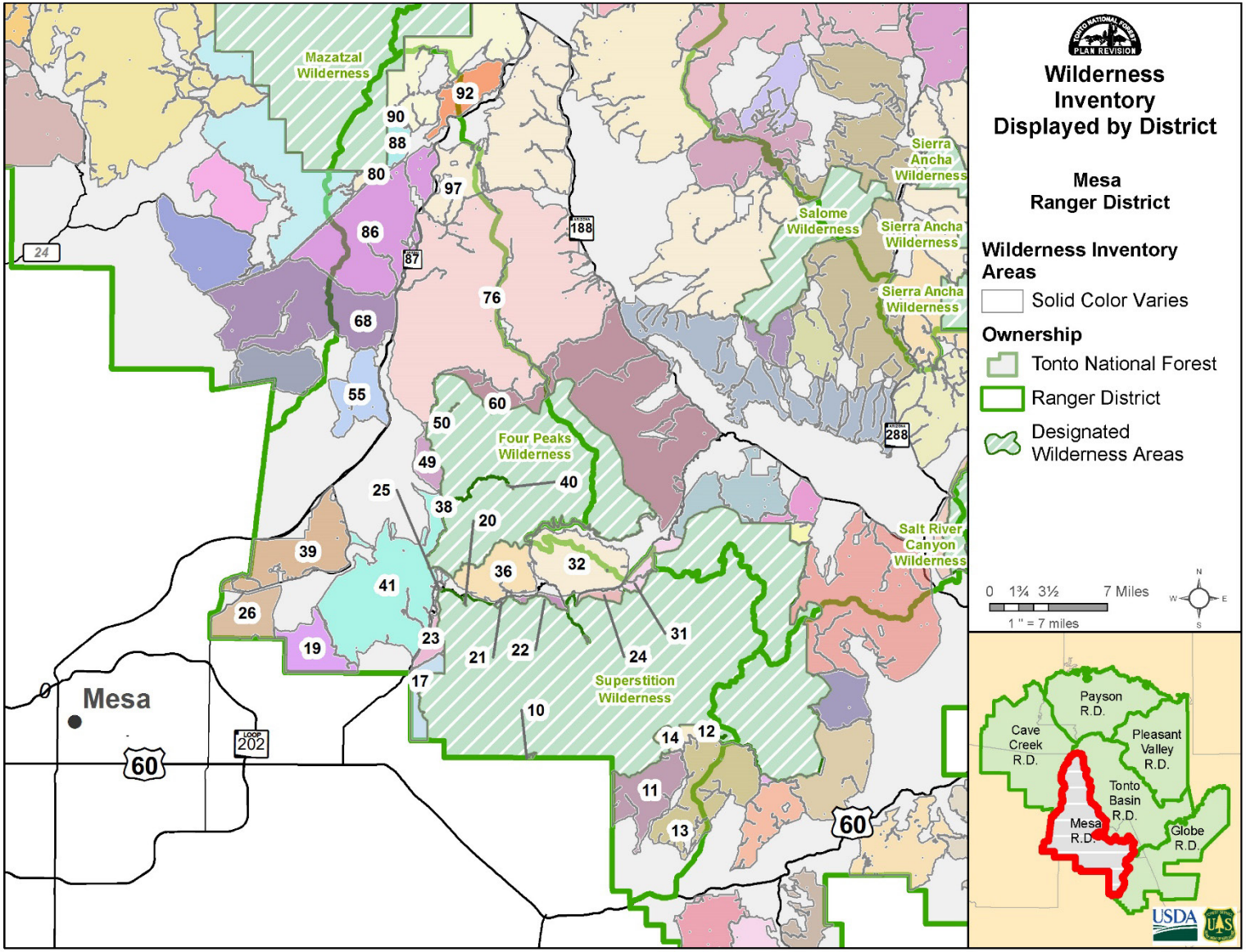


Figure 15. Recommended wilderness inventory for the Mesa Ranger District

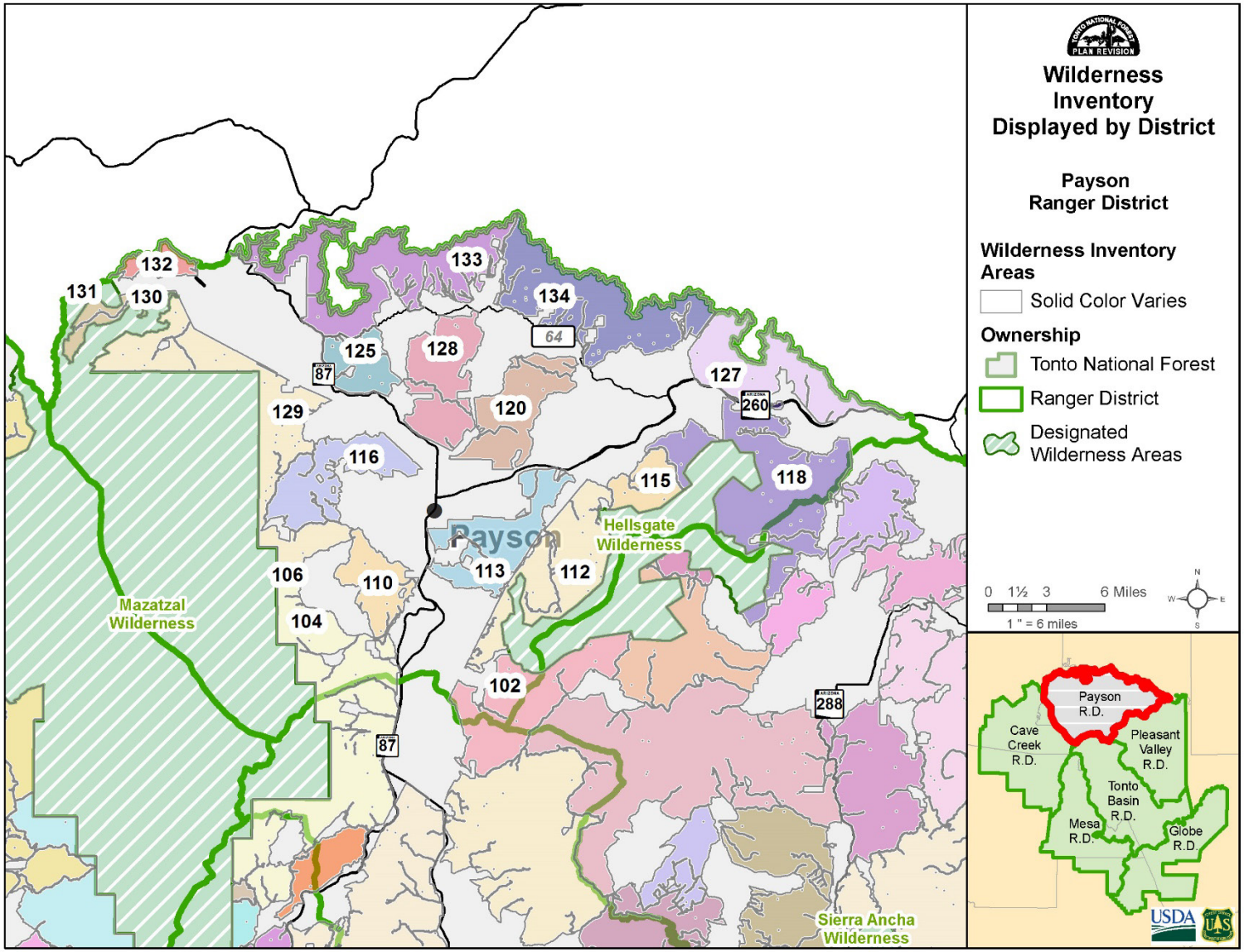


Figure 16. Recommended wilderness inventory for the Payson Ranger District

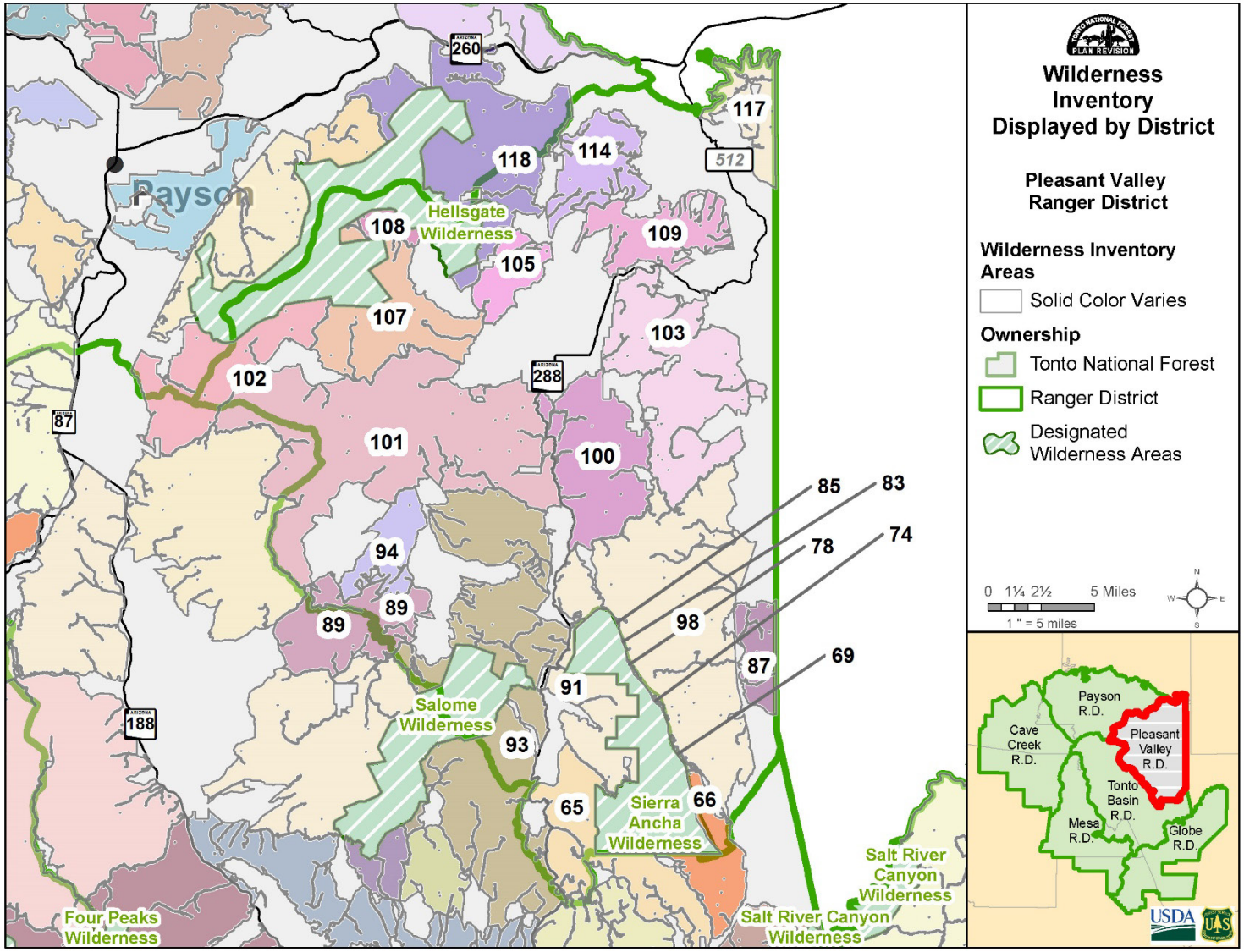


Figure 17. Recommended wilderness inventory for the Pleasant Valley Ranger District

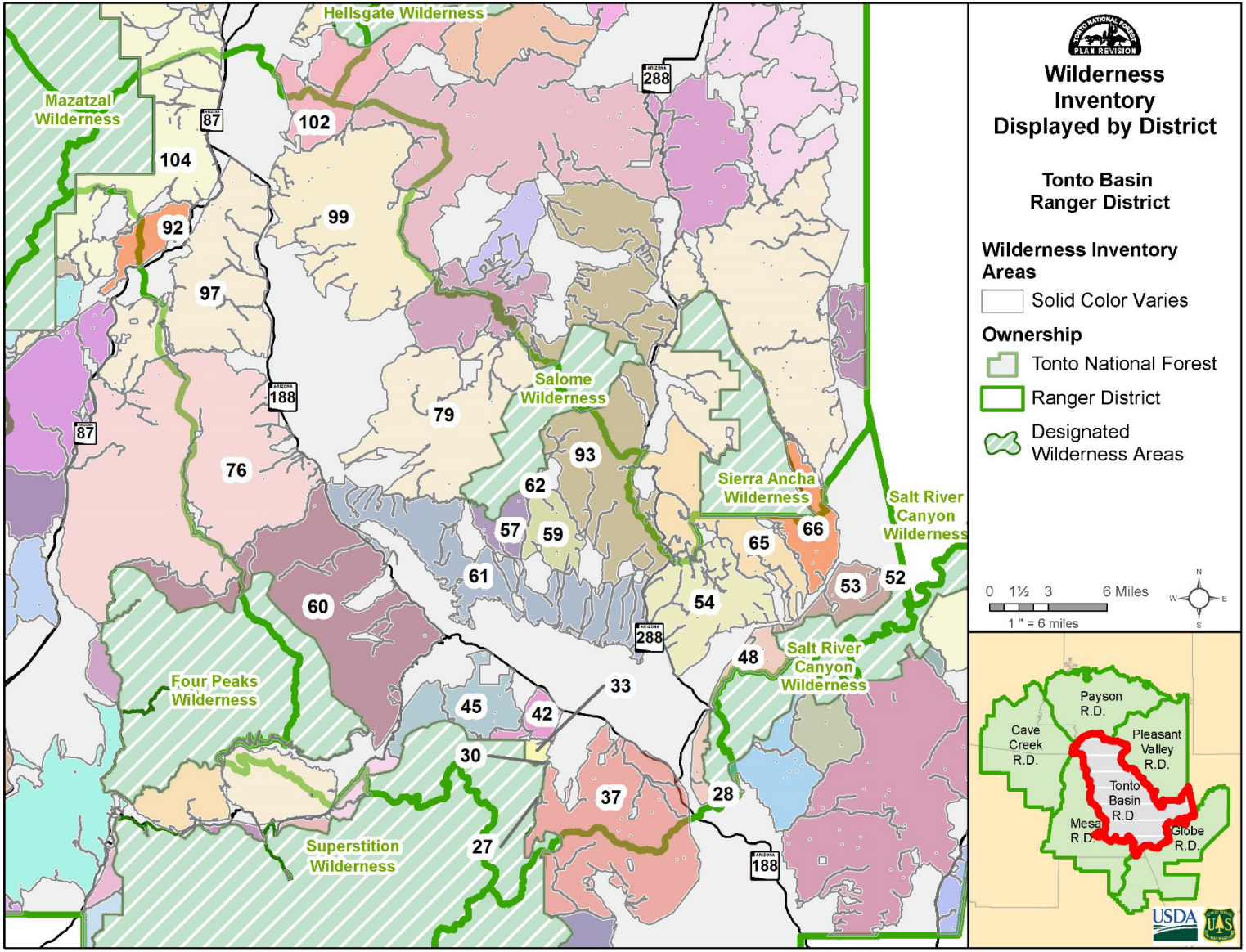


Figure 18. Recommended wilderness inventory for the Tonto Basin Ranger District

Step 2: Evaluation

The primary function of this step is to evaluate the wilderness characteristics of all lands included on the final inventory map. The evaluation is based on the criteria identified in the *Forest Service Handbook (FSH 1909.12 Chapter 70, Section 72.1)* and further defined by the Tonto National Forest through resource specialist and public engagement. Chapter 70, Section 72.1, of the Forest Service Land Management Planning Handbook 1909.12 outlines criteria for evaluation of lands for wilderness characteristics. In this step the Tonto National Forest evaluated the areas from the inventory for their wilderness characteristics: (1) size, (2) apparent naturalness, (3) outstanding opportunities for solitude or a primitive and unconfined type of recreation, (4) unique and outstanding qualities, and (5) manageability. These criteria, definitions, and ranking guides, as defined by the Tonto National Forest and our publics, are outlined in this document.

The evaluation step of the process has a given set of criteria that are explained and identified below in the following sections. These criteria will be used for ranking areas as HIGH, MODERATE, LOW, or NO for the level of wilderness characteristics the area has.

Process for the Wilderness Evaluation

The planning team on the Tonto National Forest took the following steps in evaluating the inventoried areas:

1. Release the draft evaluation criteria for public review and comment (completed October 2017)

   The intent of the Forest Supervisor and the planning team is to ensure that the process for evaluation is transparent and accessible to the public for input and feedback. The evaluation criteria for the Tonto National Forest Wilderness Recommendation Process has been through three rounds of public review. The criteria document reflected changes based on input from all three rounds of public comment. By allowing the public an opportunity to review throughout the development of this document, stakeholders were able to provide input and be familiar with the process used to evaluate the wilderness characteristics of the lands identified through the Inventory step. The three rounds of public review on the evaluation criteria are as follows:

   a. Tonto National Forest officials developed the preliminary evaluation criteria, which was available for comment from June 12 – June 30, 2017. Additionally, this criteria was discussed at the Plan Revision Public Meetings held in June 2017.

   b. Tonto National Forest officials developed the draft evaluation criteria, which was available for comment from July 21 – August 9, 2017. This was developed using the input gathered on the preliminary evaluation criteria.

   c. Tonto National Forest officials produced the expanded evaluation criteria to outline the process for evaluating wilderness characteristics for all areas included in the inventory. This document was available for public comments from September 12 – October 2, 2017.

   A summary of public input and concerns received through this step are as follows:

   - Many comments on this document were focused on clarifying the criteria, making it easier to understand and follow through the process.
   - One of the concerns voiced was with improvements that were not reflected in the inventory map or improvements that were removed from the inventory but did not accurately reflect the improvements on the ground.

- Other concerns centered on the point values assigned to the manageability criteria and if it would skew the overall ranking of the inventoried areas.
- All comments and concerns were considered in the revisions of this document and referenced when working through the evaluation process, which is documented in Step 2 below (2. Evaluation of Lands Inventoried for Wilderness Character).

2. Evaluation of lands inventoried for wilderness character (completed October 2017)

In October 2017 the planning Team systematically evaluated all lands identified in the inventory to and ranked the areas either high, moderate, low, or no for the level of wilderness characteristics they contain. The wilderness characteristics criteria are derived from the definition of wilderness provided in the Wilderness Act of 1964, and by the Forest Service Planning Handbook 1909.12 Chapter 70. The criteria and ranking system used during evaluation is in the Evaluation Rank Determination Guide, beginning on Page 12. Each area was evaluated for the following characteristics:

a. Size;

b. Apparent naturalness;

c. Opportunities for solitude or primitive and unconfined recreation;

d. Unique and outstanding qualities, this is not mandated to be present for an area to have wilderness characteristics, but is evaluated where it occurs; and

e. Manageability to protect wilderness characteristics.

The Tonto National Forest held three internal evaluation meetings across the forest to walk through the criteria for each of the inventoried areas. The first of these meetings was in Payson, Arizona from October 17 – October 20, followed by Globe, Arizona from October 23 – October 26, and lastly in Fountain Hills, Arizona from October 30 – November 2. At these meetings resource specialists across the forest sat down and evaluated the inventoried areas polygon by polygon for their wilderness characteristics based on the evaluation criteria. In order to ensure consistency in evaluation, two members of the planning team attended all 12 days of the meetings. Initial notes and ranking determinations for each of the inventoried areas can be found in the Wilderness Evaluation Rationale.

During the evaluation the planning team adjusted boundaries due to features inconsistent with wilderness characteristics but are only located on a small portion of the overall polygon (i.e., an area with mostly high apparent naturalness with the exception of an obvious former vegetation treatment near the boundary). This helped ensure that areas were given an accurate rank for their level of wilderness characteristics. Additionally, the planning team worked to accurately identify improvements contained within the polygon, both which were considered substantially noticeable and those which were not considered substantially noticeable, and ensured that the boundaries of the polygons were consistent with the improvements on the ground. Notes on these adjustments can be found within the Draft Wilderness Evaluation Rationale. In making these determinations, the planning team referenced comments received (both internally and externally) on the inventoried areas to ensure that identified improvements were noted and evaluated accordingly.

While working through the evaluation of the polygons the planning team made adjustments to the criteria to provide clarification and consistency through the evaluation process. One significant change was the adjustment of the ranking system for the evaluation step. In evaluating the polygons for this wilderness characteristic, about 90 percent of the polygons had at least one unique and outstanding quality. This can be attributed to the broad range of unique features that could be identified per the Forest Service Planning Handbook 1909.12 Chapter 70 (listed below) and the diversity of the Tonto National Forest. The additional point per polygon (as outlined in our evaluation criteria documentation released in October 2017) resulted in a skewed overall ranking of the

polygons. Based on this outcome, it was determined that all unique and outstanding features would be described when present in the area, but there would be no additional points assigned to the polygons for having a unique and outstanding qualities. Unique and outstanding qualities are not required to be present in an area for the area to be recommended for inclusion in the National Wilderness Preservation System.

3. Release draft evaluation map and documentation for public review (Completed February 2018)

   Following the evaluation of all lands inventoried for wilderness characteristics, the Tonto NF released a draft evaluation map and documentation to support assigned rankings. The Draft Evaluation Map and the Draft Wilderness Evaluation Rationale were available for public review from January 19, 2018 to February 12, 2018. Input received during this step was used in finalizing the evaluation step. A summary of public input and concerns received on the draft evaluation are as follows:

   - Some public comments presented new information or information that differed from what was already documented in the draft evaluation. These comments were reviewed by forest service staff to determine their accuracy and if they changed the draft evaluation findings for any criteria.
   - Many groups provided comments regarding specific polygons on the Globe Ranger District as they relate to existing valid uses, primarily mining claims. It was determined that the evaluation did not accurately reflect the mineral development in polygon 15 and polygon 16, which led to a reevaluation of these areas, resulting in a lowering of rank from High to Moderate. The detailed description of these polygons can be found in the Final Wilderness Evaluation Rationale.
   - Comments received identified areas in which an adjustment of boundaries could have potentially led to a higher evaluation of the area as a whole. These areas will be considered as we move into the analysis phase.
   - Commenters voiced concerns about the consistency of the evaluation step. Prior to the release of the final evaluation documentation, the notes were all checked for consistency, with changes made on areas where the wilderness characteristic scores were not consistent with similar polygons.
   - Comments called out areas with Inventoried Roadless Areas noting that they should all receive high wilderness characteristics. Having acres of inventoried roadless area was noted in the evaluation as a positive for manageability. However, the other wilderness characteristics are also considered during the evaluation and that is reflected in the overall ranking of the polygons.
   - Additional comments were related to the impacts that wilderness has on the multiple uses of the National Forest. These comments will be utilized in the analysis step where the forest looks at the impacts, benefits, and effects of an area being managed as recommended wilderness. The analysis step will be documented as part of the Forest Plan Revision Environmental Impact Statement.

4. Final documentation of evaluation (completed May 2018)

   After consideration of public comments on the evaluation criteria and associated maps, the planning team documented the evaluation process with the Final Evaluation Process Documentation, Final Wilderness Evaluation Rationale, and Final Evaluation Map. Additionally, all of these items are included in the project record.

Evaluation Rank Determination Guide

Each criterion was evaluated systematically in the numerical order they are assigned in the evaluation process documentation. If at any point in the process an area received a rating of "NO" for any of the first three evaluation criteria (size, apparent naturalness, and opportunities for solitude or unconfined recreation), the evaluation did not continue for that area because these are required characteristics of a wilderness area in the Wilderness Act. The evaluated area was instead be assigned a summary score of "NO" for the level of wilderness characteristics that it contains, and removed from any further discussion in the evaluation.

Each evaluated area was assigned an overall ranking of the level of wilderness characteristics it possesses: HIGH, MODERATE, LOW, or NO. These rankings are determined through a point system based on the wilderness characteristics of the area, primarily the apparent naturalness, opportunities for solitude or unconfined recreation, and manageability. In order to achieve each level the area must have the following number of points:

- NO = 0 – 2.99 points
- LOW = 3 – 5.99 points
- MODERATE = 6 – 8.99 points
- HIGH = 9 - 12 points

These points were derived from the evaluation of wilderness characteristics. Table 38 describes the criteria and the points possible in each category. Table 39 through table 43 outline the considerations made when determining the rank given in each category (high, moderate, low, or no). The intent of each consideration was to help further describe potential discussion topics for each criterion that are indicated for the five wilderness characteristics per FSH 1909.12 Chapter 70.[12] The specific considerations utilized in the evaluation depended on the area being evaluated, and it was not always necessary to consider all points outlined in the tables below. Further determinations on the evaluation criteria are in table 39, table 40, table 41, table 42, and table 43.

12 Accessible on the USDA Forest Service 2012 Planning Rule website: https://www.fs.usda.gov/detail/planningrule/home/?cid=stelprd3828310

Table 38. Points possible for wilderness characteristics

Wilderness Characteristic	Description	How Evaluated	Points Possible
1) Size	This criterion evaluated if an area less than 5,000 acres is of sufficient size to make its preservation and use in an unimpaired condition practicable. More information on this criterion can be found in table 39.	Yes / No If an area received a "yes," this criteria was moved forward in the evaluation process, if it received a "no", the area was given an overall wilderness characteristic rank of NO.	N/A
2) Apparent naturalness	This criterion evaluated the degree to which an area generally appears to be affected primarily by the forces of nature, with the imprints of man's work substantially unnoticeable. There are 3 categories of Apparent Naturalness: the composition of plant and animal communities, the ecological conditions, and improvements. More information on this criterion can be found in table 40.	Average Rank Value The interdisciplinary team averaged the score given in each of the 3 categories.	3
3) Outstanding opportunities for solitude or unconfined recreation*	This criterion evaluated the degree to which the area has outstanding opportunities for solitude or for a primitive and unconfined type of recreation. More information on this criterion can be found in table 41. *An area only had to possess one or the other; the area does not have to possess outstanding opportunities for both elements, nor does it need to have outstanding opportunities on every acre.	Highest Rank Value The score was determined by the highest rank value between the two categories: Solitude or Unconfined Recreation.	3
4) Unique and outstanding qualities*	This criterion evaluated the degree to which the area may contain ecological, geological, or other features of scientific, educational, scenic, or historical value. There are 5 categories of unique and outstanding qualities. More information on this criterion can be found in table 42. *These values are not required to be present in an area for the area to be recommended for inclusion in the National Wilderness Preservation System, but their presence should be identified and evaluated where they exist.	Yes / No If the area had any unique or outstanding qualities, these qualities are noted in the description of the polygon, but no points were given for having a unique and outstanding quality.	N/A
5) Manageability*	This criterion evaluated the degree to which the area may be managed to preserve its wilderness characteristics, considering current conditions. More information on this criterion can be found in table 43. *Due to the importance of the forest being able to manage an area for its wilderness characteristics, the manageability ranks are assigned a higher score for a higher rank value.	Rank Value Points were determined based on the rank value the area was given. The points are as follows: No – 0 points Low – 1 point	6

Wilderness Characteristic	Description	How Evaluated	Points Possible
		Moderate – 3 points High – 6 points	
NA	NA	**Total Points Possible**	12

Size

This criterion evaluates if an area less than 5,000 acres is of sufficient size to make its preservation and use in an unimpaired condition practicable. The planning team assigned a score of Yes or No to all of the inventoried areas. Rationale for the score was documented. If they received a score of NO the evaluation of that area was discontinued, and the area will receive a wilderness characteristic ranking of "NO" If the area received a score of YES it continued to be evaluated.

Table 39. Size criteria

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Characteristic Determination Guide
Evaluate how an area less than 5,000 acres is of sufficient size to make its preservation and use in an unimpaired condition practicable.	Consider areas less than 5,000 acres if they are adjacent to another Wilderness area – or an area proposed to be one. Consider primitive areas, or areas that are part of another wilderness inventory on an adjacent land management agency unit. Consider if areas smaller than 5,000 acres can be combined. Consider if the terrain, bodies of water, vegetation, and/or geographic location may facilitate protection of wilderness characteristics of the entire area. Consider if the surrounding or inholding areas are in non-federal ownership or are managed currently for uses that would make the area impractical to manage as a wilderness due to its relative size. Include any additional information related to the manageability of an area less than 5,000 acres.	Yes ● Any area greater than 5,000 acres. ● Areas less than 5,000 acres but is contiguous to existing wilderness, primitive areas, administratively recommended wilderness, or wilderness inventory of other Federal ownership. ● Areas less than 5,000 acres but are sufficient size to manage as a wilderness based on considerations. No ● Areas less than 5,000 acres not contiguous to any existing wilderness, primitive areas, administratively recommended wilderness, or wilderness inventory of other Federal ownership, AND could not be managed as a wilderness based on considerations.

Apparent Naturalness

This criterion evaluated the degree to which an area generally appears to be affected primarily by the forces of nature, with the imprints of man's work substantially unnoticeable. For each identified area the planning team will evaluate the apparent naturalness of the area. The standard for this criterion is how natural the area would appear to an average forest visitor.

This criteria is divided into three basic questions: (1) what is the composition of plant and animal communities; (2) What is the extent to which the area appears to reflect ecological conditions that would normally be associated with the area without human intervention and; (3) what is the extent to which improvements included in the area represent a departure from apparent naturalness?

The ranking score given for each category will be averaged to determine the overall score for apparent naturalness. The planning team applied an overall ranking of high, moderate, low, or no for the level of apparent naturalness, accompanied by a detailed narrative documenting the considerations made and the rationale of the assigned rank.

Table 40. Apparent naturalness criteria

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Characteristic Determination Guide
What is the composition of plant and animal communities?	Do the plant and animal communities appear substantially unnatural to the average forest visitor? Describe the vegetation types, associations, and plant and animal communities, including atypical vegetation associations or type changes (e.g. forest to woodland conversion from large catastrophic fires). How are concentrations of nonnative plants and/or animals distributed across the landscape? Include any additional information related to the question.	High (3) –The composition of plant and animal communities appears natural to the average forest visitor. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Moderate (2) – In most areas the composition of plant and animal communities would appear natural to the average forest visitor. The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequent small to moderate patch sizes in the area. Low (1) – The composition of plant and animal communities appears unnatural to the average forest visitor in substantial portions of the area. The presence of exotic, invasive and/or non-native plant and animal communities represent frequent small to moderate patch sizes in the area. No (0) – The composition of plant and animal communities represents a departure from apparent naturalness in the majority of the area and is easily noticed by the average forest visitor. The presence of exotic, invasive and/or non-native plant and animal communities are predominant in the area.
What is the extent to which the area appears to reflect ecological conditions that would normally be associated with the area without human intervention?	How would the average forest visitor perceive the impacts to the naturalness of the area from human intervention? Describe the distribution and intensity of vegetation restoration treatments (e.g. thinning), timber harvest areas, and associated activities (e.g., clear cuts, bulldozer lines, fuel breaks). Consider places where human intervention has improved the apparent naturalness. Consider if the average forest visitor would notice a distinct difference from a treated area to a non-treated area. Consider large scale restoration projects Include any additional information related to the question.	High (3) – To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Restoration treatments in the area have minimal physical impacts and have the potential to restore a more natural appearance in a short time. Moderate (2) – To the average forest visitor the vegetation does not appear natural in isolated spots or is scattered. Evidence of human intervention on the landscape is uncommon and most visitors to the area would not notice any previous human intervention. The area may require more intensive restoration treatments in insolated spots to improve the apparent naturalness, and impacts/signs of human intervention would only persist for a few years. Low (1) – To the average forest visitor the vegetation does not appear natural commonly in the area. Ecosystem function is impaired. Limited signs of human intervention are visible to the average visitor. The area may require more intensive restoration treatments in a moderate proportion of the overall area in order to improve the apparent naturalness, with the physical impacts/signs of human intervention persisting for a number of years. No (0) – To the average forest visitor the vegetation does not appear natural throughout the area. Human intervention to the apparent naturalness is obvious

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Characteristic Determination Guide
		to the average forest visitor. The majority of areas require intensive treatments to restore apparent naturalness and physical impacts/signs of human intervention are likely to persist for long periods of time.
What is the extent to which improvements included in the area represent a departure from apparent naturalness?	Consider the extent to which the following improvements cause the appearance to depart from apparent naturalness in the area as a whole. ● Any remaining roads (including decommissioned, temporary, or user-created), motorized trails, and known unauthorized routes ● Airstrips, heliports, and helispots ● Permanently installed vertical structures ● Areas of mining activity ● Recreation, range, or wildlife improvements that cannot be modified and depart from the apparent naturalness. ● Ground-return telephone lines, electric lines, and powerlines ● Watershed treatment areas. ● Structures, dwellings, and other signs of past occupation. ● Consider the building materials and permanence of the improvements on the landscape. ● Consider if the improvements are similar in type and appearance to improvements that exist in current Tonto National Forest Wilderness. ● Include any additional information related to the question.	High (3) – Little or no evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. The presence or appearance of improvements does not detract from apparent naturalness. It is rare to see improvements. Moderate (2) – Unnoticeable or unobjectionable human influence. Prevalence of improvements is overall low throughout the area, it may be concentrated in some spots but is more typically dispersed through the area. It is common to find spots where improvements are absent or unseen. Appearance of improvements detract from apparent naturalness in some areas. Low (1) – Noticeable evidence of human influence, area has high level of human disturbance. Prevalence of improvements is overall high throughout the area, and is often concentrated. Although spots where improvements are absent or unseen are uncommon, they exist. Appearance of improvements detract from apparent naturalness in most areas. No (0) – Obvious evidence of human influence. Prevalence of improvements is very high throughout the area and there are very few or no spots where improvements are absent or unseen. Appearance of improvements detract from apparent naturalness throughout the area.

Outstanding Opportunities for Solitude or a Primitive and Unconfined Type of Recreation

This criterion evaluated the degree to which the area has outstanding opportunities for solitude or for a primitive and unconfined type of recreation. An area only had to possess one or the other; the area did not have to possess outstanding opportunities for both elements, nor did it need to have outstanding opportunities on every acre. The definitions for this criterion are identified in table 41. Since an area did not need both opportunities for solitude and unconfined recreation for it to have wilderness character, the highest score between the two categories was the overall score for this characteristic. The planning team applied an overall ranking of high, moderate, low, or no for the outstanding opportunity for solitude or a primitive and unconfined type of recreation, accompanied by a detailed narrative documenting the considerations made and the rationale of the assigned rank.

Table 41. Outstanding opportunities for solitude or a primitive and unconfined type of recreation criteria

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Characteristic Determination Guide
Consider impacts that are pervasive and influence a	Is there pervasive evidence of civilization from within the area? Consider proximity of area to high use areas, trailheads, private lands, roads, and/or activities that impact	High (3) – Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. Encounters with, or evidence

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Characteristic Determination Guide
visitor's opportunity for solitude within the evaluated area.	opportunities for solitude. Consider frequency of impacts and seasonal variabilities. Describe the general topography of the area for its visual, spatial, and acoustic environment. Consider how people travel across the landscape. Consider the differences between urban and rural ideas of solitude. Include any additional information related to the question.	of, humans is rare. Moderate (2) – Opportunities to feel alone are possible in the majority of the area, though signs of civilization are possible. Views of high human impact areas occur infrequently, but are possible. Encounters with, or evidence of, humans is uncommon. Low (1) – Little opportunity of feeling alone and there are some signs of civilization. Frequent views of high human impact areas and encounters with, or evidence of, humans is common or likely. No (0) – No opportunity of feeling alone. Encounters with, or evidence of, humans is unavoidable. Signs of civilization are pervasive. Views of high human impact areas occur frequently.
Consider the opportunity to engage in primitive-type or unconfined recreation activities that lead to a visitor's ability to feel a part of nature.	Describe the types of primitive recreation activities in the area (e.g., hunting, fishing, dispersed camping, hiking, rock climbing, and horseback riding). Is the area relatively free of social restrictions on visitor behavior, providing an unconfined experience? What is the level of challenge and risk in the area? Include any additional information related to the question.	High (3) – There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. Moderate (2) – There are some opportunities for engaging in primitive and/or unconfined recreation. At least some of these opportunities are of high quality and/or risk or these opportunities are all of moderate quality and/or moderate risk. Low (1) – There are few opportunities to engage in primitive and unconfined recreation. Most existing opportunities are poor quality, with low risk. No (0) – There are no opportunities to engage in primitive and unconfined recreation.

Unique and Outstanding Qualities

This criterion evaluated the degree to which the area may contain ecological, geological, or other features of scientific, educational, scenic, or historical value. When evaluating unique and outstanding qualities, the interdisciplinary team considered if the feature is iconic, unique at a regional or national scale, and the extent that the feature defines how people think about and value the area. These values are not required to be present in an area for the area to be recommended for inclusion in the National Wilderness Preservation System, but their presence was identified and evaluated where they exist.

Table 42. Unique and outstanding qualities criteria

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Character Determination Guide
Does the area contain rare plant or animal	Presence of species with unique or outstanding values (e.g. endemic species, species of conservation concern, federally listed species, or species of social or recreational value)?	Yes – Yes there are known occurrences of rare plant or animal communities (e.g., Threatened and Endangered

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Character Determination Guide
communities or rare ecosystems?	Consider the density/abundance of species. Consider the amount of non-native species. Consider the date of occurrence of species. Presence of ecosystems and habitats that are rare or uncommon in Arizona. Consider research natural areas, botanical areas, and other designated special areas for which the purpose is protection of rare or uncommon ecosystems or habitats. Identify any eligible or designated Wild and Scenic Rivers with fish, wildlife, or ecological outstandingly remarkable values.	species, Species of Conservation Concern). No – No unique or outstanding values for rare plant or animal communities or rare ecosystems.
Are there any outstanding landscape features such as waterfalls, mountains, viewpoints, waterbodies, or geologic features?	Describe any outstanding and unique landscape features in the area, including their significance and extent that the feature defines how people value the area. Consider the amount of outstanding or unique landscape features. Identify any eligible or designated Wild and Scenic Rivers with geologic or scenic outstandingly remarkable values.	Yes – There are unique or outstanding landscape features (e.g. waterfalls, mountains, viewpoints, waterbodies, or geologic features) No – There are no unique or outstanding landscape features.
Are there historic and cultural resource sites in the area of regional or national significance?	Presence of significant historic or cultural resources sites? Consider if the feature is nationally recognized (for example, through an official designation such as the National Register) or if the features is considered a priority heritage asset. Consider the amount of historic/cultural sites in the area. Identify any eligible or designated Wild and Scenic Rivers with cultural outstandingly remarkable values.	Yes – There are regionally or nationally significant historic and cultural resource sites. No – There are not unique or outstanding historic and cultural resources.
Are there any high quality water resources or important watershed features?	Presence and extent of high quality water resources or important watershed features in the area. Consider watershed conditions Identify any eligible or designated Wild and Scenic Rivers	Yes – There are high quality watershed values and features in the area. No – There are no high quality water resources or important watershed features.

Manageability

This criterion evaluated the degree to which the area may be managed to preserve its wilderness characteristics, considering current conditions, trends of use, and existing management challenges. For each identified area the planning team evaluated if the area could be managed to preserve its wilderness characteristics. When discussing the preliminary evaluation criteria at the plan revision public meetings in June 2017 and the following comment periods the public expressed their concern with the Tonto National Forest's ability to manage wilderness areas to preserve their wilderness characteristics. Being able to effectively manage an area as a recommended wilderness is important to the Tonto National Forest and through providing effective management the Tonto National Forest can work to maintain or enhance the wilderness characteristics of an area if recommended. Since this is an important criteria for potential

recommended wilderness areas, both internally and with our publics, the score for manageability was weighted higher than the other categories.

Due to the importance of the Tonto National Forest being able to manage the area for its wilderness characteristics, the area received 6 points for high manageability, 3 points for moderate manageability, 1 point for low manageability, and 0 points for no manageability. The planning team applied an overall ranking of high, moderate, low, or no for the manageability of the area, accompanied by a detailed narrative documenting the considerations made and the rationale of the assigned rank.

Table 43. Manageability criteria

Evaluation Criteria	Considerations Made During Evaluation	Wilderness Character Determination Guide
Can the area be managed to preserve its wilderness characteristics?	What is the shape and configuration of the area? Describe the boundary, edge to interior ratio, presence of cherry-stemmed roads, etc. Describe the presence and extent of legally established rights or uses within the area and how theses uses may support or impact managing an area for wilderness characteristics (e.g. active mining claims, special uses, cultural or traditional uses, Research Natural Areas). Consider the presence and extent of any specific Federal or State laws that may be relevant to the area or the ability to manage the area to protect wilderness characteristics. Consider large scale restoration projects planned for the area (e.g., four forests restoration initiative). Describe the management of adjacent lands and consider current management plans, activities, and/or restrictions for the area. Presence of Inventoried Roadless Area. Include percent if possible. Describe the amount of non-primitive recreation activities in the area that would impede the Tonto NF's ability to maintain wilderness characteristics. If high concentrations of non-primitive recreation, consider the ability to use alternative approaches (volunteers, agreements with the state, partnerships, etc.) in order to increase the manageability. Include any additional information related to the question.	High (6) – Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. Moderate (3) – Management to preserve the area's wilderness characteristics are possible throughout most of the area. There are some projects or management plans that would impact the wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are scattered. Low (1) – Management to preserve the area's wilderness characteristics is difficult throughout most of the area. There are commonly projects or management plans that impact the wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics occurs across most of the area. No (0) – It is impossible to manage the majority of the area to preserve its wilderness characteristics. Projects or management plans that impact the wilderness characteristics of the area are unavoidable. The presence and extent of management activities and other uses that detract from wilderness characteristics is pervasive throughout the area

Evaluation Results

The following maps (Figure 19 through figure 25) display the final results of the wilderness evaluation by district with the appropriate wilderness characteristic rank assigned based on the evaluation. The evaluation resulted in 32 areas (98,929 acres) with "high" wilderness characteristics; 35 areas (583,017 acres) with "moderate" wilderness characteristics; 66 areas (803,980 acres) with "low" wilderness characteristics; and 23 areas (132,396 acres) with "no" wilderness characteristics. Evaluation narratives are provided in the Final Wilderness Evaluation Rationale, included in the project record.

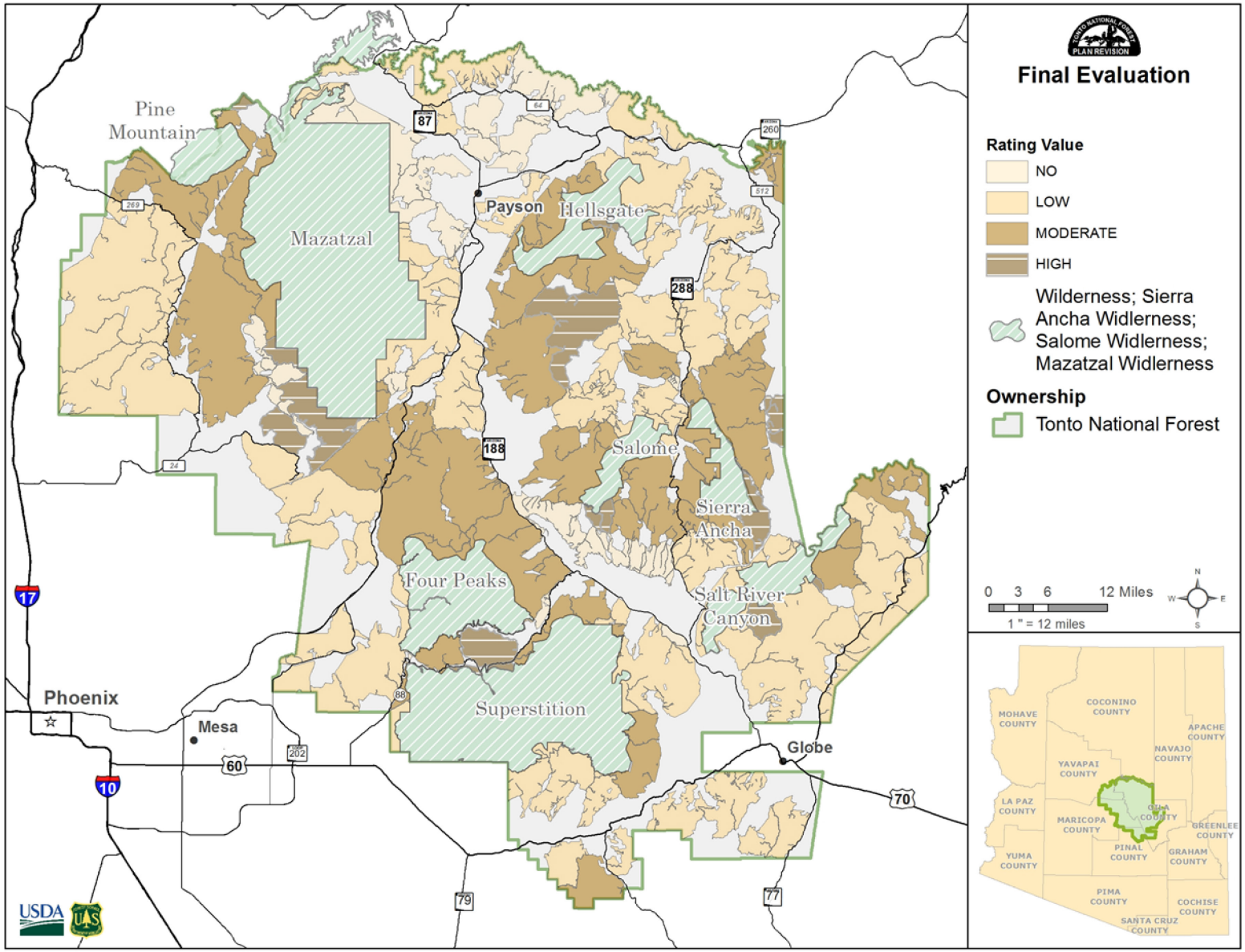


Figure 19 Recommended wilderness evaluation results

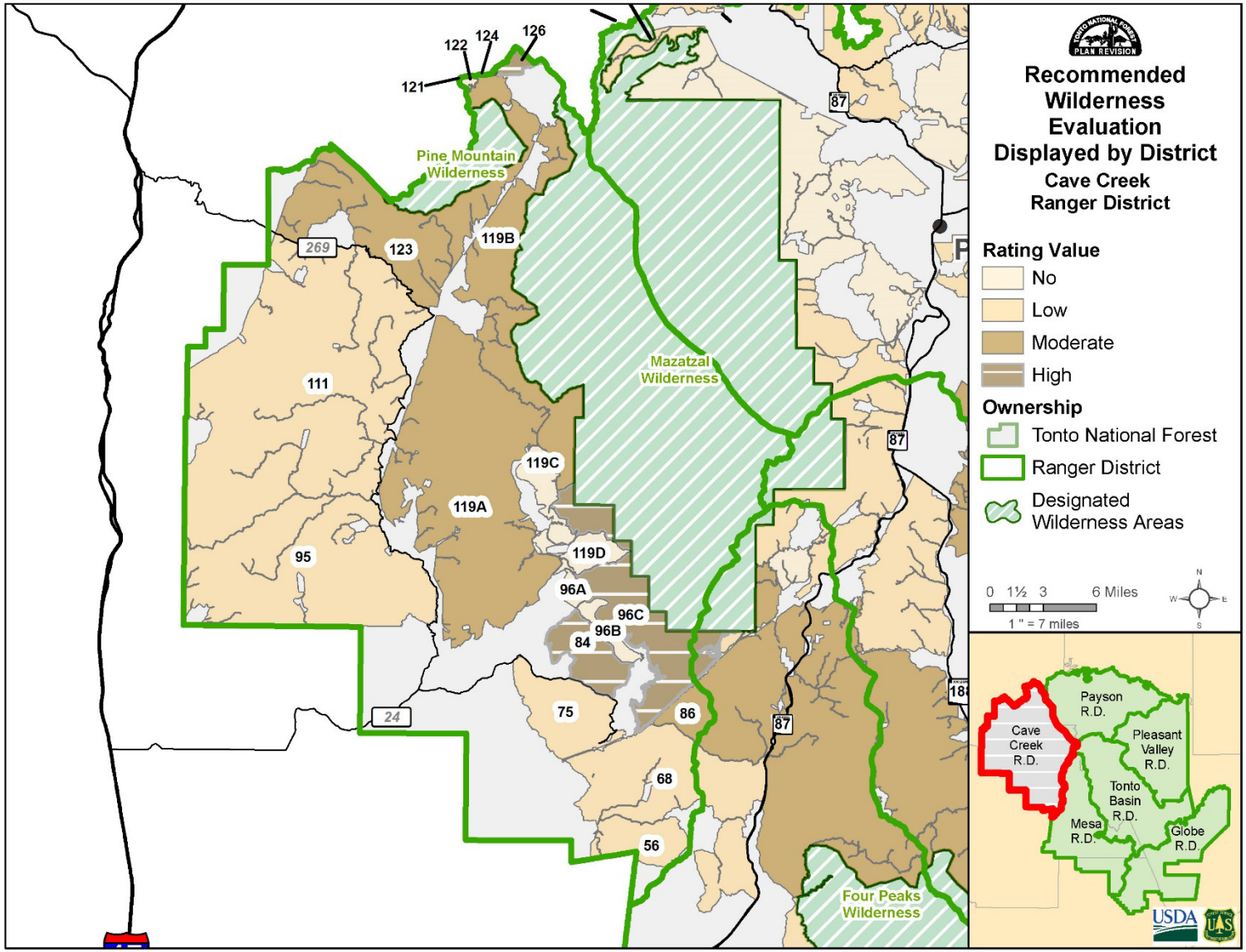


Figure 20. Recommended wilderness evaluation on the Cave Creek Ranger District

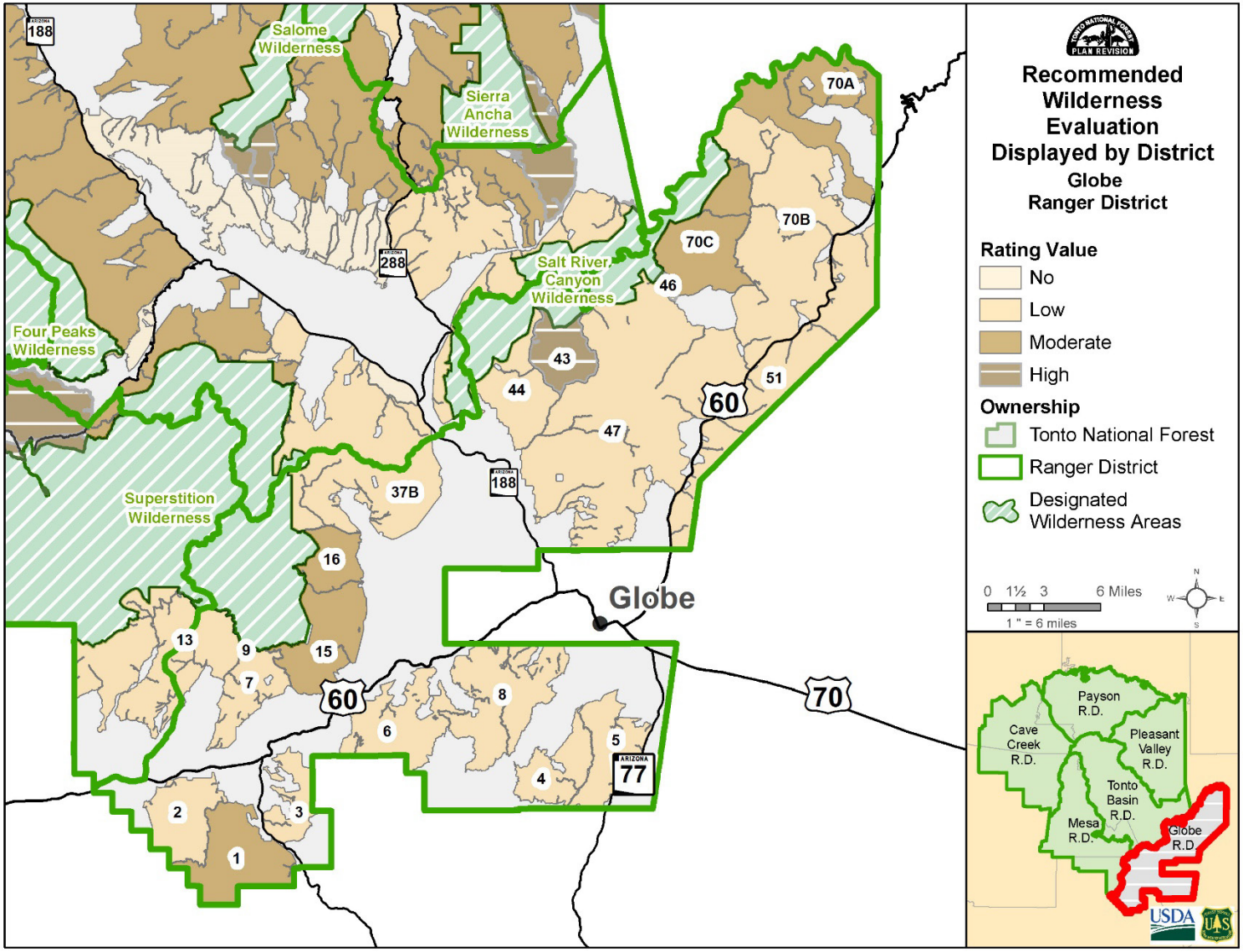


Figure 21. Recommended wilderness evaluation on the Globe Ranger District

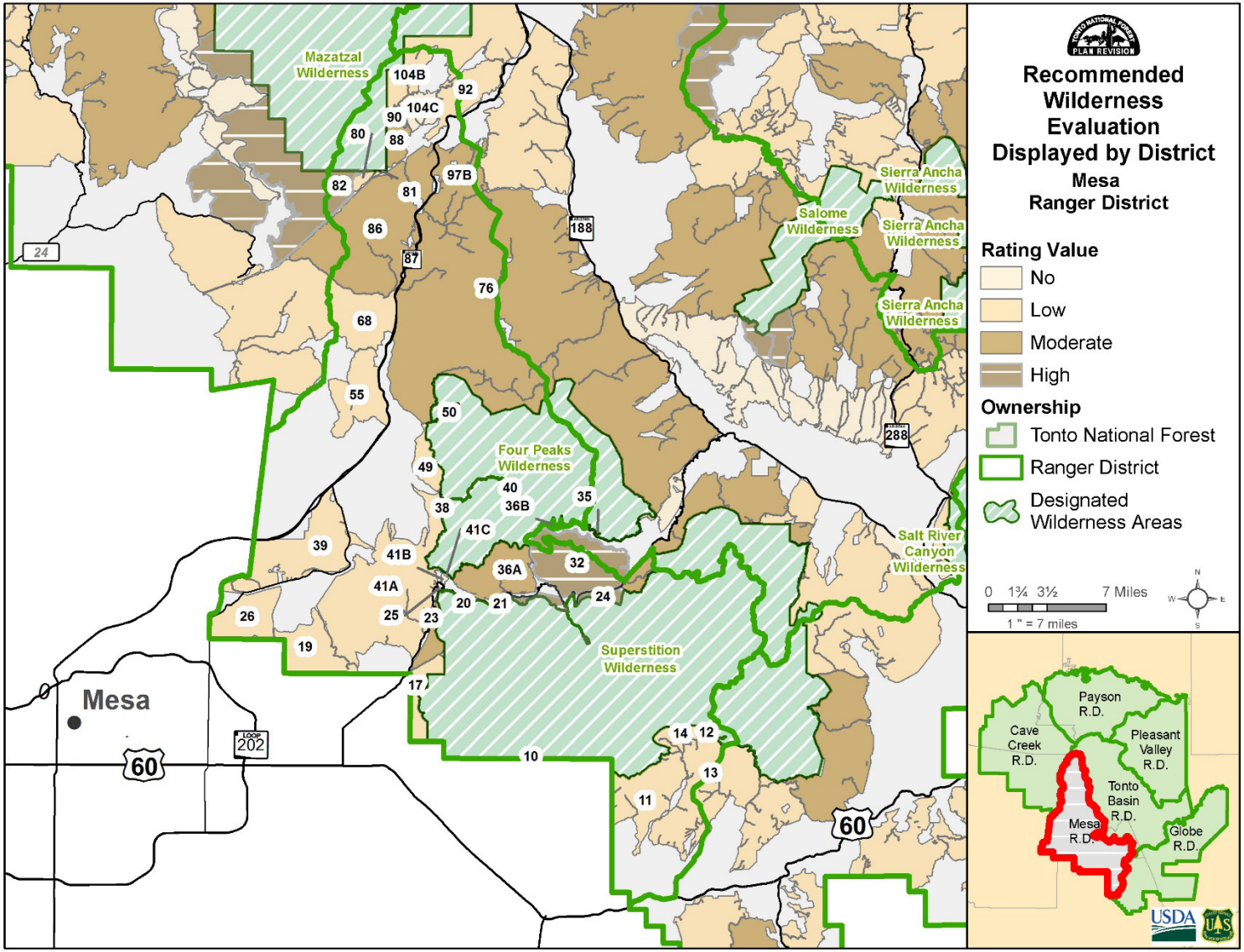


Figure 22. Recommended wilderness evaluation on the Mesa Ranger District

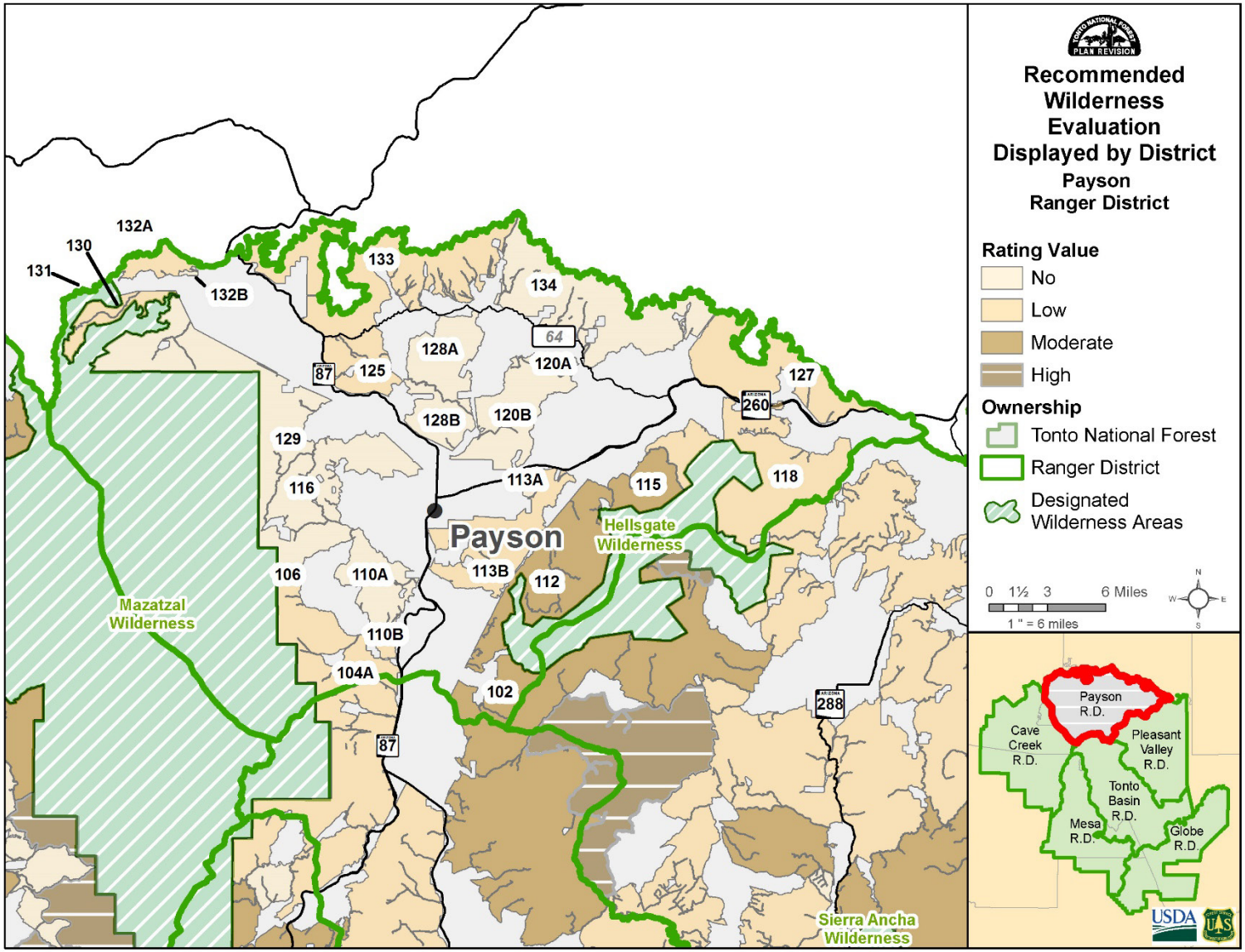


Figure 23. Recommended wilderness evaluation on the Payson Ranger District

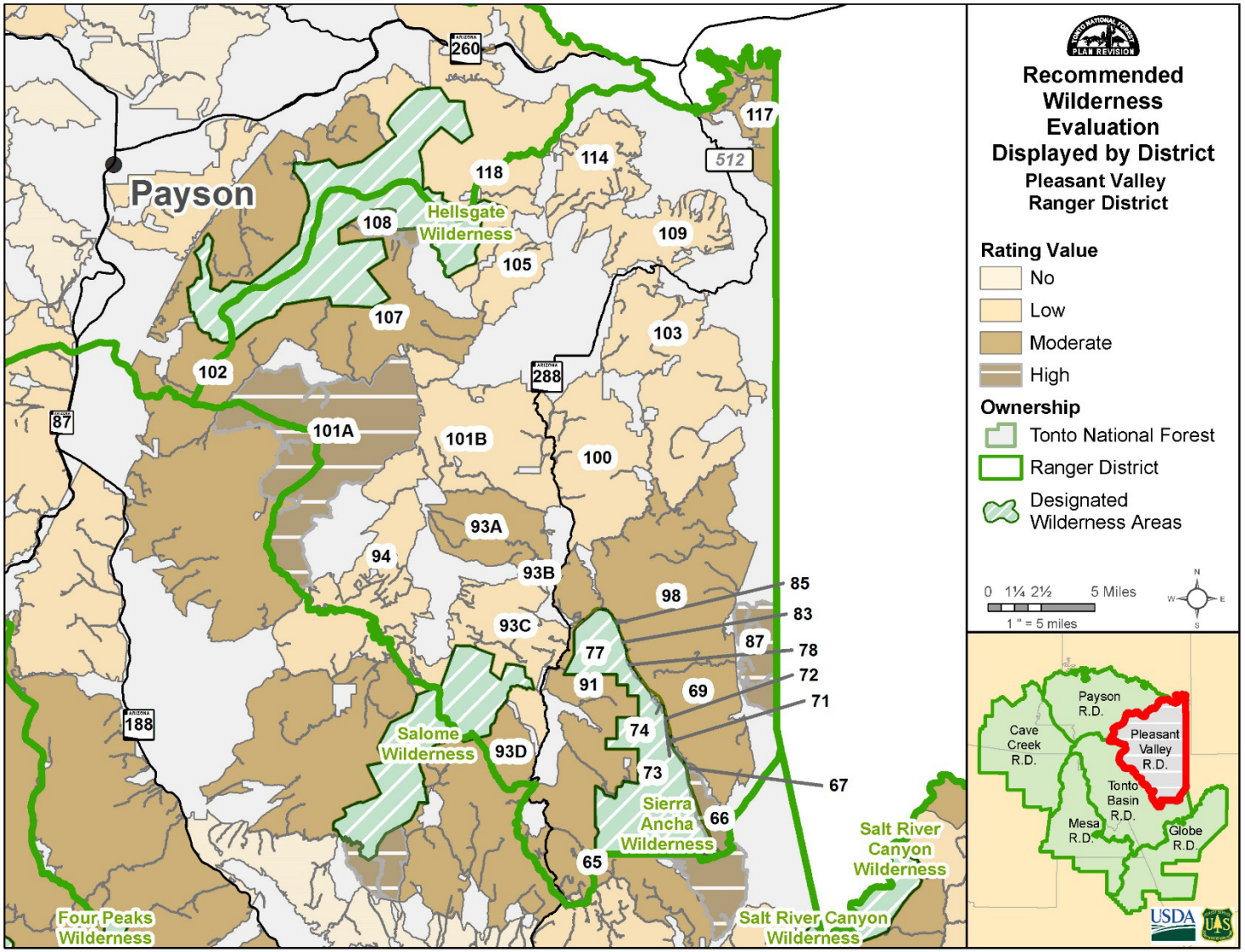


Figure 24. Recommended wilderness evaluation on the Pleasant Valley Ranger District

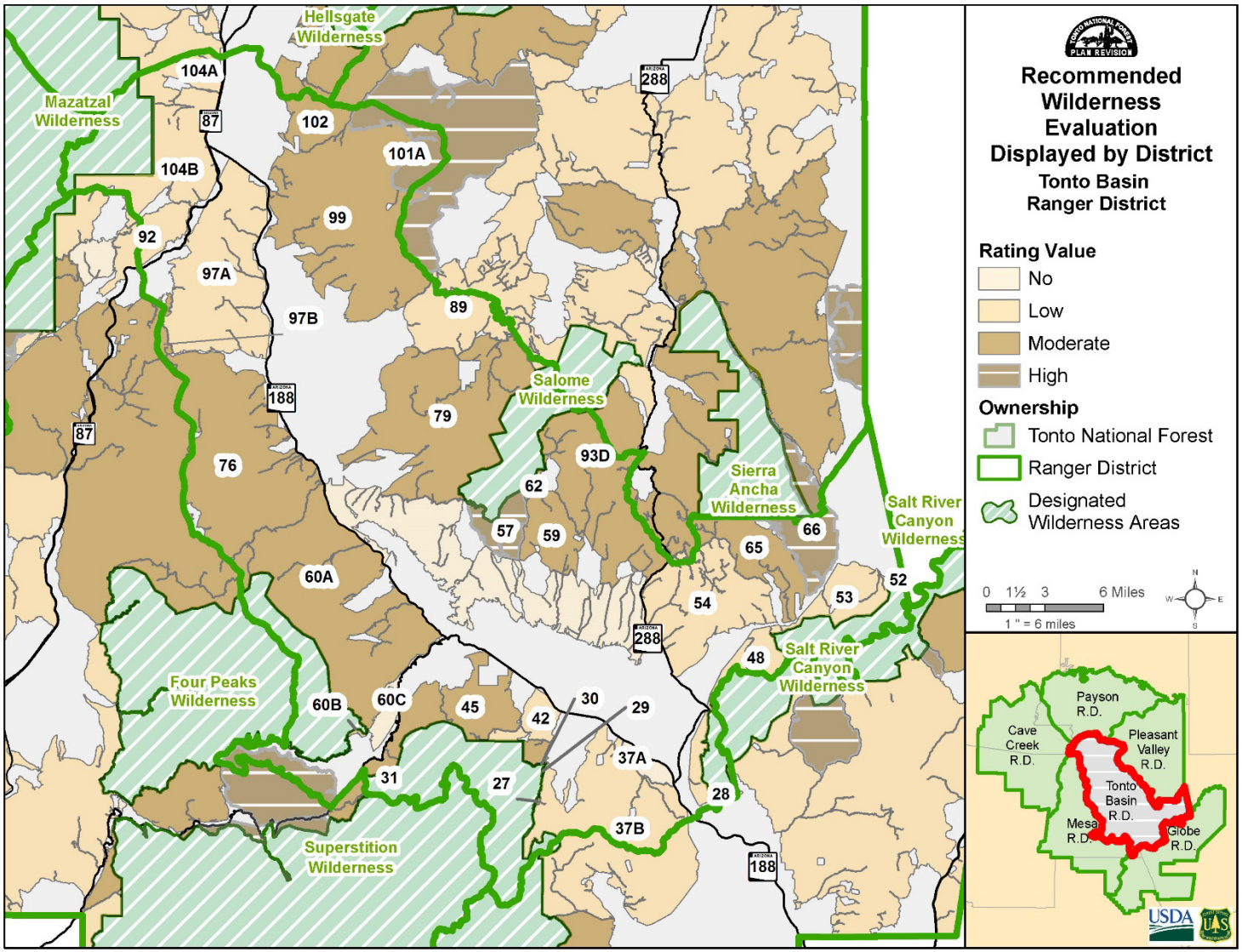


Figure 25. Recommended wilderness evaluation on the Tonto Basin Ranger District

Step 3: Analysis

The Tonto National Forest developed criteria for the selection of recommended wilderness areas to be included in the environmental impact statement for plan revision. Please note that not all lands included in the inventory and subsequent evaluations are required to be carried forward to an alternative.

Several factors were considered in determining the recommended wilderness areas in each alternative. The areas were selected based upon consideration of the information within the wilderness evaluation. The evaluation indicated which areas had wilderness characteristics such as naturalness, outstanding opportunities for solitude or primitive and unconfined recreation, and other special features of ecological, geological, or scientific, educational, scenic, or historical value. Based on the level of wilderness characteristics, no areas which received a "low" or "no" overall wilderness characteristic ranking will be analyzed in the environmental impact statement. In doing this step, the responsible official had the discretion to cut or group polygons to help with boundary management and the preservation of wilderness characteristics.

Process for Step 3: Analysis

In addition to including the environmental effects analysis in the recommended wilderness section of the environmental impact statement, Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12 requires that for each area included in one or more alternatives, the following items must be identified:

- The name of the area and the number of acres to be considered;
- The location and a summarized description of a recommended boundary for each area;
- A brief description of the general geography, topography, and vegetation of the recommended area;
- A brief description of the current uses and management of the area;
- A description of the area's wilderness characteristics and the ability of the Forest to protect and manage the area so as to preserve its wilderness characteristics;
- A brief summary of the factors considered and the process used in evaluating the area and developing the alternatives; and
- A brief summary of the ecological and social characteristics that would provide the basis for the area's suitability for inclusion in the National Wilderness Preservation System.

The following sections outline the criteria for selection of areas in each of the alternatives for plan revision, as well as provides a summary table and rationale of each area included in the alternative.

Alternative A

The no-action alternative is based on the 1985 forest plan. There are no recommended wilderness areas to carry forward from the 1985 plan into this alternative.

Alternative B

The selection of areas recommended for wilderness under this alternative were carefully considered in the context of the other multiple-use considerations that the Forest is balancing in developing management area recommendations. Alternative B includes plan direction that allows for adaptive management to address potential ecological changes with the potential to alter the provision of ecosystem services of the Tonto National Forest. For alternative B, we referenced information gathered in the evaluation on the

areas in which have the highest level of wilderness characteristics (including manageability). The following items provided a basis for recommendation in alternative B:

- High wilderness characteristics were identified across all categories in the evaluation process. This includes a high degree of apparent naturalness, high primitive recreation opportunities or ample opportunities for solitude, and a lack of developments such as roads, buildings, and other facilities;
- High manageability as recommended wilderness, including ease of boundary management, lack of private land inholdings, and/or lack of current activities or issues that would make this type of management difficult. This determination was made based on notes about manageability in the evaluation step of the process; and
- There are no tradeoffs identified in the evaluation such as major non-conforming uses or high need for restoration treatments.

These criteria were selected because they identify the areas with the highest amount of wilderness characteristics that the forest has the ability to manage in perpetuity for these characteristics. The selection of these areas would allow the Tonto to increase primitive area on the forest, and meet the needs of the public, while allowing for adaptive management consistent with this alternative.

Alternative C

The selection of areas recommended for wilderness under this alternative will be carefully considered in the context of the other multiple-use considerations that the Forest is considering specific to this alternative. Alternative C emphasizes naturalness and primitive recreation opportunities. Acres of recommended wilderness in alternative C will be selected based upon consideration of the information within the wilderness evaluation. Alternative C will include areas in which:

- The area received a high overall wilderness characteristic ranking in the evaluation;
- The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation; or
- The area received significant public comment.

These criteria were selected because they fit into the theme of the alternative with an increase in primitive recreation opportunities and an emphasis on fire techniques for restoration, which is more in line with recommended wilderness management.

Alternative D

There will be no recommended wilderness in this alternative. Although the wilderness evaluation map displays many areas and acres that possess wilderness characteristics, this alternative emphasizes restoration, access, and management that would utilize mechanical treatments and motorized access. These themes being addressed in this alternative are not consistent with the management of recommended wilderness areas, therefore no recommended wilderness are being analyzed.

Summary of Wilderness Analysis

All of the areas identified in the inventory were evaluated based on their wilderness characteristics, per the 2012 planning rule and final directives. There were 156 separate areas identified in the inventory and evaluated per the evaluation criteria. The overall evaluation rank, rationale for recommendation, and modifications made for analysis are described in table 44. Detailed descriptions of each area recommended in one or more alternative can be found in the sections below.

Table 44. Summary of evaluated areas with recommendations

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
1	Globe	12,250	Moderate	Recommended in alternative C with modifications. Rationale: Received significant public comment to be analyzed as a recommended wilderness area. Modifications were made to the boundary to remove an area of non-conforming use.
2	Globe	8,472	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
3	Globe	5,029	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
4	Globe	6,825	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
5	Globe	8,831	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
6	Globe	11,098	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
7	Globe	6,734	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
8	Globe	16,159	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
9	Globe	236	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
10	Mesa	36	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
11	Mesa	8,283	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
12	Mesa	13	High	Recommended in alternative B and alternative C. Rationale: Received “high” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
13	Globe	14,725	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
14	Mesa	1,699	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
15	Globe	11,151	Moderate	Recommended in alternative C Rationale: Received a “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
16	Globe	5,268	Moderate	Recommended in alternative C Rationale: Received a “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
17	Mesa	2,992	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
18	Mesa	28	High	Recommended in alternative B and alternative C Rationale: Received “high” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
19	Mesa	6,215	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
20	Mesa	12	High	Not Recommended Rationale: Though this area received a “high” overall wilderness characteristic ranking, the entirety of this polygon was located within the boundary of Bureau of Reclamation withdrawn areas that would be difficult to manage for their intended purpose in a recommended wilderness area.
21	Mesa	111	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
22	Mesa	683	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
23	Mesa	1,639	Moderate	Not Recommended

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
				Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
24	Mesa	900	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
25	Mesa	39	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
26	Mesa	5,737	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
27	Tonto Basin	48	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
28	Globe	13	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
29	Tonto Basin	11	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
30	Tonto Basin	19	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
31	Tonto Basin	2,290	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
32	Mesa	10,726	High	Recommended in alternative B and alternative C with modifications Rationale: Received “High” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses. Modifications were made to the boundary to remove Bureau of Reclamation withdrawn areas and an existing improvement that would be difficult to maintain and manage in a recommended wilderness area.
33	Tonto Basin	880	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
34	Tonto Basin	101	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
35	Tonto Basin	122	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
36a	Mesa	7,232	Moderate	Recommended in alternative C with modifications Rationale: Received a “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation. Modifications were made to the boundary to remove Bureau of Reclamation withdrawn areas that would be difficult to manage for their intended purpose in a recommended wilderness area.
36b	Tonto Basin	92	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
37a	Globe	1,676	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
37b	Tonto Basin	33,694	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
38	Mesa	8	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
39	Mesa	12,071	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
40	Mesa	9	High	Recommended in alternative B and alternative C Rationale: Received “high” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
41a	Mesa	25,466	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
41b	Mesa	121	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
41c	Mesa	3	No	Not Recommended

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
				Rationale: Received a “no” overall wilderness characteristic ranking.
42	Tonto Basin	2,912	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
43	Globe	6,312	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
44	Globe	9,259	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
45	Tonto Basin	9,688	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
46	Globe	614	High	Recommended in alternative B and alternative C Rationale: Received “high” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
47	Globe	57,780	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
48	Globe	5,420	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
49	Mesa	2,423	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
50	Mesa	30	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
51	Globe	22,995	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
52	Tonto Basin	94	High	Recommended in alternative B and alternative C Rationale: Received “high” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
53	Tonto Basin	5,828	Low	Not Recommended

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
				Rationale: Received a “low” overall wilderness characteristic ranking.
54	Tonto Basin	16,376	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
55	Mesa	6,957	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
56	Cave Creek	7,157	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
57	Tonto Basin	3,806	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
59	Tonto Basin	5,693	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
60a	Tonto Basin	37,488	Moderate	Recommended in alternative C with modifications Rationale: While this area received a “moderate” overall wilderness characteristic ranking, the primary manageability concerns of the area included the presence of Bureau of Reclamation First Form withdrawals and at least one Salt River Project improvement and/or right of way. With boundary adjustments in this area to remove withdrawn areas, the manageability concerns are minimized, resulting in a “high” ranking for manageability and a “high” overall ranking for this polygon.
60b	Tonto Basin	122	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
60c	Tonto Basin	1,945	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
61	Tonto Basin	27,731	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
62	Tonto Basin	430	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
65	Pleasant Valley	16,461	Moderate	Recommended in alternative C with modifications Rationale: Received "moderate" overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation. Boundaries were adjusted for this polygon to remove the experimental forest, which will be referred to as 65a and 65b further on in this document.
66	Pleasant Valley	7,711	High	Recommended in alternative C Rationale: Received a "high" overall wilderness characteristic ranking.
67	Pleasant Valley	50	High	Recommended in alternative B and alternative C Rationale: Received "high" wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
68	Cave Creek	25,841	Low	Not Recommended Rationale: Received a "low" overall wilderness characteristic ranking.
69	Pleasant Valley	67	High	Recommended in alternative B and alternative C Rationale: Received "high" wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
70a	Globe	15,899	Moderate	Recommended in alternative C Rationale: Received significant public comment to be analyzed as a recommended wilderness area.
70b	Globe	34,456	Low	Not Recommended Rationale: Received a "low" overall wilderness characteristic ranking.
71	Pleasant Valley	20	High	Recommended in alternative B and alternative C Rationale: Received "high" wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
72	Pleasant Valley	10	High	Recommended in alternative C Rationale: Received "high" wilderness characteristic rankings across all categories, but there are boundary management difficulties associated with discussions about the current Sierra Ancha Wilderness Boundary and the Cherry Creek Road (FR203).
73	Pleasant Valley	18	High	Recommended in alternative C Rationale: Received "high" wilderness

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
				characteristic rankings across all categories, but there are boundary management difficulties associated with discussions about the current Sierra Ancha Wilderness Boundary and the Cherry Creek Road (FR203).
74	Pleasant Valley	24	High	Recommended in alternative C Rationale: Received "high" wilderness characteristic rankings across all categories, but there are boundary management difficulties associated with discussions about the current Sierra Ancha Wilderness Boundary and the Cherry Creek Road (FR203).
75	Cave Creek	12,243	Low	Not Recommended Rationale: Received a "low" overall wilderness characteristic ranking.
76	Tonto Basin	72,550	Moderate	Recommended in alternative C Rationale: Received a "moderate" overall wilderness characteristic ranking <u>and</u> had high opportunities for primitive and unconfined recreation.
77	Pleasant Valley	20	High	Recommended in alternative C Rationale: Received "high" wilderness characteristic rankings across all categories, but there are boundary management difficulties associated with discussions about the current Sierra Ancha Wilderness Boundary and the Cherry Creek Road (FR203).
78	Pleasant Valley	8	High	Recommended in alternative C Rationale: Received "high" wilderness characteristic rankings across all categories, but there are boundary management difficulties associated with discussions about the current Sierra Ancha Wilderness Boundary and the Cherry Creek Road (FR203).
79	Tonto Basin	29,468	Moderate	Recommended in alternative C with modifications Rationale: Received significant public comment to be analyzed as a recommended wilderness area. Modifications were made to this area to exclude areas with lesser wilderness characteristics and prevent a large inholding from being surrounded by recommended wilderness.
80	Mesa	61	Low	Not Recommended Rationale: Received a "low" overall wilderness characteristic ranking.
81	Mesa	20	Low	Not Recommended Rationale: Received a "low" overall wilderness characteristic ranking.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
82	Mesa	523	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
83	Pleasant Valley	6	High	Recommended in alternative C Rationale: Received “high” wilderness characteristic rankings across all categories, but there are boundary management difficulties associated with discussions about the current Sierra Ancha Wilderness Boundary and the Cherry Creek Road (FR203).
84	Cave Creek	7,846	High	Recommended in alternative B and alternative C with modifications Rationale: Received “high” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses. Boundary modifications were made to remove Bureau of Reclamation withdrawn areas, correct for road data inconsistencies, and remove areas of non-conforming use that would be difficult to manage for in a recommended wilderness area.
85	Pleasant Valley	7	High	Recommended in alternative C Rationale: Received “high” wilderness characteristic rankings across all categories, but there are boundary management difficulties associated with discussions about the current Sierra Ancha Wilderness Boundary and the Cherry Creek Road (FR203).
86	Cave Creek	23,963	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
87	Pleasant Valley	5,228	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
88	Mesa	1,863	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
89	Pleasant Valley	13,408	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
90	Mesa	593	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
91	Pleasant Valley	10,635	Moderate	Recommended in alternative C Rationale: Received a “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
92	Tonto Basin	5,379	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
93a	Pleasant Valley	9,974	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
93b	Pleasant Valley	654	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
93c	Pleasant Valley	14,949	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
93d	Pleasant Valley	23,299	Moderate	Recommended in alternative C Rationale: Received a “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
94	Pleasant Valley	6,661	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
95	Cave Creek	49,563	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
96a	Cave Creek	1,279	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
96b	Cave Creek	1,872	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
96c	Cave Creek	22,130	High	Recommended in alternative C with modifications Rationale: Received a “high” overall wilderness characteristic ranking. Boundary adjustments were made to remove Bureau of Reclamation withdrawn areas that would be difficult to manage for their intended purpose in a recommended wilderness area.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
97a	Tonto Basin	23,123	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
97b	Mesa	6,816	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
98	Pleasant Valley	43,094	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
99	Tonto Basin	34,181	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
101a	Pleasant Valley	23,442	High	Recommended in alternative B and alternative C Rationale: Received “high” wilderness characteristic rankings across all categories, including manageability, and there are no known non-conforming uses.
101b	Pleasant Valley	29,657	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
102	Payson	16,772	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
103	Pleasant Valley	26,646	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
104a	Payson	15,367	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
104b	Tonto Basin	16,490	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
105	Pleasant Valley	5,577	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
106	Payson	363	Low	Not Recommended

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
				Rationale: Received a “low” overall wilderness characteristic ranking.
107	Pleasant Valley	15,498	Moderate	Recommended in alternative C Rationale: Received “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
108	Pleasant Valley	1,634	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
109	Pleasant Valley	10,267	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
110a	Payson	6,918	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
110b	Payson	119	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
111	Cave Creek	95,119	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
112	Payson	16,172	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
113a	Payson	640	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
113b	Payson	11,226	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
114	Pleasant Valley	9,634	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
115	Payson	4,871	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
116	Payson	11,372	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
117	Pleasant Valley	6,951	Moderate	Not Recommended Rationale: Did not receive a “high” wilderness characteristic ranking for primitive and unconfined recreation opportunities.
118	Pleasant Valley	26,538	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
119a	Cave Creek	65,145	Moderate	Recommended in alternative C with modifications Rationale: Received “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation. Boundary adjustments were made to remove Bureau of Reclamation withdrawn areas that would be difficult to manage for their intended purpose in a recommended wilderness area.
119b	Cave Creek	26,461	Moderate	Recommended in alternative C with modifications Rationale: Received “moderate” overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation. Boundary adjustments were made to remove Bureau of Reclamation withdrawn areas that would be difficult to manage for their intended purpose in a recommended wilderness area. This resulted in this area being split into three polygons, which will be referred to as 119b, 119e, and 119f further on in this document.
119c	Cave Creek	4,328	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
119d	Cave Creek	4,049	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
120a	Payson	1,165	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
120b	Payson	10,095	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
121	Cave Creek	13	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
122	Cave Creek	293	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
123	Cave Creek	32,913	Moderate	Recommended in alternative C with modifications Rationale: Received significant public comment to be analyzed as a recommended wilderness area. Modifications were made to exclude areas where wilderness characteristics were low. This resulted in this area being split into two polygons, which will be referred to as 123a and 123b further on in this document.
124	Cave Creek	5	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
125	Payson	5,834	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
126	Cave Creek	1,210	High	Recommended in alternative C with modifications Rationale: Received a “high” overall wilderness characteristic ranking. Modifications were made to the boundary to remove Bureau of Reclamation withdrawn areas that would be difficult to manage for their intended purpose in a recommended wilderness area.
127	Payson	14,065	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
128a	Payson	7,547	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
128b	Payson	4,546	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
129	Payson	22,401	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
130	Payson	3,217	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
131	Payson	30	High	Recommended in alternative C Rationale: Received a “high” overall wilderness characteristic ranking.
132a	Payson	2,561	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.

Polygon Number	District	Acres (in evaluation)	Final Wilderness Characteristic Evaluation Rank	Recommendation and Rationale
132b	Payson	162	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.
133	Payson	21,910	Low	Not Recommended Rationale: Received a “low” overall wilderness characteristic ranking.
134	Payson	21,042	No	Not Recommended Rationale: Received a “no” overall wilderness characteristic ranking.

Changes between Draft and Final

Comments on the analysis step of the wilderness recommendation process were accepted during the comment period for the draft environmental impact statement, from December 13, 2019 to March 12, 2020. A summary of public input and resulting changes to the analysis are as follows:

- The majority of comments either expressed general support or non-support of recommended wilderness. Per 36 CFR 212, we are required to evaluate Forest Service land for consideration as recommended wilderness. Forest Service Manual 1920 and Forest Service Handbook 1909.12. Forest Service Handbook 1909.12, chapter 70 is the policy direction that guides the wilderness recommendations process. The Forest Service considered a wide range of recommended wilderness areas, from 0 acres of recommended wilderness areas in alternative D to over 399,000 acres of recommended wilderness areas in alternative C. In drafting the record of decision, the responsible official carefully considered a range of recommended wilderness areas, as well as other allocations, to determine the mix of land and resource uses that would best meet public needs.
- A number of comments focused on boundaries of specific polygons where adjustments could be made to increase the manageability of the area. The information provided in those comments will be considered in determination of the final recommendation by the responsible official, as part of the record of decision.
- Where new information was provided on the wilderness characteristics of an analyzed recommended wilderness area the information was verified by resource specialists on the Tonto, then incorporated into the descriptions of the areas where they appear in the Alternative B Recommended Wilderness Areas and Alternative C Recommended Wilderness Areas sections below.
- Comments were submitted on the adjustment of boundaries to remove bureau of reclamation withdrawn areas from the areas analyzed as recommended wilderness. In order to enhance the manageability of recommended wilderness areas, while respecting the law, regulation, and policy Bureau of Reclamation operates under, we removed the land that would result in added difficulty for management for the intended purpose of Bureau of Reclamation withdrawn lands.
    - As a result of this comment the Tonto reviewed the manageability evaluations of all areas that overlapped with Bureau of Reclamation first form withdrawal to determine if they should be included in an alternative of the draft environmental impact statement based removal of the manageability concern. Through this evaluation it was determined that Polygon 60a would be analyzed in alternative C. The primary manageability concerns of the area included the presence of Bureau of Reclamation First Form withdrawals and at least one Salt River Project improvement and/or right of way. With the boundary adjustments within this area to remove the withdrawn areas, the manageability concerns are minimized, resulting in a high ranking for manageability and a high overall ranking for this polygon.
- In transitioning to the scenery management system, the current scenic integrity of each area was documented in the description of current uses and management in the polygon tables below. This replaced the visual quality objectives documented in the draft environmental impact statement.

Alternative B Recommended Wilderness Areas

Alternative B includes 11 recommended wilderness areas totaling 43,204 acres. These areas include:

- Superstition Wilderness Contiguous recommended wilderness area A (12 acres)
- Superstition Wilderness Contiguous recommended wilderness area B (28 acres)

- Coronado Mesa recommended wilderness area (6,515 acres)
- Four Peak Wilderness contiguous recommended wilderness area A (9 acres)
- Salt River Canyon Wilderness contiguous recommended wilderness area A (613 acres)
- Salt River Canyon Wilderness contiguous recommended wilderness area B (93 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area A (50 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area B (67 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area C (20 acres)
- Indian Butte recommended wilderness area (6,140 acres)
- Gun Creek recommended wilderness area (29,657 acres)

This section provides the following information for each recommended wilderness area included in alternative B:

- The name of the area and the number of acres to be considered;
- The location and a summarized description of a recommended boundary for each area;
    - If private property or improvement (e.g., powerlines) dictate or are located along a part of the area boundary, the boundary line falls 300 feet from the private property line and 100 feet from an improvement.
- A brief description of the general geography, topography, and vegetation of the recommended area;
- A brief description of the current uses and management of the area;
    - This section includes the recreation opportunity spectrum classifications, scenic integrity, 1985 plan management area(s), range allotment(s), and other information that pertains to the use and management in the area.
- A description of the area's wilderness characteristics and the ability of the Forest to protect and manage the area so as to preserve its wilderness characteristics;
    - Throughout the descriptions of polygons, there are references to cherry-stem roads. A cherry-stem road refers to a dead-end road that appears to protrude into a polygon, but the perimeter of the polygon is drawn around the road, excluding the road from being within the actual boundary of a polygon.
- A brief summary of the factors considered and the process used in evaluating the area and developing the alternatives;
- A brief summary of the ecological and social characteristics that would provide the basis for the area's suitability for inclusion in the National Wilderness Preservation System; and
- A map showing the boundaries of the recommended wilderness area. When printed in black and white, the recommended wilderness can be identified by the black border around the area.

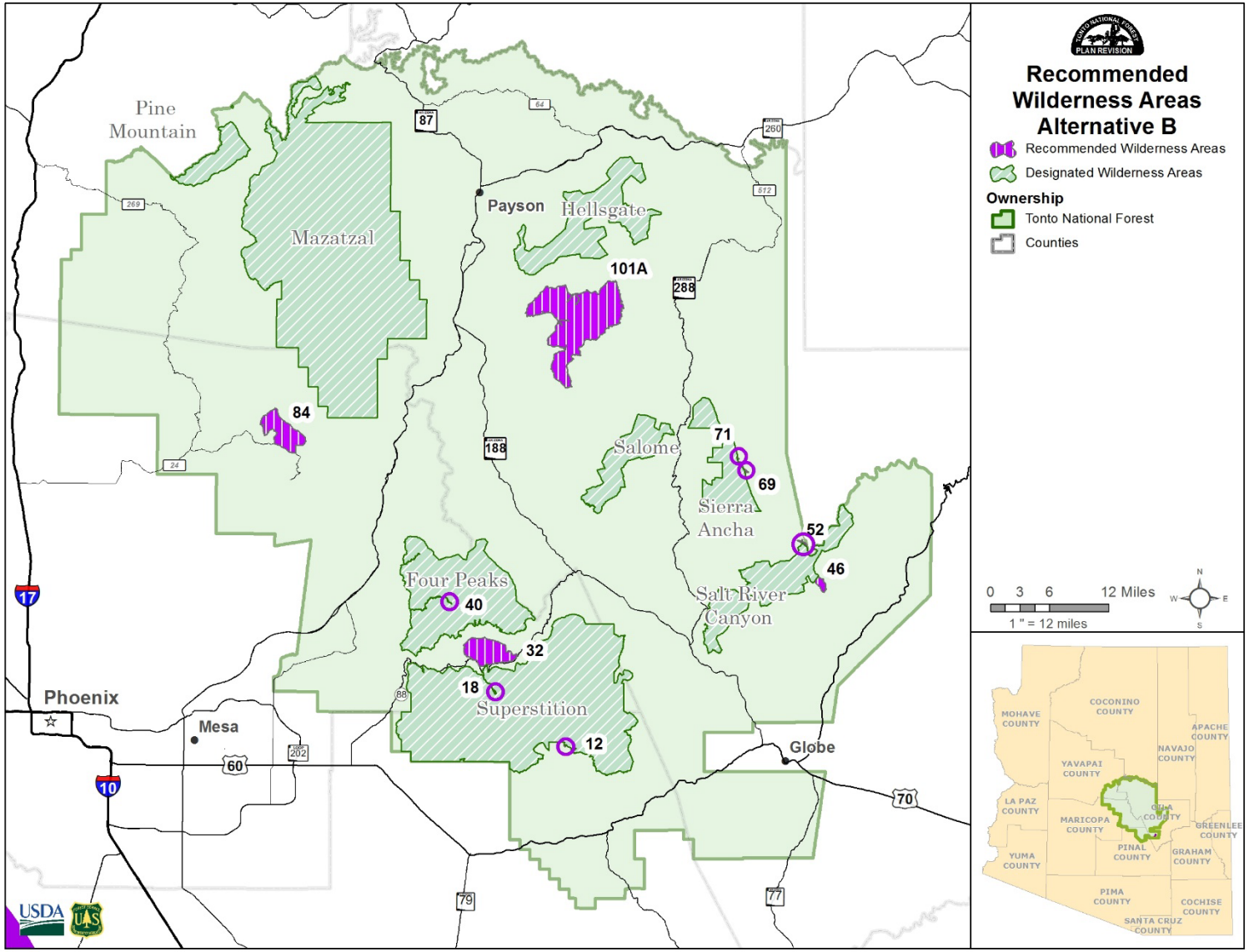
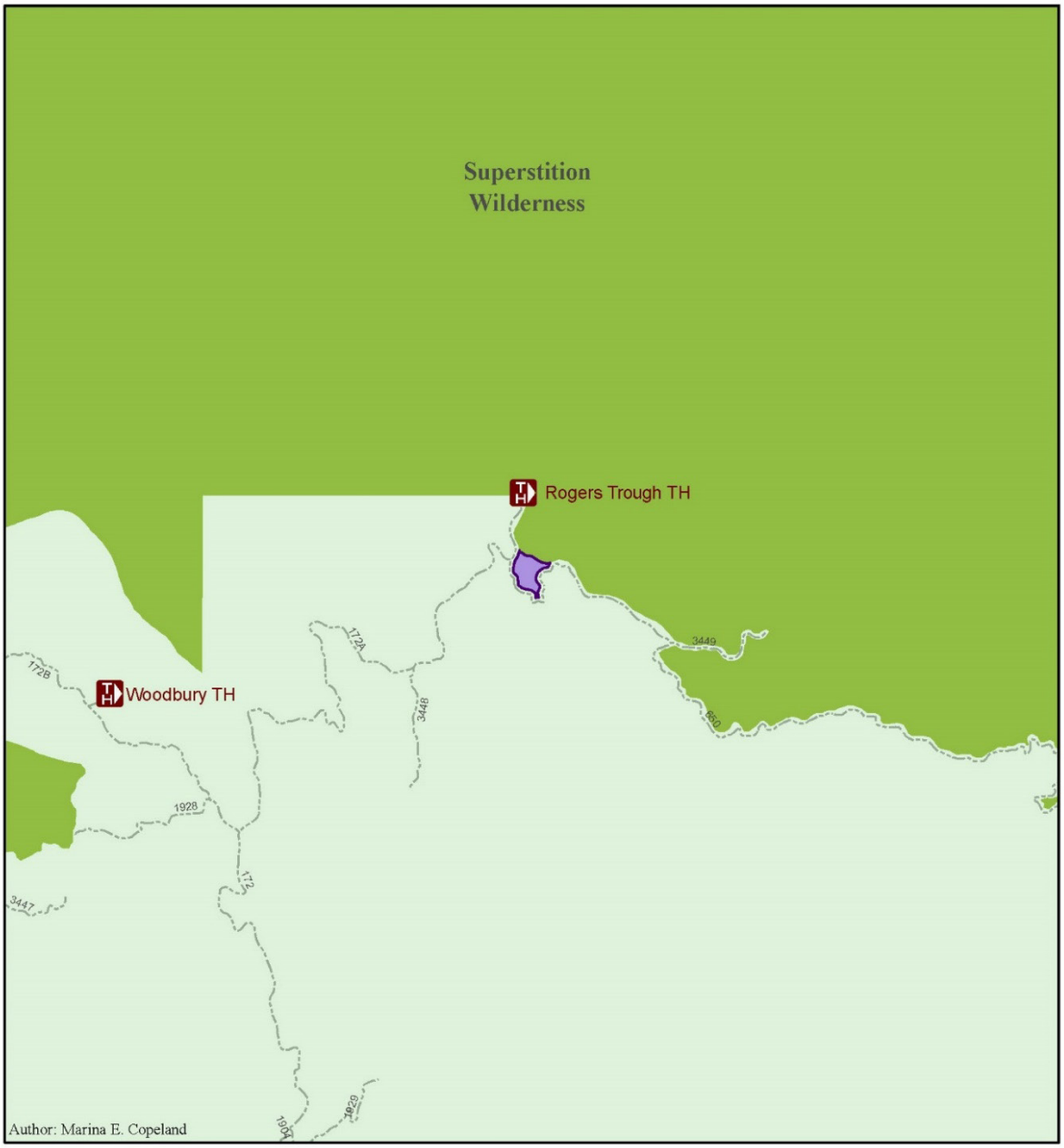


Figure 26. Recommended wilderness areas in alternative B

Polygon 12 – Superstition Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	13 acres
Summarized description of the recommended boundary	This area is a small triangular shape adjacent to the Superstition Wilderness. The boundary follows the National Forest System roads, and the superstition wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located approximately 52 air miles from Phoenix in Gila County, this area lies adjacent to the south boundary of the Superstition Wilderness on the Mesa Ranger District. This small area is characterized by rolling land on the southern end of the Superstition mountain range. Elevation in this area ranges from 5,000 – 5,200 feet. This area is entirely comprised of the Semi-Desert Grassland Ecological Response Unit. Major plant communities include chaparral, oak, pinyon juniper, and mountain mahogany, which provides suitable habitat for a variety of game and non-game species.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 3I General Management Area Range Allotment: Millsite Adjacent to the Superstition Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The composition of plant and animal communities appears natural to the average forest visitor. Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Low severity fire burned 100% of this area (Woodbury Fire, 2019). Undeveloped Quality: There is no developed infrastructure within this area. The only known improvement within this polygon is an existing historic trail alignment. No known fence or other range developments are present in the area. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. There is an adjacent road that receives heavy use, but there is very little use inside the polygon, making opportunities to experience solitude high in the area. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation and most existing opportunities are poor quality with low risk. High quality recreation opportunities may be present when combined with the adjacent wilderness. Other features of value: None Identified This area has few other uses or management considerations making managing to preserve wilderness characteristics possible. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of

Factor	Description
	management activities and other uses that detract from wilderness characteristics are isolated.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is undeveloped with no infrastructure The social characteristics that provide the basis for suitability are as follows: ● Solitude is present due to adjacency to wilderness ● There are high quality opportunities for primitive and unconfined recreation, especially when combined with adjacent wilderness opportunities



Superstition Wilderness Contiguous Recommended Wilderness Area A

Derived from
Evaluation Polygon 12

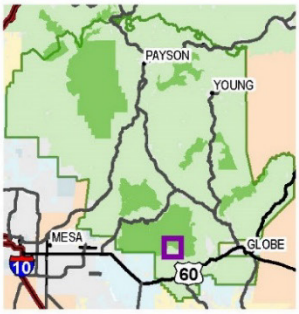
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 12 acres
Pinal County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles



This map is designed for Forest Service planning purposes only. It only represents areas being analyzed and does not convey future recommendations. It does not contain sufficient detail for legal purposes.

References: Data acquired from a variety of sources of differing accuracy, precision, and reliability. Features represented by this map may not represent accurate geographic locations.

Disclaimer: The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map and reserves the right to correct, update, modify, or replace information without notification.

Figure 27. Superstition Wilderness contiguous recommended wilderness area A

Polygon 18 – Superstition Wilderness Contiguous Recommended Wilderness Area B

Factor	Description
Acres	28 acres
Summarized description of the recommended boundary	This area is a small triangular shape adjacent to the Superstition Wilderness. The boundary follows the National Forest System roads, and the superstition wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located in Maricopa County, approximately 45 miles from downtown Phoenix, this area is surrounded by the Superstition Wilderness on the Mesa Ranger District. This small area is characterized by sloping hillside and washes flowing into Tortilla Creek. The area is part of the superstition mountain range. Elevation in this area ranges from 3,000 – 3,100 feet. This area is comprised primarily of the Desert Willow Ecological Response Unit. The major plant community includes Sonoran Desert plants like saguaro, ocotillo, cholla, prickly pear, and a variety of forbs.
Current uses and management	Recreation Opportunity Spectrum: 100% Roaded Natural Scenic Integrity: 100% High. 1985 Plan Management Area: 3I General Management Area Range Allotment: Tortilla Adjacent to the Superstition Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Some nonnative red brome possible in some locations. Suitable habitat exists for a variety of game and non-game species. Maple leaf false snapdragon (sensitive) is known to be in the surrounding area and could occur in the polygon. Low severity fire burned 100% of this area (Woodbury Fire, 2019). Undeveloped Quality: There is a small section of non-motorized trail and remnants from the old Tortilla Ranch, but the presence or appearance of improvements does not detract from apparent naturalness. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Low level of use on adjacent road during the winter and spring, so motorized sounds can be heard. Very small polygon, so opportunities are limited, but possible when away from the road. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation when used in conjunction with the adjacent wilderness. These opportunities are of high quality and include horseback riding, hiking, dispersed camping. There are no controls on user behavior within this area. Other Features of Value: There is one historic archaeological site currently identified within this polygon Management to preserve these wilderness characteristics is possible throughout the area. Though it is very small, the adjacency to the Superstition Wilderness makes management possible. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management

Factor	Description
	activities and other uses that detract from wilderness characteristics are isolated. No range improvements.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is mostly undeveloped with little infrastructure The social characteristics that provide the basis for suitability are as follows: ● Solitude is present due to adjacency to wilderness ● There are high quality opportunities for primitive and unconfined recreation, especially when combined with adjacent wilderness opportunities There is one known archeological site in this area.

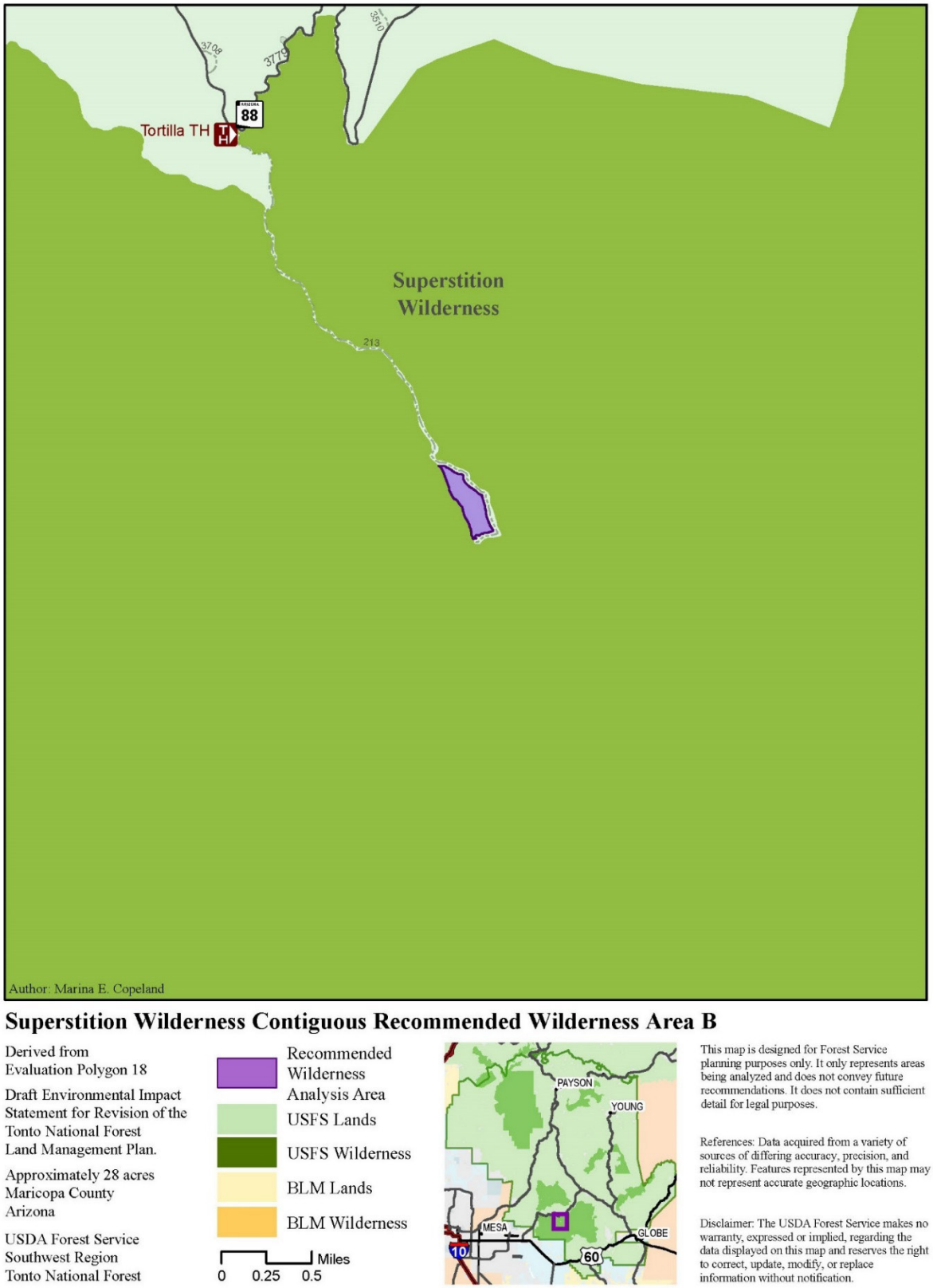


Figure 28. Superstition Wilderness contiguous recommended wilderness area B

Polygon 32 – Coronado Mesa Recommended Wilderness Area

Factor	Description
Acres	6,515 acres
Summarized description of the recommended boundary	This area is a large polygon located south of Apache Lake. The boundary follows the National Forest System roads, powerline right of ways, and Bureau of Reclamation first form withdrawal lands. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located in Maricopa County on the Mesa Ranger District, this area is geologically tied to the Superstition Mountain Range at its northern most extension and is located within the superior volcanic field. This area is dominated by two natural features: Horse Mesa and the Fish Creek Canyon. Horse Mesa is a high, very inaccessible bench over 8 miles in length. Sheer cliffs and deep canyons completely surround the Mesa, some forming the northern boundary. Fish Creek Canyon is a spectacular canyon that flows north out of the Superstition Wilderness, characterized by its vertical walls and boulder covered bottom. At its deepest point within this area it is nearly 2,000 feet deep. Elevation in this area ranges from 1,760 – 4,300 feet. The majority of the area is in the Mojave-Sonoran Desert Scrub Ecological Response Unit (91%). However, the top of Horse Mesa constitutes Semi-Desert Grassland (7%). There are limited areas of riparian vegetation, primarily found along Fish Creek (2%).
Current uses and management	Recreation Opportunity Spectrum: 32% Roaded Natural, 68% Semi-Primitive Non-Motorized Scenic Integrity: 95% High, 5% Moderate. 1985 Plan Management Areas: 3I General Management Area, 6F Roosevelt and Apache Lakes Recreation Area Range Allotments: Reavis, Roosevelt, and Tortilla 95% of this area is managed as the Horse Mesa Inventoried Roadless Area.
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative plants include red brome in the desert areas. This area provides suitable habitat for a variety of game and non-game species. Species of special status include longfin dace, lowland leopard frog, Bald Eagle, Fish Creek Fleabane, and Gila rock daisy. Undeveloped Quality: No developments along the shoreline. Minimal user created trails and routes. The presence or appearance of improvements does not detract from apparent naturalness of the area. Solitude: Significant feeling of being alone or remote from civilization is common throughout the area. Cross country hunting and hiking and recreation use along fish creek is fairly low, making human encounters infrequent. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and unconfined recreation and at least some of these opportunities are of high quality. Hiking, hunting, canyoneering and fishing can occur in the area. The terrain is steep and rugged, there are no system trails and no user controls. Other Features of Value: Species of special status include longfin dace,

Factor	Description
	lowland leopard frog and bald eagle, Fish Creek Fleabane and Gila rock daisy. There is a total of seven archaeological sites recorded to date within this polygon. One of these sites is prehistoric in nature, four date from the historic period, and two are multi-component. Prehistoric site types include rock shelters and sherd and lithic scatters. Historic site types include Apache and Yavapai occupations and telephone lines. Fish Creek is a high quality water resource that flows through a scenic canyon within this polygon. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The boundary of the area has been adjusted to remove the communication site on rock butte. This is in the communication site flight path, as a helicopter is used to access the site. This area contains at least one Salt River Project (SRP) improvement and/or right of way. There are very few mineral claims recorded with the BLM, and there are no operating plans approved by the Mesa Ranger District. One boundary is the 88 road that receives a high level of use, but due to the terrain only a small portion can be seen from the area. There is a small cherry stem. Approximately 95% of the area is a part of an Inventoried Roadless Area. Arizona Game and Fish periodically (annually) removes big horn sheep from this area to improve big horn sheep population and helicopters are used. Big horn sheep are also collared.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is mostly undeveloped with little infrastructure ● The area contains unique ecological features including a high quality water resource and known occurrences of species of special status. The social characteristics that provide the basis for suitability are as follows: ● The area offers opportunities for solitude ● There are some opportunities for primitive and unconfined recreation; primarily offering high risk opportunities due to terrain.

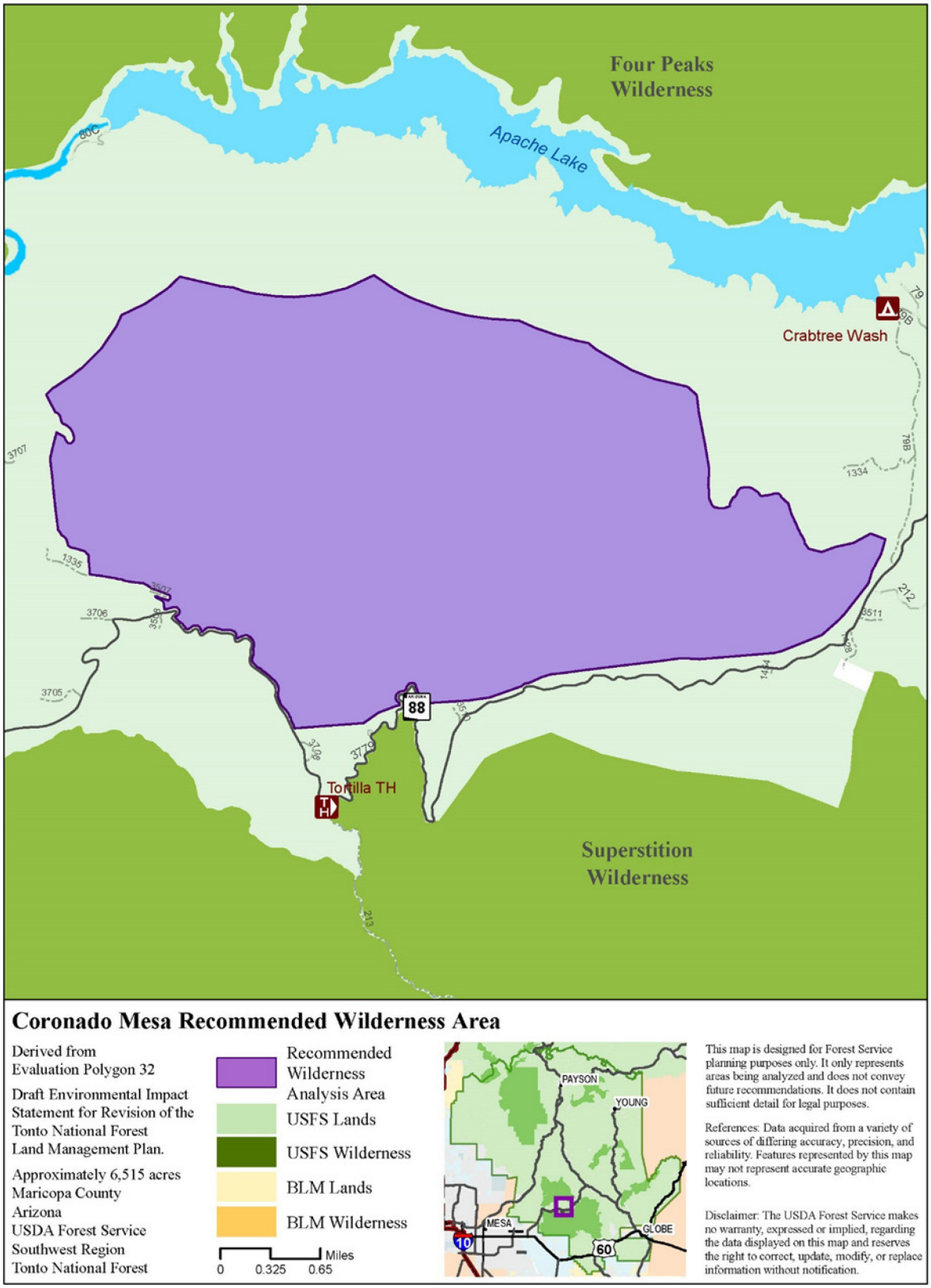


Figure 29. Coronado Mesa recommended wilderness area

Polygon 40 – Four Peaks Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	9 acres
Summarized description of the recommended boundary	This area is a small, long, skinny area primarily surrounded by the Four Peaks Wilderness. The boundary follows the National Forest System roads, and the Four Peaks wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in the middle of the Four Peaks Wilderness, Approximately 25 miles northeast of Mesa, AZ on the Mesa Ranger District. This area has multiple steep ridgelines and canyons that extend down from Four Peaks massif. The elevation in this area ranges from 2,900 – 3,200 feet. This area is in the Mojave-Sonoran Desert Scrub Ecological Response Unit. Major plant communities include typical chaparral and Sonoran Desert vegetation.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 3I General Management Area Range Allotments: Sunflower Adjacent to the Four Peaks Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Nonnative red brome is likely present, but not apparent to the average visitor. Suitable habitat for common Sonoran wildlife exists in the area. There are no species of special status. Undeveloped Quality: One non-motorized/non-mechanized trail runs through the middle of the polygon. Solitude: The area sees low use, is difficult to access, and is surrounded by wilderness. Common or significant feeling of being alone or remote from civilization is possible throughout the area. Some overhead flights could impact opportunities for solitude. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality. Hiking, hunting, dispersed camping are possible, and opportunities are high quality and abundant when used in conjunction with the adjacent wilderness. Other Features of Value: None Identified Management to preserve the wilderness characteristics is possible throughout the area. Though it is very small, the adjacency to the Four Peaks Wilderness makes management possible. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. There is little to no use of the area and it is surrounded by wilderness. A gate keeps motorized traffic out of this section.
Brief summary of the factors considered and the process used in	● High manageability as recommended wilderness

Factor	Description
evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● A non-motorized trail runs through this area, but it does not impact the naturalness. The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are high quality opportunities for primitive and unconfined recreation.

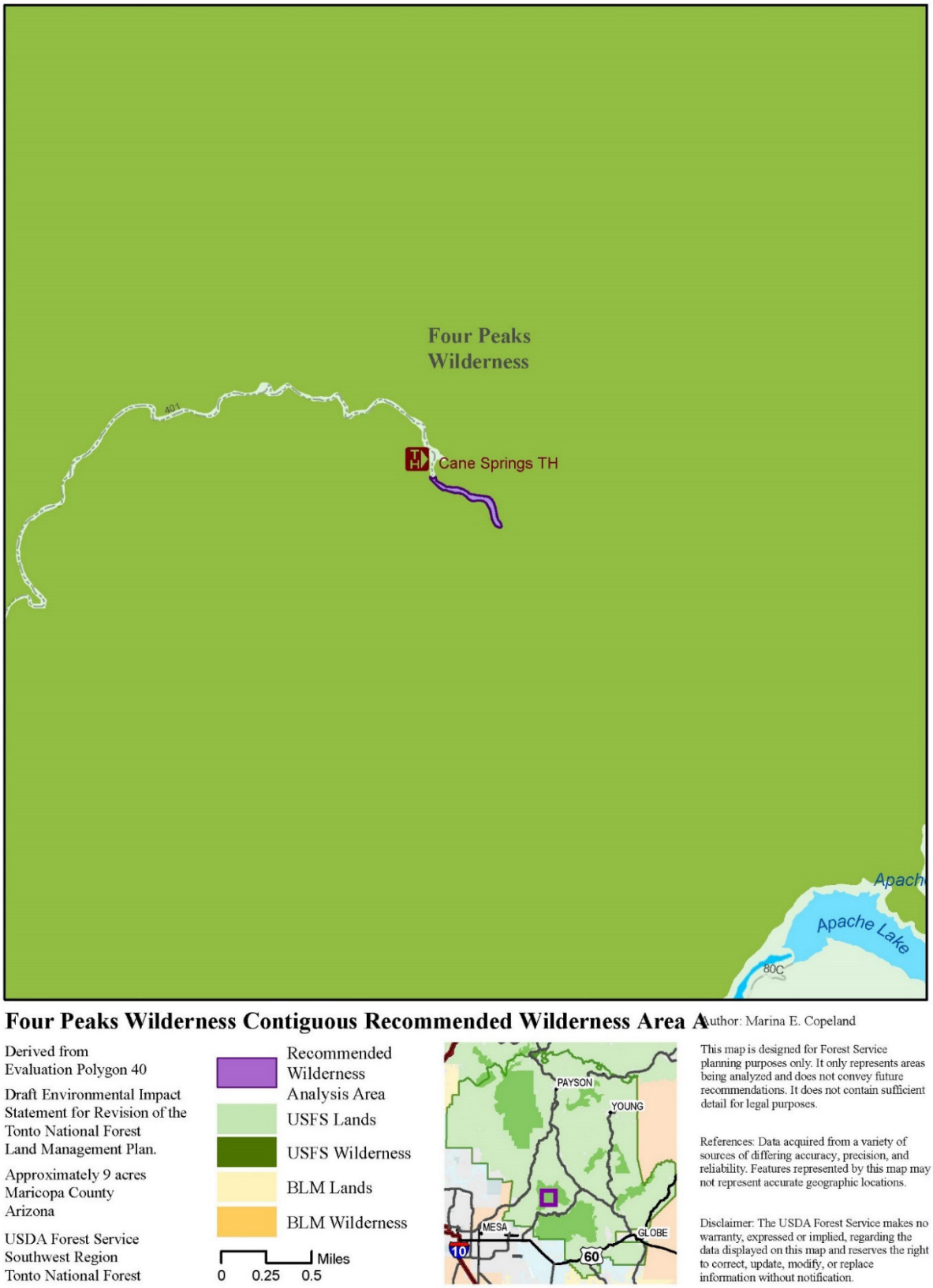
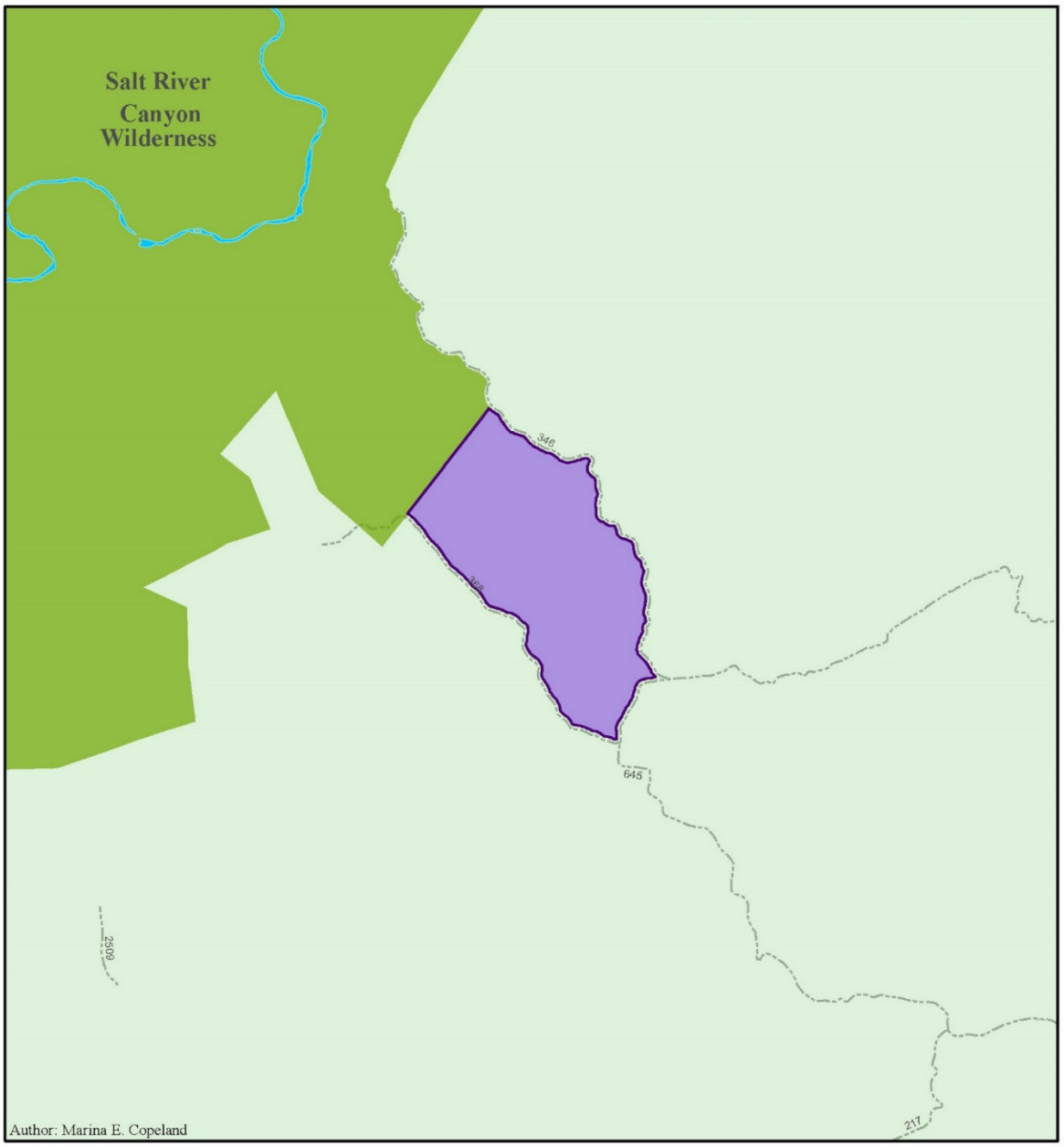


Figure 30. Map of Four Peaks Wilderness contiguous recommended wilderness area

Polygon 46 – Salt River Canyon Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	614 acres
Summarized description of the recommended boundary	This small area is south of the Superstition Wilderness in the Globe Ranger District. The boundary follows National Forest System roads, and the salt river canyon wilderness boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located on the Globe Ranger District, approximately 80 air miles from Phoenix. It is located adjacent to the Salt River Canyon Wilderness, southwest of the Blackjack Mountains. This area is characterized by rolling hills and large desert washes. The elevation in this area ranges from 3,400 – 4,300 feet. This area is entirely comprised of the Juniper Grass Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 2F General Management Area Range Allotment: Sedow Adjacent to the Salt River Canyon Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No past vegetation treatments have occurred in this area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. No special status species, but habitat for a variety of game and non-game species. No nonnative species. Undeveloped Quality: Prevalence of improvements is rare or scattered. Barbed wire range fence runs across the polygon. No other improvements. Solitude: There is very low use throughout the area. The polygon is small polygon, but opportunities are possible, especially when visited in conjunction with the adjacent wilderness. Some use on roads during hunting season. Unconfined and Primitive Recreation: When used in conjunction with the adjacent wilderness, opportunities to experience primitive and unconfined recreation is possible. Hiking and hunting is possible but fairly low quality. Other Features of Value: None Identified Management to preserve the wilderness characteristics is possible throughout the area. This is a small area, primarily bounded by Forest Service roads that see little use. Easily manageable when considered in conjunction with the Salt River Canyon Wilderness. There are no projects or management plans that would impact the wilderness characteristics of the area. No uses or considerations that would inhibit management of the area to preserve its wilderness characteristics.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention.

Factor	Description
suitability for inclusion in the National Wilderness Preservation System	● The area is mostly undeveloped with little infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers good opportunities for solitude. ● There are opportunities for primitive and unconfined recreation when used in conjunction with the Salt River Canyon Wilderness.



Salt River Canyon Wilderness Contiguous Recommended Wilderness Area A

Derived from
Evaluation Polygon 46

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 613 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

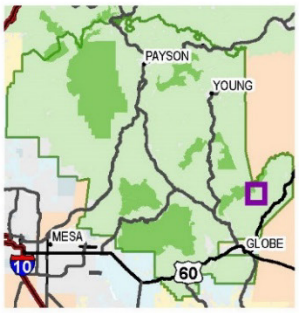


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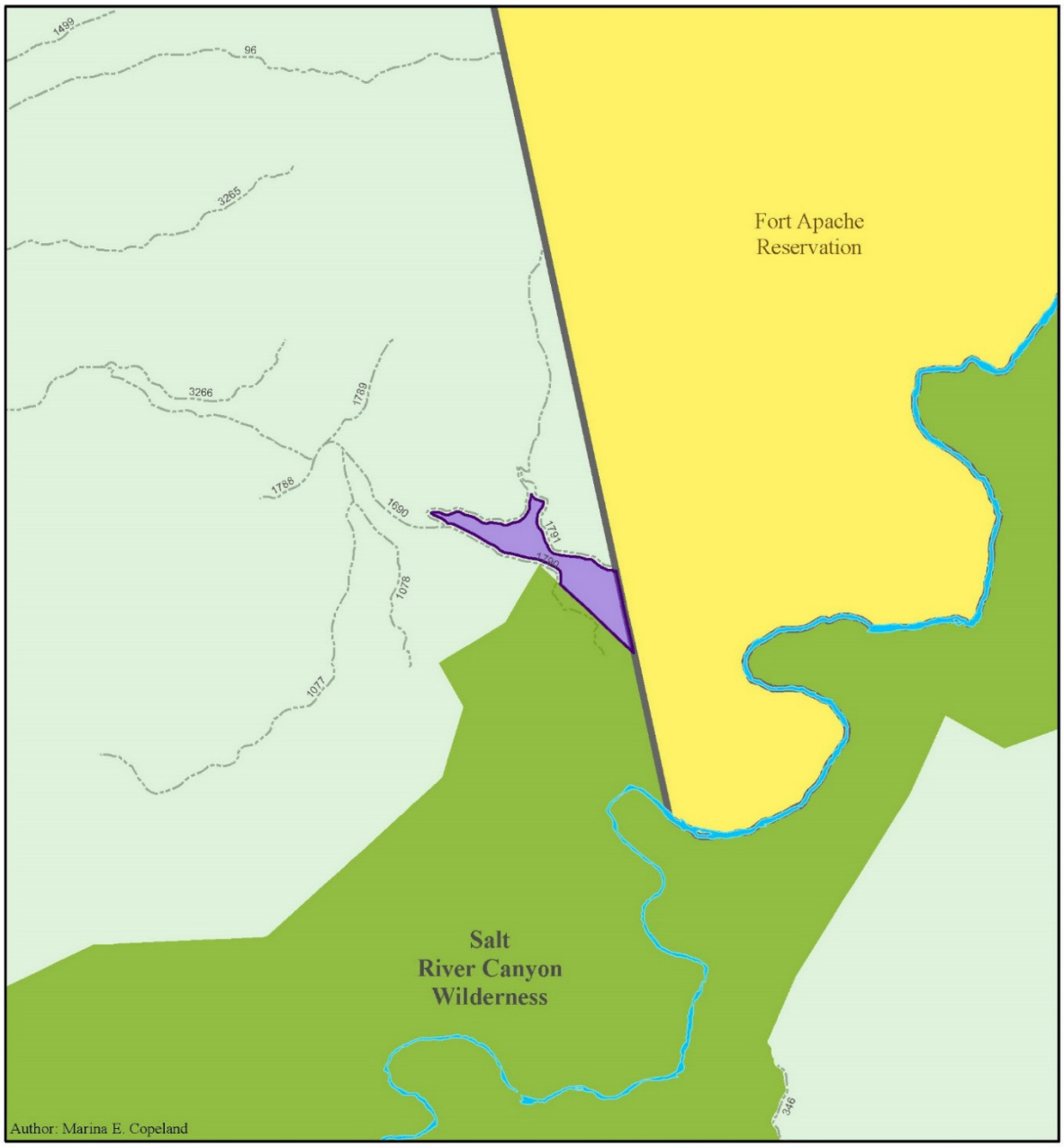
Figure 31. Salt River Canyon Wilderness contiguous recommended wilderness area A

Polygon 52 – Salt River Canyon Wilderness Contiguous Recommended Wilderness Area B

Factor	Description
Acres	93 acres
Summarized description of the recommended boundary	This area is a small triangular shape adjacent to the Salt River Canyon Wilderness. The boundary follows the National Forest System roads, the National Forest Boundary, and the Salt River Canyon wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. Most adjacent land is managed by the Forest Service, but the easternmost boundary of this area abuts the Fort Apache Reservation.
Brief description of the general geography, topography, and vegetation	Located on the Globe Ranger District near the border of the Tonto National Forest and the Fort Apache Reservation, this area shares characteristics of the Salt River Canyon Wilderness. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. The elevation in this area ranges from 2,900 – 3,300 feet. This area primarily comprised of the Semi-Desert Grassland Ecological Response Unit. Major plant communities include Sonoran Desert plants, such as cholla, and desert scrub.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 6J General Management Area Range Allotment: Dagger Adjacent to the Salt River Canyon Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. No known treatments. Suitable habitat for a variety of game and non-game species exists in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. Occurrence of improvements is rare. No range improvements, no special use infrastructure, no recreation improvements. Solitude: Opportunities for solitude possible, especially when closer to the adjacent wilderness. Adjacent roads are very low use other than during hunting season when a visitor may see or hear some motorized use of the road Unconfined and Primitive Recreation: Some camping, hunting, hiking opportunities are possible in the polygon, and when used in conjunction with the adjacent wilderness some opportunities are good quality. Other Features of Value: None identified Management to preserve the wilderness characteristics is possible throughout the area. The polygon is adjacent to the Salt River Canyon Wilderness. There are no projects or management plans that would impact the wilderness characteristics of the area. There are few improvements and few uses that would make it difficult to manage the area to preserve wilderness characteristics.

Factor	Description
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers good opportunities for solitude. ● There are high quality opportunities for primitive and unconfined recreation when used in conjunction with the Salt River Canyon Wilderness.



Salt River Canyon Wilderness Contiguous Recommended Wilderness Area B

Derived from
Evaluation Polygon 52

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 94 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

Miles
0 0.25 0.5

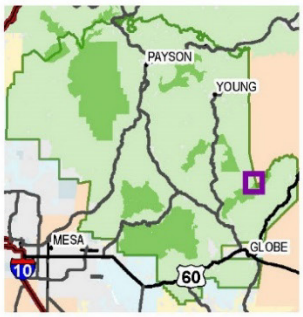


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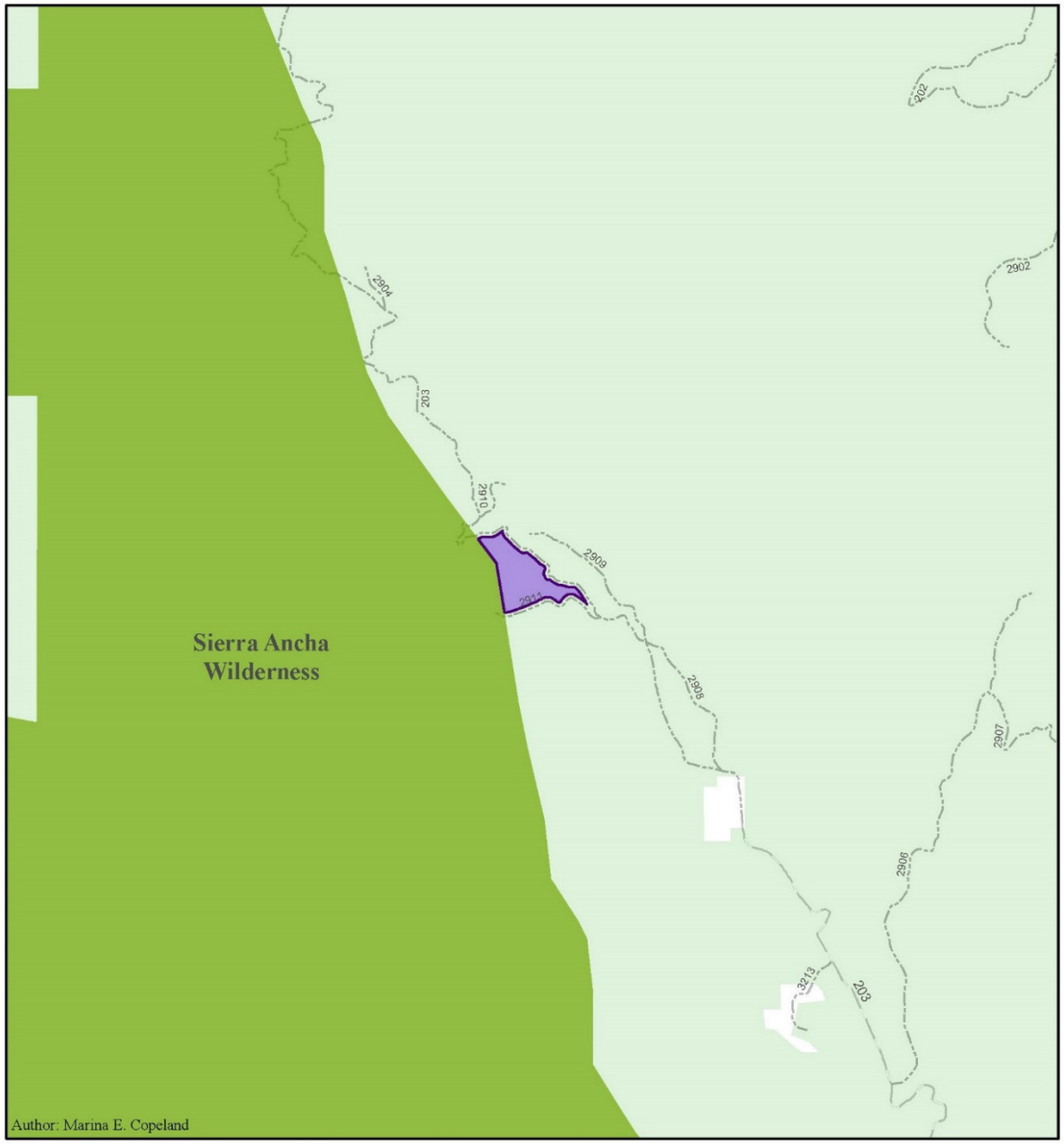
Figure 32. Salt River Canyon Wilderness contiguous recommended wilderness area B

Polygon 67– Sierra Ancha Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	50 acres
Summarized description of the recommended boundary	The boundary follows National Forest System Roads, primarily the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This deeply dissected mountainous segment consists of the rugged Sierra Ancha Mountains with high plateaus and Steep Canyons. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,500 to 4,000 feet. Precipitous box canyons run eastward into Cherry Creek. This area has vegetation common to the PJ Evergreen Shrub Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 9% Primitive, 91% Roaded Natural Scenic Integrity: 9% Very High, 91% High. 1985 Plan Management Areas: 5A Sierra Ancha Wilderness and 5G General Management Area Range Allotments: Center Mountain and Flying H Approximately 80% of the area is in an Inventoried Roadless Area. Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Juniper grassland is the dominant plant community. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted.

Factor	Description
	Other Features of Value: There are unique or outstanding landscape features in this area, such as the view shed which includes cliffs and cliff dwellings Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. When managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area A

Derived from Evaluation Polygon 67

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 50 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

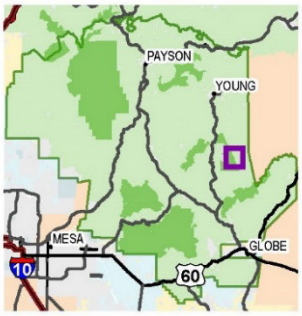


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Figure 33. Sierra Ancha Wilderness contiguous recommended wilderness area A

Polygon 69 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area B

Factor	Description
Acres	67 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix, on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This deeply dissected mountainous segment consists of the rugged Sierra Ancha Mountains with high plateaus and Steep Canyons. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,500 – 4,000 feet. Precipitous box canyons run eastward into Cherry Creek. This area is primarily in the PJ Evergreen Shrub Ecological Response Unit (93% of area) with a small section of Semi-Desert Grassland (7%).
Current uses and management	Recreation Opportunity Spectrum: 18% Primitive, 82% Roaded Natural Scenic Integrity: 19% Very High, 81% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness and 5G General Management Area Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: When considered with the adjacent wilderness, there are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape

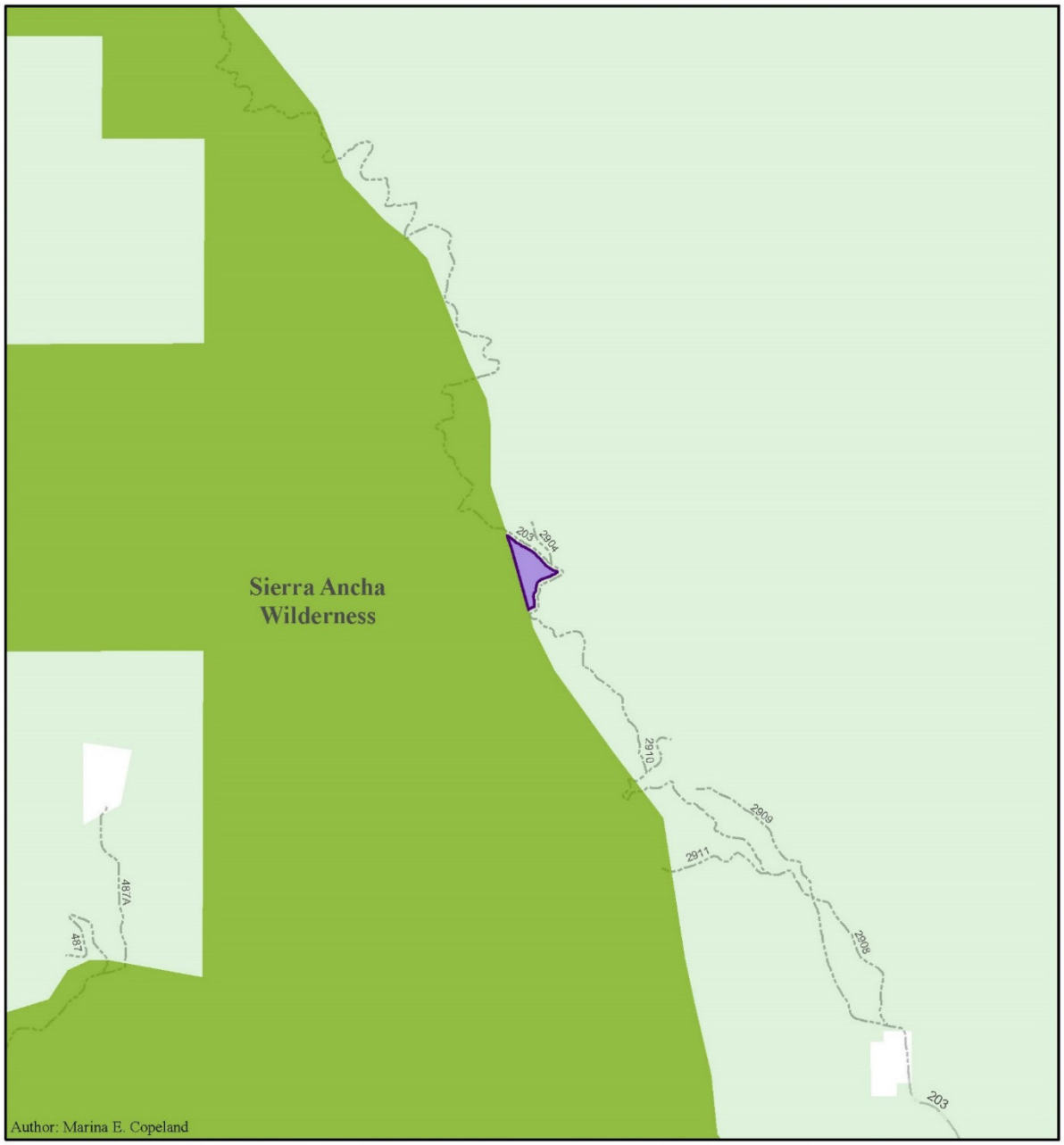
Factor	Description
	features in this area, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. When managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

Figure 34. Sierra Ancha Wilderness contiguous recommended wilderness area B

Polygon 71 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area C

Factor	Description
Acres	20 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix, on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,700 – 4,000 feet. Precipitous box canyons run eastward into Cherry Creek. This area has vegetation typically found in the PJ Evergreen Shrub (72% of the area) and Semi-Desert Grassland (28%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 2% Primitive, 98% Roaded Natural Scenic Integrity: 100% High. 1985 Plan Management Area: 5G General Management Area Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this area, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the

Factor	Description
	wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area C

Derived from
Evaluation Polygon 71

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 20 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

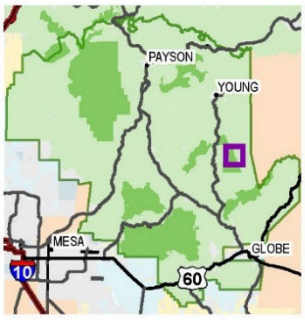


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Figure 35. Map of Sierra Ancha Wilderness contiguous recommended wilderness area C

Polygon 84 – Indian Butte Recommended Wilderness Area

Factor	Description
Acres	6,140 acres
Summarized description of the recommended boundary	This area is bounded by National Forest System roads to the north and west and Bureau of Reclamation first form withdrawal land boundaries to the south and east. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located approximately 40 miles north of Phoenix, just west of Bartlett Lake on the Cave Creek District. The topography includes areas of high rounded hills and ridges in basins. Elevations in this area range from 2,080 – 3,735 feet. This area's primary Ecological Response Unit is Mojave-Sonoran Desert Scrub (86% of area), with pockets of Semi-Desert Grassland (12%), Interior Chaparral (1%), and Riparian (1%).
Current uses and management	Recreation Opportunity Spectrum: 84% Semi-Primitive Motorized, 16% Roaded Natural Scenic Integrity: 84% High, 16% Moderate 1985 Plan Management Area: 1F General Management Area Range Allotment: St Clair
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative plants, fountain grass and red brome, are in the polygon in isolated patches. Suitable habitat for a variety of game and non-game species exists in the area as well as bald eagles. The area is identified as an Important Bird Area. Undeveloped Quality: The only improvements in the polygon are several level one roads that are still apparent on the landscape. The presence or appearance of improvements does not detract from apparent naturalness. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. All the roads around the perimeter are closed to public use, so no current use. And very little use occurs in the interior of the polygon. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and unconfined recreation like hiking, hunting, and dispersed camping and some of these opportunities are of high quality. Other Features of Value: There is one known historic archaeological site currently identified within this polygon. The site consists of a concrete foundation and artifact scatter. This area has known nesting populations of Bald Eagles and is an Important Bird Area Management to preserve the wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. Some challenges exist including that the roads surrounding this area is proposed as an off-highway vehicle recreation area, and the adjacent FR458 road is very high use.
Brief summary of the factors considered and the process used in	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness

Factor	Description
evaluating the area and developing the alternatives	● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area significant feeling of being alone or remote from civilization ● There are some high-quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

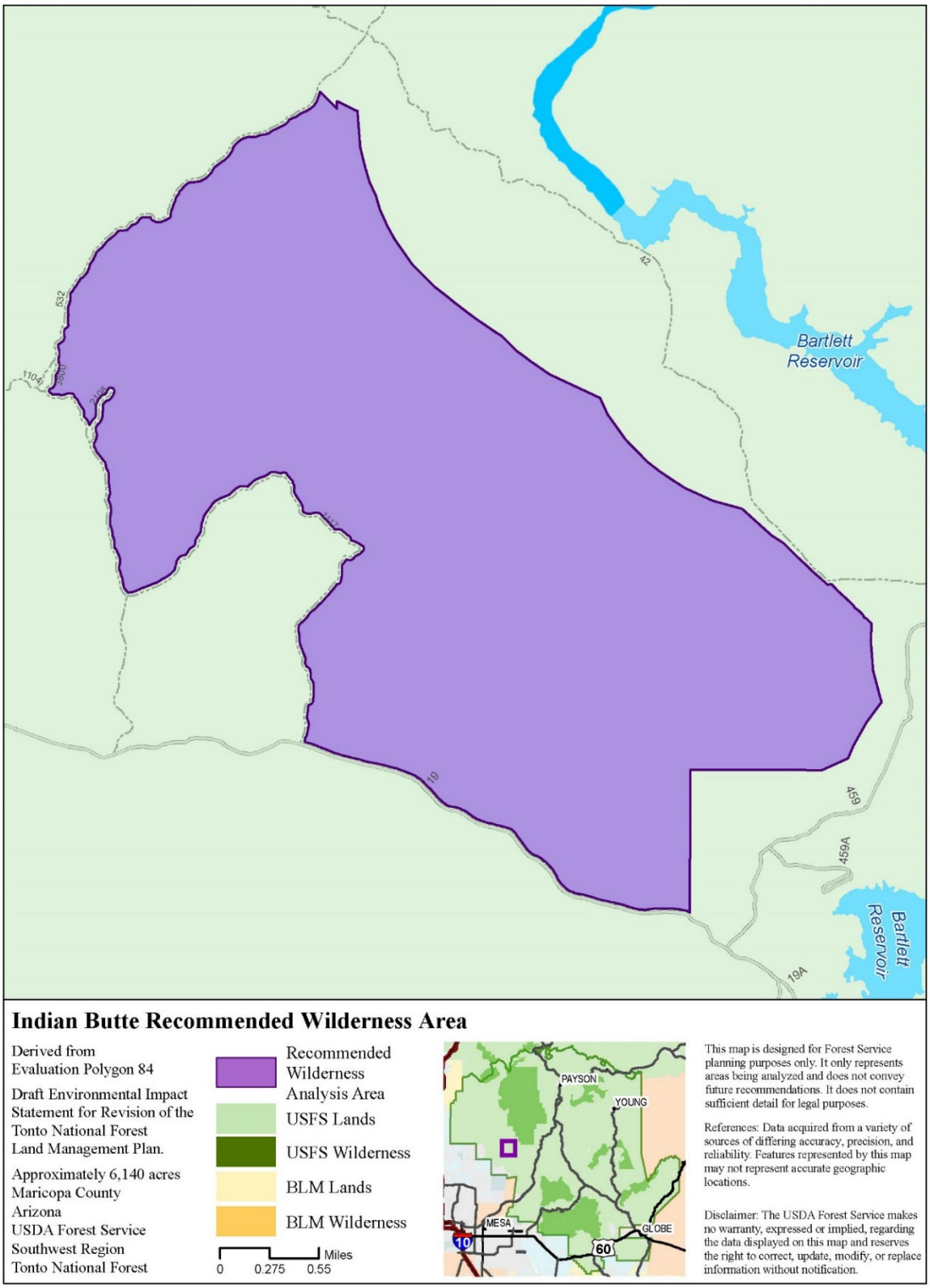
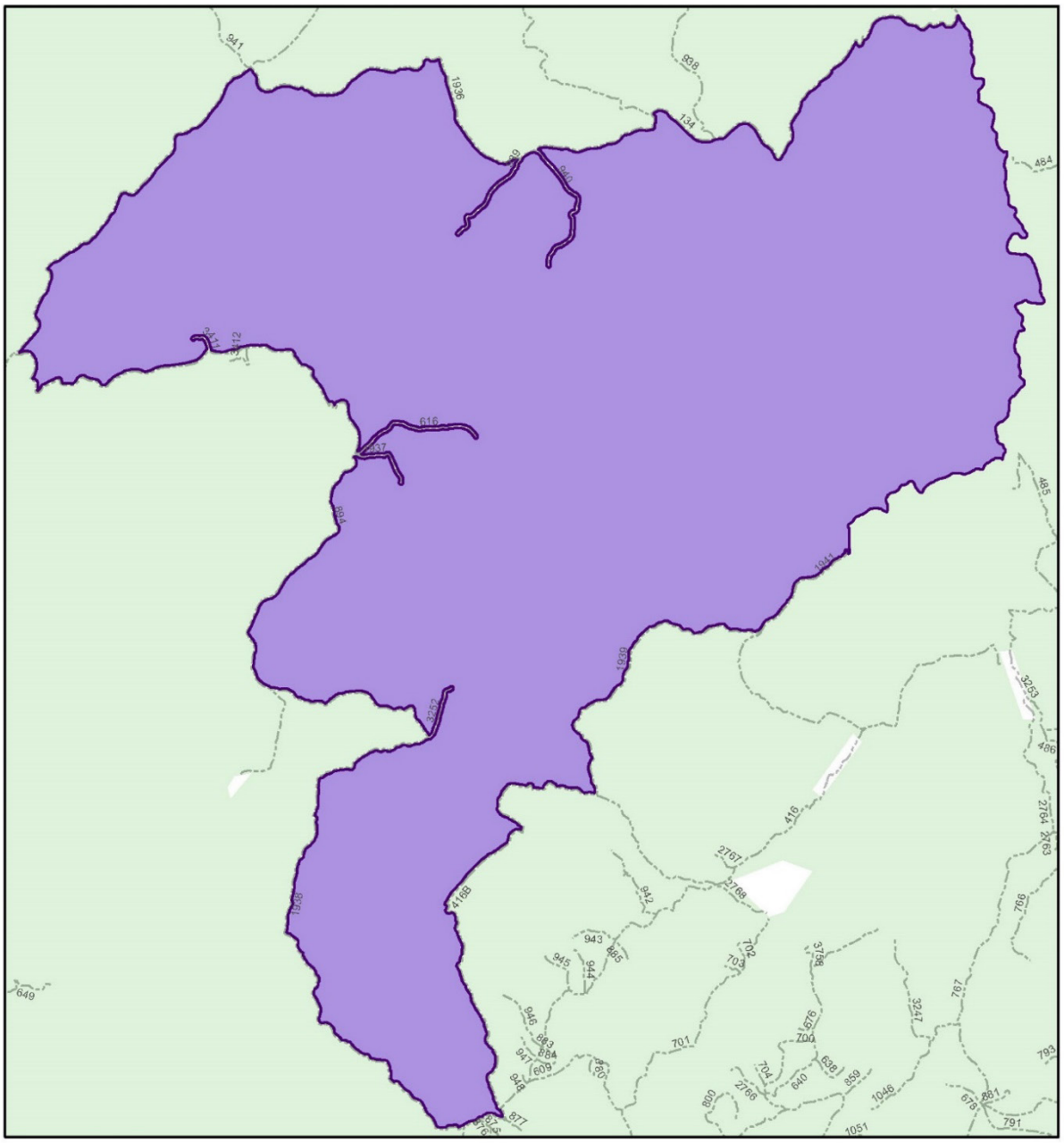


Figure 36. Indian Butte recommended wilderness area

Polygon 101a – Gun Creek Recommended Wilderness Area

Factor	Description
Acres	29,657 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, linear improvements on the ground, and Spring Creek, which is a natural feature, making it easy to locate on the ground. These features cause the area to be oddly shaped. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located just southeast of Payson on the Pleasant Valley Ranger District, below the Hellsgate Wilderness, this area is approximately 70 air miles from Phoenix. This area can be characterized by areas of steep ridges and deep canyons, including Coffee Pot Canyon and North Fork Brady Canyon. The elevation in this area ranges from 3,800 – 6,300 feet. This area is comprised of a mixture of ecological response units including: Ponderosa Pine – Evergreen Oak (5% of area), PJ Grass (17%), PJ Evergreen Shrub (48%), Madrean Pinyon-Oak Woodlands (7%), Madrean Encinal Woodland (19%), and Juniper Grass (4%). There are also riparian plant communities present in small percentages, including cottonwood, sycamore, elder, and ash.
Current uses and management	Recreation Opportunity Spectrum: 48% Semi-Primitive Motorized, 52% Semi-Primitive Non-Motorized Scenic Integrity: 100% High. 1985 Plan Management Areas: 5G General Management Area, 6J General Management Area, and 5D Mogollon Rim-Sierra Ancha Area Range Allotments: Tonto Basin, Soldier Camp, Seventy-Six, and Buzzard Roost.
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There have been no restoration treatments. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Invasive species are infrequent but concentrated along travel routes, mainly bull thistle and star thistle. There are no special status species with exception of a golden eagle breading pair, and suitable habitat for various game and non-game species. High severity wildfire occurred in less than 1% of the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. The presence or appearance of improvements does not detract from apparent naturalness. There are four earthen stock tanks, barbed wire fencing that border allotment boundaries, 3 allotments, sheep driveway, 2 historic line shacks (coffeepot and pigeon creek), and an old helispot for wildfire suppression. Improvements do not distract from the naturalness. Solitude: Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. Encounters with, or evidence of, humans is rare. There is no motorized incursion, it is on motorized routes. Solitude is easy to find in most of area, due to canyon ability to escape to remote areas. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. There is good quality hunting, hiking, horseback riding, moderate camping, limited to no fishing. Opportunities are high risk due to remoteness and unconfined.

Factor	Description
	Other Features of Value: There is a known golden eagle breeding pair is in this area. There are high quality watershed values and Rock Creek and Spring Creek have potential native fish habitat within this polygon. There are unique or outstanding landscape features. Some rock outcropping and outstanding view sheds in the area. A total of eleven archaeological sites have been recorded to date within this polygon. Seven of these sites are prehistoric in nature, and four date from the historic period. Prehistoric site types include multi-room masonry structures and sherd and lithic scatters. Historic site types include habitations (i.e. homestead), mines, mills, ranching operations, and burials. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. Infrequent access needed for range improvements on 5-10 year cycle. The majority of range improvements in this area are located near the cherry stemmed roads.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure. ● There are known occurrences and populations of species of special status. ● Rock Creek and Spring Creek are important watershed features. The social characteristics that provide the basis for suitability are as follows: ● The area significant feeling of being alone or remote from civilization ● Abundant opportunities exist to participate in both primitive and unconfined recreation types. ● There are 11 known archeological sites in the area.



Gun Creek Recommended Wilderness Area

Derived from
Evaluation Polygon 101A

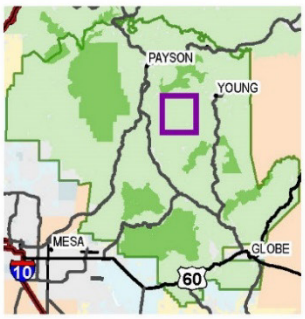
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 29657 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.5 1 Miles



Author: Marina E. Copeland

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Figure 37. Gun Creek recommended wilderness area

Alternative C Recommended Wilderness Areas

All areas, or polygons, recommended as wilderness in alternative B are also included in alternative C. Alterative C includes 50 recommended wilderness areas totaling 399,029 acres, as follows:

- Wood Canyon recommended wilderness area (11,978 acres)
- Superstition Wilderness contiguous recommended wilderness area C (36 acres)
- Superstition Wilderness contiguous recommended wilderness area A (12 acres)
- Haunted Canyon recommended wilderness area (11,059 acres)
- JK Mountain recommended wilderness area (5,267 acres)
- Superstition Wilderness contiguous recommended wilderness area B (28 acres)
- Superstition Wilderness contiguous recommended wilderness area D (613 acres)
- Superstition Wilderness contiguous recommended wilderness area E (827 acres)
- Salt River Canyon Wilderness contiguous recommended wilderness area C (13 acres)
- Coronado Mesa recommended wilderness area (6,515 acres)
- Mesquite Flat recommended wilderness area (2,560 acres)
- Four Peak Wilderness contiguous recommended wilderness area B (8 acres)
- Four Peak Wilderness contiguous recommended wilderness area A (9 acres)
- Rockinstraw recommended wilderness area (6,312 acres)
- Salt River Canyon Wilderness contiguous recommended wilderness area A (613 acres)
- Salt River Canyon Wilderness contiguous recommended wilderness area B (93 acres)
- Dutchwoman recommended wilderness area (3,806 acres)
- Bumblebee recommended wilderness area (30,511 acres)
- Grantham Peak recommended wilderness area (1,996 acres)
- Zimmerman recommended wilderness area (7,221 acres)
- Bull Canyon recommended wilderness area (7,712 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area A (50 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area B (67 acres)
- Picacho recommended wilderness area (15,899 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area C (20 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area D (10 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area E (18 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area F (24 acres)
- Boulder recommended wilderness area (72,508 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area G (20 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area H (8 acres)

- Blue Peak recommended wilderness area (23,283 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area I (5 acres)
- Indian Butte recommended wilderness area (6,140 acres)
- Sierra Ancha Wilderness contiguous recommended wilderness area J (7 acres)
- Rock House recommended wilderness area (5,228 acres)
- Baker Mountain recommended wilderness area (10,565 acres)
- Tanner Peak recommended wilderness area (21,842 acres)
- Alder Point recommended wilderness area (14,844 acres)
- Gun Creek recommended wilderness area (29,657 acres)
- Diamond Butte recommended wilderness area (15,498 acres)
- Smokey Hollow recommended wilderness area (1,634 acres)
- Lime Creek recommended wilderness area (56,771 acres)
- Mullen Mesa recommended wilderness area (3,661 acres)
- Dugan recommended wilderness area (1,805 acres)
- Rugged Mesa recommended wilderness area (11,292 acres)
- Tumbleweed recommended wilderness area (4,722 acres)
- Pigeon Creek recommended wilderness area (5,828 acres)
- Childs recommended wilderness area (402 acres)
- Fossil Springs recommended wilderness area (30 acres)

This section provides the following information for each area included in alternative C for the forest plan revision environmental impact statement:

- The name of the area and the number of acres to be considered;
- The location and a summarized description of a recommended boundary for each area;
    - If private property or improvement (e.g., powerlines) dictate or are located along a part of the area boundary, the boundary line falls 300 feet from the private property line and 100 feet from an improvement.
- A brief description of the general geography, topography, and vegetation of the recommended area;
- A brief description of the current uses and management of the area;
    - This section includes the recreation opportunity spectrum classifications, scenic integrity, 1985 plan management area(s), range allotment(s), and other information that pertains to the use and management in the area.
- A description of the area's wilderness characteristics and the ability of the Forest to protect and manage the area so as to preserve its wilderness characteristics;
    - Throughout the descriptions of polygons, there are references to cherry stem roads. A cherry stem road refers to a dead-end road that appears to protrude into a polygon, but the perimeter of

the polygon is drawn around the road, excluding the road from being within the actual boundary of a polygon.

- A brief summary of the factors considered and the process used in evaluating the area and developing the alternatives; and
- A brief summary of the ecological and social characteristics that would provide the basis for the area's suitability for inclusion in the National Wilderness Preservation System.

A map showing the boundaries of the recommended wilderness area (when printed in black and white, the recommended wilderness can be identified by the thick black border around the area).

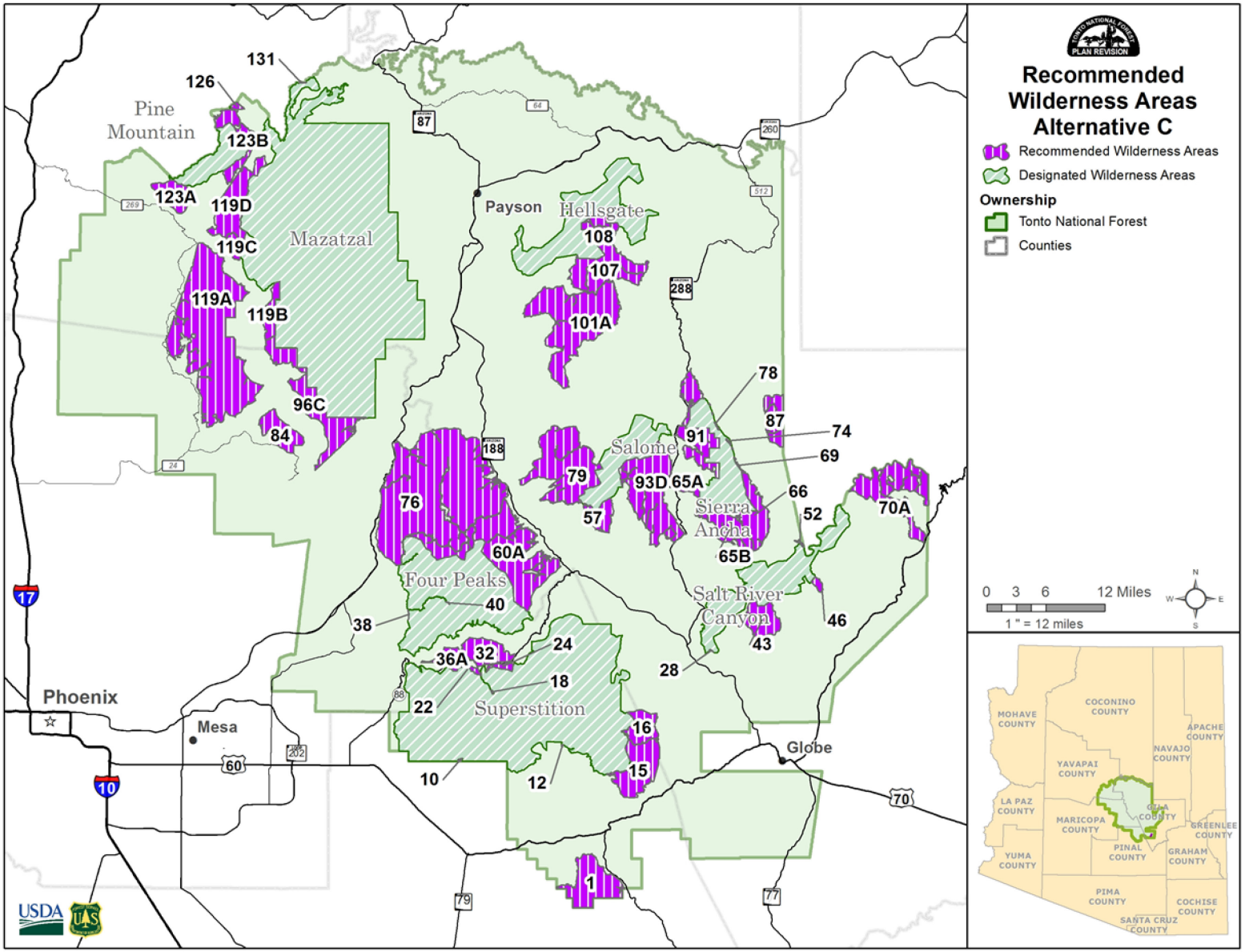


Figure 38. Map of recommended wilderness areas in alternative C

Polygon 1 – Wood Canyon Recommended Wilderness Area

Factor	Description
Acres	11,978 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the forest administrative boundaries, and private land boundaries, making it fairly easy to locate on the map and on the ground. Adjacent land is managed by the Forest Service, Private Landowners, and the Bureau of Land Management.
Brief description of the general geography, topography, and vegetation	Located in Gila County, south of Superior on the Globe Ranger District, this area is characterized by a rugged volcanic hills, with elevations ranging from 2,640 – 4,310 feet. The desert landscape offers little water and little shade to escape the hot Arizona climate. This area is comprised mainly of Mojave-Sonoran Desert Scrub Ecological Response Unit (89%), with some Semi-Desert Grassland (11%). Sonoran Desert saguaro, mesquite, furrowing saltbush, crucifixion thorn, and native bunch grasses make up the dominant plant communities. Additionally, there are some pockets of riparian vegetation including deer grass and individual cottonwood trees.
Current uses and management	Recreation Opportunity Spectrum: 31% Roaded Natural, 17% Semi-Primitive Motorized, 52% Semi-Primitive Non-Motorized Scenic Integrity: 85% High, 15% Moderate 1985 Plan Management Area: 2F General Management Area Range Allotment: Superior
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. The presence of exotic, invasive and/or non-native plants are found in infrequent small patch sizes in the area and include nonnative red brome, Buffel grass, and some Sahara mustard. Suitable habitat for a variety of game and non-game wildlife species can be found in the area. Some species of special status include bighorn sheep, Sonoran Desert tortoise and lowland leopard frog. Wildfire affected approximately 15% of the area, but did not detract from the apparent naturalness of the area. Undeveloped Quality: Prevalence of improvements is rare or scattered. The presence or appearance of improvements does not detract from apparent naturalness. Several pipelines and earthen stock tanks can be found in low density, scattered throughout the area. There is an isolated unauthorized motorized route and one authorized motorized route. The Arizona National Scenic Trail (AZNST) runs through the middle of the polygon. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. In over 70% of the area a visitor can experience solitude. The Four Road has high use on the weekends. The Arizona National Scenic Trail receives a fair amount of use during the high use season. There is also use associated with the private adjacent land. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and/or unconfined recreation such as hunting, hiking, horseback riding, and dispersed camping. The hiking and horseback opportunities in this areas are of high quality.

Factor	Description
	Other Features of Value: There are species of unique values present, such as lowland leopard frog and the Sonoran Desert tortoise, and desert bighorn sheep. There are outstanding landscape viewpoints of Picket Post Mountain. A total of 29 archaeological sites have been recorded to date within this polygon. Fourteen of these sites are prehistoric in nature, three date from the historic period, one is multi-component, and eleven are of unknown cultural or temporal affiliation. Prehistoric site types include sherd and lithic scatters, pithouses, hornos, field houses, agricultural features, and rock shelters. Historic site types include agricultural features and transportation corridors. The presence and extent of management activities and other uses that detract from wilderness characteristics are scattered throughout this area. This polygon is bordered to the south by the White Canyon Wilderness Area, which is on Bureau of Land Management lands. The 4 Road gets a high level of use, but limited ability to get off the road with motorized vehicles makes management possible. A few other uses and considerations in the area would impact the wilderness characteristics, including a high level of mountain bike use, which is considered some of the best in the state. This area contains at least one Salt River Project (SRP) improvement and/or right of way.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate ranking for its wilderness characteristics, but significant public comment in the evaluation step warranted further analysis.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is mostly undeveloped with little infrastructure scattered throughout the polygon. ● The area contains known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● There are opportunities for solitude on about 70% of the area. ● There are some opportunities for primitive and unconfined recreation; primarily offering high risk opportunities due to terrain. ● The area contains an abundance of archeological sites of national and regional significance.

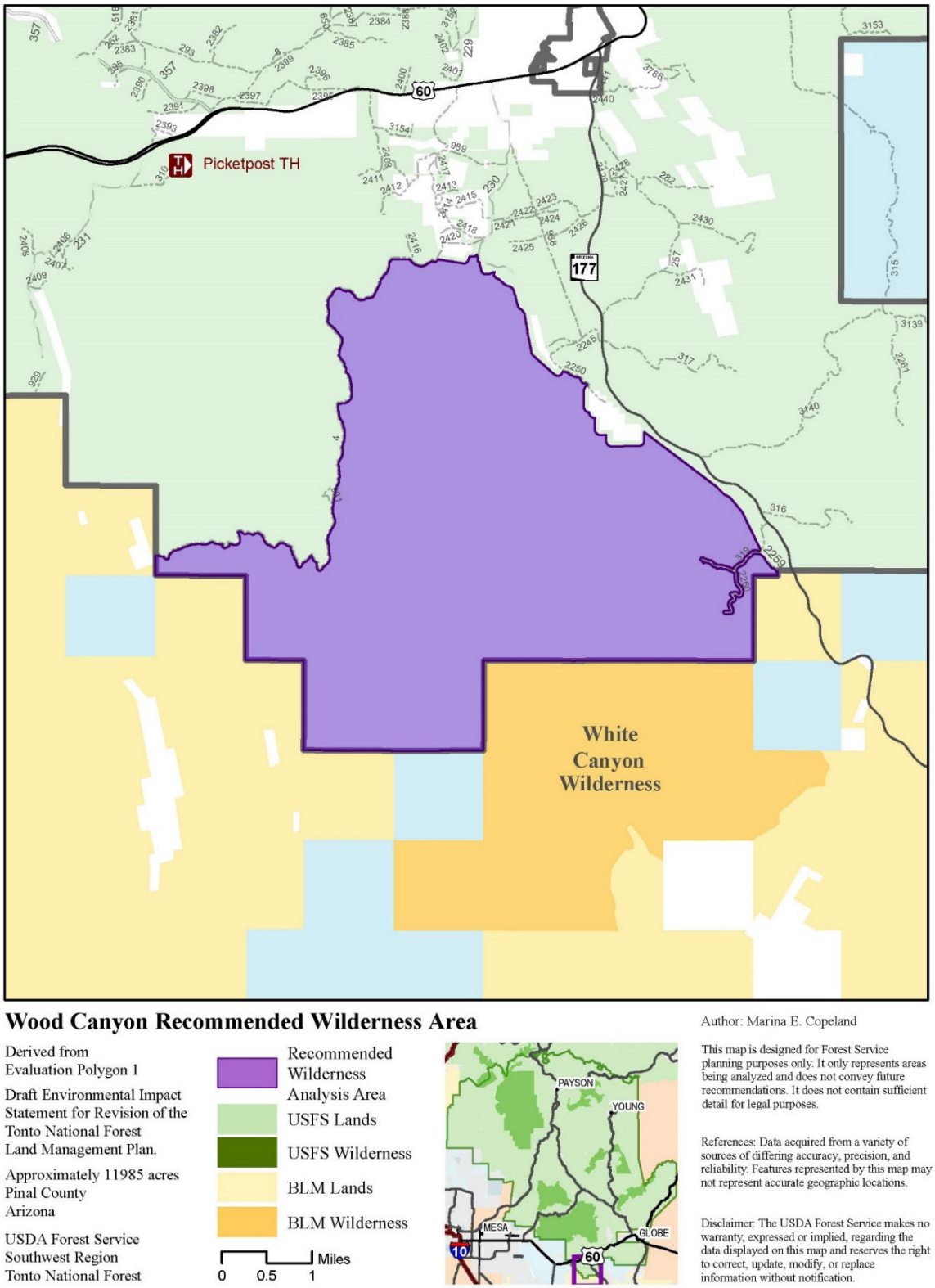
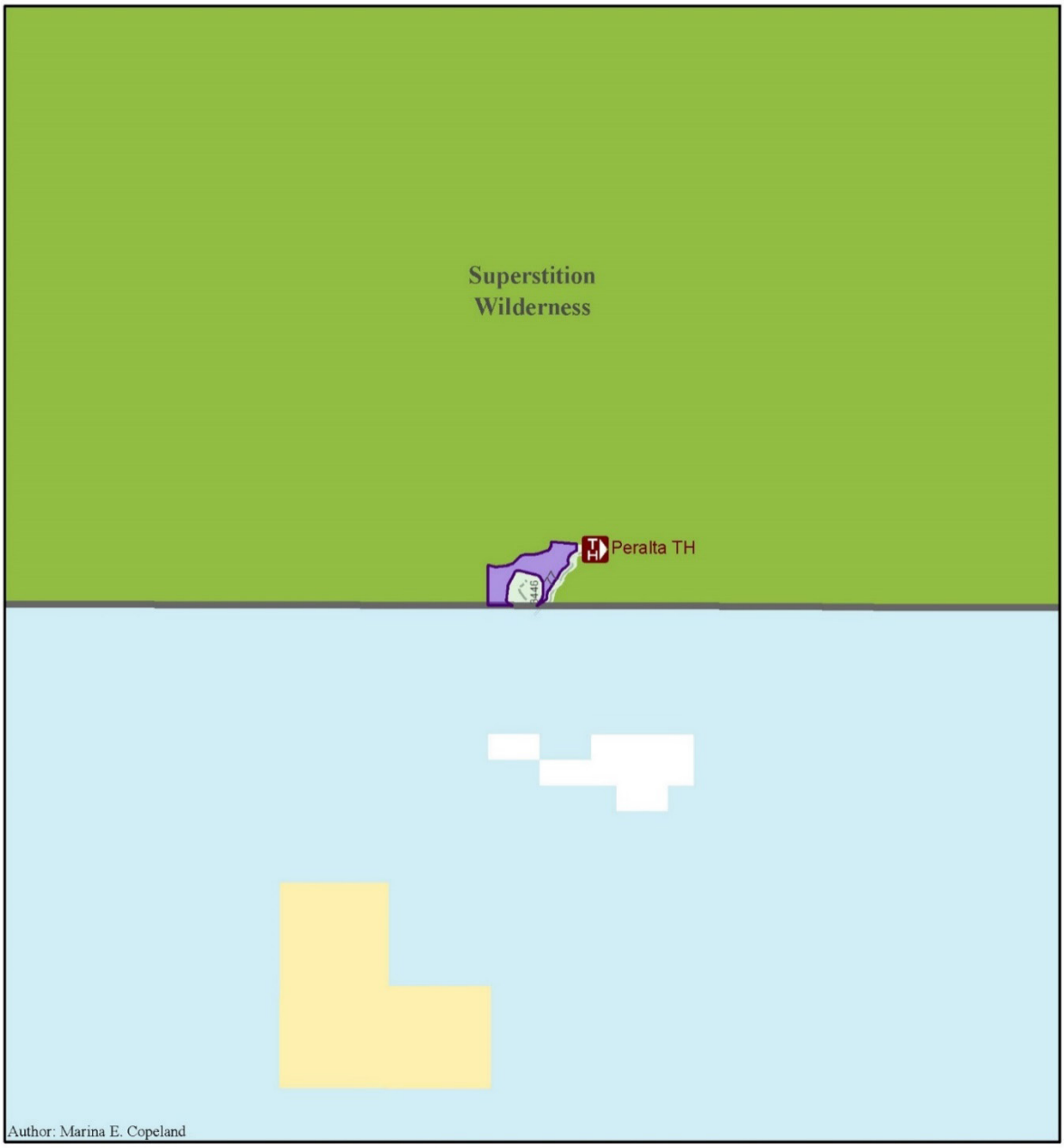


Figure 39. Wood Canyon recommended wilderness area

Polygon 10 – Superstition Wilderness Contiguous Recommended Wilderness Area C

Factor	Description
Acres	36 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the forest administrative boundaries, the Superstition Wilderness Boundary, and 100 feet buffered from the Dons Camp recreation site, which was determined a substantially noticeable improvement in the inventory phase. The boundary lines are fairly easy to locate on the map, but difficult to figure out on the ground. Adjacent land included private land and land managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This small polygon is located along southern boundary of the Tonto National Forest on the Mesa Ranger District. The desert terrain has a gradual, boulder filled, slope until it reaches the Dacite Cliffs, which mark the boundary to the Superstition Wilderness. Elevation in this area ranges from 2,320 – 3,105 feet. This area is comprised of the Interior Chaparral (82%) and Mojave-Sonoran Desert Scrub (18%) Ecological Response Units. Plants are those common to the Sonoran Desert including saguaro, ocotillo, cholla, prickly pear cactus, and a variety of desert forbs.
Current uses and management	Recreation Opportunity Spectrum: 100% Roaded Natural Scenic Integrity: 100% Moderate 1985 Plan Management Area: 3I General Management Area Range Allotment: Superstition
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area, though some red brome is possible in disturbed areas. Animal communities appear natural. Suitable habitat exists for a variety of game and non-game species. The protected Sonoran Desert tortoise is present in the area. Undeveloped Quality: Prevalence of improvements is rare or scattered, though approximately 5% of the area has a clearing that is caused from overflow parking on the edge of the polygon. Solitude: Encounters with, or evidence of, humans is unavoidable. There is heavy use parking areas and dispersed camping sites just outside this polygon that would affect opportunities for solitude in the winter and spring. Hundreds of people come to the "Don's camp" in the winter and spring. The polygon is also very small, which allows visitors to see and hear signs of civilization from most places in the polygon. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation. Most existing opportunities are poor quality with low risk. Hiking, camping, horseback riding and hunting could occur in the area when used in conjunction with the adjacent wilderness. Other Features of Value: None Identified Management to preserve the wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the

Factor	Description
	presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The polygon is adjacent to the wilderness, there are no range or mining claims, few improvements, and the area has a high level of apparent naturalness. Challenges for management would be use on the adjacent road and at Don's camp and the overflow parking lot.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is undeveloped with no infrastructure The social characteristics that provide the basis for suitability are as follows: ● There are some opportunities to participate in primitive or unconfined recreation when used in conjunction with the Superstition Wilderness



Superstition Wilderness Contiguous Recommended Wilderness Area C

Derived from
Evaluation Polygon 10

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 36 acres
Pinal County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

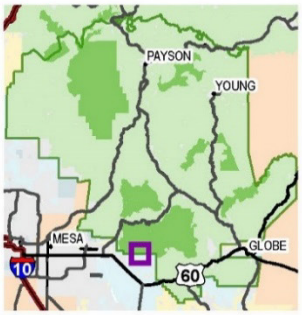


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Figure 40. Superstition Wilderness contiguous recommended wilderness area C

Polygon 12 – Superstition Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	13 acres
Summarized description of the recommended boundary	This area is a small triangular shape adjacent to the Superstition Wilderness. The boundary follows the National Forest System roads, and the superstition wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located approximately 52 air miles from Phoenix in Gila County, this area lies adjacent to the south boundary of the Superstition Wilderness on the Mesa Ranger District. This small area is characterized by rolling land on the southern end of the Superstition mountain range. Elevation in this area ranges from 5,000 – 5,200 feet. This area is in entirely comprised of the Semi-Desert Grassland Ecological Response Unit. Major plant communities include chaparral, oak, pinyon juniper, and mountain mahogany, which provides suitable habitat for a variety of game and non-game species.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High 1985 Plan Management Area: 3I General Management Area Range Allotment: Millsite Adjacent to the Superstition Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The composition of plant and animal communities appears natural to the average forest visitor. Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Low severity fire burned 100% of this area (Woodbury Fire, 2019). Undeveloped Quality: There is no developed infrastructure within this area. The only known improvement within this polygon is an existing historic trail alignment. No known fence or other range developments are present in the area. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. There is an adjacent road that receives heavy use, but there is very little use inside the polygon, making opportunities to experience solitude high in the area. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation and most existing opportunities are poor quality with low risk. High quality recreation opportunities may be present when combined with the adjacent wilderness. Other features of value: None Identified This area has few other uses or management considerations making managing to preserve wilderness characteristics possible. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated.

Factor	Description
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is undeveloped with no infrastructure The social characteristics that provide the basis for suitability are as follows: ● Solitude is present due to adjacency to wilderness ● There are high quality opportunities for primitive and unconfined recreation, especially when combined with adjacent wilderness opportunities

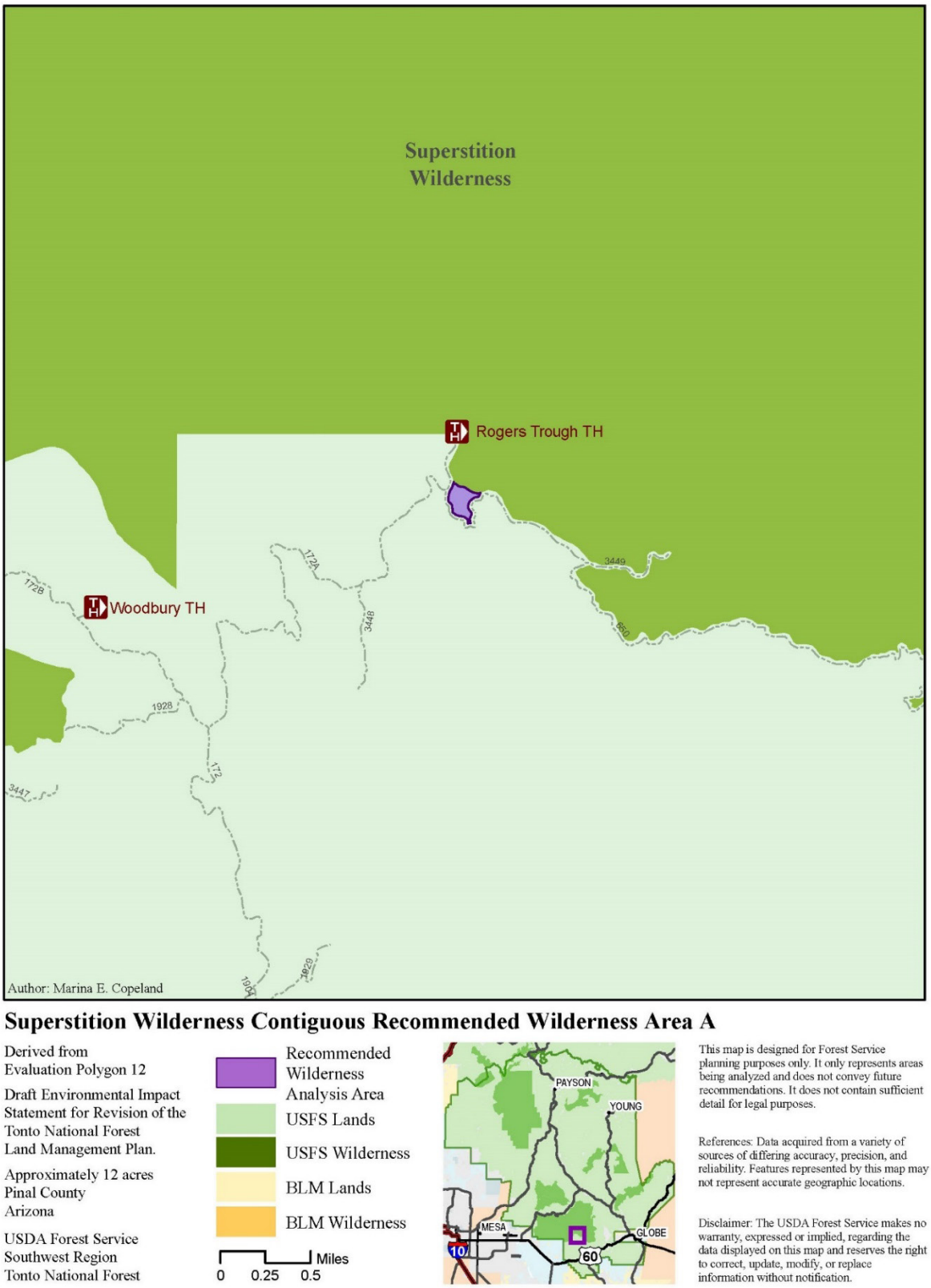
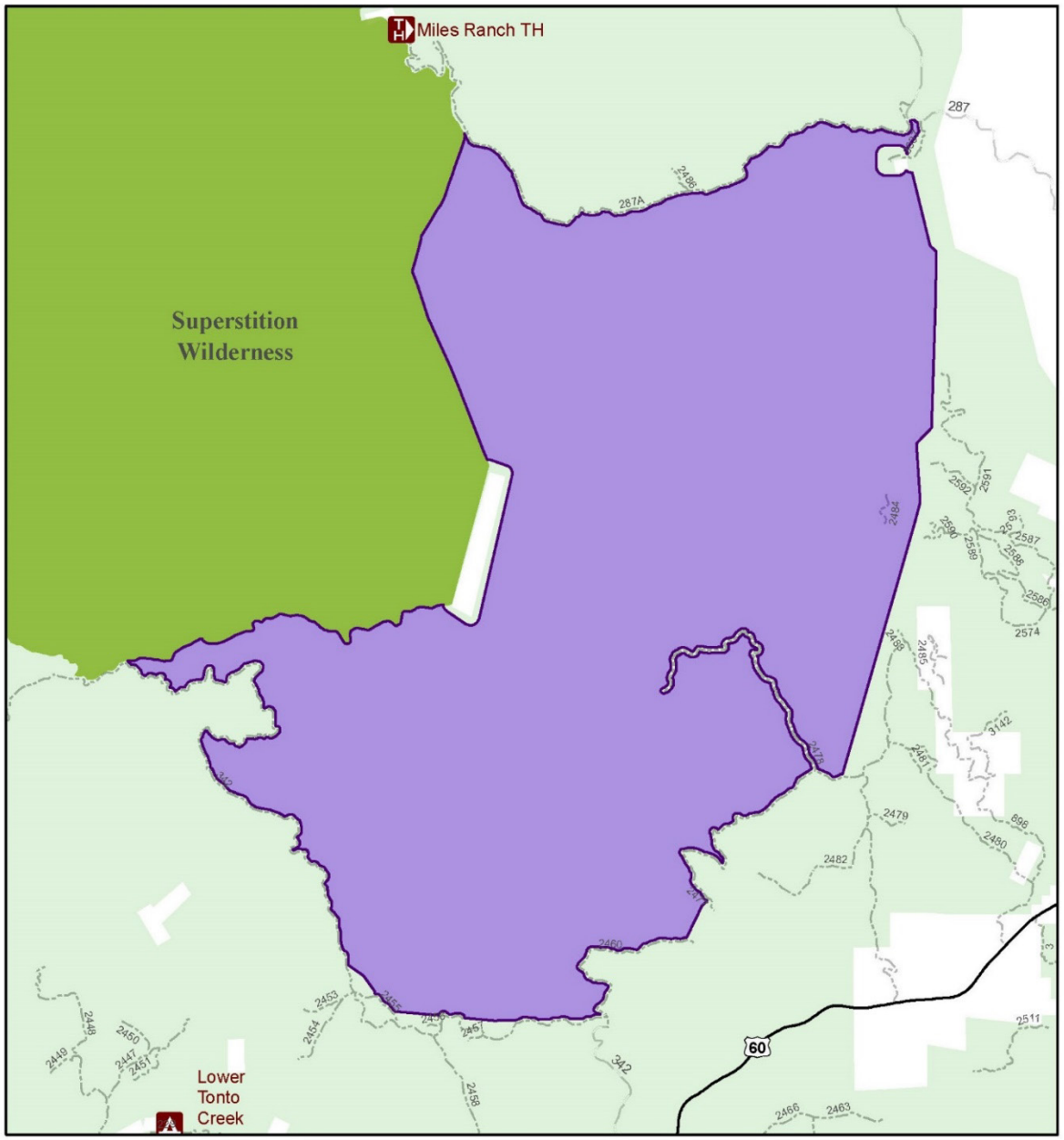


Figure 41. Superstition Wilderness contiguous recommended wilderness area A

Polygon 15 – Haunted Canyon Recommended Wilderness Area

Factor	Description
Acres	11,059 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Superstition Wilderness boundary, and linear improvements (e.g., powerlines), making it fairly easy to locate on the map. Adjacent land is managed by the Forest Service, with nearby private property.
Brief description of the general geography, topography, and vegetation	This area is located approximately 8 miles north of Superior, Arizona in Pinal County on the Globe Ranger District. Elevations throughout this area range from 3,150 – 5,600 feet with a maze of canyons and ridgelines. Haunted Canyon runs through this area, which is a striking area characterized by steep granite rock walls. This area is comprised primarily of Interior Chaparral (65%) and Juniper Grass (33%) Ecological Response Units. The dominant plant communities consist of interior chaparral, scrub oak, manzanita, a lot of juniper woodland with native grass. The remaining 2% of this area is comprised of riparian vegetation including sycamore, ash, and cottonwood.
Current uses and management	Recreation Opportunity Spectrum: 10% Roaded Natural, 41% Semi-Primitive Motorized, 49% Semi Primitive Non-Motorized Scenic Integrity: 85% High, 15% Moderate 1985 Plan Management Area: 2F General Management Area Range Allotments: Bellevue, Brushiest, Devils Canyon, Pinto Creek, Sleeping Beauty, Superior
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Non-natives include minor elements of tamarisk and tree of heaven in the riparian, as well as red brome and love grass in the drier areas. Suitable habitat for a variety of game and non-game wildlife species can be found in the area, such as javelina, deer, mountain lion, and coyote. Species of special status include hedgehog cactus, yellow billed cuckoo, lowland leopard frog, and desert sucker. A wildfire occurred in 2005 affecting approximately 15% of the area, no type change conversion occurred. Undeveloped Quality: The presence or appearance of improvements detracts from apparent naturalness in some areas within this polygon. A moderate density of range improvements throughout the area include corral, fence, pipeline, and tanks. There is evidence of current and historic mining activity. A low density of unauthorized routes is present in the area. Solitude: Common or significant feeling of being alone or remote from civilization throughout most of the area, but signs of civilization are possible. Mining activity that can be seen and heard from within the polygon. Adjacent roads have a moderate amount of motorized use. The area is remote and rugged in the area contiguous to the Superstition Wilderness. Opportunities to experience solitude is possible throughout some of the area. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in high quality primitive and/or unconfined recreation, such as hiking, hunting, dispersed camping, horseback riding, and wildlife viewing. Other Features of Value: There are species of special status such as hedgehog cactus, Yellow billed cuckoo, lowland leopard frog, and desert sucker. A total of fourteen archaeological sites have been recorded to date within this polygon. Ten of these sites are

Factor	Description
	prehistoric in nature, one dates from the historic period, and three are multi-component. Prehistoric site types include multi-room habitations, field houses, and sherd and lithic scatters. Historic site types include a smelter, ranches, CCC camps, and cabins in the area. Management to preserve the wilderness characteristics is difficult throughout the area. One cherry stem road is present. One private property parcel is positioned between the wilderness and the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are frequent. Mining exploration has a potential to occur in the area due to a majority of the area being under existing claims, with over 600 active claims of record. These activities could include drilling and a well fields that support mining operations if present. SRP has a power line outside the polygon, with rights of way that go into this polygon that would need road access and continual maintenance. A moderate density of range infrastructure exists within the area that will need to be maintained, usually with motorized and mechanized equipment. A boundary adjustment should be considered if this area is recommended for wilderness to avoid rights of way and cherry stem.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: • ● The majority of the area appears natural and shows little to no influence of previous human intervention. • ● Species of special status are present in this area. The social characteristics that provide the basis for suitability are as follows: • ● Common or significant feeling of solitude throughout most of the area. • ● There are high quality opportunities for primitive and unconfined recreation, especially when combined with adjacent wilderness opportunities. • ● A total of fourteen archaeological sites have been recorded to date within this polygon



Haunted Canyon Recommended Wilderness Area

Derived from Evaluation Polygon 15

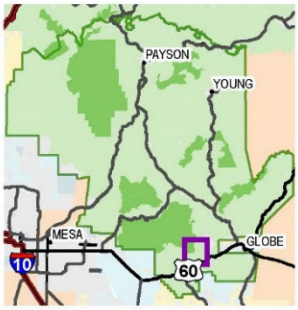
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 11059 acres Gila & Pinal County Arizona

USDA Forest Service Southwest Region Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.35 0.7 Miles



Author: Marina E. Copeland

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Figure 42. Haunted Canyon recommended wilderness area

Polygon 16 – JK Mountain Recommended Wilderness Area

Factor	Description
Acres	5,267 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads and the superstition wilderness boundary, making it fairly easy to locate on the map and on the ground. Adjacent land is managed by the Forest Service, but small pieces of neighboring property are private lands.
Brief description of the general geography, topography, and vegetation	This area is located approximately 10 miles north of Superior, Arizona in Pinal and Gila County on the Globe Ranger District. Elevations throughout this area range from 2,950 – 4,480 feet with views from the high ridgelines into forests and meadows. This area is comprised primarily of Interior Chaparral (20% of area) and Juniper Grass (76%) Ecological Response Units. The prominent vegetation types are interior chaparral, scrub oak, manzanita, and juniper woodland with native grass. This area also has a small amount (4%) of Sycamore-Fremont Cottonwood riparian vegetation, which includes plant species such as sycamore, ash, and cottonwood.
Current uses and management	Recreation Opportunity Spectrum: 40% Roaded Natural, 10% Semi-Primitive Motorized, 50% Semi Primitive Non-Motorized Scenic Integrity: 60% High, 40% Moderate 1985 Plan Management Area: 2F General Management Area Range Allotments: Brushiest, Pinto Creek
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are minor elements of tamarisk and tree of heaven in the riparian as well as red brome and love grass in the drier areas. The species of special status include hedgehog cactus, yellow billed cuckoo critical habitat, lowland leopard frog, Gila longfin dace, and desert sucker. Suitable habitat for a variety of game and non-game wildlife species can be found in the area, such as javelina, deer, mountain lion, and coyote. Undeveloped Quality: Appearance of improvements detract from apparent naturalness in some areas. The range improvements include corral, fence, pipeline, and tanks in moderate density. Evidence of current and historic mining activity can be seen, but in fairly low density. Low density of unauthorized routes exist in the area. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Visitors are able to see the mine and the presence of improvements from the eastern half of the area. The adjacent roads have fairly low to moderate use in the spring and fall. It is possible to experience solitude in most of the area. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation, such as hiking, horseback riding, bird watching, and dispersed camping. When visited in conjunction with the Superstition Wilderness, and as you get closer to the wilderness, opportunities are abundant and of high quality. Other Features of Value: There are unique species such as hedgehog cactus, yellow billed cuckoo critical habitat, lowland leopard frog, Gila longfin dace, desert sucker, Gila topminnow. A total of five archaeological sites have been recorded to date within this polygon. Four of these are prehistoric in nature, and one is multi-component. Prehistoric site types

Factor	Description
	include multi-room habitations, field houses, sherd and lithic scatters, and hornos. The historic site type includes masonry structures. This area supports reaches of perennial flow in West Fork Pinto Creek, scenic waterfalls on West Fork Pinto Creek and Horrell Creek. Scenic canyon and riparian area above Mowing Machine Spring on unnamed tributary to Pinto Creek along southern boundary of polygon. The area is contiguous to the Superstition Wilderness on one side. The boundary road has low to moderate use. The presence and extent of management activities and other uses that detract from wilderness characteristics are scattered throughout this area. This area contains at least one Salt River Project (SRP) improvement and/or right of way. Maintenance and access to range infrastructure would likely need to continue and has historically used mechanized and motorized equipment. Mineral exploration has the potential to occur in the area due to the majority of the area being under existing claims. Currently, there are 29 active claims in this area.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● This area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural and shows little to no influence of previous human intervention. ● Species of special status are present in this area. ● There are scenic canyon and riparian areas The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of solitude throughout most of the area. ● There are high quality opportunities for primitive and unconfined recreation, especially when combined with adjacent wilderness opportunities. ● A total of five archaeological sites have been recorded to date within this polygon.

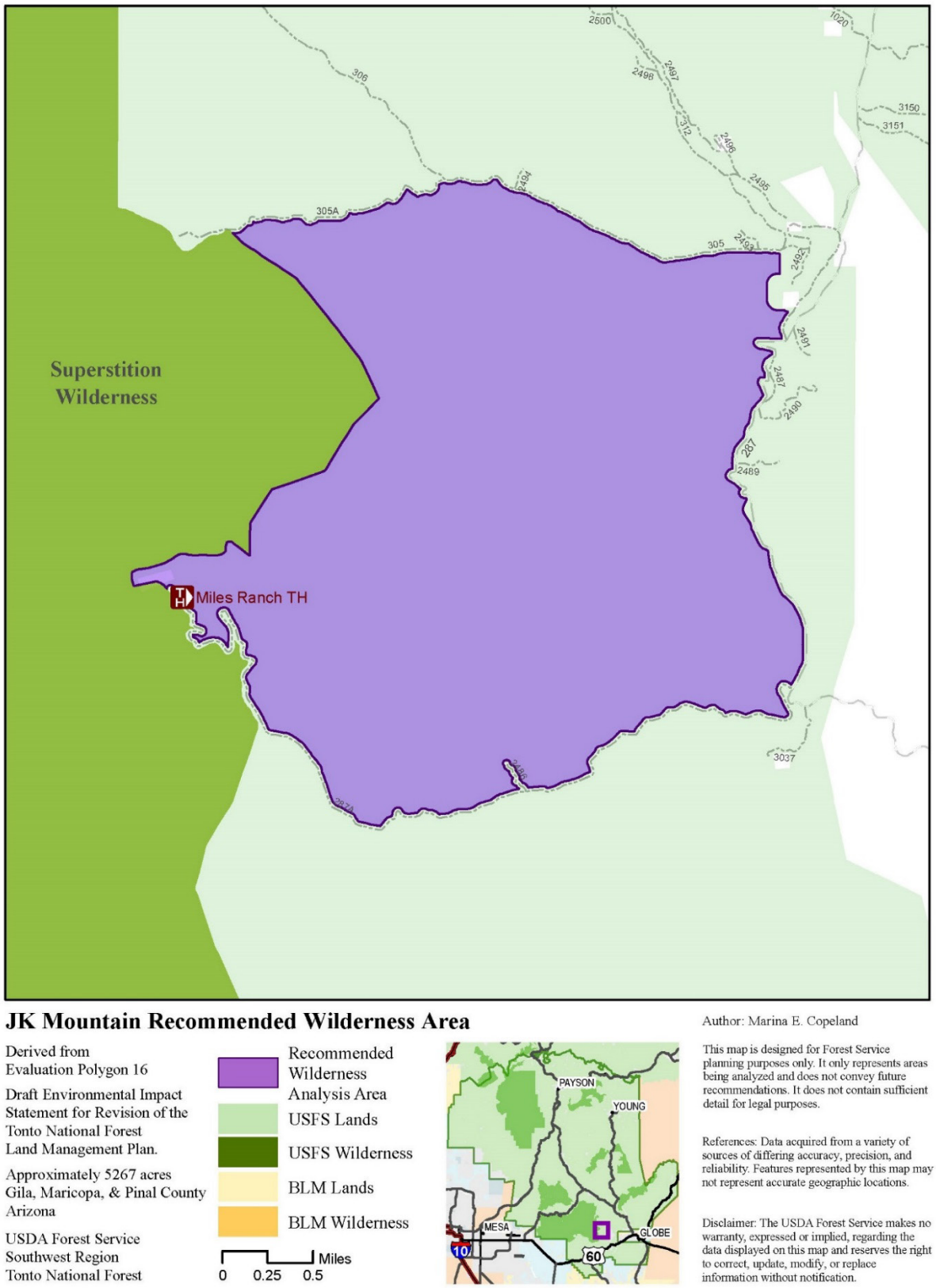
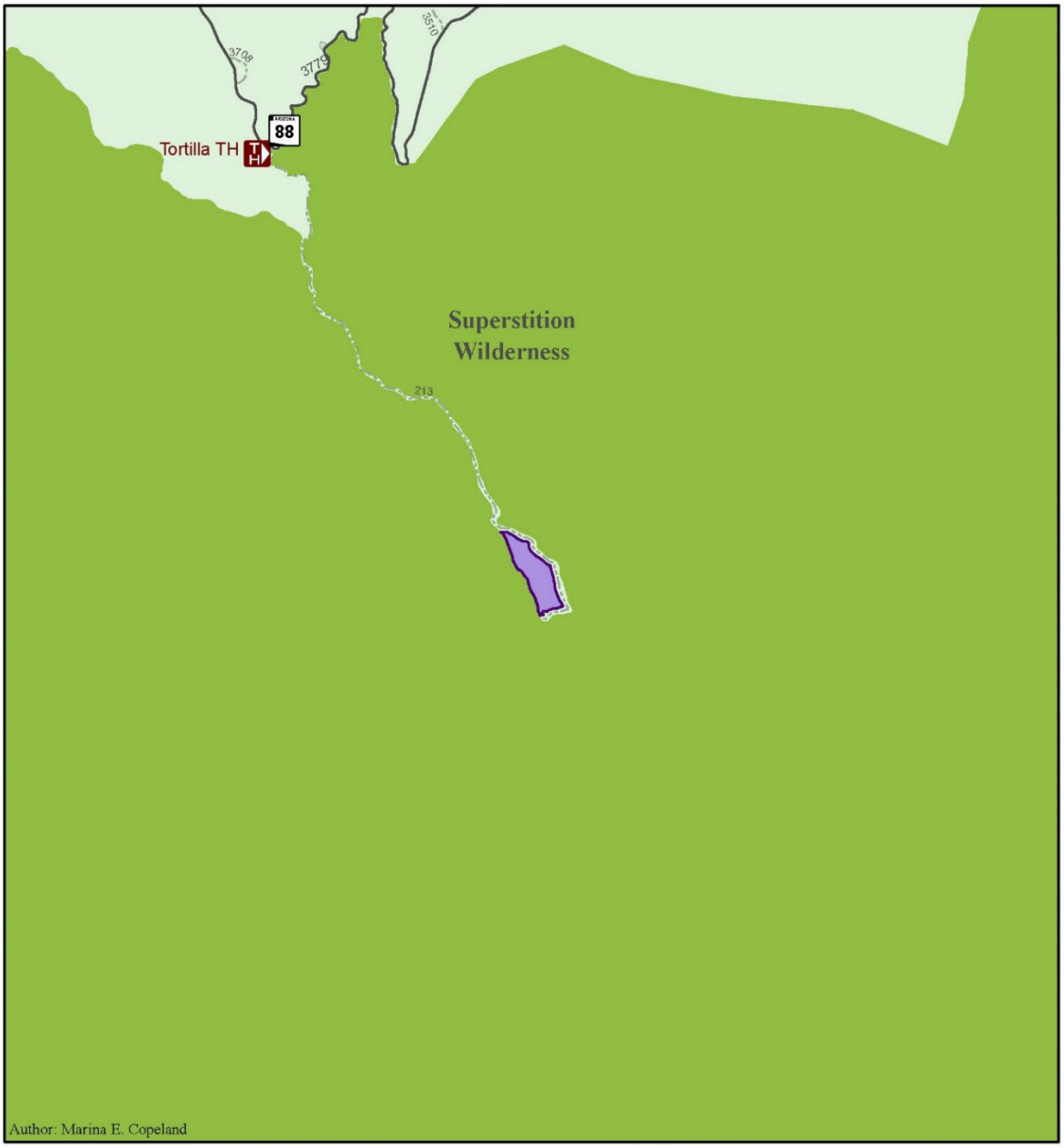


Figure 43. JK Mountain recommended wilderness area

Polygon 18 – Superstition Wilderness Contiguous Recommended Wilderness Area B

Factor	Description
Acres	28 acres
Summarized description of the recommended boundary	This area is a small triangular shape adjacent to the Superstition Wilderness. The boundary follows the National Forest System roads, and the superstition wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located in Maricopa County, approximately 45 miles from downtown Phoenix, this area is surrounded by the Superstition Wilderness on the Mesa Ranger District. This small area is characterized by sloping hillside and washes flowing into Tortilla Creek. The area is part of the superstition mountain range. Elevation in this area ranges from 3,000 – 3,100 feet. This area is comprised primarily of the Desert Willow Ecological Response Unit. The major plant community includes Sonoran Desert plants like saguaro, ocotillo, cholla, prickly pear, and a variety of forbs.
Current uses and management	Recreation Opportunity Spectrum: 100% Roaded Natural Scenic Integrity: 100% High 1985 Plan Management Area: 3I General Management Area Range Allotment: Tortilla Adjacent to the Superstition Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Some nonnative red brome possible in some locations. Suitable habitat exists for a variety of game and non-game species. Maple leaf false snapdragon (sensitive) is known to be in the surrounding area and could occur in the polygon. Low severity fire burned 100% of this area (Woodbury Fire, 2019). Undeveloped Quality: There is a small section of non-motorized trail and remnants from the old Tortilla Ranch, but the presence or appearance of improvements does not detract from apparent naturalness. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Low level of use on adjacent road during the winter and spring, so motorized sounds can be heard. Very small polygon, so opportunities are limited, but possible when away from the road. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation when used in conjunction with the adjacent wilderness. These opportunities are of high quality and include horseback riding, hiking, dispersed camping. There are no controls on user behavior within this area. Other Features of Value: There is one historic archaeological site currently identified within this polygon Management to preserve these wilderness characteristics is possible throughout the area. Though it is very small, the adjacency to the Superstition Wilderness makes management possible. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management

Factor	Description
	activities and other uses that detract from wilderness characteristics are isolated. No range improvements.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is mostly undeveloped with little infrastructure The social characteristics that provide the basis for suitability are as follows: ● Solitude is present due to adjacency to wilderness ● There are high quality opportunities for primitive and unconfined recreation, especially when combined with adjacent wilderness opportunities ● There is one known archeological site in this area.



Superstition Wilderness Contiguous Recommended Wilderness Area B

Derived from
Evaluation Polygon 18

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 28 acres
Maricopa County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

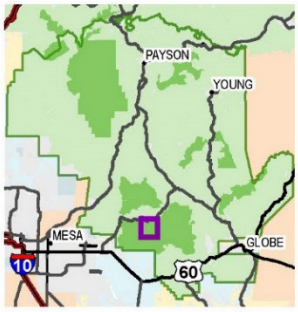


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Figure 44. Superstition Wilderness contiguous recommended wilderness area B

Polygon 22 – Superstition Wilderness Contiguous Recommended Wilderness Area D

Factor	Description
Acres	613 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, linear improvements, and the Superstition Wilderness Boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located north of the Superstition Wilderness near Tortilla Flat, AZ on the Mesa Ranger District. This area can be characterized by rolling basins and ridgetops, with elevations that range from 1,960 – 3,010 feet. This area is in the Mojave-Sonoran Desert Scrub Ecological Response Unit. Dominant plants include upland Sonoran Desert vegetation. This area also has about 4 acres of riparian vegetation.
Current uses and management	Recreation Opportunity Spectrum: 100% Roaded Natural Scenic Integrity: 100% High. 1985 Plan Management Area: 3I General Management Area Range Allotment: Superstition, Tortilla Adjacent to the Superstition Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative plants include Bufflegrass, fountain grass, and red brome throughout the polygon, but not apparent to the average visitor. Low to very low severity fire burned 50% of this area (Woodbury Fire, 2019). Undeveloped Quality: The presence or appearance of improvements does not detract from apparent naturalness. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. The polygon is very small and sights and sounds of adjacent land use can be seen/heard in the area. There is some hunting activity. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and unconfined recreation and at least some of these opportunities are of high quality. Some opportunities for hiking, hunting, and canyoneering can be found in the area. Other Features of Value: Mapleleaf false snap dragon and the Sonoran Desert tortoise, both species of special status, are found in the area. A total of two archaeological sites have been recorded to date within this polygon. One is prehistoric in nature; the other site dates from the historic period. Prehistoric site type is a rock shelter habitation. The historic site type is a telephone line corridor dating to the 1900s. Management to preserve wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The polygon is adjacent to a designated wilderness. There are no planned treatments

Factor	Description
	and no rights or special uses. This area contains at least one Salt River Project (SRP) improvement and/or right of way.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● This area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is undeveloped with no infrastructure ● The area contains unique ecological features including known occurrences of multiple at risk species or economically important species. The social characteristics that provide the basis for suitability are as follows: ● There is the possibility of finding solitude in the area. ● There are some opportunities to participate in primitive or unconfined recreation when used in conjunction with the Superstition Wilderness. ● A total of two archaeological sites have been recorded to date within this polygon

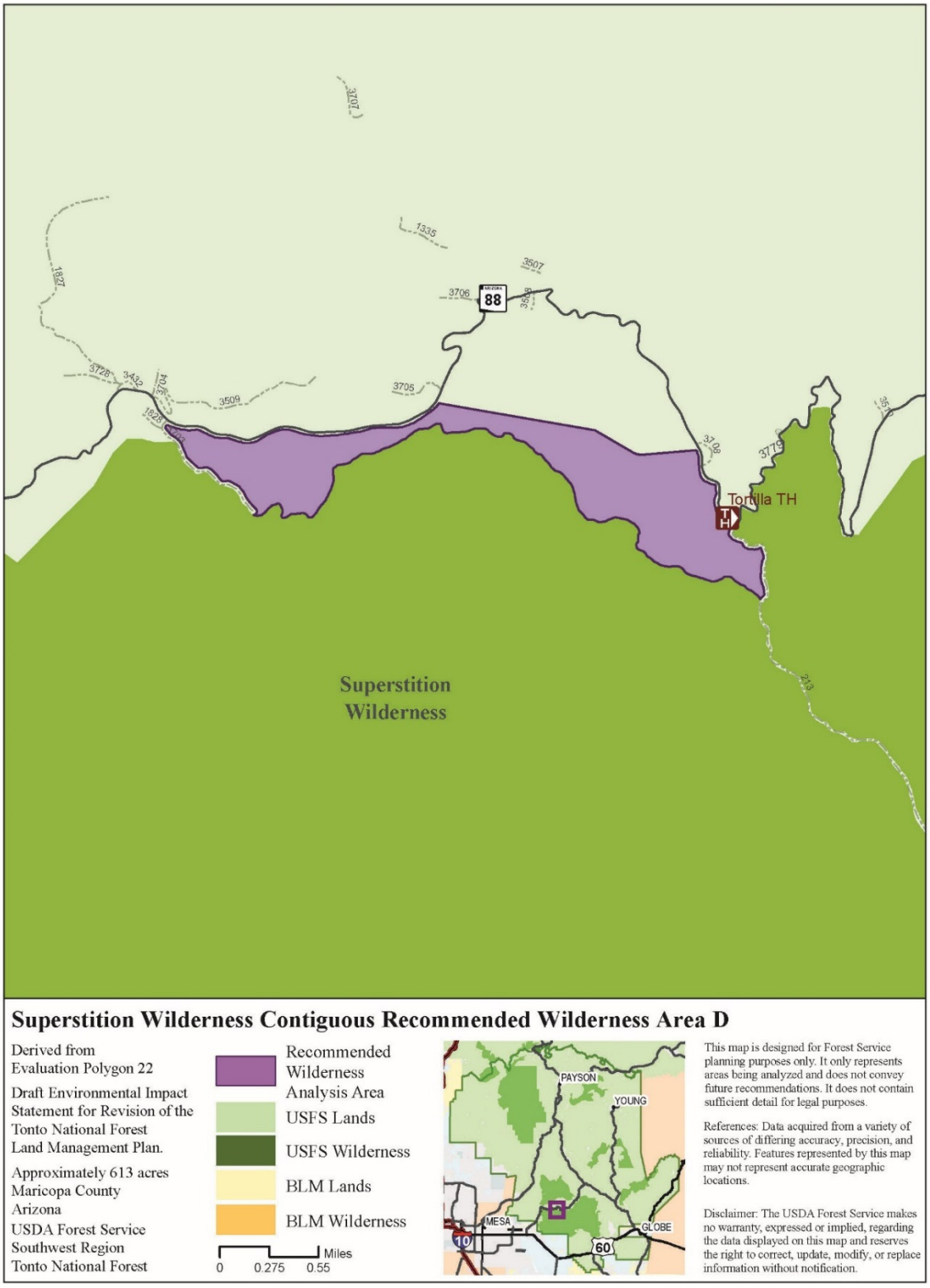


Figure 45. Superstition Wilderness contiguous recommended wilderness area D

Polygon 24 – Superstition Wilderness Contiguous Recommended Wilderness Area E

Factor	Description
Acres	827 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Superstition Wilderness Boundary, and private land boundaries, making it fairly easy to locate on the map and on the ground, with the exception of the small area surrounding the department of transportation yard along the northern boundary. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located north of the Superstition Wilderness near Tortilla Flat, AZ on the Mesa Ranger District. Prominent cliffs can be seen throughout this area, the largest of which mark the boundary with the Superstition Wilderness. Elevations in this area range from 2,145 – 4,150 feet. This area is comprised primarily of the Semi-Desert Grassland Ecological Response Unit (82%) with areas of Mojave Sonoran Desert Scrub (17%). Sonoran Desert plant and animal communities dominate this polygon. Some riparian plant communities in this area (1% of area), which include cottonwood, willows, and sycamores.
Current uses and management	Recreation Opportunity Spectrum: 100% Roaded Natural Scenic Integrity: 99% High, 1% Very Low 1985 Plan Management Area: 3I General Management Area Range Allotment: Reavis, Tortilla Adjacent to the Superstition Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Some nonnative fountain grass and brome can be found in the polygon, but is not apparent to the average visitor. Low to very low severity fire burned 100% of this area (Woodbury Fire, 2019). Undeveloped Quality: There are no improvements that impact the undeveloped quality in this area. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. There is limited ability to get away from the road and traffic on the road detracts of opportunities for solitude. The steep cliff face limits movement away from the road. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and unconfined recreation and at least some of these opportunities are of high quality. Hiking, hunting, dispersed camping, and bird watching may occur in the area. It is difficult to access the adjacent wilderness from the polygon. Other Features of Value: Lowland leopard frog and maple leaf false snapdragon are species of special status found in the polygon. Management to preserve the wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. High use roads, including the Apache Trail, are adjacent to the polygon on two sides and wilderness adjacent on the third edge, though access to the wilderness is difficult. An Arizona department of transportation yard is just outside polygon. This

Factor	Description
	area contains at least one Salt River Project (SRP) improvement and/or right of way.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is undeveloped with no infrastructure ● The area contains unique ecological features including known occurrences of multiple at risk species or economically important species. The social characteristics that provide the basis for suitability are as follows: ● There is the possibility of finding solitude in the area. ● There are some opportunities to participate in primitive or unconfined recreation that are high quality

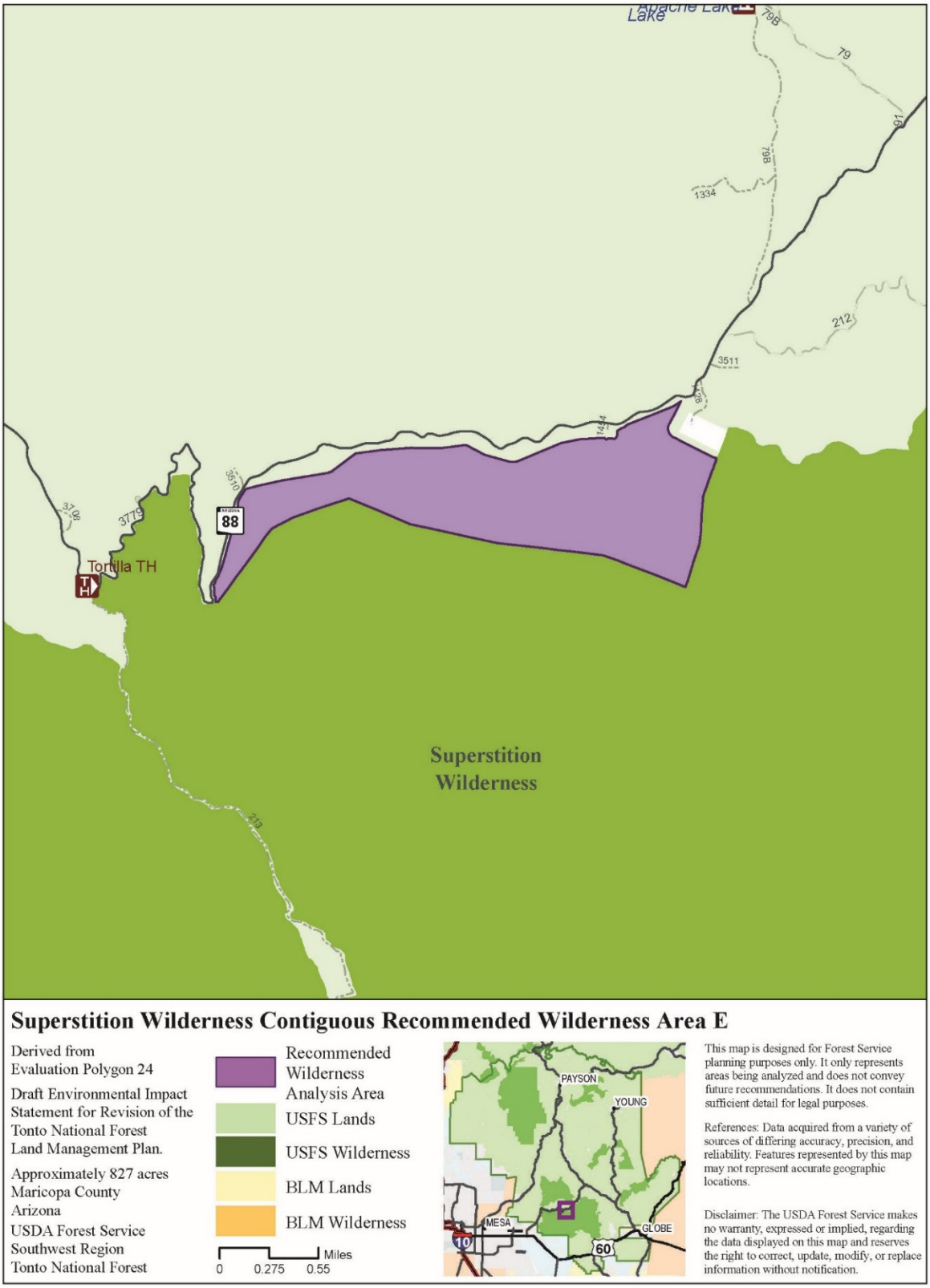
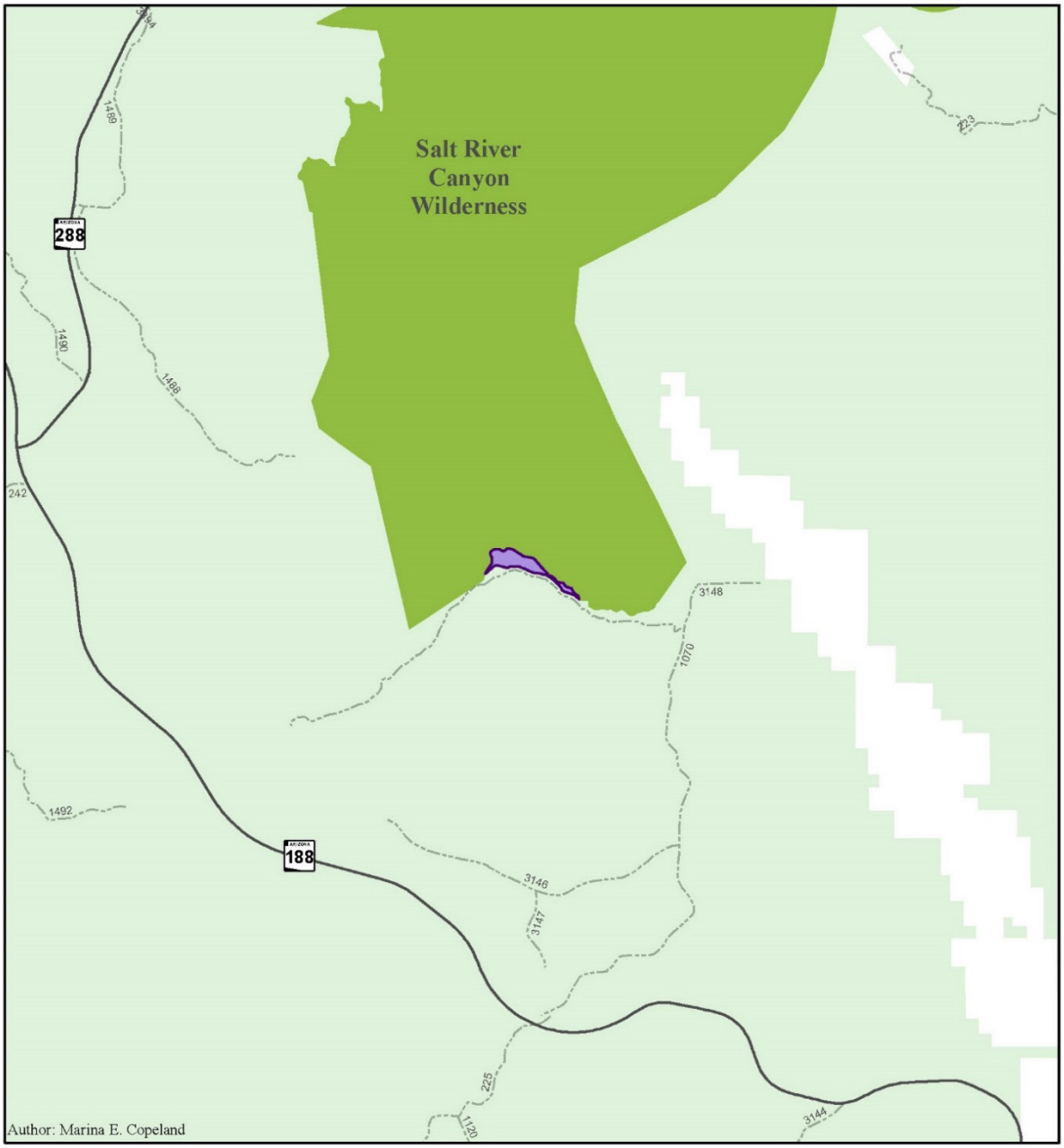


Figure 46. Superstition Wilderness contiguous recommended wilderness area E

Polygon 28 – Salt River Canyon Wilderness Contiguous Recommended Wilderness Area C

Factor	Description
Acres	13 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the forest administrative boundaries, and private land boundaries, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This small area is located on the edge of the Salt River Canyon Wilderness in the Salt River Mountains on the Globe Ranger District. Elevations in this boulder covered landscape range from 3,420 – 4,050 feet. This area is a mix of Semi-Desert Grassland (72% of area) and PJ Evergreen Shrub (28%) Ecological Response Units. The plant community consist primarily of Sonoran Desert species.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 72% Very High, 28% Very Low 1985 Plan Management Area: 2F General Management Area, 6J General Management Area Range Allotment: Hicks Pikes Peak Adjacent to the Salt River Canyon Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No recorded vegetation treatments. Suitable habitat for a variety of game and non-game wildlife species can be found in the area, such as rocky mountain bighorn sheep and potential habitat for the gilded flicker. No known special status species or invasive/non-native species. Undeveloped Quality: Little or no evidence of human influence on the landscape, with no known improvements. Solitude: Frequent views of high human impact areas and encounters with, or evidence of, humans is common or likely. The area is very small and adjacent to wilderness on one side with a low use road and powerline on the other, which makes solitude difficult to experience. Unconfined and Primitive Recreation: Most existing opportunities to engage in primitive recreation (hiking, hunting, wildlife viewing) are low quality, with low risk due to the area being very small and bounded by a road. Other Features of Value: No known There are no projects or management plans that would impact the wilderness characteristics of the area. When managed in conjunction with the adjacent Superstition Wilderness, preservation of wilderness characteristics are possible. Very low degree of use on the boundary road. Steep, rugged terrain would inhibit motorized trespass. This area contains a Salt River Project (SRP) improvement right of way.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.

Factor	Description
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural ● The areas is undeveloped with no infrastructure The social characteristics that provide the basis for suitability are as follows: There are few opportunities to participate in primitive or unconfined recreation when used in conjunction with the Salt River Canyon Wilderness



Salt River Canyon Wilderness Contiguous Recommended Wilderness Area C

Derived from
Evaluation Polygon 28

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 13 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

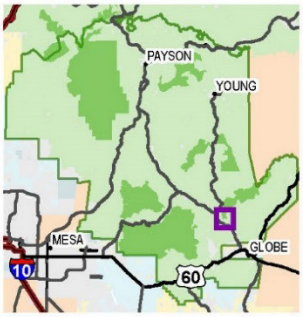


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Figure 47. Salt River Canyon Wilderness contiguous recommended wilderness area C

Polygon 32 – Coronado Mesa Recommended Wilderness Area

Factor	Description
Acres	6,515 acres
Summarized description of the recommended boundary	This area is a large polygon located south of Apache Lake. The boundary follows the National Forest System roads, powerline right of ways, and Bureau of Reclamation first form withdrawal lands. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located in Maricopa County on the Mesa Ranger District, this area is geologically tied to the Superstition Mountain Range at its northern most extension and is located within the superior volcanic field. This area is dominated by two natural features: Horse Mesa and the Fish Creek Canyon. Horse Mesa is a high, very inaccessible bench over 8 miles in length. Sheer cliffs and deep canyons completely surround the Mesa, some forming the northern boundary. Fish Creek Canyon is a spectacular canyon that flows north out of the Superstition Wilderness, characterized by its vertical walls and boulder covered bottom. At its deepest point within this area it is nearly 2,000 feet deep. Elevation in this area ranges from 1,760 – 4,300 feet. The majority of the area is in the Mojave-Sonoran Desert Scrub Ecological Response Unit (91%). However, the top of Horse Mesa constitutes Semi-Desert Grassland (7%). There are limited areas of riparian vegetation, primarily found along Fish Creek (2%).
Current uses and management	Recreation Opportunity Spectrum: 32% Roaded Natural, 68% Semi-Primitive Non-Motorized Scenic Integrity: 95% High, 5% Moderate 1985 Plan Management Areas: 3I General Management Area, 6F Roosevelt and Apache Lakes Recreation Area Range Allotments: Reavis, Roosevelt, and Tortilla 95% of this area is managed as the Horse Mesa Inventoried Roadless Area.
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative plants include red brome in the desert areas. This area provides suitable habitat for a variety of game and non-game species. Species of special status include longfin dace, lowland leopard frog, Bald Eagle, Fish Creek Fleabane, and Gila rock daisy. Undeveloped Quality: No developments along the shoreline. Minimal user created trails and routes. The presence or appearance of improvements does not detract from apparent naturalness of the area. Solitude: Significant feeling of being alone or remote from civilization is common throughout the area. Cross country hunting and hiking and recreation use along fish creek is fairly low, making human encounters infrequent. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and unconfined recreation and at least some of these opportunities are of high quality. Hiking, hunting, canyoneering and fishing can occur in the area. The terrain is steep and rugged, there are no system trails and no user controls. Other Features of Value: Species of special status include longfin dace,

Factor	Description
	lowland leopard frog and bald eagle, Fish Creek Fleabane and Gila rock daisy. There is a total of seven archaeological sites recorded to date within this polygon. One of these sites is prehistoric in nature, four date from the historic period, and two are multi-component. Prehistoric site types include rock shelters and sherd and lithic scatters. Historic site types include Apache and Yavapai occupations and telephone lines. Fish Creek is a high quality water resource that flows through a scenic canyon within this polygon. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The boundary of the area has been adjusted to remove the communication site on rock butte. This is in the communication site flight path, as a helicopter is used to access the site. This area contains at least one Salt River Project (SRP) improvement and/or right of way. There are very few mineral claims recorded with the BLM, and there are no operating plans approved by the Mesa Ranger District. One boundary is the 88 road that receives a high level of use, but due to the terrain only a small portion can be seen from the area. There is a small cherry stem. Approximately 95% of the area is a part of an Inventoried Roadless Area. Arizona Game and Fish periodically (annually) removes big horn sheep from this area to improve big horn sheep population and helicopters are used. Big horn sheep are also collared.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is mostly undeveloped with little infrastructure ● The area contains unique ecological features including a high quality water resource and known occurrences of species of special status. The social characteristics that provide the basis for suitability are as follows: ● The area offers opportunities for solitude ● There are some opportunities for primitive and unconfined recreation; primarily offering high risk opportunities due to terrain.

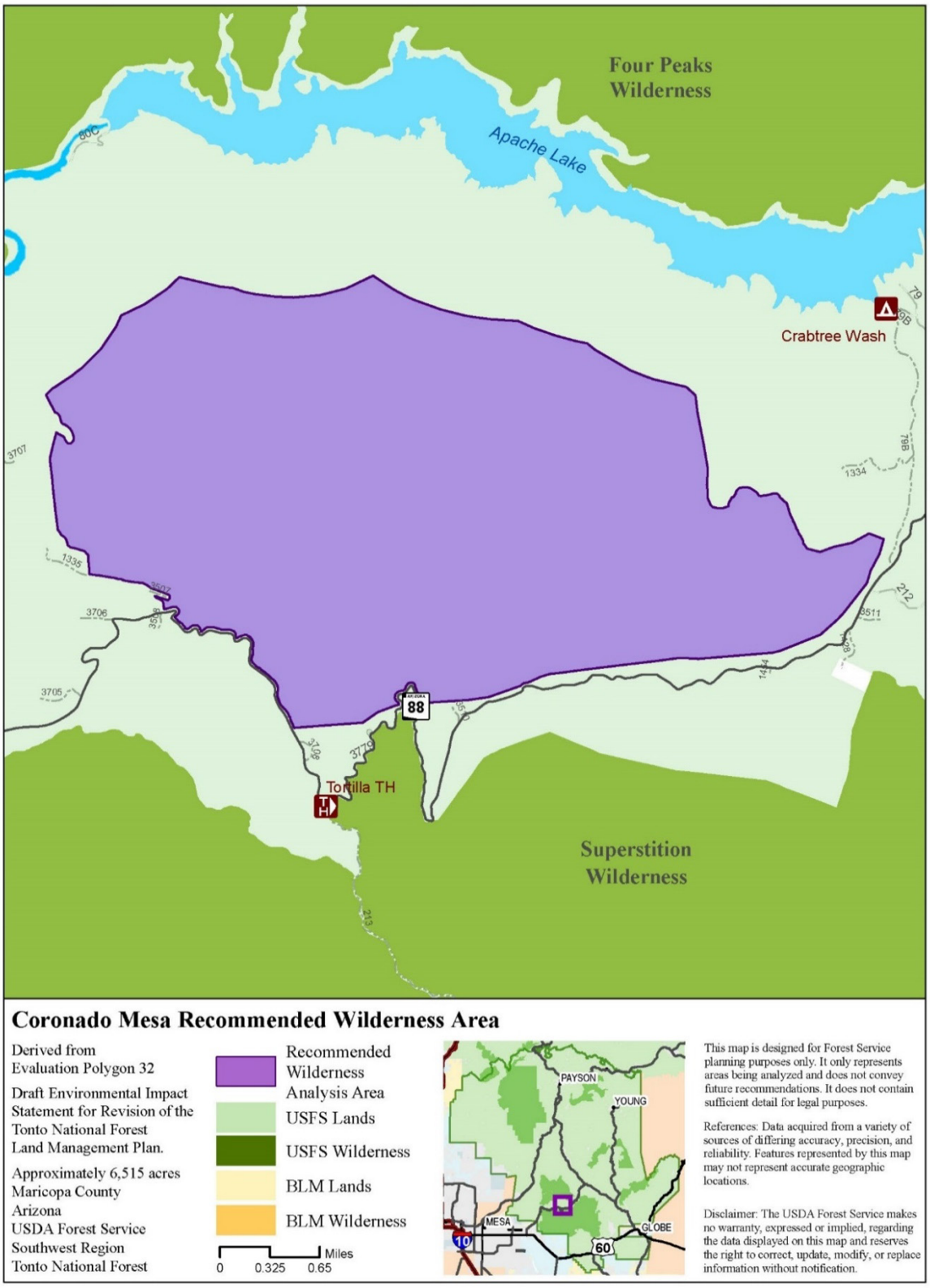


Figure 48. Coronado Mesa recommended wilderness area

Polygon 36a – Mesquite Flat Recommended Wilderness Area

Factor	Description
Acres	2,560 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, linear improvement rights of way, and Bureau of Reclamation first form withdrawal lands, making it fairly easy to locate on the map. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Maricopa County on the Mesa Ranger District, approximately 30 air miles east of the downtown Phoenix area. This area is geologically tied to the Superstition Mountain Range, at its north most extension. The area can be characterized by a series of mountain masses deep canyons, craggy cliffs, and polished domes comprised of various tuffs, with elevations ranging from 1,675 – 2,845 feet. One geologic feature of note is Tortilla Flat Mountain, which looks as if it is a “stack of tortillas” on the landscape. This area is in the Mojave Sonoran Desert Scrub Ecological Response Unit. There are very limited stretches of riparian vegetation totaling about 0.25% of the area.
Current uses and management	Recreation Opportunity Spectrum: 72% Roaded Natural, 23% Semi-Primitive Non-Motorized Scenic Integrity: 98% High, 2% Moderate. 1985 Plan Management Areas: 3F Lower Salt River Recreation Area, 3I General Management Area Range Allotments: Superstition and Tortilla 95% of this area is managed as the Black Cross Inventoried Roadless Area.
Description of the wilderness characteristics and the Forest’s ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Common nonnatives/invasives can be found within the area. Red brome, Bufflegrass, and fountain grass are present on the landscape. Species of special status include Sonoran Desert tortoise, peregrine falcon, bald eagle, and Pima Indian mallow. Suitable habitat for a variety of Sonoran Desert game and non-game species exists in the area. Undeveloped Quality: Range improvements include one tank. Minimal user created routes or system trails exists in the area. The presence or appearance of improvements does not detract from apparent naturalness. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Authorized motorized boating occurs on Canyon Lake. High use occurs on the adjacent 88 road, however, when away from roads, opportunities for solitude improve. Terrain is rolling, so visual screening may improve the feeling of solitude in some spots. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality. Hiking, hunting, horseback riding, primitive camping, rock climbing, and canyoneering opportunities can be found in the area.

Factor	Description
	Other Features of Value: Species of special status include Sonoran Desert tortoise, peregrine falcon, bald eagle, and Pima Indian mallow. The geology of the area with canyons and cliffs is considered outstanding. A total of six archaeological sites have been recorded to date within this polygon. Three of these sites is prehistoric in nature, and two date from the historic period. The prehistoric site type are rock shelters, fieldhouses, trash middens, and sherd and lithic scatter. Historic site types include utility corridors, dam construction camps and Apache occupation. Management to preserve the area's wilderness characteristics is possible throughout most of the area, though some challenges are present. There is a long cherry stem road that cuts into the polygon and motorized use occurs on Canyon Lake, which is visible from the polygon. Adjacent roads are high use most of the year, but there is minimal possibility of user created road development from adjacent roads due to terrain and vegetation. Range improvements are minimal and not being used or maintained at this time. There is at least one Salt River Project (SRP) improvement and/or right of way. Approximately 95% of the area is an Inventoried Roadless Area. SRP helicopter maintenance of adjacent impoundment is another management consideration for this polygon.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is mostly undeveloped with little infrastructure. ● The area contains known occurrences of multiple at risk species. The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are high quality opportunities for primitive and unconfined recreation; primarily offering high risk opportunities due to terrain. ● The area is known for its outstanding views of canyons and cliffs. ● There are six known archeological sites within the area

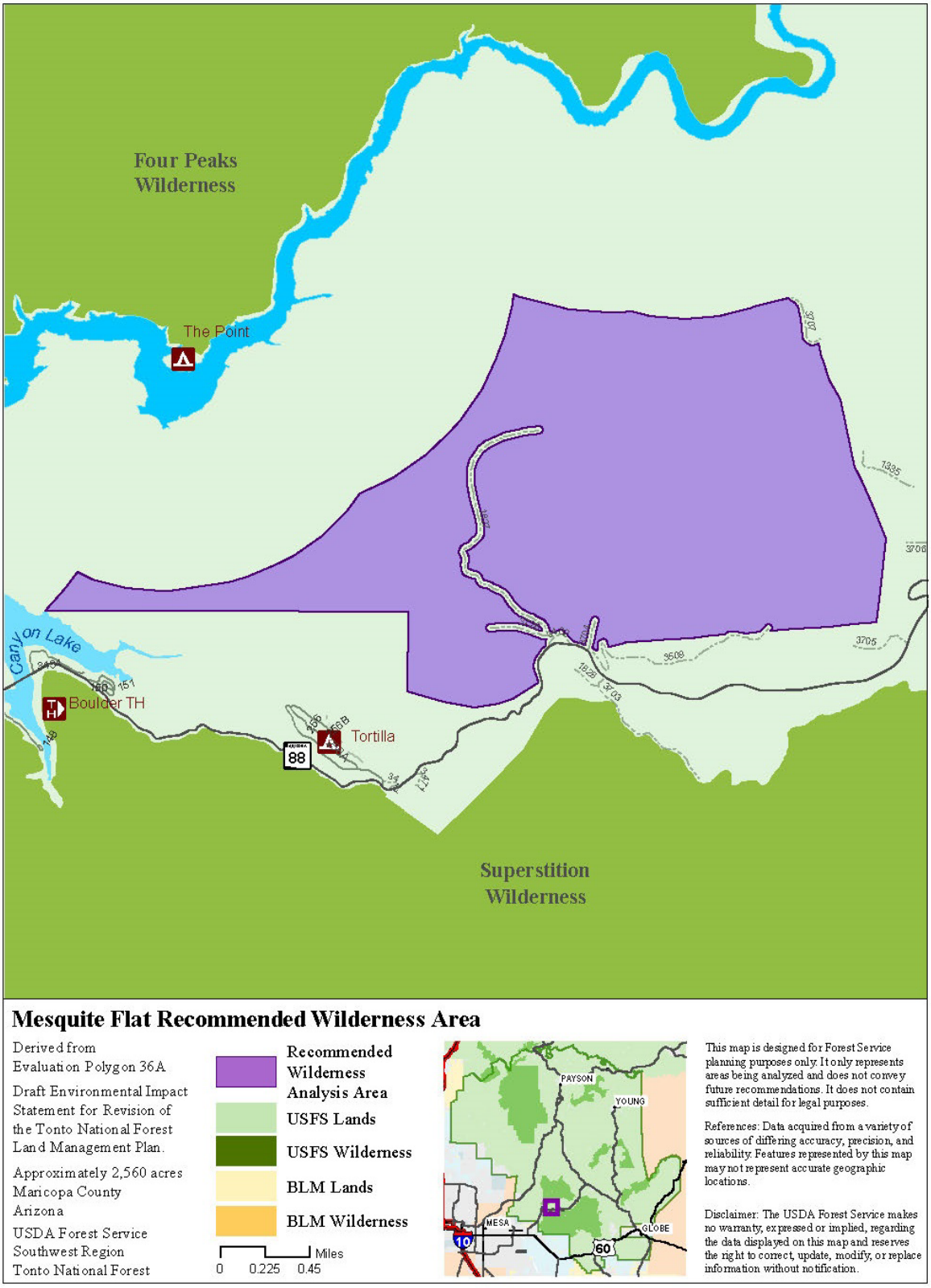
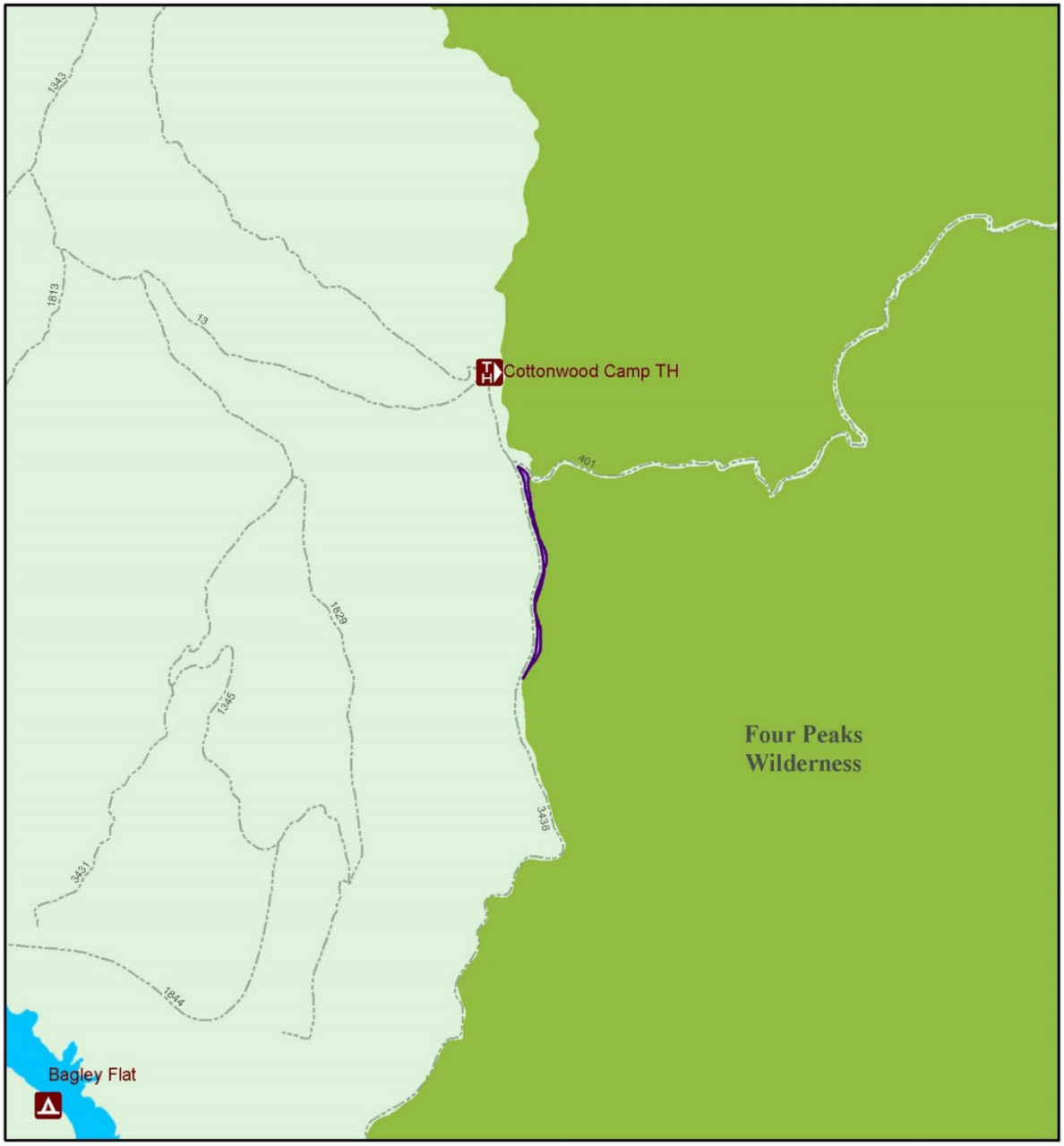


Figure 49. Mesquite Flat recommended wilderness area

Polygon 38 – Four Peaks Wilderness Contiguous Recommended Wilderness Area B

Factor	Description
Acres	8 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads and the Four Peaks Wilderness boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This long, skinny polygon borders the Four Peaks Wilderness Area on the Mesa Ranger District. This polygon is located in the riparian area of Cottonwood Creek, where the elevation only ranges from 1,790 – 1,860 feet. 99 percent of this area is in the Freemont Cottonwood / Shrub Ecological Response Unit, which is a riparian plant community.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Areas: 3I General Management Area Range Allotments: Sunflower This area is adjacent to the Four Peaks Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative species include a minimal amount of red brome. Suitable habitat for a variety of game and non-game species exists in the polygon and no special status species. Undeveloped Quality: The presence or appearance of improvements does not detract from apparent naturalness. There are no improvements Solitude: Opportunities to feel alone are possible in much of the area, though the area is very small (7 acres) and solitude would not possible unless used in conjunction with the adjacent wilderness. Some signs of civilization are possible. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and unconfined recreation and at least some of these opportunities are of high quality. The area is adjacent to the wilderness, and when used in conjunction with neighboring wilderness, hiking, hunting, bouldering, and camping are all possible and provide a moderate level of challenge and risk. Other Features of Value: No known Management to preserve the wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The small polygon borders the Four Peaks Wilderness, but has an extremely high edge to interior ratio. The other side of the unit is a road that has low use.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation
Brief summary of the ecological and social characteristics that would provide the basis for suitability	The ecological characteristics that provide the basis for suitability are as follows: ● The majority of the area appears natural

Factor	Description
for inclusion in the National Wilderness Preservation System	● The areas is undeveloped with no infrastructure The social characteristics that provide the basis for suitability are as follows: ● There is an opportunity to feel alone in this area There are some opportunities to participate in primitive or unconfined recreation when used in conjunction with the Four Peaks Wilderness



Four Peaks Wilderness Contiguous Recommended Wilderness Area B

Author: Marina E. Copeland

Derived from
Evaluation Polygon 38

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 8 acres
Maricopa County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

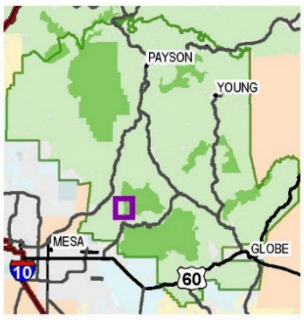


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Figure 50. Four Peaks Wilderness contiguous recommended wilderness area B

Polygon 40 – Four Peaks Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	9 acres
Summarized description of the recommended boundary	This area is a small, long, skinny area primarily surrounded by the Four Peaks Wilderness. The boundary follows the National Forest System roads, and the Four Peaks wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located on the Mesa Ranger District in the middle of the Four Peaks Wilderness, Approximately 25 miles northeast of Mesa, AZ. This area has multiple steep ridgelines and canyons that extend down from the Four Peaks mountain range. The elevation in this area ranges from 2,900 – 3,200 feet. This area is in the Mojave-Sonoran Desert Scrub Ecological Response Unit. Major plant communities include typical chaparral and Sonoran Desert vegetation.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 3I General Management Area Range Allotments: Sunflower Adjacent to the Four Peaks Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Nonnative red brome is likely present, but not apparent to the average visitor. Suitable habitat for common Sonoran wildlife exists in the area. There are no species of special status. Undeveloped Quality: One non-motorized/non mechanized trail runs through the middle of the polygon. Solitude: The area sees low use, is difficult to access, and is surrounded by wilderness. Common or significant feeling of being alone or remote from civilization is possible throughout the area. Some overhead flights could impact opportunities for solitude. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality. Hiking, hunting, dispersed camping are possible, and opportunities are high quality and abundant when used in conjunction with the adjacent wilderness. Other Features of Value: None Identified Management to preserve the wilderness characteristics is possible throughout the area. Though it is very small, the adjacency to the Four Peaks Wilderness makes management possible. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. There is little to no use of the area and it is surrounded by wilderness. A gate keeps motorized traffic out of this section.
Brief summary of the factors considered and the process used in	● The area received a high overall wilderness characteristic ranking in the evaluation.

Factor	Description
evaluating the area and developing the alternatives	
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● A non-motorized trail runs through this area, but it does not impact the naturalness. The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are high quality opportunities for primitive and unconfined recreation.

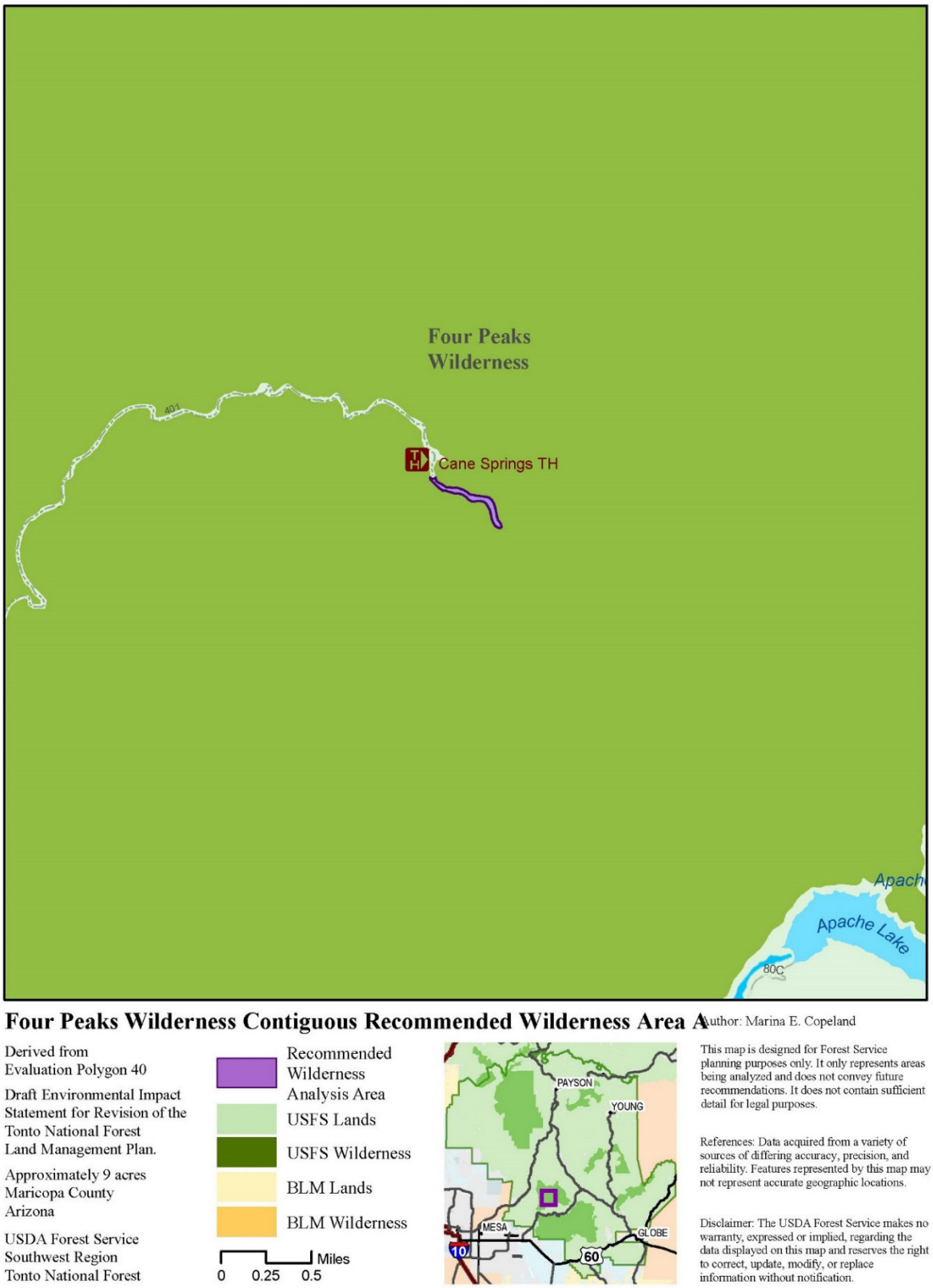


Figure 51. Four Peaks Wilderness contiguous recommended wilderness area A

Polygon 43 – Rockinstraw Recommended Wilderness Area

Factor	Description
Acres	6,312 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads on three sides and the Salt River Canyon Wilderness on the northern boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, directly south of the Salt River Canyon Wilderness on the Globe Ranger District. The elevations in this area range from 2,500 feet to 5,375. Rockinstraw Mountain is the highest point, located in the middle of this area, with gradual slopes and ridgelines leading to the top of this mountain. This area is a mix of the Interior Chaparral (45% of the area), Juniper Grass (38%), Semi-Desert Grassland (10%), PJ Evergreen Shrub (4%), Mojave-Sonoran Desert Shrub (2%), and Riparian (1%) Ecological Response Units. The vegetation consist primarily of Sonoran Desert and scrub oak communities, with bunch grasses, mesquite, and false mesquite.
Current uses and management	Recreation Opportunity Spectrum: 10% Roaded Natural, 90% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 2F General Management Area Range Allotments: Hicks Pikes Peak Adjacent to the Salt River Canyon Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no records of vegetation treatments in the area. Red brome is present on more than half the area, but generally does not detract from apparent naturalness. Suitable habitat for a variety of game and non-game wildlife species can be found in the area. Undeveloped Quality: The presence or appearance of improvements does not detract from apparent naturalness. Low density of range improvements throughout the area, which include a well, a trough, a pipeline, two storage tanks, and a coral. Several user created routes are present. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. There is a moderate level of use on horseshoe bend road, so visitors can hear sounds of motorized use, and evidence of improvements. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation. There is moderate quality hiking, high quality hunting, and dispersed camping off of horseshoe bend road. The area is challenging due to limited and rough access. There are no system trails in the area. Other Features of Value: No known There are no projects or management plans that would impact the wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness

Factor	Description
	characteristics are isolated. The area is adjacent to the Salt River Canyon Wilderness, with limited access. There are minimal improvements, though some range infrastructure would need to be maintained. Few other considerations or management challenges. There is one small cherry stem roads.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are some opportunities for primitive and unconfined recreation with high risk.

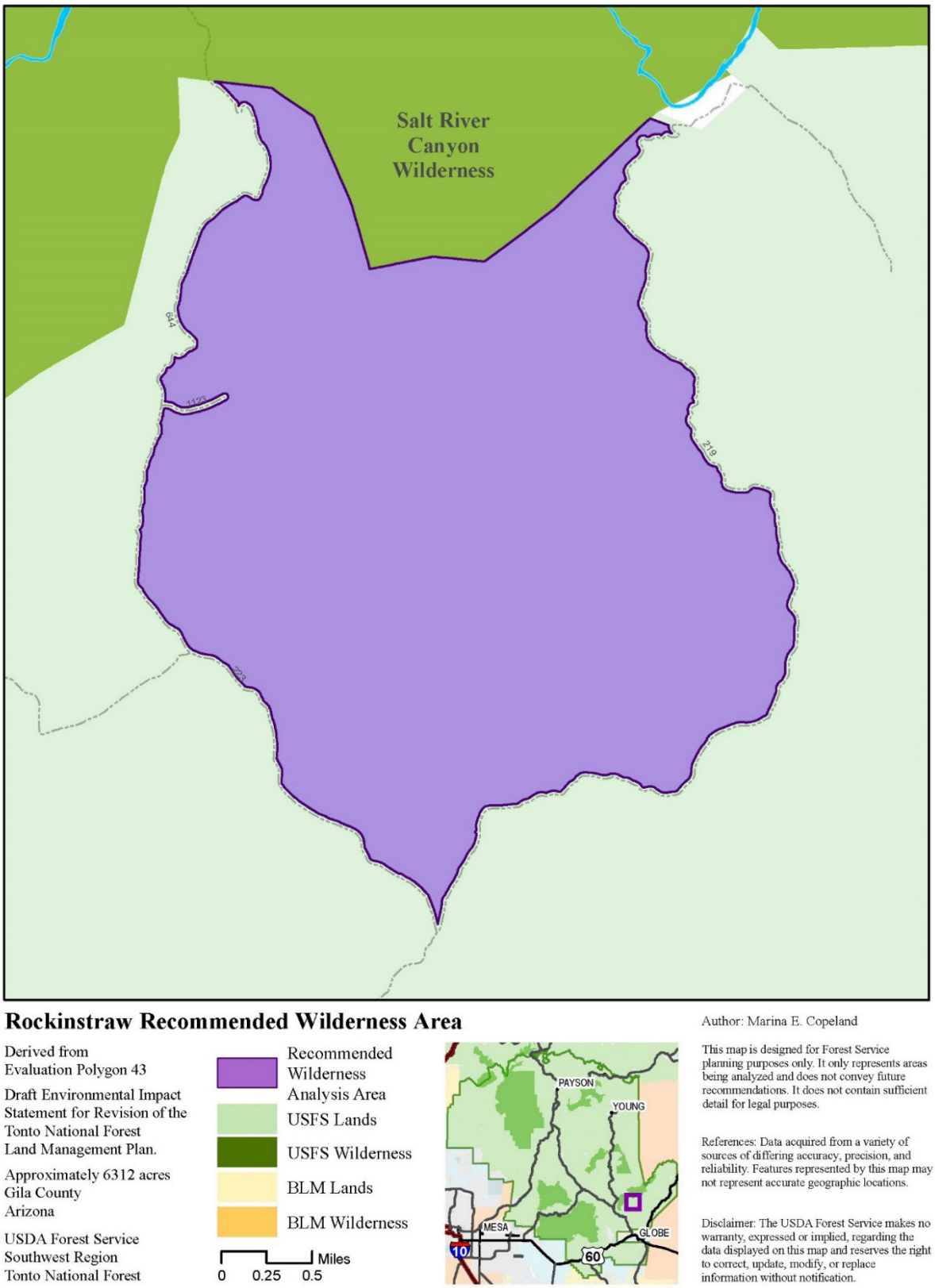


Figure 52. Rockinstraw recommended wilderness area

Polygon 46 – Salt River Canyon Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	613 acres
Summarized description of the recommended boundary	This small area is south of the Superstition Wilderness in the Globe Ranger District. The boundary follows National Forest System roads, and the salt river canyon wilderness boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located on the Globe Ranger District, approximately 80 air miles from Phoenix. It is located adjacent to the Salt River Canyon Wilderness, southwest of the Blackjack Mountains. This area is characterized by rolling hills and large desert washes. The elevation in this area ranges from 3,400 – 4,300 feet. This area is entirely comprised of the Juniper Grass Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 2F General Management Area Range Allotment: Sedow Adjacent to the Salt River Canyon Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No past vegetation treatments have occurred in this area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. No special status species, but habitat for a variety of game and non-game species. No nonnative species. Undeveloped Quality: Prevalence of improvements is rare or scattered. Barbed wire range fence runs across the polygon. No other improvements. Solitude: There is very low use throughout the area. The polygon is small polygon, but opportunities are possible, especially when visited in conjunction with the adjacent wilderness. Some use on roads during hunting season. Unconfined and Primitive Recreation: When used in conjunction with the adjacent wilderness, opportunities to experience primitive and unconfined recreation is possible. Hiking and hunting is possible but fairly low quality. Other Features of Value: None Identified Management to preserve the wilderness characteristics is possible throughout the area. This is a small area, primarily bounded by Forest Service roads that see little use. Easily manageable when considered in conjunction with the Salt River Canyon Wilderness. There are no projects or management plans that would impact the wilderness characteristics of the area. No uses or considerations that would inhibit management of the area to preserve its wilderness characteristics.

Factor	Description
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Adjacent to the Salt River Canyon Wilderness ● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is mostly undeveloped with little infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers good opportunities for solitude. ● There are opportunities for primitive and unconfined recreation when used in conjunction with the Salt River Canyon Wilderness.

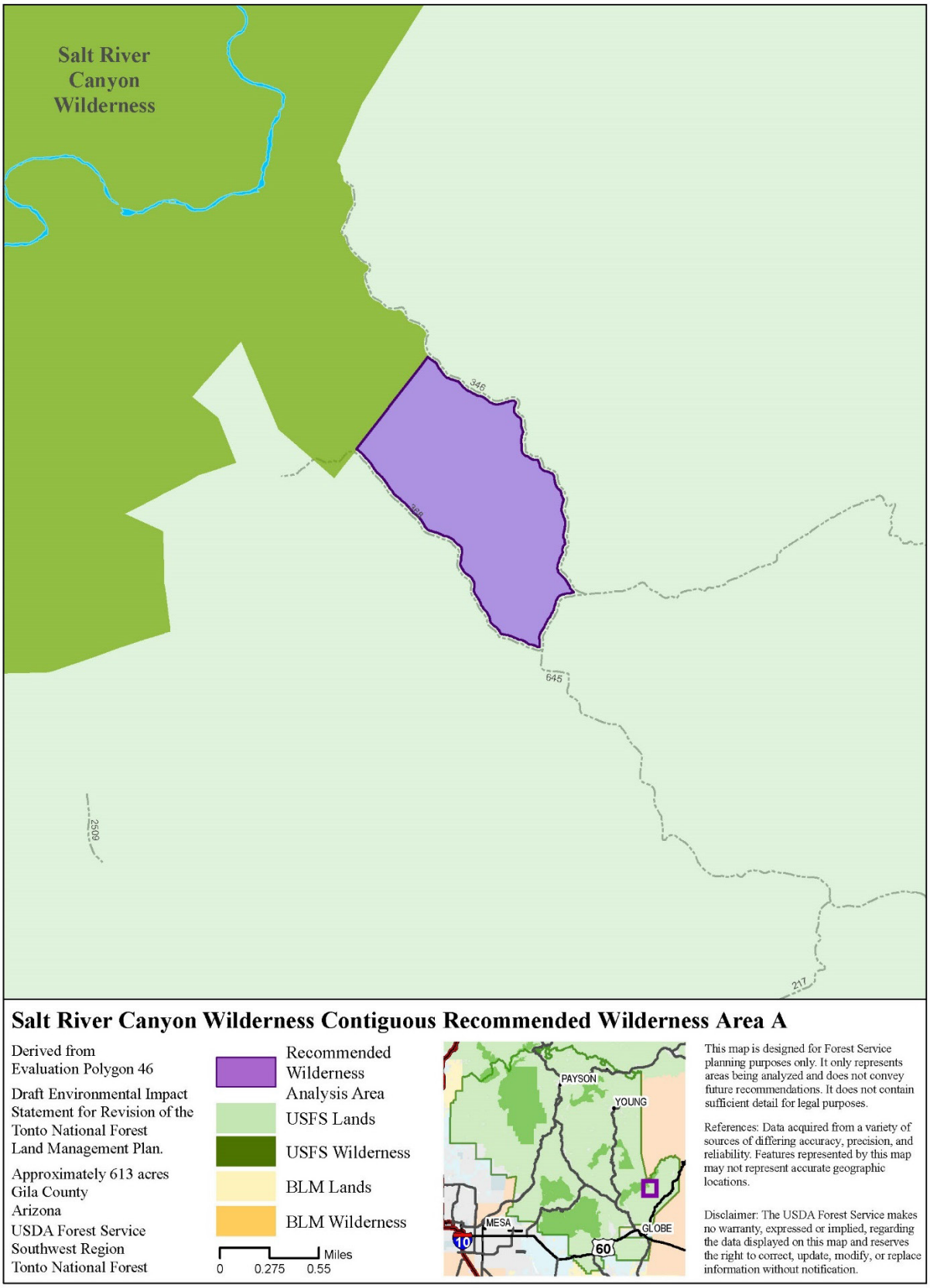
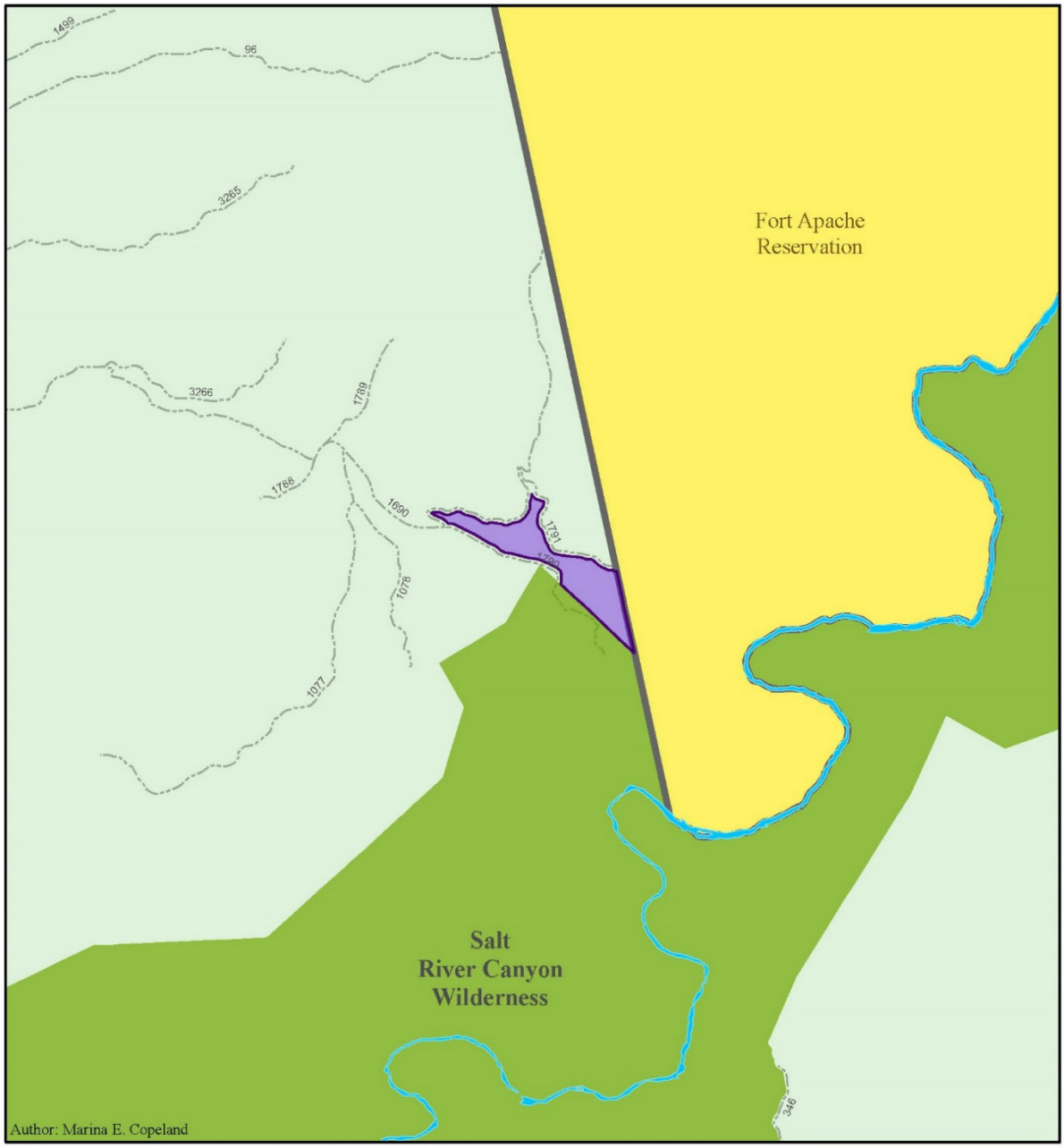


Figure 53. Salt River Canyon Wilderness contiguous recommended wilderness area A

Polygon 52 – Salt River Canyon Wilderness Contiguous Recommended Wilderness Area B

Factor	Description
Acres	93 acres
Summarized description of the recommended boundary	This area is a small triangular shape adjacent to the Salt River Canyon Wilderness. The boundary follows the National Forest System roads, the National Forest Boundary, and the Salt River Canyon wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. Most adjacent land is managed by the Forest Service, but the easternmost boundary of this area abuts the Fort Apache Reservation.
Brief description of the general geography, topography, and vegetation	Located in Gila county, near the border of the Tonto National Forest and the Fort Apache Reservation on the Globe Ranger District, this area shares characteristics of the Salt River Canyon Wilderness. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. The elevation in this area ranges from 2,900 – 3,300 feet. This area primarily comprised of the Semi-Desert Grassland Ecological Response Unit. Major plant communities include Sonoran Desert plants, such as cholla, and desert scrub.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High 1985 Plan Management Area: 6J General Management Area Range Allotment: Dagger Adjacent to the Salt River Canyon Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. No known treatments. Suitable habitat for a variety of game and non-game species exists in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. Occurrence of improvements is rare. No range improvements, no special use infrastructure, no recreation improvements. Solitude: Opportunities for solitude possible, especially when closer to the adjacent wilderness. Adjacent roads are very low use other than during hunting season when a visitor may see or hear some motorized use of the road Unconfined and Primitive Recreation: Some camping, hunting, hiking opportunities are possible in the polygon, and when used in conjunction with the adjacent wilderness some opportunities are good quality. Other Features of Value: None identified Management to preserve the wilderness characteristics is possible throughout the area. The polygon is adjacent to the Salt River Canyon Wilderness. There are no projects or management plans that would impact the wilderness characteristics of the area. There are few improvements and few uses that would make it difficult to manage the area to preserve wilderness characteristics.

Factor	Description
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● Adjacent to the Salt River Canyon Wilderness ● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness ● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers good opportunities for solitude. ● There are high quality opportunities for primitive and unconfined recreation when used in conjunction with the Salt River Canyon Wilderness.



Salt River Canyon Wilderness Contiguous Recommended Wilderness Area B

Derived from
Evaluation Polygon 52

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 94 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

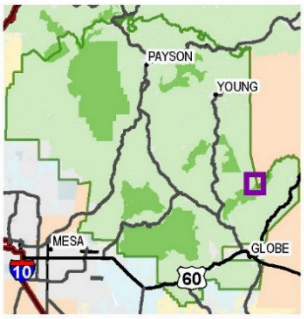


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Figure 54. Salt River Canyon Wilderness contiguous recommended wilderness area B

Polygon 57 – Dutchwoman Butte Recommended Wilderness Area

Factor	Description
Acres	3,806 acres
Summarized description of the recommended boundary	This triangular area is located south of the Salome Wilderness. The boundary follows the National Forest System roads, the Salome Wilderness boundary, and one private property, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This areas is located in the middle of the Tonto National Forest on the Tonto Basin Ranger District, approximately 60 air miles from Downtown Phoenix. Salome creek runs through this area and is marked by a deep canyon on the eastern portion of the area. Elevations range from 2,310 – 5,050 feet This area has acres in the Mojave-Sonoran Desert Scrub (71% of area), Semi-Desert Grassland (23%), Sonora-Mojave Mixed Salt Desert Scrub (4%), and Desert Willow (2%) Ecological Response Units. Dominant vegetation communities are Sonoran Desert in the south, as you go upslope you get into the semi desert grassland and transition to juniper and red juniper berry grassland. Along Salome creek, a robust suite of riparian species including sycamore, cottonwood, willow, cattails, sedges, and desert willow.
Current uses and management	Recreation Opportunity Spectrum: 69% Semi-Primitive Motorized, 31% Roaded Natural Scenic Integrity: 100% High. 1985 Plan Management Area: 6F Roosevelt and Apache Lakes Recreation Area, 6J General Management Area Range Allotment: Dutchwoman Adjacent to the Salome Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No treatments have occurred in the area. Nonnatives include some red brome and desert mustard. Tamarisk in Salome creek, but small patches and generally not apparent on the landscape to the average visitor. Riparian nesting species and general suite of game and non-game species. Species of special status include Lowland leopard frog round tail chub and Tonto basin agave. Nonnative fish include Green sunfish, largemouth bass, gizzard shad, common carp and bluegill. Undeveloped Quality: Little or no evidence of human influence on the Landscape. Prevalence of improvements is rare or scattered. There is a low concentration of range improvements, 3 dirt stock tanks, one well, windmill, steel storage tank, one trough and one piece of pipe. One non-motorized trail (The Jug) that runs the perimeter between the polygon and the Salome wilderness. No special use infrastructure. Topography constrains unauthorized road development. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. The adjacent 60 road is traveled year round. The jug trail is most popular in the spring, but is used year round. Some increased use occurs during hunting season. Visitors can hear military activity frequently in the area. Outfitters and Guides operate in the area.

Factor	Description
	Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and/or unconfined recreation. At least some of these opportunities are of high quality and/or risk. High quality canyoneering, hiking, good quality hunting with moderate risk occurs in the area. Good quality horseback riding, great birding, moderate quality fishing opportunities can be found in the area. Other Features of Value: Species of special status include Lowland leopard frog round tail chub and Tonto basin agave. This area has outstanding view sheds, especially along the Jug Trail. A total of nineteen archaeological sites have been recorded to date within this polygon. Eighteen of these sites are prehistoric in nature, and one has components from both prehistoric and historic periods. The prehistoric site types are multi-room masonry structures, caves, habitations, fieldhouses, pithouse villages, hornos, agricultural features, and sherd and lithic scatters. The historic site type includes trash middens. Corridor for the Salome eligible WSR is in the polygon. Contains a portion of the Jug which is a series of rapids and waterfalls in a slot canyon on Salome Creek with perennial water. The Jug is a popular recreation site. Management to preserve the wilderness characteristics is possible throughout the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The area is adjacent to the Salome wilderness, there is minimal cherry stemming or ability to create new roads. Topography limits unauthorized motorized incursion. Low presence of improvements or other uses in the area.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure. ● The area has known occurrences of species of special status and economically important species. ● Salome eligible wild and scenic river corridor extends into this polygon The social characteristics that provide the basis for suitability are as follows: ● The area offers good opportunities for solitude. ● There are some high quality opportunities for primitive and unconfined recreation, especially when used in conjunction with the Salome Wilderness. ● There are 19 known archeological sites in the area ● There are outstanding viewsheds from this area

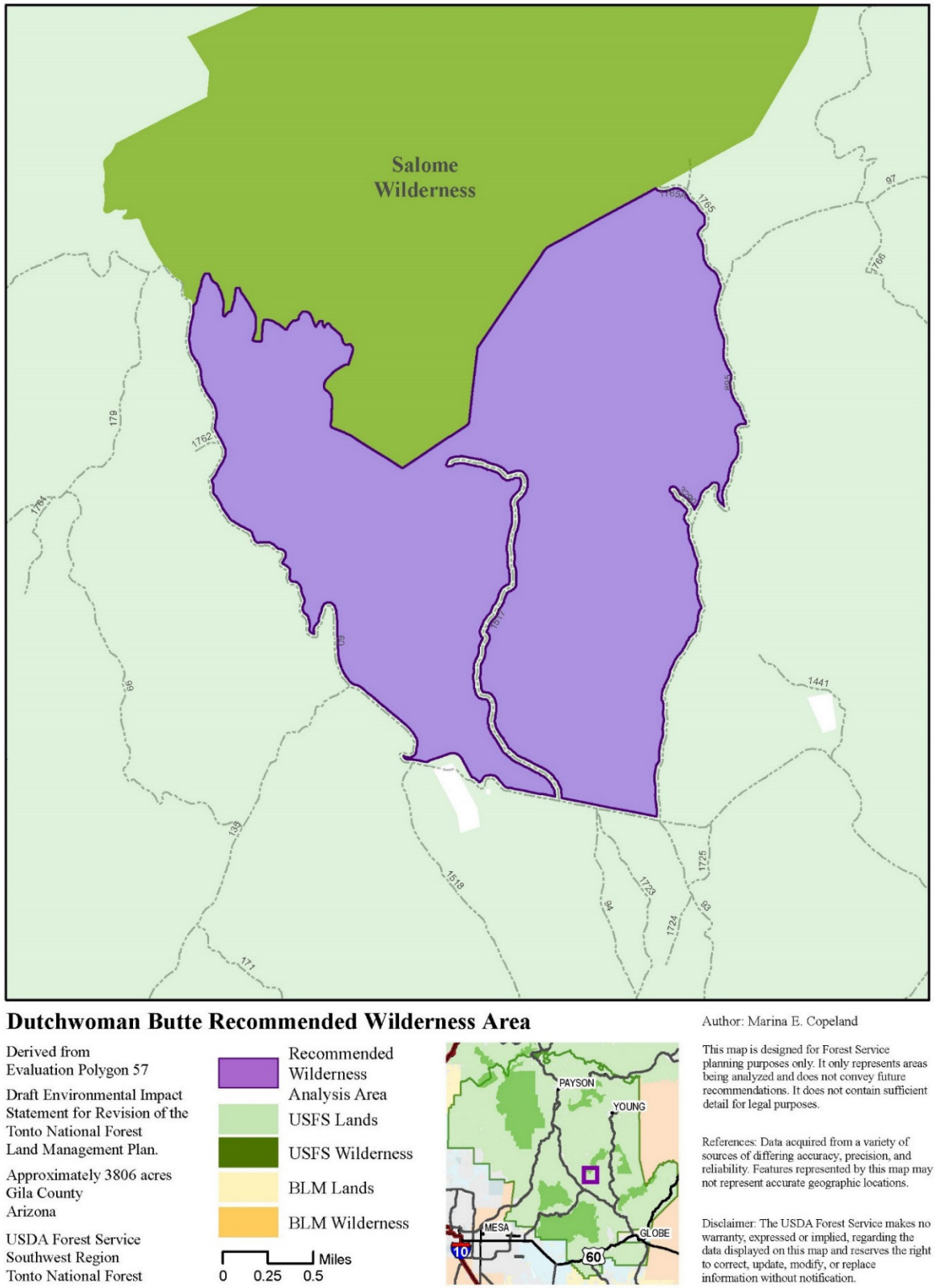


Figure 55. Dutchwoman Butte recommended wilderness area

Polygon 60a – Bumblebee Recommended Wilderness Area

Factor	Description
Acres	30,512 acres
Summarized description of the recommended boundary	This area is located to the east of Four Peaks Wilderness. The boundary follows the 2500ft contour line along most of the eastern boundary, forest service roads, Bureau of Reclamation withdrawn lands, and the Four Peaks boundary. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This areas is located in the middle of the Tonto National Forest on the Tonto Basin Ranger District, this area is a rugged section of the Basin and Range province of the Upper Sonoran Desert. Topographically granite cliffs, slabs, and boulders characterize much of the landscape, with deep canyons carved by waterways, such as Bumblebee Creek. Elevations range from 2,243 – 6,145 feet This area has acres in the Interior Chaparral (55% of area), Mojave-Sonoran Desert Scrub (27%), Semi-Desert Grassland (15%), and Ponderosa Pine – Evergreen Oak (2%), and Fremont Cottonwood (1%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 20% Roaded Natural, 17% Semi-Primitive Motorized, 44% Semi-Primitive Non-Motorized Scenic Integrity: Very High (3%), High (96%), Moderate (1%) 1985 Plan Management Area: 6D Buckhorn Mountain Research Natural Area, 6J and 3I General Management Area, 6F Roosevelt and Apache Lakes Recreation Area, 6C Three Bar Wildlife Area Range Allotment(s): 7/K and Sunflower Adjacent to the Four Peaks Wilderness 58% of this area is managed as Three Bar Wildlife Area 3% of this area is managed as Buckhorn Mountain Research Natural Area
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: In most areas the composition of plant and animal communities would appear natural to the average forest visitor. Plant communities are diverse transition along typical elevation gradients from Sonoran Desert to mixed conifer grassland up to ponderosa pine communities. Some Riparian, cottonwoods, sycamore and desert willow-mostly confined to Rock Creek and Bumblebee also occurs in the area. Species and habitats of special status include Mexican Spotted Owl (MSO) designated critical habitat as well as an MSO Protected Activity Center, Lowland Leopard Frog, Bald Eagle breeding areas, 11 species of bats including the western Red Bat, Peregrine Falcon, Golden Eagle, Sonoran Desert Tortoise, Gila Monster, and Hohokam and Desert Agave. Suitable habitat for a variety of game and non-game species occurs in the area. The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequently in the area. Approximately 90 percent of the area has been impacted by wildfire that were responsible for vegetation type changes. Undeveloped Quality: Prevalence of improvements is rare or scattered. Improvements include several wildlife tanks, six developed recreation trails, including the Arizona Trail, trailhead #132. Range improvements are scattered throughout the area, with no range improvements on the southern portion of the polygon.

Factor	Description
	Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Use on surrounding roads make it difficult to experience a feeling of solitude when in close proximity. However, once away from roads, few visitors venture off into the rugged and steep terrain in the interior of the polygon. Use of Roosevelt Lake and Apache Lake affects solitude due to the sounds of motor boats. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and/or unconfined recreation and at least some of these opportunities are of high quality. Great hunting can be found in the area. Horseback riding is very common and considered moderate quality. High quality backpacking and hiking can also be found in the area. Good to high quality camping can be found in the area. Other Features of Value: Species and habitats of special status include Mexican Spotted Owl (MSO) designated critical habitat as well as an MSO Protected Activity Center, Lowland Leopard Frog, Bald Eagle breeding areas, 11 species of bats including the western Red Bat, Peregrine Falcon, Golden Eagle, Sonoran Desert Tortoise, Gila Monster, and Hohokam and Desert Agave. Also contains the Three Bar Wildlife Area and Buckhorn Mountain research natural area. There are a total of 67 archaeological sites recorded to date within this polygon. Fifty-seven of these sites are prehistoric in nature, seven date from the historic period, and three are multi-component. Prehistoric site types include single and multi-room masonry structures, pit house villages, burials, hilltop forts, field houses, hornos, agricultural features and sherd and lithic scatters. Historic site types include utility corridors, transportation corridors, farming implements, infrastructure, and artifact scatters. Management to preserve the area's wilderness characteristics are possible throughout most of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are scattered. Topography and vegetation limit unauthorized roads. There is a low density of range improvements and few mineral development or rights, though there is one mine in the polygon.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking when the boundary was adjusted to remove Bureau of Reclamation withdrawn lands.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Prevalence of improvements is overall low throughout the area. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible through most of the area. ● There are some opportunities for engaging in primitive and/or

Factor	Description
	unconfined recreation. ● There are known archeological sites in the area.

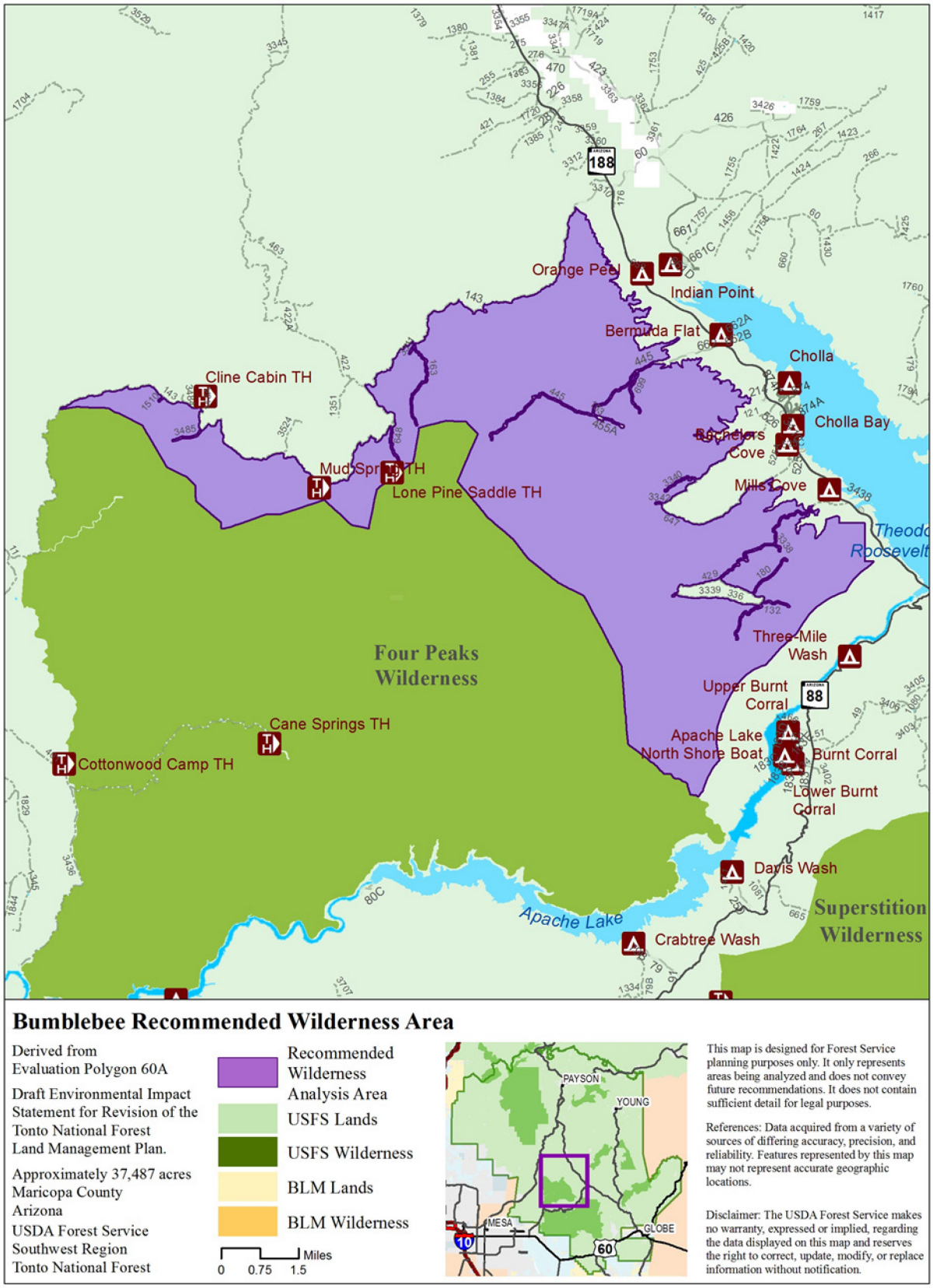


Figure 56. Bumblebee recommended wilderness area

Polygon 65a – Grantham Peak Recommended Wilderness Area

Factor	Description
Acres	1,996 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Sierra Ancha Wilderness boundary, and the Sierra Ancha Experimental Forest boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located along the west side of the Sierra Ancha Wilderness in the Pleasant Valley Ranger District, this area ranges in elevation from 5,030 – 7,575 feet. The area is dominated by isolated benches, small mesas, and mountain peaks including Carr Peak and Grantham Peak. Canyons through this area have been formed from the perennial streams that run out of the Sierra Anchas. Consistent with the varying elevations of this area, is has combination of Interior Chaparral (3% of area), Juniper Grass (38%), Madrean Pinyon-Oak Woodland (8%), Mixed Conifer w/ Aspen (18%), PJ Evergreen Shrub (21%), Ponderosa Pine – Evergreen Oak (9%), Semi-Desert Grassland (2%), and Riparian (1%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 7% Semi-Primitive Motorized, 13% Roaded Natural, 80% Semi-Primitive Non-Motorized Scenic Integrity: 52% Very High, 47% High 1985 Plan Management Area: 5D Mogollon Rim-Sierra Ancha Area, 5F Proposed Upper Forks Parker Creek Research Natural Area Range Allotment: Dagger Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Dozer lines are present related to suppression activities. Suitable habitat for a variety of game and non-game wildlife species can be found in the area. Some species of special status include Mexican Spotted Owl (PAC and designated critical habitat), populations of bloomers dock, and occurrences of desert sucker, common black hawk, longfin dace, lowland leopard frog, tonto basin agave, Yavapai hedgehog cactus, and suitable habitat for Sierra Ancha fleabane. The presence of exotic, invasive and/or non-native plants are found in infrequent small patch sizes in the area and include; thistle and red brome. Moderate severity wildfire occurred in the majority of the area. Undeveloped Quality: Prevalence of improvements is overall low throughout the area, it may be concentrated in some spots but is more typically dispersed through the area. There is a trail (non-motorized and non-mechanized). Some areas of historic mining in the southern and western portions of area. Range permittees exist in the area and Salt River Project has 2 gaging stations, south fork parker creek and upper parker creek. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Solitude can be found away from roads, in cliffs and off trails. Unconfined and Primitive Recreation: There are abundant

Factor	Description
	opportunities for engaging in primitive and/or unconfined recreation. High quality hunting, hiking, and horseback riding are available. Good bird watching. The risk is moderate through most of the area but high in the northern portion. Other Features of Value: Species of special status include Mexican Spotted Owl (PAC and designated critical habitat) Occurrences of desert sucker, common black hawk, longfin dace, lowland leopard frog, tonto basin agave, Yavapai hedgehog cactus, and suitable habitat for Sierra Ancha fleabane. There are unique or outstanding landscape features including spectacular views available including canyon and cliff walls. There are known archaeological sites within this polygon, most of which are prehistoric in nature. Prehistoric site types include single and multi-room masonry structures, cliff dwellings, petroglyphs, pithouse villages, burials, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Management to preserve the area's wilderness characteristics are possible throughout most of the area. Motorized use is limited due to topography. The experimental forest is adjacent to this area. This area is within the 4FRI footprint. This area contains at least one Salt River Project (SRP) improvement and/or right of way. Pertinent information includes the administration and maintenance of a Salt River Project rain gage, 50% of the area is within IRA, and it is adjacent to wilderness.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Prevalence of improvements is overall low throughout the area. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible through most of the area. ● There are abundant opportunities for engaging in primitive and/or unconfined recreation. ● There are known archeological sites in the area.

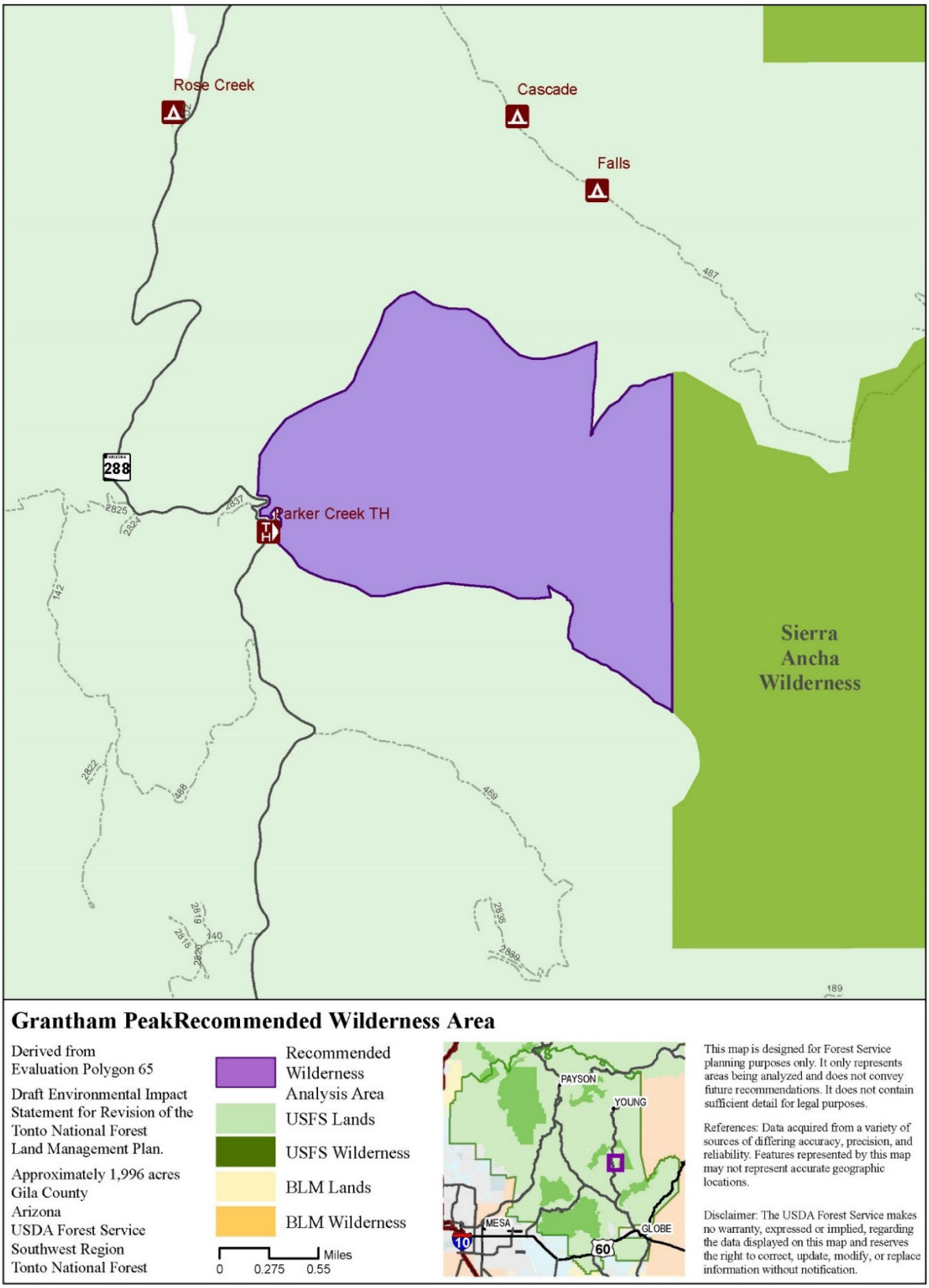


Figure 57. Grantham Peak recommended wilderness area

Polygon 65b – Zimmerman Recommended Wilderness Area

Factor	Description
Acres	7,721 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Sierra Ancha Experimental Forest boundary, and the Sierra Ancha Wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located along the west and south side of the Sierra Ancha Wilderness in the Pleasant Valley Ranger District, this area ranges in elevation from 2,700 – 6,930 feet. The area is dominated by isolated benches, small mesas, mountain peaks including Zimmerman Point, and canyons formed from the perennial and intermittent streams that run out of the Sierra Anchas. Consistent with the varying elevations of this area, is has combination of Interior Chaparral (5% of area), Juniper Grass (42%), Mojave-Sonoran Desert Scrub (11%), PJ Evergreen Shrub (2%), Semi-Desert Grassland (39%), and Riparian (1%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 71% Semi-Primitive Motorized, 29% Roaded Natural Scenic Integrity: 100% High 1985 Plan Management Area: 6J General Management Area Range Allotment: Dagger Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Suitable habitat for a variety of game and non-game wildlife species can be found in the area. Some species of special status include Mexican Spotted Owl (PAC and designated critical habitat), and occurrences of, common black hawk, lowland leopard frog, tonto basin agave, Yavapai hedgehog cactus, and suitable habitat for Sierra Ancha fleabane. The presence of exotic, invasive and/or non-native plants are found in infrequent small patch sizes in the area and include; thistle, red brome and Buffel grass near roads and disturbed area. Moderate severity wildfire occurred in a portion of this area. Undeveloped Quality: Prevalence of improvements is overall low throughout the area, it may be concentrated in some spots but is more typically dispersed through the area. Range permittees exist in the area. Range improvements include moderate density of earthen stock tank and 2 cement troughs. Fences are limited. Some areas of historic mining in the southern and western portions of area. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. There is a high amount of traffic heading to private property and inholdings, as well as Bull Canyon Trailhead. Solitude can be found away from roads, in cliffs and off trails. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. High quality hunting, hiking, and horseback riding are available. The risk is moderate through most of the area.

Factor	Description
	Other Features of Value: Species of special status include Mexican Spotted Owl (PAC and designated critical habitat), and occurrences of, common black hawk, lowland leopard frog, tonto basin agave, Yavapai hedgehog cactus, and suitable habitat for Sierra Ancha fleabane. There are known and recorded archeological sites within this polygon. Most of these sites are prehistoric in nature. Prehistoric site types include single and multi-room masonry structures, cliff dwellings, petroglyphs, pithouse villages, burials, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Management to preserve the area's wilderness characteristics are possible throughout most of the area. Motorized use is limited due to topography and management. Potential need to maintain range improvement on a 5-10 year cycle. The Sierra Ancha Experimental Forest is adjacent to the polygon. This area is within the 4FRI footprint. This area contains at least one Salt River Project (SRP) improvement and/or right of way. The area is adjacent to wilderness.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Prevalence of improvements is overall low throughout the area. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area. ● There are abundant opportunities for engaging in primitive and/or unconfined recreation. ● There are known archeological sites in the area.

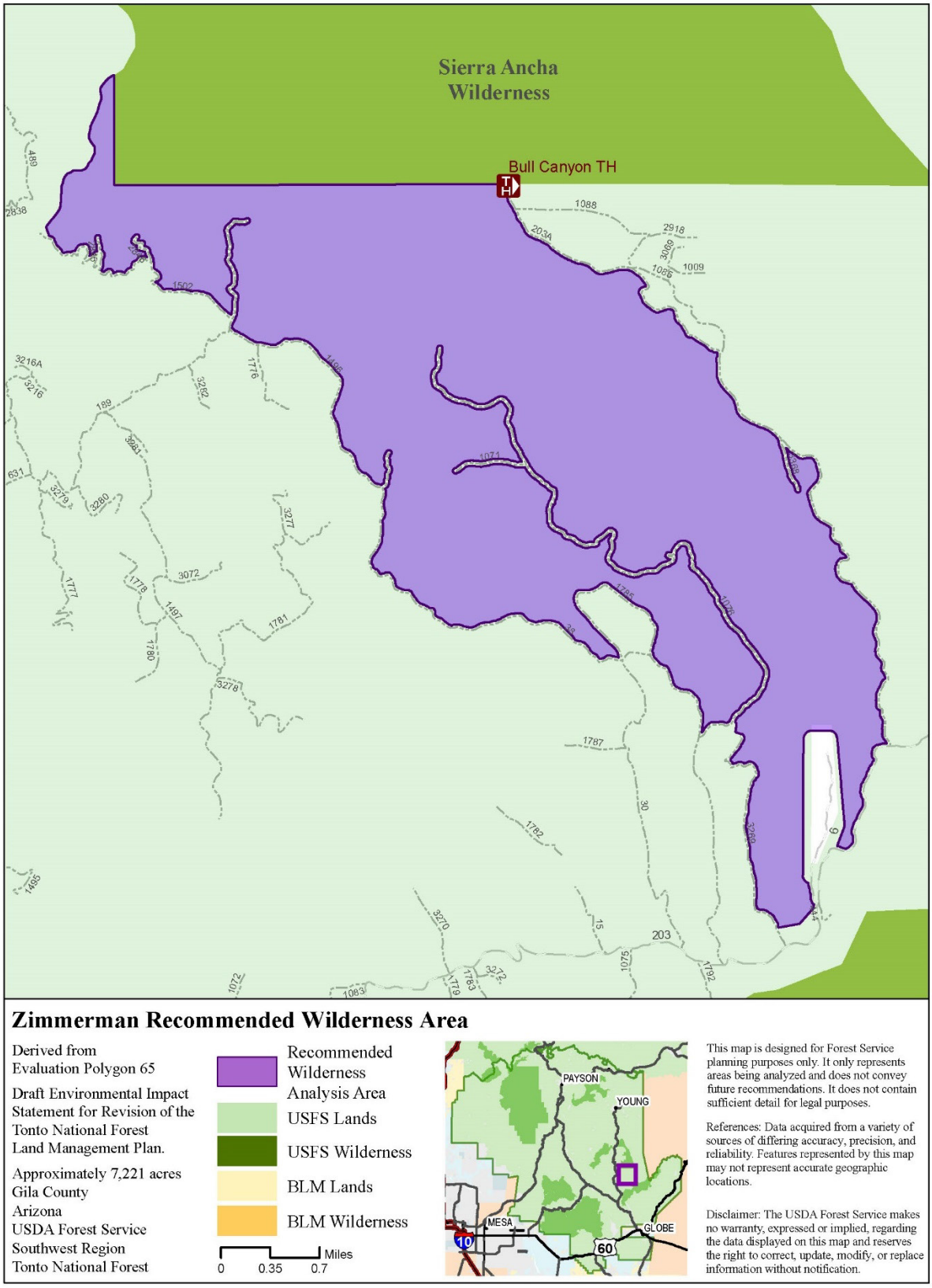


Figure 58. Zimmerman recommended wilderness area

Polygon 66 – Bull Canyon Recommended Wilderness Area

Factor	Description
Acres	7,712 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Sierra Ancha Wilderness boundary, and private land boundaries, making it fairly easy to locate on the map and on the ground, though it is oddly shaped in some areas due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located along the south side of the Sierra Ancha Wilderness in the Pleasant Valley Ranger District, this area ranges in elevation from 3,490 – 4,020 feet. The area is dominated by high rounded hills and ridges in modern basins, with prominent bluffs near the western boundary. This area has vegetation common to the Semi-Desert Grassland (53% of area), PJ Evergreen Shrub (32%), Mojave-Sonoran Desert Scrub (6%), Desert Willow (5%), and Riparian (4%) Ecological Response Units. Vegetation consist of evergreen oak in drainages, juniper grass and juniper brush, semi desert grassland and Sonoran/Mojave desert. Riparian communities consisting of cottonwood, sycamore, alder, and ash.
Current uses and management	Recreation Opportunity Spectrum: 4% Primitive, 42% Roaded Natural 15% Semi-Primitive Motorized, 39% Semi-Primitive Non-Motorized Scenic Integrity: 4% Very High, 96% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness, 5G General Management Area, 6J General Management Area Range Allotment: Dagger, Flying H Adjacent to the Sierra Ancha Wilderness 20% managed as Inventoried Roadless Area
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Very little treatment has occurred in this area. Suitable habitat for a variety of game and non-game wildlife species can be found in the area. Some species of special status include Mexican Spotted Owl (designated critical habitat) occurrence of Yavapai desert sucker, golden eagles, lowland leopard frog, Round tail chub, Metcalfe's Tick-trefoil, notable observation of Gila monster. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Some invasive species include, red brome (widespread in southern portions), Buffel grass along roads and in disturbed areas, small patches of thistle throughout, and tamarisk/saltpeter in the cherry creek drainage, mosquito fish, fathead minnow, flathead catfish, and green sunfish. Undeveloped Quality: Little evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. There is a low density of earthen stock tanks and fences in the southern portion of area (one storage tank and one trough in the southern portion of the polygon), roads are limited - motorized travel is confined to outer boundary and limited due to topography. Unauthorized motorized routes exist within dry washes and drainage at low density. Areas of historic mining activities exist, but no associated above ground structures.

Factor	Description
	Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. There is a high amount of traffic heading to private property and inholdings, as well as Bull Canyon Trailhead. Solitude can be found away from roads, in cliffs and off trails. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and/or unconfined recreation. There is good hunting in the area, moderate to low camping due to the heat and, low quality fishing. Great birding opportunities exist, with good hiking and horseback riding. There is a moderate to high risk due to temperatures and ruggedness, it is unconfined in terms of social restriction. Other Features of Value: Species of special status include Mexican Spotted Owl (designated critical habitat) occurrence of Yavapai desert sucker, golden eagles, lowland leopard frog, Round tail chub, Metcalfe's Tick-trefoil, notable observation of Gila monster. A total of 49 archaeological sites have been recorded to date within this polygon, all of which are prehistoric in nature. Prehistoric site types include single and multi-room masonry structures, pithouse villages, burials, fieldhouses, agricultural features and sherd and lithic scatters. Cherry Creek runs through this area and has high water quality, high quality riparian, and instream flow water right claim. Management to preserve the wilderness characteristics is easy throughout the area. Only 20% of the area is within the Sierra Ancha IRA (Inventoried Roadless Area). This area is also adjacent to Sierra Ancha Wilderness. There is a low amount of roads (authorized and unauthorized). Some mineral claims exist with the potential for future activities. There is a potential need for maintenance to range improvements. The area contains three private inholdings on the eastern boundary with WUI and therefore potential suppression activities. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Prevalence of improvements is overall low throughout the area. ● There are known occurrences and populations of species of special status. ● This area has important watershed features including Cherry Creek. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area. ● There are some high quality opportunities for engaging in primitive and/or unconfined recreation. ● There are 49 known archeological sites in the area.

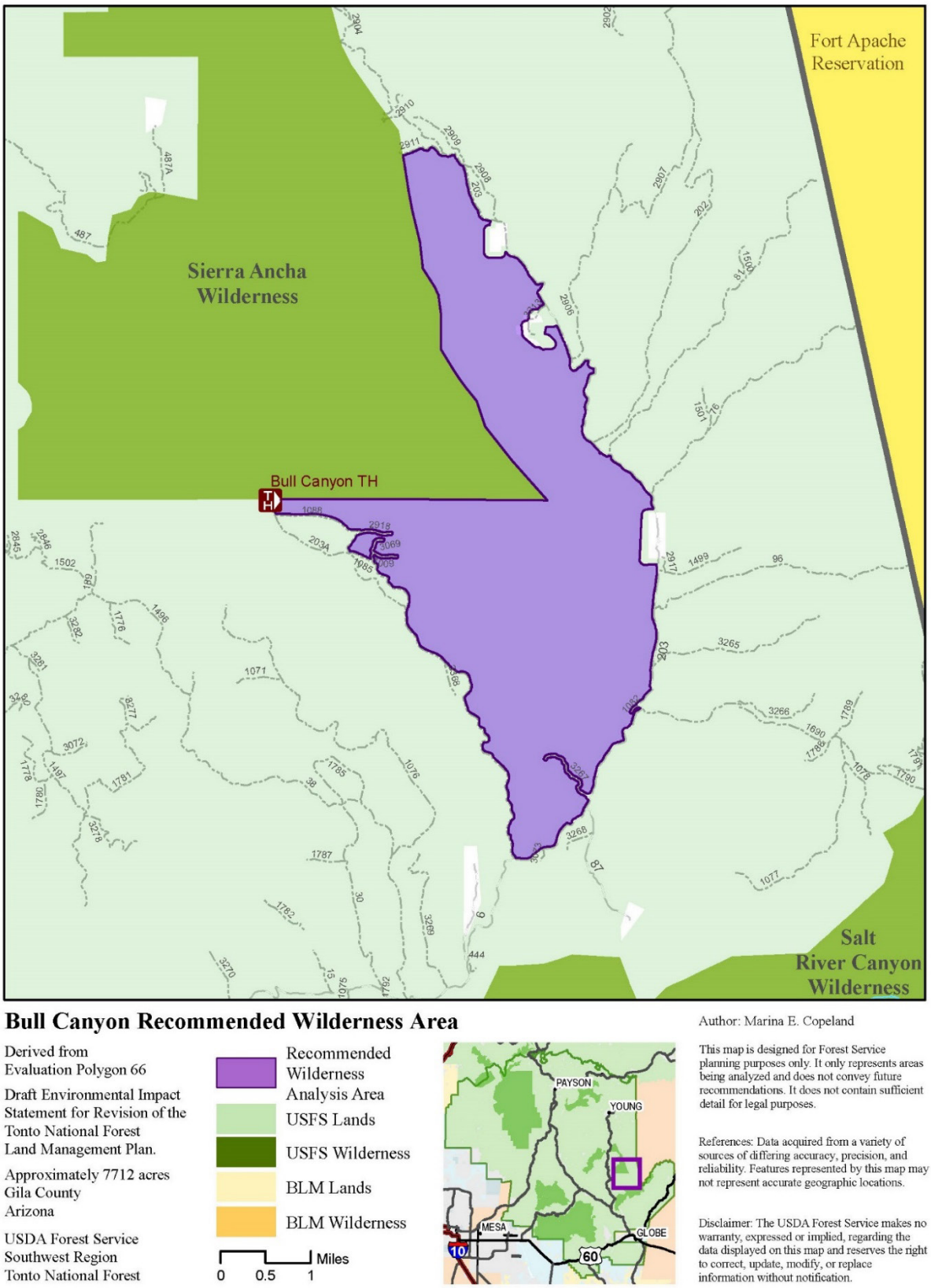


Figure 59. Bull Canyon recommended wilderness area

Polygon 67– Sierra Ancha Wilderness Contiguous Recommended Wilderness Area A

Factor	Description
Acres	50 acres
Summarized description of the recommended boundary	The boundary follows National Forest System Roads, primarily the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County on the Pleasant Valley Ranger District, approximately 76 air miles from Downtown Phoenix. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This deeply dissected mountainous segment consists of the rugged Sierra Ancha Mountains with high plateaus and Steep Canyons. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,500 to 4,000 feet. Box canyons run eastward into Cherry Creek. This area is in the PJ Evergreen Shrub Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 9% Primitive, 91% Roaded Natural Scenic Integrity: 9% Very High, 91% High 1985 Plan Management Areas: 5A Sierra Ancha Wilderness and 5G General Management Area Range Allotments: Center Mountain and Flying H Approximately 80% of the area is in an Inventoried Roadless Area. Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Juniper grassland is the dominant plant community. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted.

Factor	Description
	Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. When managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

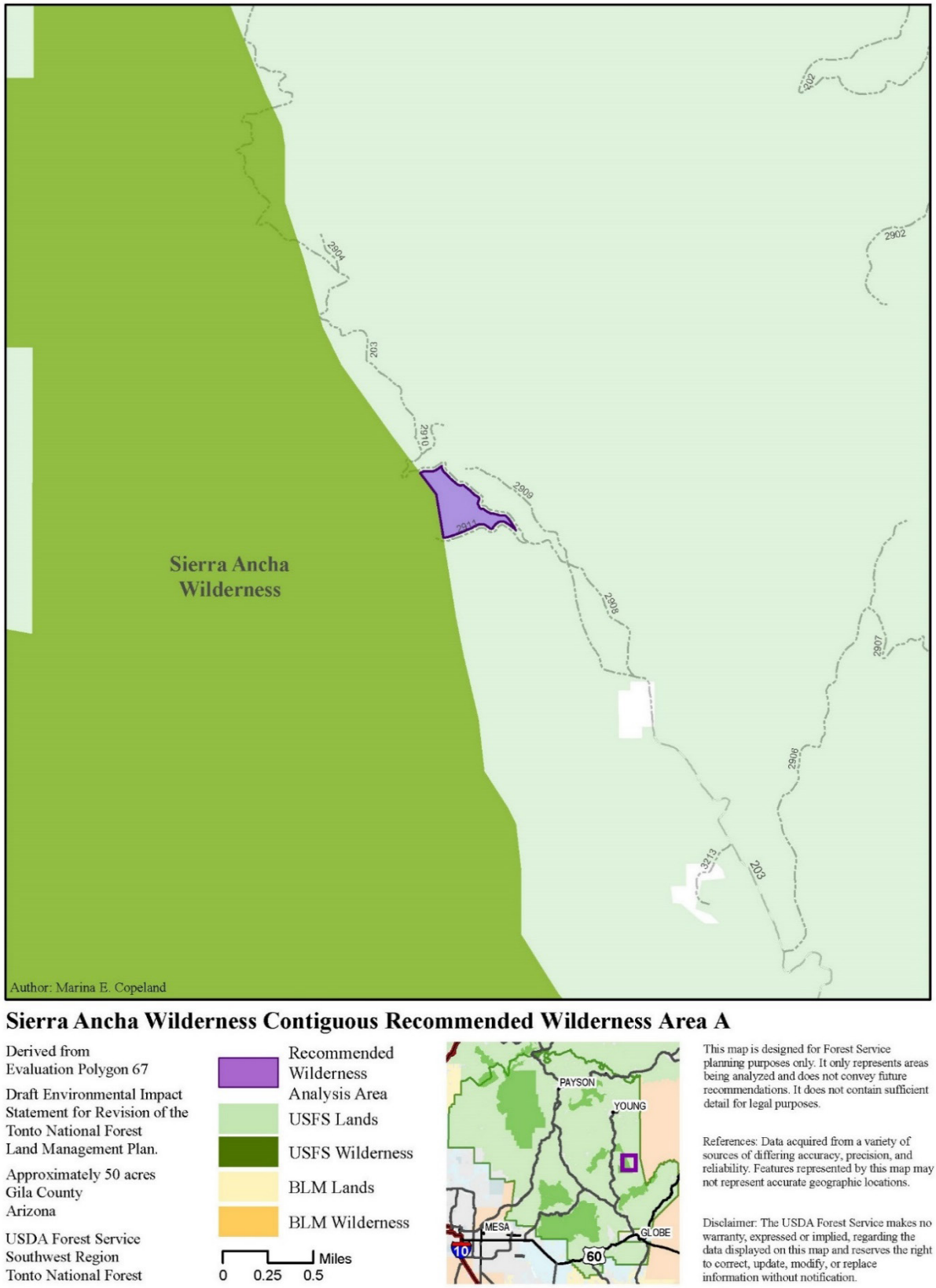


Figure 60. Sierra Ancha Wilderness contiguous recommended wilderness area A

Polygon 69– Sierra Ancha Wilderness Contiguous Recommended Wilderness Area B

Factor	Description
Acres	67 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This deeply dissected mountainous segment consists of the rugged Sierra Ancha Mountains with high plateaus and Steep Canyons. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,500 – 4,000 feet. Precipitous box canyons run eastward into Cherry Creek. This area is primarily in the PJ Evergreen Shrub Ecological Response Unit (93% of area) with a small section of Semi-Desert Grassland (7%).
Current uses and management	Recreation Opportunity Spectrum: 19% Primitive, 81% Roaded Natural Scenic Integrity: 19% Very High, 81% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness and 5G General Management Area Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: When considered with the adjacent wilderness, there are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape

Factor	Description
	features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. When managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

Sierra Ancha Wilderness Contiguous Recommended Wilderness Area B

Derived from
Evaluation Polygon 69

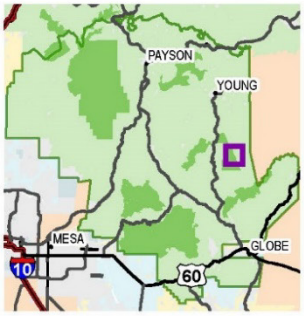
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 67 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles



This map is designed for Forest Service planning purposes only. It only represents areas being analyzed and does not convey future recommendations. It does not contain sufficient detail for legal purposes.

References: Data acquired from a variety of sources of differing accuracy, precision, and reliability. Features represented by this map may not represent accurate geographic locations.

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Figure 61. Sierra Ancha Wilderness contiguous recommended wilderness area B

Polygon 70a – Picacho Recommended Wilderness Area

Factor	Description
Acres	15,899 acres
Summarized description of the recommended boundary	This oddly shaped area follows the National Forest System roads, private property boundaries, Ash Creek, and the Tonto National Forest boundary with the Fort Apache Indian Reservation. Adjacent land is managed by the Forest Service and the Fort Apache Tribe.
Brief description of the general geography, topography, and vegetation	Located in Gila County on the Globe Ranger District next to the Fort Apache Indian Reservation, the northern boundary of this area is marked by a portion of the Salt River Canyon, with drainages that flow north to empty into the Salt River. The terrain is rugged and rocky, with elevations ranging from 2,865 – 5,890 feet. This area has vegetation common to the Juniper Grass (51% of area), Mojave-Sonoran Desert Scrub (3%), PJ Evergreen Shrub (30%), PJ Grass (6%), PJ Woodland (3%), Semi-Desert Grassland (6%) and Riparian (1%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 16% Roaded Natural, 65% Semi-Primitive Motorized, 19% Semi-Primitive Non-Motorized Scenic Integrity: 81% High, 13% Moderate, 6% Low. 1985 Plan Management Area: 2C Upper Salt River, 2F General Management Area Range Allotment: Chrysotile, Haystack Butte 30% of the area is managed as the Picacho Peak Inventoried Roadless Area
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Less than 5% of the area has undergone mechanical juniper treatments. Restoration treatments in the area have minimal physical impacts and have the potential to restore a more natural appearance in a short time. No known invasive species, except tamarisk along the river dominates the riparian area. Species of special status include southwest willow flycatcher occupied habitat, common black hawk, bald eagle, golden eagle, narrow headed garter snake occupied and critical habitat. Ash creek has desert sucker, Sonora sucker, longfin dace, Gila chub, lowland leopard frog, razor back sucker critical habitat. A variety of game and non-game species including Mearns quail, turkey, elk, white tailed deer, and bear occur in the area. Ash creek is a wildlife corridor. Some non-native fish are present including crayfish. Small fire occurred in 1980, but did not affect the apparent naturalness of the area. Undeveloped Quality: Prevalence of improvements is overall low throughout the area, and may be concentrated in some spots but is more typically dispersed through the area. It is common to find spots where improvements are absent or unseen. Moderate density of range improvements include earthen stock tanks (looks like ponds), minimal pipelines, 2 corrals, fences, troughs, and storage tanks. Evidence of past mining includes old asbestos and salt mines. Minimal user created routes. No system trails. Solitude: Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. Encounters with, or evidence of, humans is rare. Minimal use along roads, topography and vegetation support a feeling

Factor	Description
	of solitude. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation including High quality white water rafting, fishing, hunting, rock climbing, hiking, and birding. These opportunities are of high quality and/or risk. Other Features of Value: Species of special status include southwest willow flycatcher occupied habitat, Salt River Salt daisy, common black hawk, bald eagle, golden eagle, narrow headed garter snake occupied and critical habitat. Ash creek has desert sucker, Sonora sucker, longfin dace, Gila chub, lowland leopard frog, razor back sucker critical habitat. There are outstanding landscape features including Seneca falls, Seneca Lake, salt banks, Upper Salt River is an eligible Wild and Scenic River with scenic, geologic, cultural, and recreation outstandingly remarkable values. There is a total of 23 archaeological sites have been recorded to date within this polygon. Eighteen of these sites are prehistoric in nature, three date from the historic period, and two are multi-component. Prehistoric site types include multi-room masonry structures, petroglyphs, hilltop forts, pithouse villages, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Historic site types include mines, recreation facilities, habitations, and burials. Ash creek and the Salt River are both high quality water resources that are important for the watershed. Management to preserve the area's wilderness characteristics are possible throughout most of the area. There are some projects or management plans that would impact the wilderness characteristics of the area. Approximately 30% of the area is in the Picacho Peak Inventoried Roadless Area (IRA). There are some cherry stem roads and two inholdings that are old mines, one has been reclaimed. There are unpatented mining claims in the area. Maintenance of range improvements with motorized access would continue to be necessary. Four outfitter and guide permits are issued for the river as well as private river permits in the spring for the Salt River. Fort Apache Indian Reservation (White Mountain tribal land) borders the area. Small private area adjacent in the south. The area along the river and in the IRA would be easier to manage for wilderness characteristics than outside the IRA.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Prevalence of improvements is overall low throughout the area. ● There are known occurrences and populations of species of special status. ● This area has important watershed features including Ash Creek and the Salt River, which is an eligible Wild and Scenic River. The social characteristics that provide the basis for suitability are as follows:

Factor	Description
	● Opportunities to feel alone are possible in much of the area. ● There are abundant opportunities for engaging in primitive and/or unconfined recreation. ● There are 23 known archeological sites in the area. ● There are outstanding landscape features, which enhance the scenic value of the area.

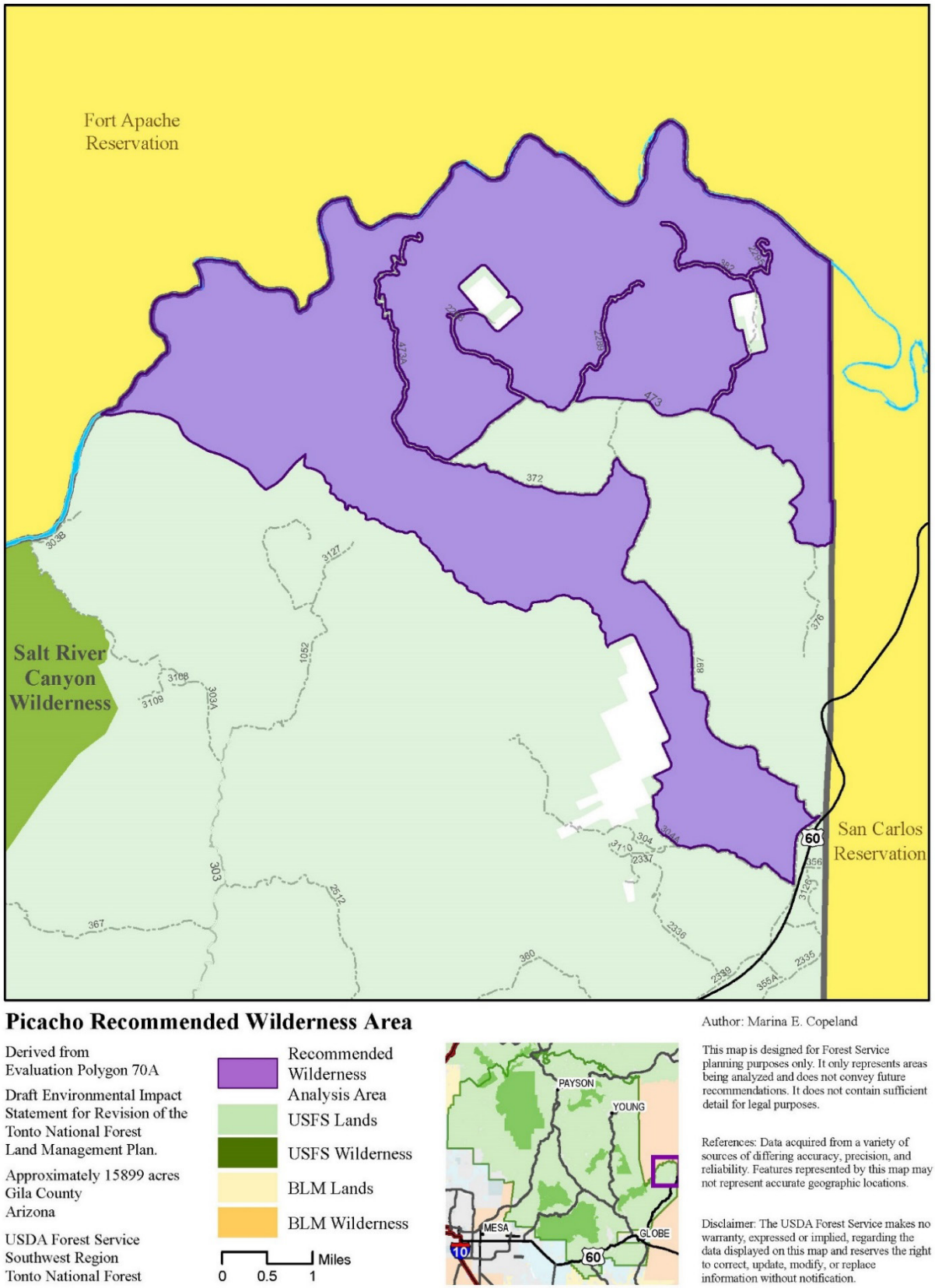


Figure 62. Picacho recommended wilderness area

Polygon 71 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area C

Factor	Description
Acres	20 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,700 – 4,000 feet. Precipitous box canyons run eastward into Cherry Creek. This area has vegetation typically found in the PJ Evergreen Shrub (72% of the area) and Semi-Desert Grassland (28%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 2% Primitive, 98% Roaded Natural Scenic Integrity: 100% High 1985 Plan Management Area: 5G General Management Area Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the

Factor	Description
	wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

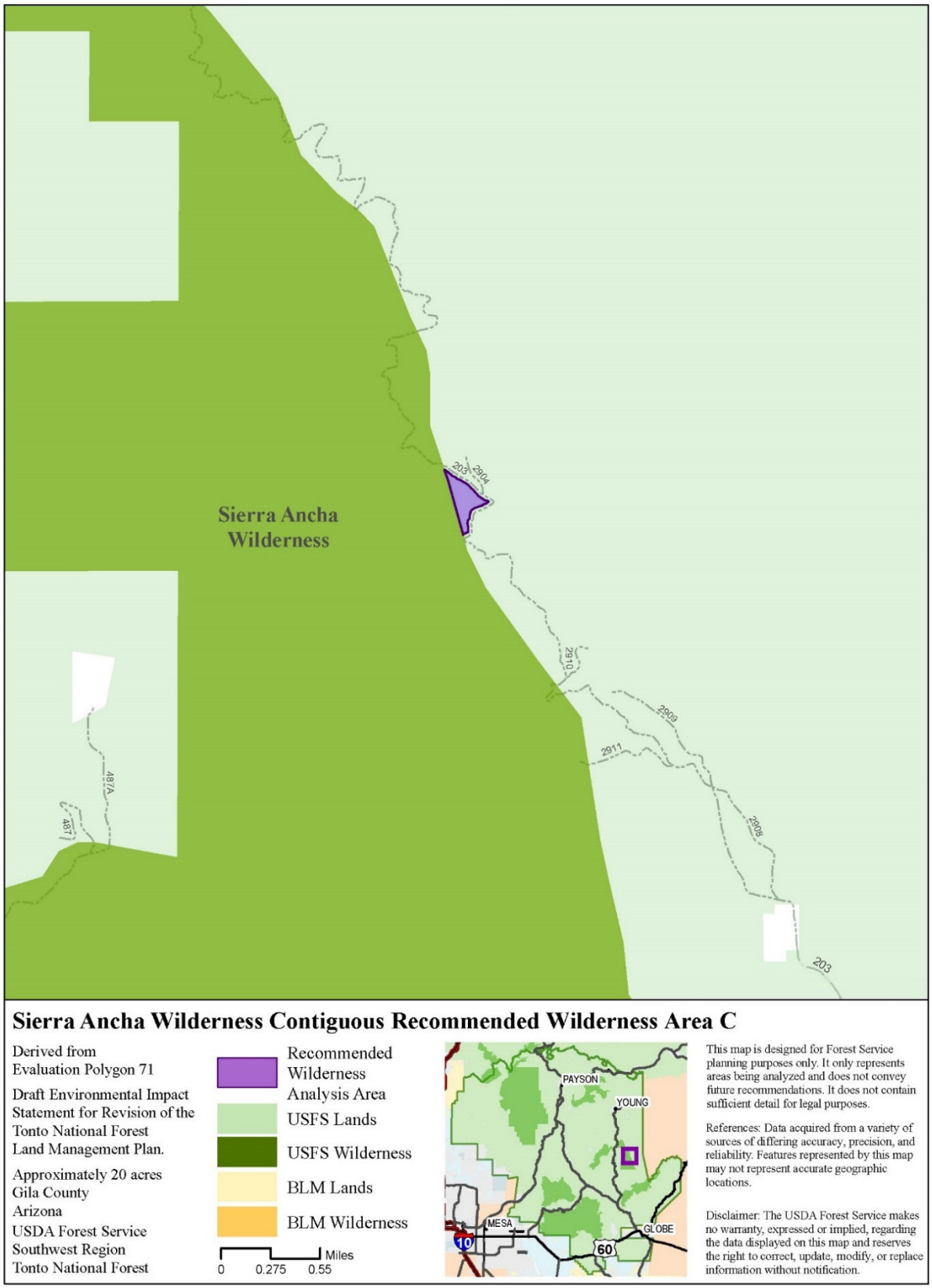
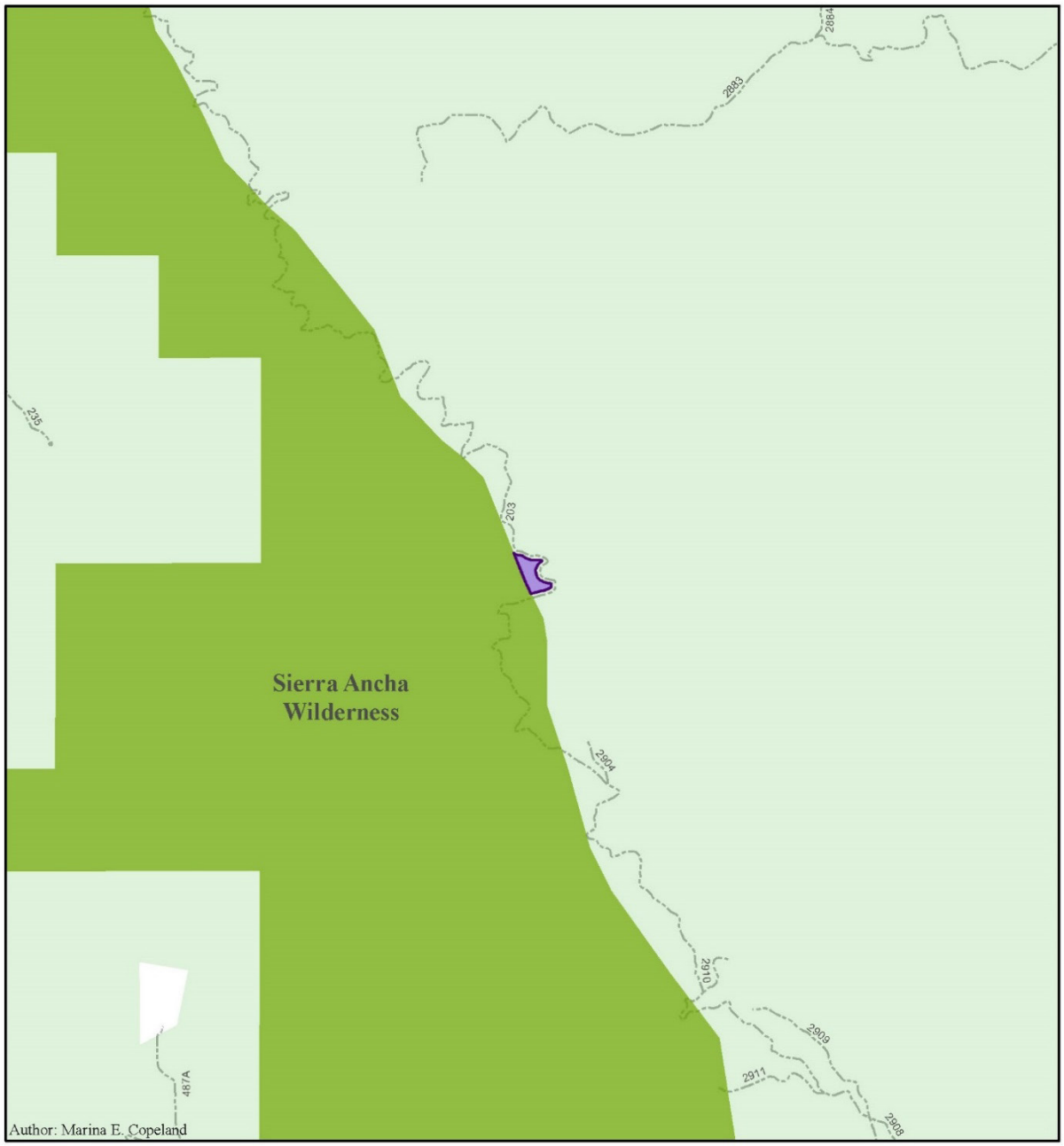


Figure 63. Sierra Ancha Wilderness contiguous recommended wilderness area C

Polygon 72 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area D

Factor	Description
Acres	10 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,950 – 4,180 feet. Precipitous box canyons run eastward through this area into Cherry Creek. This area has vegetation typically found in the PJ Evergreen Shrub Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 43% Primitive, 57% Roaded Natural Scenic Integrity: 40% Very High, 60% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness and 5G General Management Area Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout

Factor	Description
	the area. There are no projects or management plans that would impact the wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area D

Derived from
Evaluation Polygon 72

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 10 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

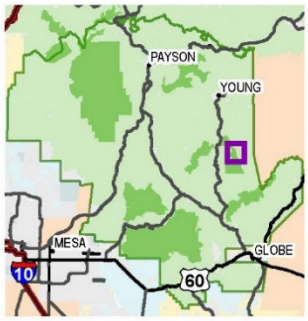


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Figure 64. Sierra Ancha Wilderness contiguous recommended wilderness area D

Polygon 73 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area E

Factor	Description
Acres	18 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 3,930 – 4,170 feet. Precipitous box canyons run eastward into Cherry Creek. This area has vegetation typically found in the PJ Evergreen Shrub Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 100% Primitive Scenic Integrity: 100% Very High 1985 Plan Management Area: 5A Sierra Ancha Wilderness Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the

Factor	Description
	wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

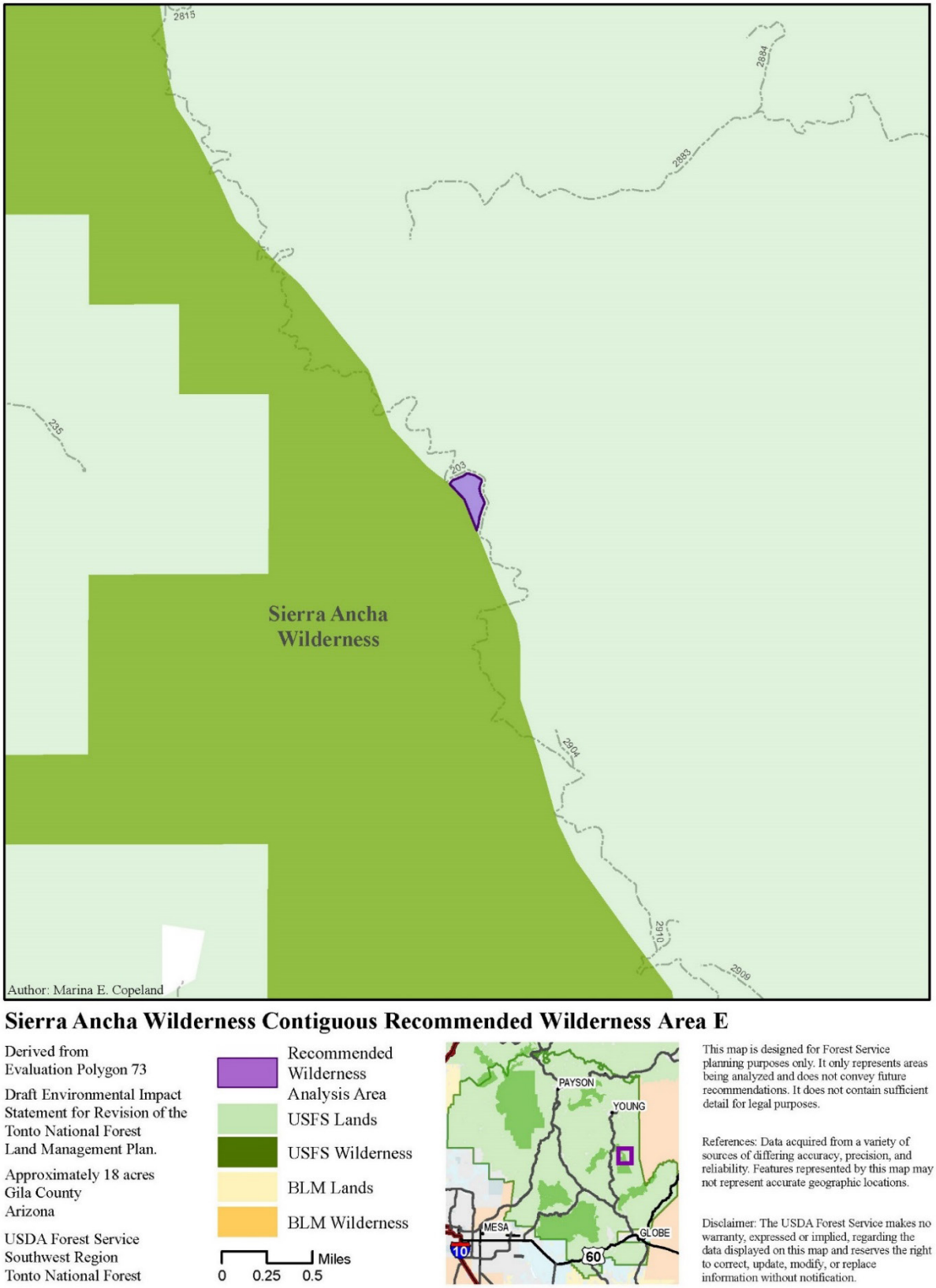
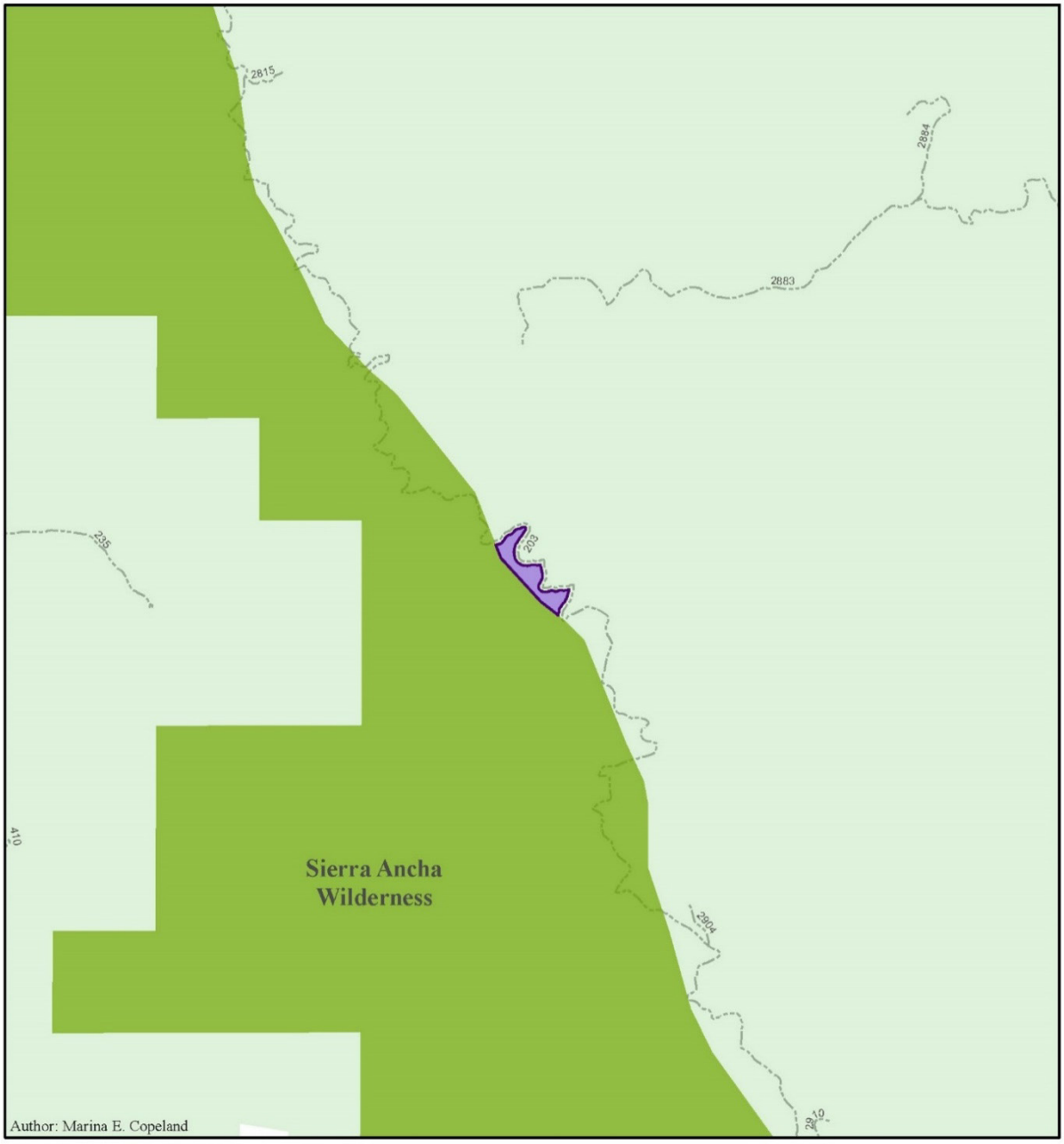


Figure 65. Sierra Ancha Wilderness contiguous recommended wilderness area E

Polygon 74 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area F

Factor	Description
Acres	24 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 4,035 – 4,295 feet. Precipitous box canyons run eastward into Cherry Creek. This area has vegetation typically found in the Madrean Encinal Woodland Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 100% Primitive Scenic Integrity: 90% Very High, 10% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the

Factor	Description
	wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area F

Derived from
Evaluation Polygon 74

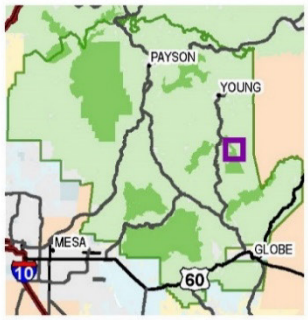
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 24 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles



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References: Data acquired from a variety of sources of differing accuracy, precision, and reliability. Features represented by this map may not represent accurate geographic locations.

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Figure 66. Sierra Ancha Wilderness contiguous recommended wilderness area F

Polygon 76 – Boulder Recommended Wilderness Area

Factor	Description
Acres	72,508 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, Bureau of Reclamation first form withdrawal lands, and the Four Peaks Wilderness Boundary, making it fairly easy to locate on the map. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located in Maricopa and Gila counties on the Tonto Basin Ranger District, this area is a rugged section of the Basin and Range province of the Upper Sonoran Desert. Topographically, this area is dominated by the crest of the Mazatzal mountains, which run northwest to southeast within this area. Elevations range in this area from 2,105 – 6,295 feet. The two highest peaks in this area are Pine Mountain and Boulder Mountain. The massive, steep altitudinal gradient is carved up with canyons, washes, and creeks; rocky slopes, rolling hills, and craggy peaks fill the voids between. This expansive area has a mix of vegetation communities including the Interior Chaparral (50% of area), Mojave-Sonoran Desert Scrub (29%), Semi-Desert Grassland (14%), Ponderosa Pine – Evergreen Oak (2%), Sonora-Mojave Mixed Salt Desert Scrub (2%), Riparian (1%), Juniper Grass (1%), PJ Evergreen Shrub (1%), and Madrean Encinal Woodland (0.5%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 9% Roaded Natural, 2% Rural, 37% Semi-Primitive Motorized, 52% Semi-Primitive Non-Motorized Scenic Integrity: 96% High, 4% Moderate 1985 Plan Management Area: 3I General Management Area, 6J General Management Area Range Allotment: 7/K, Diamond, Sunflower, Tonto Basin 75% of this area is managed as the Boulder Inventoried Roadless Area Adjacent to the Four Peaks Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. 95% of this polygon was impacted by high severity wildfire. There have been no known vegetation treatments in the area. Species and habitat of special status include Mexican Spotted Owl Protected Activity Centers and critical habitat, Bezy's Night lizard, Lowland Leopard Frog, Gila monsters, Gila Top Minnow, Desert Sucker, Golden Eagle, 9 Species of Bat (including Western Red Bat), Tonto Basin and Hohokam Agave, and Sonoran Desert Tortoise. The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequent small patch sizes in the area, though there is a large area of invasive Yellow Star Thistle, some Oleander, and sweet resin bush that covers approximately 10 acres. There are also infrequent patches of red brome and nonnative mustard. Undeveloped Quality: Prevalence of improvements is overall low throughout the area and may be concentrated in some spots but is more typically dispersed through the area. It is common to find spots where improvements are absent or unseen. There are 7 non-motorized system trails, areas of historic mining activity, a moderate density of authorized system routes, a moderate density of range improvements including the Ash Creek well that has a building with a pump system, 3 spring developments with above ground poly pipe, 6 troughs and additional stock and storage tanks .

Factor	Description
	Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Opportunities improve when away from the Arizona Trail, and two major highways that are adjacent to the polygon. The rugged nature of the topography allows visitors to find opportunities for solitude. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. The area provides high quality hiking, hunting traditional rock climbing, bouldering, backpacking and horseback riding. Camping is common. Other Features of Value: Species and habitat of special status include Mexican Spotted Owl Protected Activity Centers and critical habitat, Bezy's Night lizard, Lowland Leopard Frog, Gila monsters, Gila Top Minnow, Desert Sucker, Golden Eagle, 9 Species of Bat (including Western Red Bat), Tonto Basin and Hohokam Agave, and Sonoran Desert Tortoise. A total of 98 archaeological sites have been recorded to date within this polygon. Seventy-nine of these sites are prehistoric in nature, nine date from the historic period, seven have evidence of occupations from both time periods, and three are of unknown cultural or temporal affiliation. Prehistoric site types include multi-room masonry structures, platform mounds, hilltop forts, petroglyphs, pithouse villages, burials, fieldhouses, hornos, middens, agricultural features and sherd and lithic scatters. Historic site types include mines, transportation corridors, CCC erosional control features, and cairns Management to preserve the area's wilderness characteristics is possible throughout most of the area. Private land and two major Arizona highways bound the area and there is heavy cherry stemming around the perimeter of the polygon. There is a moderate degree of motorized encroachment coming from the private edge, mineral materials activities, and access required for range Improvements. 75% of the polygon is part of an inventoried Roadless area.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Prevalence of improvements is overall low throughout the area and may be concentrated in some spots but is more typically dispersed through the area. ● There are known populations and occurrences of species of special status. The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

Factor	Description
	● There are 98 known archeological sites in this area.

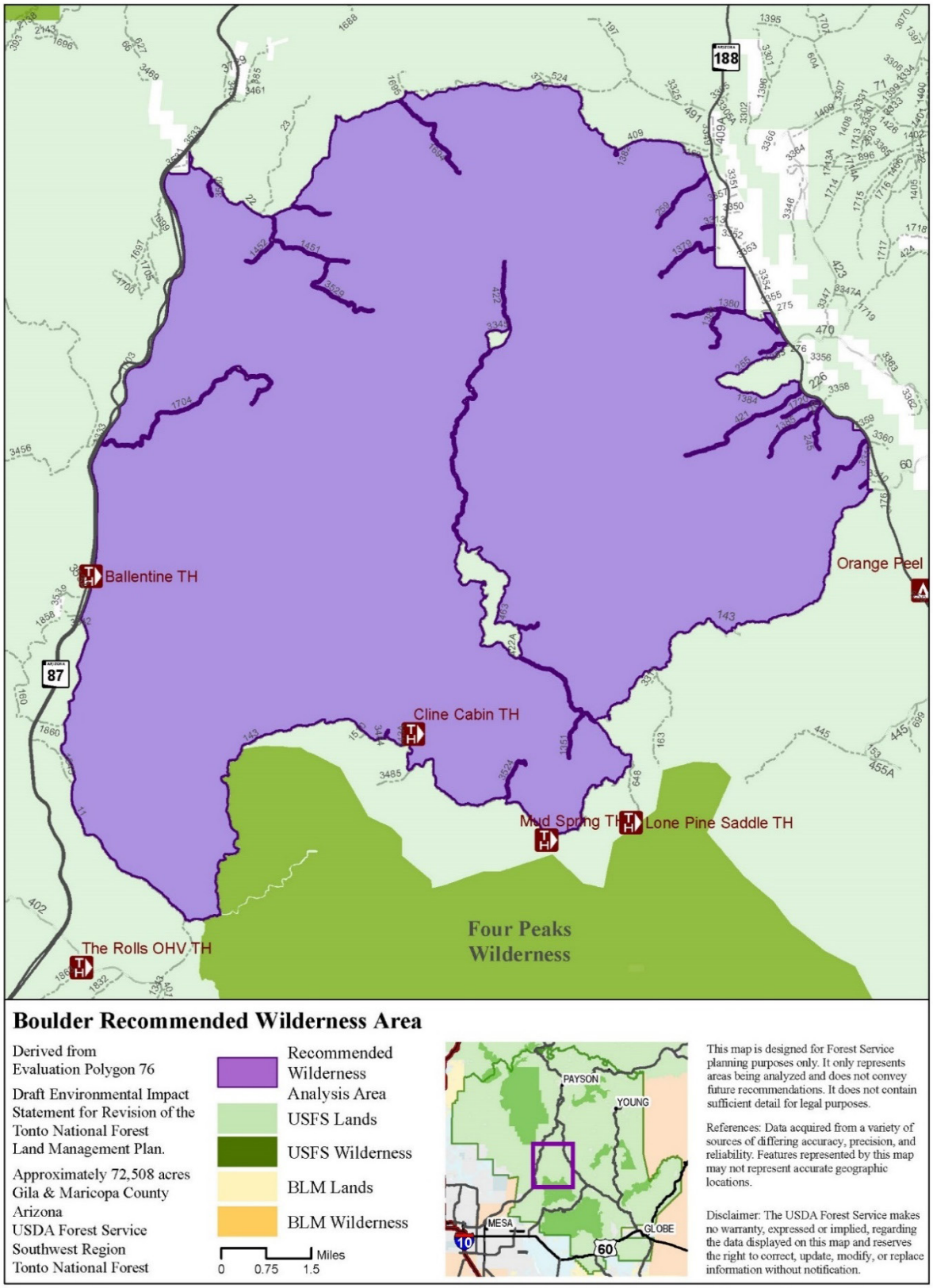
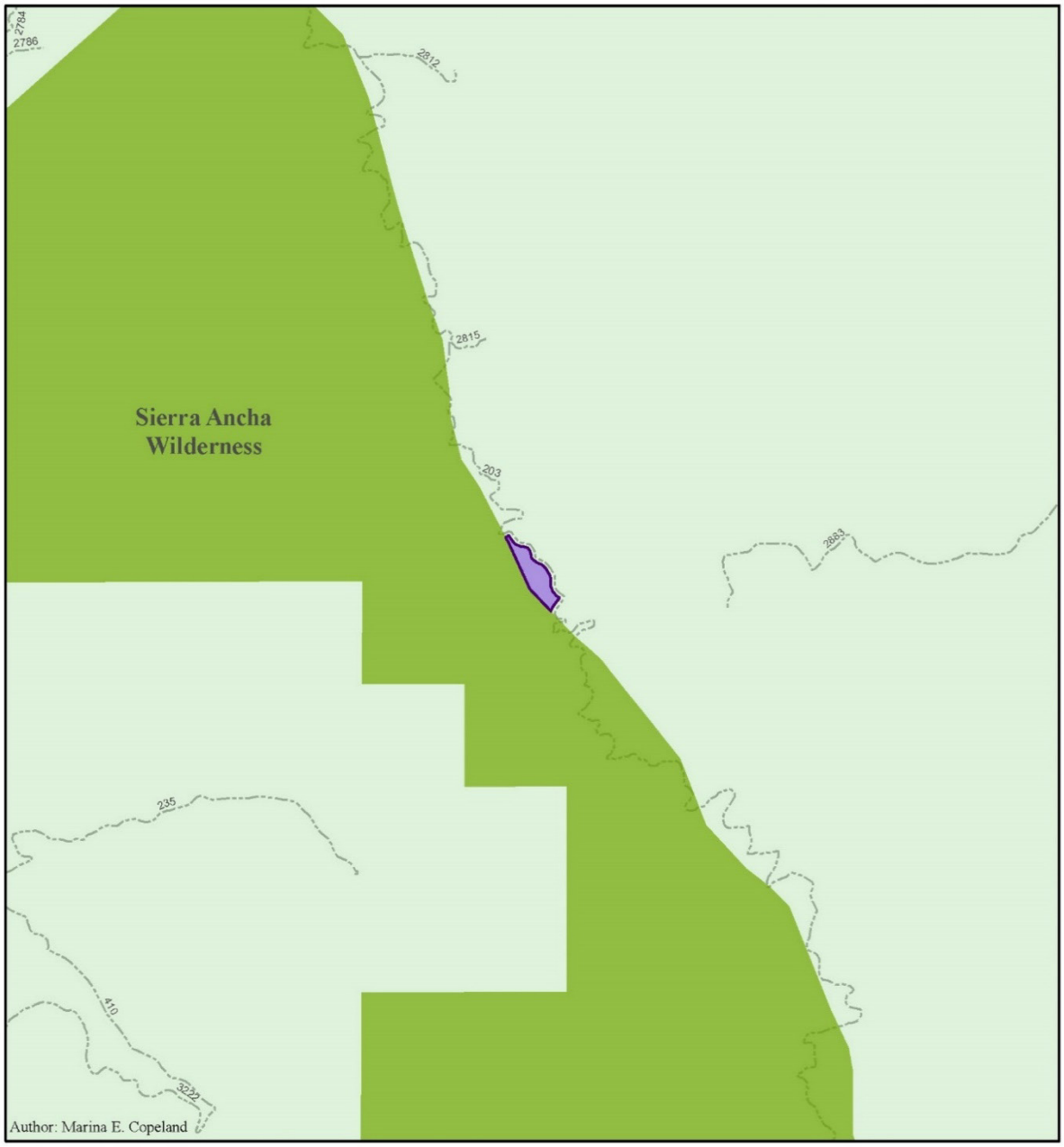


Figure 67. Boulder recommended wilderness area

Polygon 77 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area G

Factor	Description
Acres	20 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 4,085 – 4,375 feet. Precipitous box canyons run eastward into Cherry Creek. This area has vegetation typically found in the Madrean Encinal Woodland Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 100% Primitive Scenic Integrity: 98% Very High, 2% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the

Factor	Description
	wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area G

Derived from
Evaluation Polygon 77

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 20 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

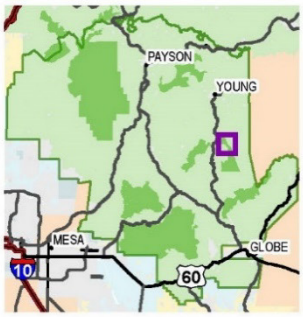


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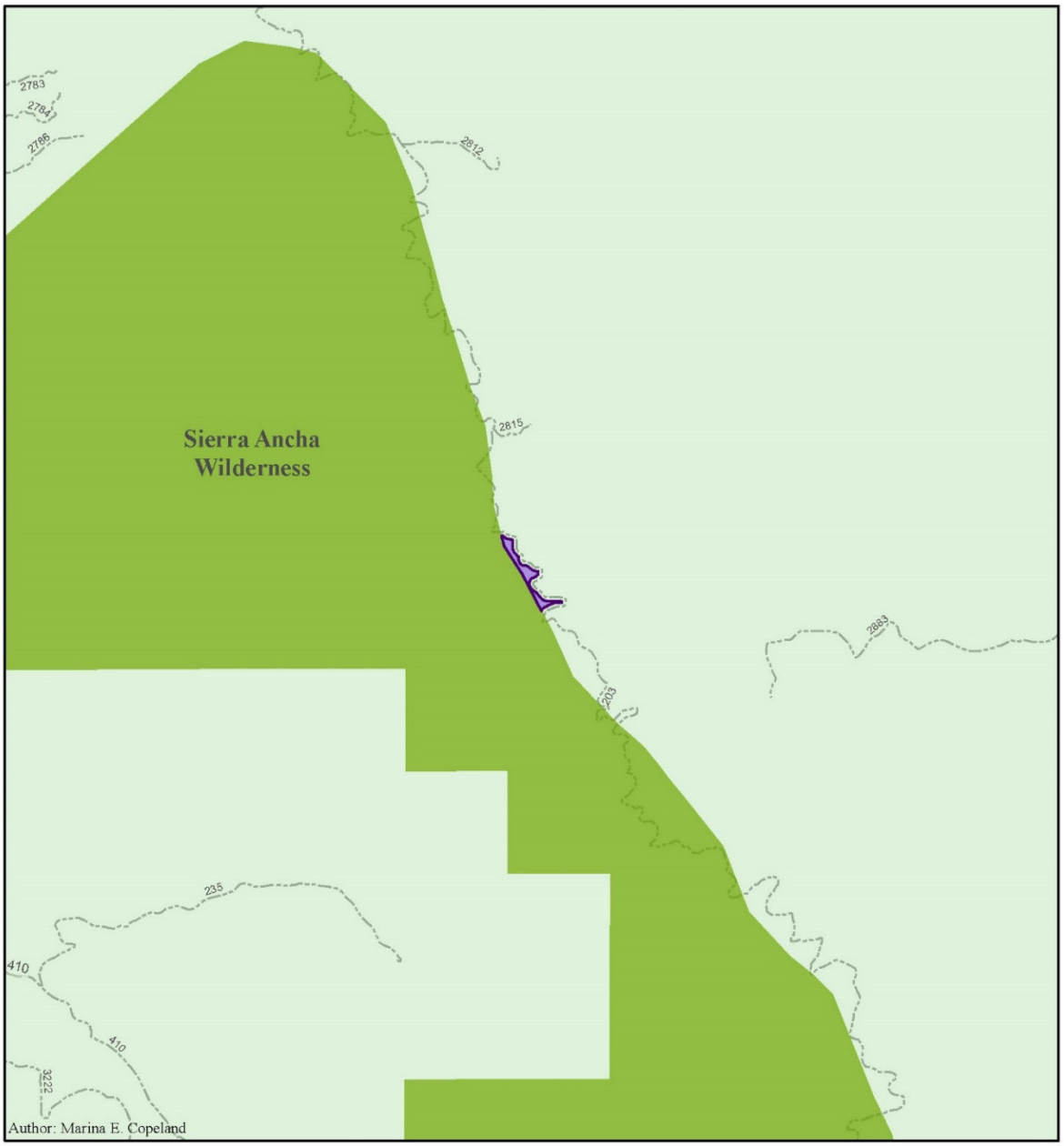
Figure 68. Sierra Ancha Wilderness contiguous recommended wilderness area G

Polygon 78 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area H

Factor	Description
Acres	8 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. It occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is characterized by high cliffs and abrupt changes in elevation, which ranges from 4,220 – 4,455 feet. Precipitous box canyons run eastward into Cherry Creek. This area has vegetation typically found in the Madrean Encinal Woodland Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 100% Primitive Scenic Integrity: 78% Very High, 22% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness Range Allotment: Center Mountain Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the

Factor	Description
	wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area H

Derived from Evaluation Polygon 78

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 8 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

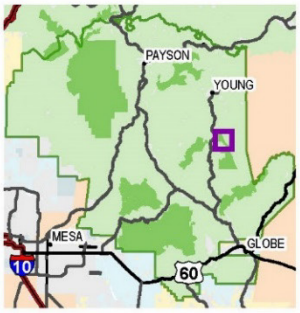


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Figure 69. Sierra Ancha Wilderness contiguous recommended wilderness area H

Polygon 79 – Blue Peak Recommended Wilderness Area

Factor	Description
Acres	23,283 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Salome Wilderness boundary, and an intermittent stream until it reaches the current IRA boundary. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located on the Tonto Basin Ranger District, approximately 60 air miles from downtown Phoenix and 27 air miles from Payson, in Gila County. This mountainous area has multiple peaks and valleys, with elevations ranging from 2,200 – 5,940 feet. The topography is extremely rugged with steep slopes, outcropping of bedrock, and precipitous bluffs. This vegetation in this area includes plan species common to the Mojave-Sonoran Desert Scrub (52% of area), Juniper Grass (29%), Semi-Desert Grassland (6%), Interior Chaparral (4%), Sonora-Mojave Mixed Salt Desert Scrub (4%), PJ Evergreen Shrub (2%), PJ Grass (1%), and Riparian (2%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 13% Roaded Natural, 1% Rural, 42% Semi-Primitive Motorized, 45% Semi-Primitive Non-Motorized Scenic Integrity: 95% High, 5% Moderate 1985 Plan Management Area: 6F Roosevelt and Apache Lakes Recreation Area, 6H Salome Wilderness, 6J General Management Area Range Allotment: Boneyback, Dutchwoman, Greenback, Tonto Basin 15% of this area is managed as the Salome Contiguous Inventoried Roadless Area Adjacent to the Salome Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There have been no known vegetation treatments. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area, but includes some red brome in the Sonoran Desert area near the private estates. Suitable habitat for a variety of game and non-game species occurs in the area. Species of special status include Tonto basin agave (SCC), Spike dace critical habitat (in Greenback creek), and lowland leopard frog. Two wildfires have affected approximately 5% of the area, but do not detract from apparent naturalness. Undeveloped Quality: Prevalence of improvements is overall low throughout the area, and may be concentrated in some spots but is more typically dispersed through the area. It is common to find spots where improvements are absent or unseen. Range improvements include a water system consisting of steel pipe, black pipe, earthen tanks, 3 locations of storage tanks, two locations with solar panels, 6 livestock troughs, two other water pipeline systems with two troughs off of each with one storage tank off of each smaller ones. There is moderate presence of motorized routes with greater concentration around the private inholdings and system roads. There is a powerline and right-of-way for the Salt River Project (SRP). There is one system trail (Methodist Trail) and some evidence of historic mining. Solitude: There is little opportunity of feeling alone, and signs of civilization are common. It is difficult to get away from signs of civilization due to roads and private land throughout the majority of the area, though solitude is

Factor	Description
	possible when away from improvements (roads and powerlines) and private property. Visitors can see the private property high points throughout the polygon. Opportunities improve closer to the Salome Wilderness. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation. Most existing opportunities are poor quality. Hunting, hiking, and dispersed camping can all occur in the area. The terrain is steep and rugged providing a moderate level of challenge and risk. Other Features of Value: Species of special status include Tonto basin agave (SCC), Spike dace critical habitat (in Greenback creek), and lowland leopard frog. A total of 57 archaeological sites have been recorded to date within this polygon. Fifty-one of these sites are prehistoric in nature, four have evidence of occupations from both the prehistoric and historic time period, and one is of unknown cultural/temporal affiliation. Prehistoric site types include single and multi-room masonry structures, petroglyphs, pithouse villages, burials, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Historic site types include possible CCC erosional control features and Apache occupations. Management to preserve the area's wilderness characteristics are possible throughout most of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are scattered. Some management considerations include activities and uses associated with an ANILCA Private inholding in the north (Greenback estates), presence of very long cherry stem road in several locations, access and maintenance associated with range management, Salt River Projects right of way access, and mineral development. Additionally, there is a Moderate concentration of motorized routes and motorized use occurring off the private property. Topography inhibits/limits development of additional motorized routes off of road, the area is adjacent to Salome Wilderness along the eastern edge and 15% of the area is in an inventoried Roadless area.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate ranking for its wilderness characteristics, but significant public comment in the evaluation step warranted further analysis.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● There are known populations and occurrences of species of special status. The social characteristics that provide the basis for suitability are as follows: ● There are opportunities for primitive and unconfined recreation when used in conjunction with the Salome Wilderness. ● There are 57 known archeological sites in this area.

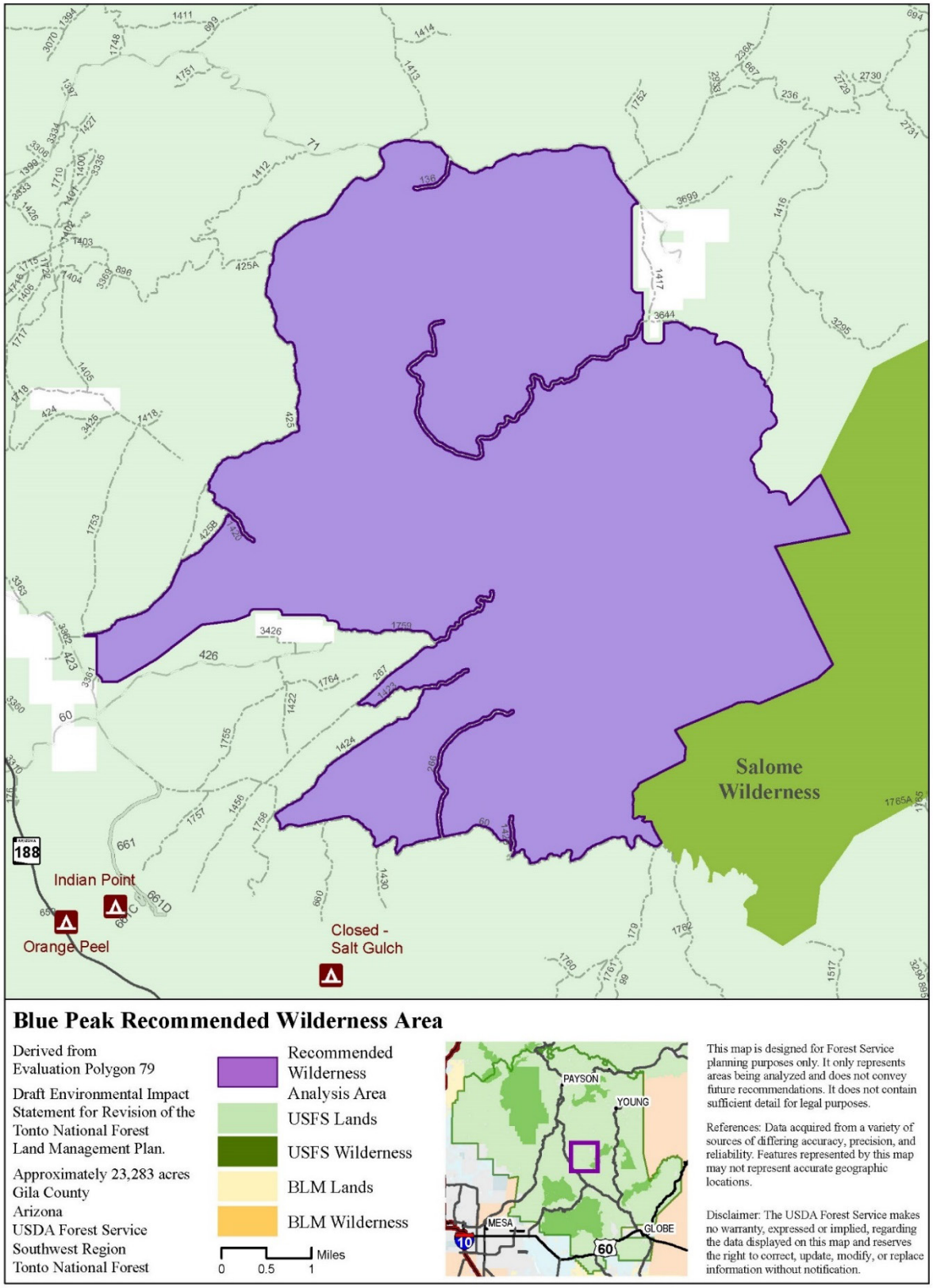
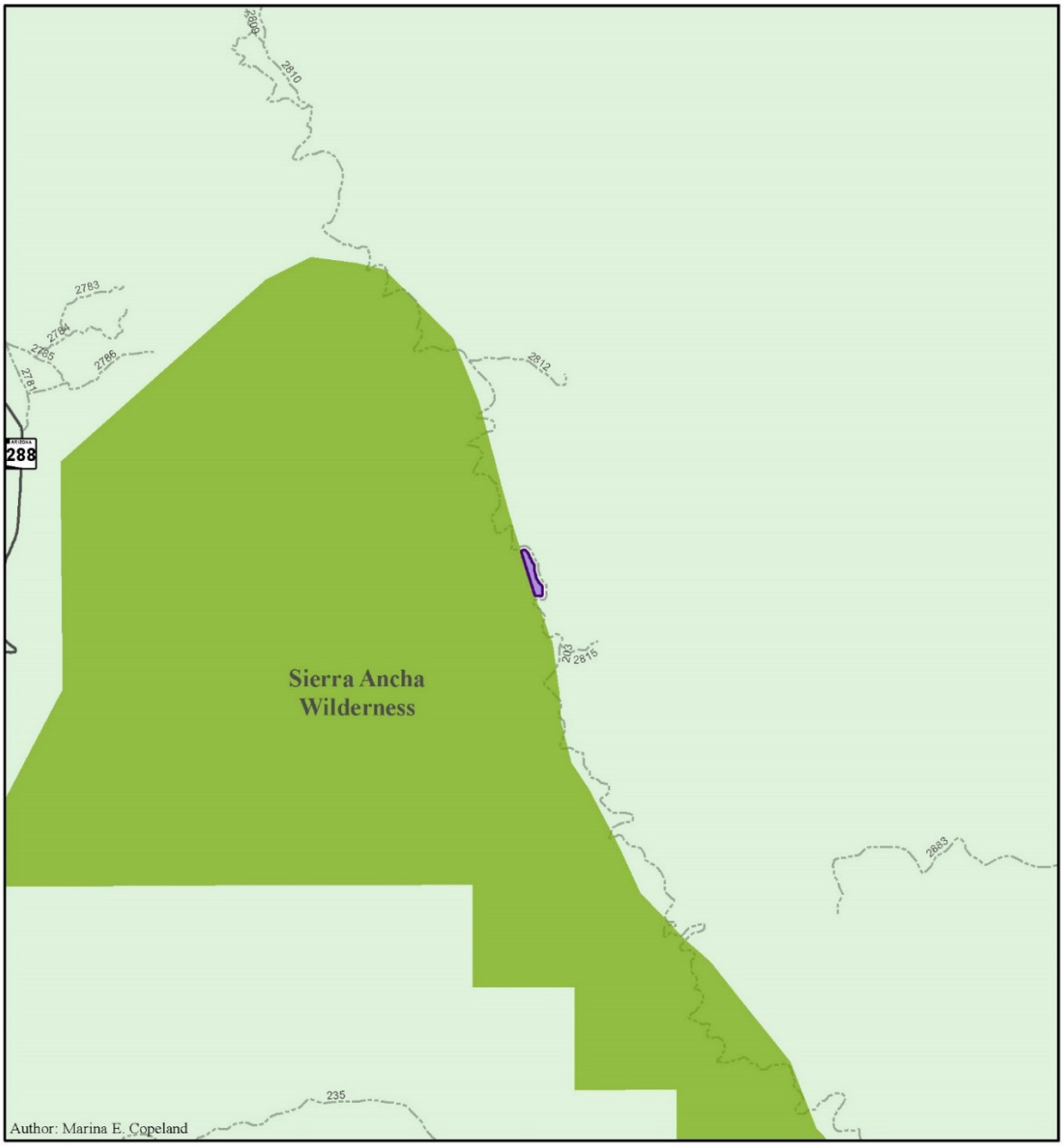


Figure 70. Blue Peak recommended wilderness area

Polygon 83 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area I

Factor	Description
Acres	6 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. This area occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is relatively flat with elevations that range from 4,315 – 4,395 feet. This area has vegetation typically found in the Madrean Encinal Woodland Ecological Response Unit.
Current uses and management	Recreation Opportunity Spectrum: 100% Primitive Scenic Integrity: 83% Very High, 17% High 1985 Plan Management Area: 5A Sierra Ancha Wilderness Range Allotment: Cherry Creek Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of

Factor	Description
	wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area I

Derived from Evaluation Polygon 83

Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 5 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles

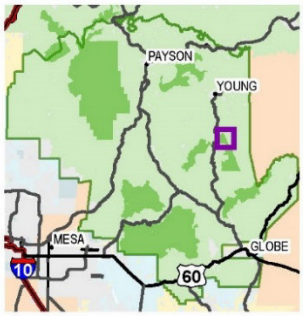


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Figure 71. Sierra Ancha Wilderness contiguous recommended wilderness area I

Polygon 84 – Indian Butte Recommended Wilderness Area

Factor	Description
Acres	6,140 acres
Summarized description of the recommended boundary	This area is bounded by National Forest System roads to the north and west and Bureau of Reclamation first form withdrawal land boundaries to the south and east. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located approximately 40 miles north of Phoenix, just west of Bartlett Lake on the Cave Creek District. The topography includes areas of high rounded hills and ridges in basins. Elevations in this area range from 2,080 – 3,735 feet. This area's primary Ecological Response Unit is Mojave-Sonoran Desert Scrub (86% of area), with pockets of Semi-Desert Grassland (12%), Interior Chaparral (1%), and Riparian (1%).
Current uses and management	Recreation Opportunity Spectrum: 84% Semi-Primitive Motorized, 16% Roaded Natural Scenic Integrity: 84% High, 16% Moderate 1985 Plan Management Area: 1F General Management Area Range Allotment: St Clair
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative plants, fountain grass and red brome, are in the polygon in isolated patches. Suitable habitat for a variety of game and non-game species exists in the area as well as bald eagles. The area is identified as an Important Bird Area. Undeveloped Quality: The only improvements in the polygon are several level one roads that are still apparent on the landscape. The presence or appearance of improvements does not detract from apparent naturalness. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. All the roads around the perimeter are closed to public use, so no current use. And very little use occurs in the interior of the polygon. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and unconfined recreation like hiking, hunting, and dispersed camping and some of these opportunities are of high quality. Other Features of Value: There is one known historic archaeological site currently identified within this polygon. The site consists of a concrete foundation and artifact scatter. This area has known nesting populations of Bald Eagles and is an Important Bird Area Management to preserve the wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. Some challenges exist including that the roads surrounding this area is proposed as an off-highway vehicle recreation area, and the adjacent FR458 road is very high use.
Brief summary of the factors considered and the process used in	● Identified as having high wilderness characteristics across all categories ● High manageability as recommended wilderness

Factor	Description
evaluating the area and developing the alternatives	● There are no non-conforming uses
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area significant feeling of being alone or remote from civilization ● There are some high-quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.

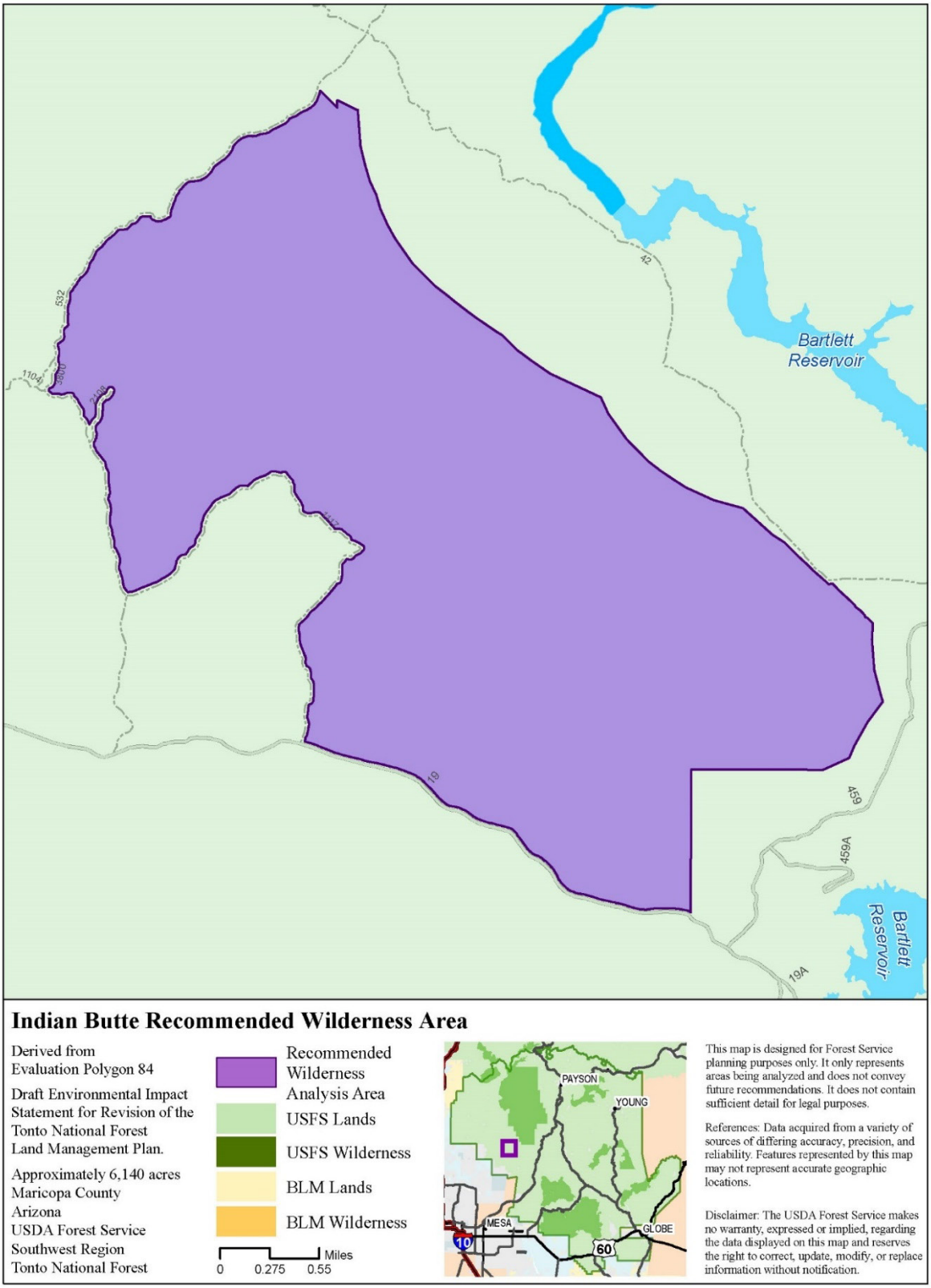
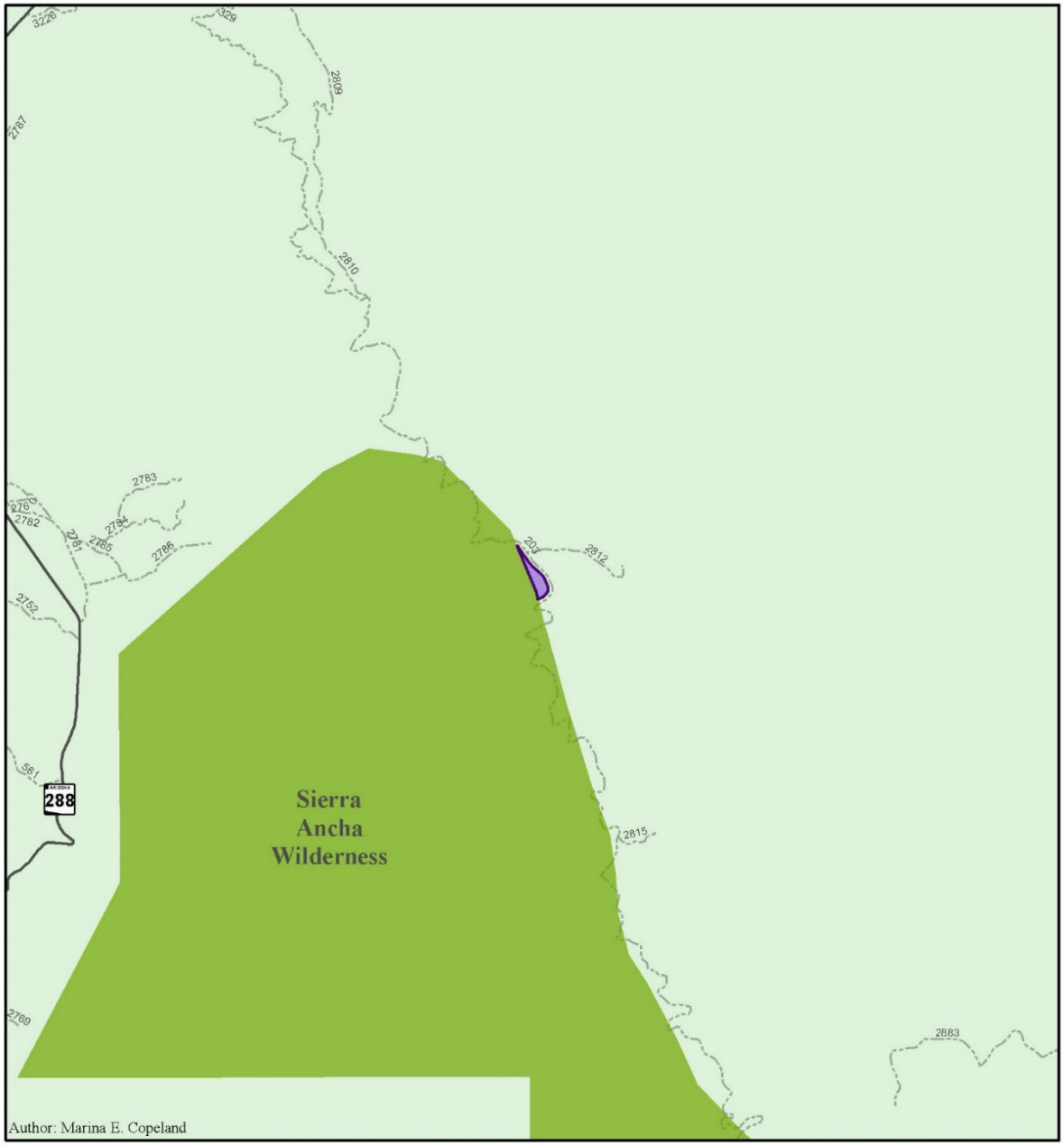


Figure 72. Indian Butte recommended wilderness area

Polygon 85 – Sierra Ancha Wilderness Contiguous Recommended Wilderness Area J

Factor	Description
Acres	7 acres
Summarized description of the recommended boundary	The boundary follows the Cherry Creek Road (FR203), and the Sierra Ancha wilderness boundary, making it fairly easy to locate on the map and on the ground, though it is oddly shaped due to these features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 76 air miles from Downtown Phoenix on the Pleasant Valley Ranger District. This area occurs within the Central Highlands Transition Zone, which is characterized by rugged mountains of igneous, metamorphic and sedimentary rocks. This area is relatively flat with elevations that range from 4,230 – 4,380 feet. This area has vegetation typically found in the Madrean Encinal Woodland (99% of area) and Riparian (1%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High 1985 Plan Management Area: 5G General Management Area Range Allotment: Cherry Creek Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. No vegetation treatments have occurred in the area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There may be occurrences of Red Brome, a nonnative species, but it is not evident to the average visitor. Some special status areas include the Mexican Spotted Owl designated critical habitat. There is no special listed species found in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. This is a very small polygon adjacent to wilderness on one side and a road on the other, which makes solitude difficult to experience. Some ATV use on the adjacent road limits opportunities for solitude when ATVs are present. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. When considered with the adjacent wilderness, opportunities for primitive recreation are abundant and of high quality. Some high quality hunting opportunity exist in the area, as well as dispersed camping. There may also be opportunities for rock climbing/canyoneering. The use is free and unrestricted. Other Features of Value: There are unique or outstanding landscape features in this areas, such as the view shed which includes cliffs and cliff dwellings. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. Though small, when managed in conjunction with the adjacent Sierra Ancha Wilderness, preservation of

Factor	Description
	wilderness characteristics are possible. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure The social characteristics that provide the basis for suitability are as follows: ● The area offers some opportunities for solitude. ● There are abundant, high quality opportunities for primitive and unconfined recreation when used in conjunction with the Sierra Ancha Wilderness.



Sierra Ancha Wilderness Contiguous Recommended Wilderness Area J

Derived from
Evaluation Polygon 85

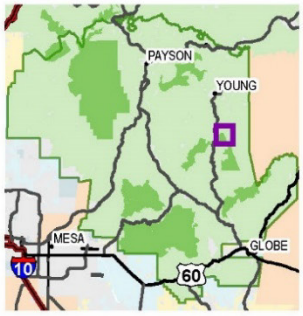
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 7 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.25 0.5 Miles



This map is designed for Forest Service planning purposes only. It only represents areas being analyzed and does not convey future recommendations. It does not contain sufficient detail for legal purposes.

References: Data acquired from a variety of sources of differing accuracy, precision, and reliability. Features represented by this map may not represent accurate geographic locations.

Disclaimer: The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map and reserves the right to correct, update, modify, or replace information without notification.

Figure 73. Sierra Ancha Wilderness contiguous recommended wilderness area J

Polygon 87 – Rock House Recommended Wilderness Area

Factor	Description
Acres	5,228 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads and the forest administrative boundary, making it fairly easy to locate on the map and on the ground. Adjacent land is managed by the Forest Service and the Fort Apache Indian Reservation.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County next to the Fort Apache Indian Reservation on the Pleasant Valley Ranger District, approximately 80 air miles from downtown Phoenix. The topography of this area includes a maze of rolling hills and gullies with elevations ranging from 5,160 – 6,200. This area contains vegetation common to PJ Evergreen Shrub (92%), Madrean Encinal Woodland (5%), and Riparian (3%) Ecological Response Units. The vegetation consists of ponderosa pine evergreen, oak in the drainage, juniper grass and juniper brush, oak woodland, and some riparian in the drainages which include cottonwood, sycamore, alder, and ash.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 99% High, 1% Very Low 1985 Plan Management Area: 5G General Management Area Range Allotment: Flying V Adjacent to the Fort Apache Indian Reservation
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. Juniper push (within 15 years) and evidence of juniper skeletons in 10% of area. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Suitable habitat for variety of game and non-game species can be found in the area. There are no know special species. There is a potential for thistle and Red Brome along roadways or disturbances. Undeveloped Quality: Little or no evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. Earthen livestock tanks and fences are sparse and in the northern portion of the polygon. Moderate amount of roads (authorized and unauthorized). The unauthorized roads exist in dry washes and ridge tops. There is historic mining in the northern portion. Solitude: Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. Encounters with, or evidence of, humans is rare. This area borders the Fort Apache Indian Reservation on the east side, so use is low and a great opportunity for solitude. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and/or unconfined recreation. At least some of these opportunities are of high quality and/or risk. High quality hunting exists on a seasonal basis. Moderate camping, hiking, and horseback riding with moderate risk. Other Features of Value: None known

Factor	Description
	Management to preserve the area's wilderness characteristics are possible throughout most of the area. There are some projects or management plans that would impact the wilderness characteristics of the area. This area is adjacent to the reservation on the east side. There is a high number of cherry stem roads with high edge to interior ratio. Potential need to maintain range improvements on a 5-10 year cycle. The WUI has potential for future suppression activities and treatments. This area contains at least one Salt River Project (SRP) improvement and/or right of way. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Little or no evidence of human influence on the landscape. The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of being alone or remote from civilization throughout the area. ● There are some opportunities for engaging in primitive and/or unconfined recreation.

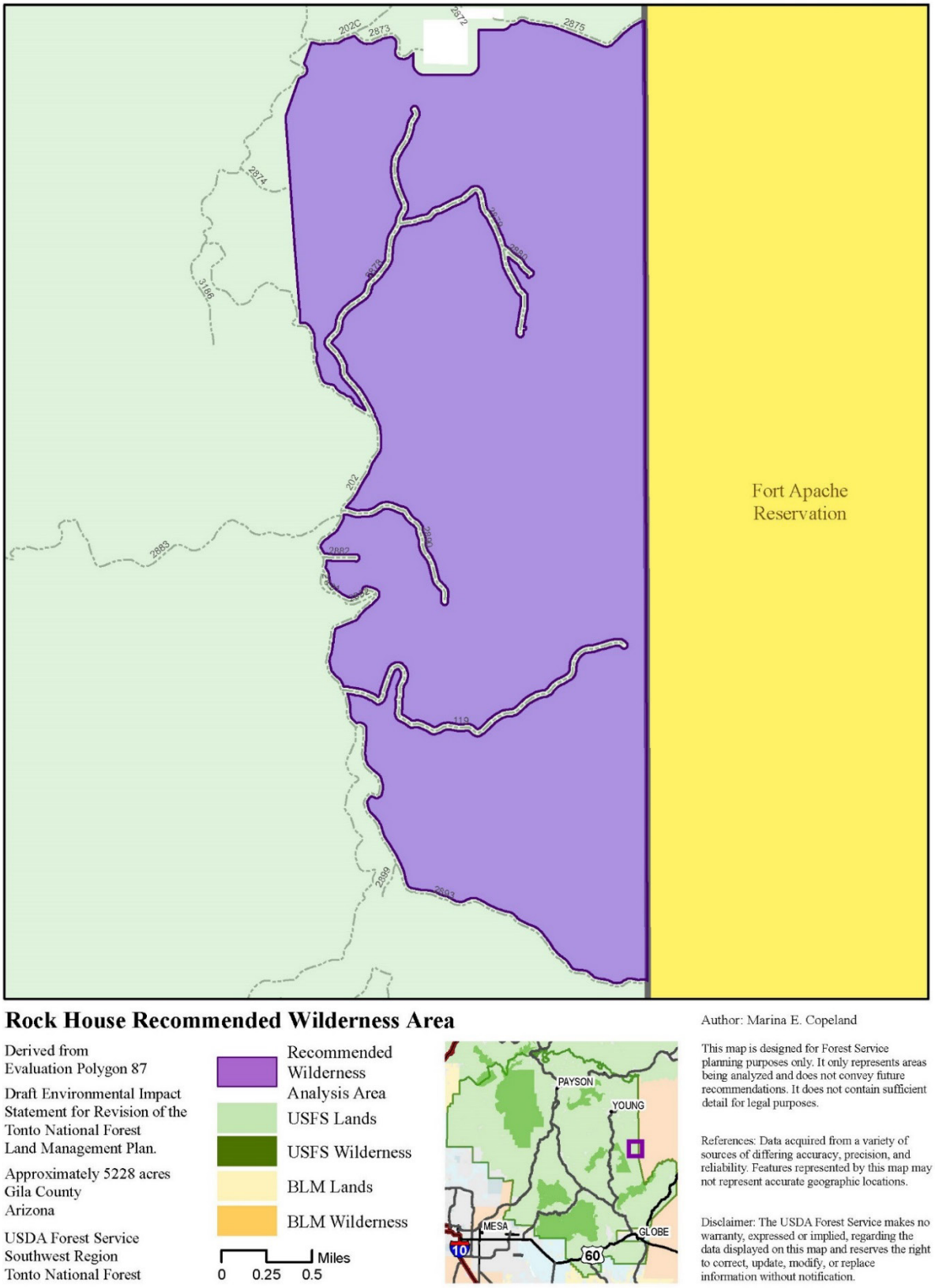


Figure 74. Rock House recommended wilderness area

Polygon 91 – Baker Mountain Recommended Wilderness Area

Factor	Description
Acres	10,565 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, private land boundaries, the Sierra Ancha Experimental Forest boundary, and the Sierra Ancha Wilderness boundary. Though the area can be easily delineated on a map, the diversity in boundary markers make this area difficult to locate on the ground. With a 300ft buffer around the private property, all adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located on the Pleasant Valley Ranger District along the northwest side of the Sierra Ancha Wilderness, approximately 70 air miles from downtown Phoenix, this area ranges in elevation from 4,380 – 7,750 feet. The topography is dominated by high rounded hills, plateaus, and steep canyons with prominent bluffs. Vegetation in this are consists of a mix of Ponderosa Pine – Evergreen Oak (58%), Interior Chaparral (15%), PJ Evergreen Shrub (17%), Mixed Conifer w/ Aspen (2%), Madrean Encinal Woodland (5%), PJ Grass (2%), and Madrean Pinyon-Oak Woodland (1%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 1% Primitive, 31% Roaded Natural, 68% Semi-Primitive Motorized Scenic Integrity: 1% Very High, 68% High, 31% Moderate 1985 Plan Management Area: 5A Sierra Ancha Wilderness, 5D Mogollon Rim-Sierra Ancha Area, 5G General Management Area Range Allotment: A-Cross, Buzzard Roost, Center Mountain, Cherry Creek, Dagger Adjacent to the Sierra Ancha Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There is evidence of fuel breaks from suppression work related to wildfires. In most areas the composition of plant and animal communities would appear natural to the average forest visitor. The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequent small patch sizes in the area. Several Mexican Spotted Owl PACs in the area as well as designated critical habitat for the MSO and peregrine falcon. Suitable habitat exists for the senator mine alumroot. There is also suitable habitat for various game and non-game species. Bull thistle has infrequent small patches along roads and disturbed areas. 6% of the area had high severity wildfire that caused type change, moderate intensity wildfire occurred in 99% of area. Undeveloped Quality: Little evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. Some mine adits and shafts, 5 trails (non-mechanized, non-motorized), very low density of range improvements (1 earthen tank and fencing). Solitude: Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. There are little unauthorized motorized trails, therefore great opportunities for solitude. Terrain limits many visitors, although there is higher visitation along edges of area in Workman Creek and Reynolds creek. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities

Factor	Description
	are of high quality and/or risk. Restricted fishing opportunities, high quality hiking, high quality camping, rock climbing, horseback riding, high quality birding, high risk and unconfined. The majority of the polygon is within the Sierra Ancha Mountains. The Sierra Anchas are part of a major transition zone known as the Central Highland, making the mountain ranges within the zone ecologically diverse, thus providing highly quality wildlife birding and viewing. Other Features of Value: Mexican Spotted Owl PACs in the area as well as designated critical habitat for the MSO and peregrine falcon. Suitable habitat exists for the Sierra Ancha fleabane, senator mine alumroot, spring snails, talus snail, and Sierra Ancha Mountain snail. There is also suitable habitat for various game and non-game species. There are known occurrences of bloomers dock (sensitive species). There are unique or outstanding landscape features including cliff dwellings, and outstanding viewpoints. A total of fourteen archaeological sites have been recorded to date within this polygon. Seven of these sites are prehistoric in nature, four date from the historic time period, and three have evidence from both the prehistoric and historic time period. Prehistoric site types include cliff dwellings, single room masonry structures, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Historic site types include habitations (cabins and homesteads) Apache occupations, and trash middens. Management to preserve the area's wilderness characteristics are possible throughout most of the area. There are some projects or management plans that would impact the wilderness characteristics of the area. There are areas within the Wildland Urban Interface (WUI), next to designated Wilderness, mainly travel via authorized roads few instances of unauthorized motorized travel. Experimental forest in the area, and mineral claims with potential future activities. There is a potential need to maintain range improvements on 5-10 year cycle, and management of special use authorizations. This area is within the 4FRI footprint. Though there are many activities most wouldn't detract from wilderness characteristic.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Little evidence of human influence on the landscape. There are known populations and occurrences of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of being alone or remote from civilization throughout the area. ● There are abundant opportunities for engaging in primitive and/or unconfined recreation. ● There are 14 known archeological sites in this area.

Factor	Description
	● There are unique and outstanding landscape features.

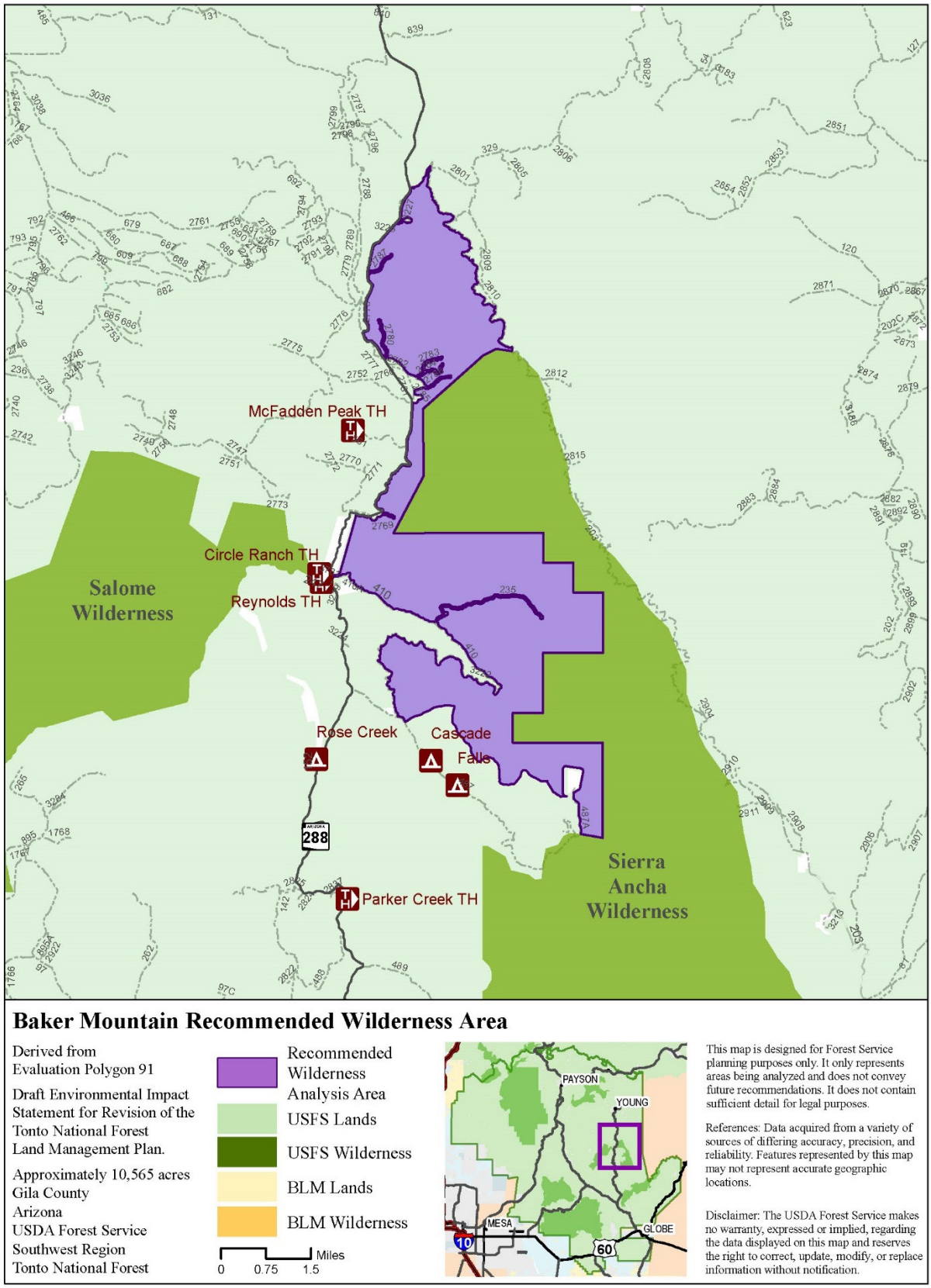


Figure 75. Baker Mountain recommended wilderness area

Polygon 93d – Tanner Peak Recommended Wilderness Area

Factor	Description
Acres	21,842 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, private property lines, the Sierra Ancha Experimental Forest Boundary, and the Salome Wilderness boundary, making it oddly shaped due to these features. Though the area can be easily delineated on a map, the diversity in boundary markers make this area difficult to locate on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located in Gila County next to the Salome Wilderness on the Pleasant Valley Ranger District, the topography in this area varies with mountain peaks, steep cliffs, rolling hills, and canyon bottoms. Elevations in this area range from 2,520 – 7,300 feet. This area has diverse vegetation communities including the Mojave-Sonoran Desert Scrub (28%), Semi-Desert Grassland (23%), Ponderosa Pine – Evergreen Oak (21%), Interior Chaparral (16%), Riparian (3%), PJ Grass (4%), Mixed Conifer w/ Aspen (4%), Sonora-Mojave Mixed Salt Desert Scrub (1%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 10% Roaded Natural, 69% Semi-Primitive Motorized, 21% Semi-Primitive Non-Motorized Scenic Integrity: 96% High, 4% Moderate 1985 Plan Management Area: 5D Mogollon Rim-Sierra Ancha Area, 6J General Management Area Range Allotment: A-Cross, Armer Mountain Adjacent to the Salome Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation does not appear natural in isolated spots or is scattered. Evidence of human intervention on the landscape is uncommon and most visitors to the area would not notice any previous human intervention. There has been very little timber management (only historic and salvage along the road). Some fuel breaks along roads and private property can be seen. Thomson Mesa area was seeded with native grasses, but the activity is not apparent on the landscape. The composition of plant and animal communities appears unnatural to the average forest visitor in substantial portions of the area. The presence of exotic, invasive and/or non-native plant and animal communities represent frequent small to moderate patch sizes in the area. There is a Mexican spotted owl PAC, peregrine falcon and golden eagle occurrences, suitable habitat for lowland leopard frog, and tonto agave. The area also has suitable habitat for various game and nongame species. There are known occurrences of bloomers dock, a sensitive species. Thistle and red brome, invasive species, can be found in larger patches. Two severe wildfires went through 40% of the area and caused type change. Undeveloped Quality: Prevalence of improvements is overall low throughout the area, it may be concentrated in some spots but is more typically dispersed through the area. The unauthorized road density is low, authorized density is moderate, and there is access to private inholding through easements. There is an interpretive site of a historic sawmill and two trails (non-motorized and non-mechanized). Three helispot (1 cement pad) exist, a moderate density of earthen stock tanks on the western portion of the polygon, moderate level of fences evenly distributed throughout, special use permit for waterline (above ground pipeline with 2 concrete spring boxes), multiple historic uranium mines and valid claims in

Factor	Description
	southern portion. Solitude: Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. Encounters with, or evidence of, humans is rare. There are many areas of very low use, very rugged terrain deter many visitors. One special use permit for Outfitting and guiding (rock climbing). Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. High quality camping (especially during cooler month), moderate hunting, great hiking, rock climbing, canyoneering, and horseback riding. These are high risk and unconfined. Other Features of Value: There is a Mexican spotted owl PAC, peregrine falcon and golden eagle occurrences, suitable habitat for lowland leopard frog, and Tonto Basin agave. There are known occurrences of bloomers dock, a sensitive species. There are unique or outstanding landscape features. A total of 96 archaeological sites have been recorded to date within this polygon. Eighty-four of these sites are prehistoric in nature, nine date from the historic period, two are multi-component, and one is of unknown cultural or temporal affiliation. Prehistoric site types include single and multi-room masonry structures, burials, pithouse villages, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Historic site types include CCC erosional control features, cabins, corrals, middens and transportation corridors. Management to preserve the area's wilderness characteristics are possible throughout most of the area. There are some projects or management plans that would impact the wilderness characteristics of the area. There are areas within the Wildland Urban Interface (WUI), next to designated Wilderness, mainly travel via authorized roads few instances of unauthorized motorized travel. Experimental forest in the area, uranium mine claims with potential future activities. There is a potential need to maintain range improvements on 5-10 year cycle, and management of special use authorizations. This area is within the 4FRI footprint. Though there are many activities most wouldn't detract from wilderness characteristic.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Evidence of human intervention on the landscape is uncommon and most visitors to the area would not notice any previous human intervention. ● Prevalence of improvements is overall low throughout the area, it may be concentrated in some spots but is more typically dispersed through the area. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of being alone or remote from civilization

Factor	Description
	throughout the area. ● There are abundant opportunities for engaging in primitive and/or unconfined recreation. ● There are 96 known archeological sites.

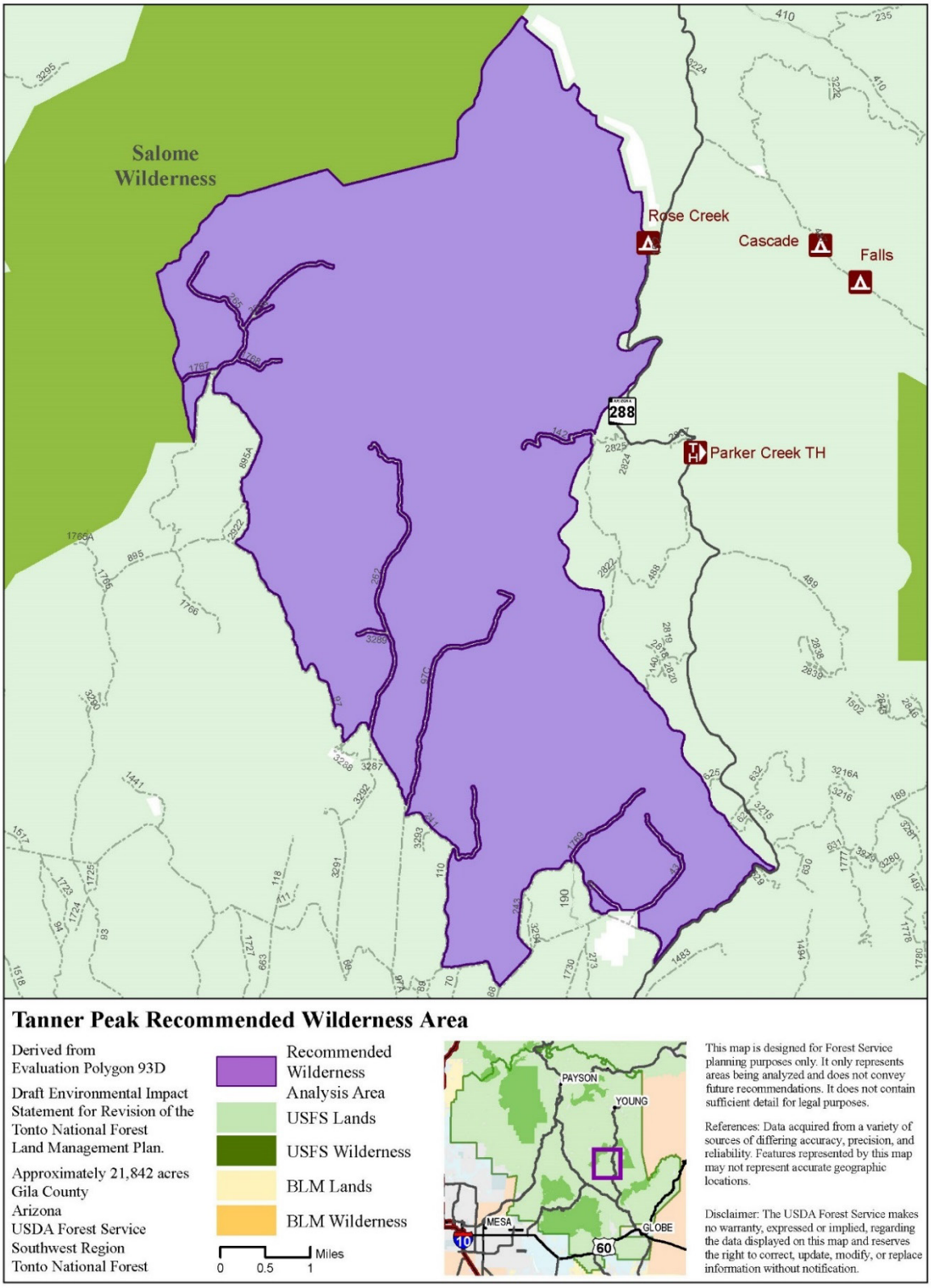


Figure 76. Tanner Peak recommended wilderness area

Polygon 96c – Alder Point Recommended Wilderness Area

Factor	Description
Acres	14,844 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, Bureau of Reclamation first form withdrawal land boundaries, linear improvements, and the Mazatzal Wilderness boundary. The inconsistency of boundary type makes this area difficult to locate on the ground. Adjacent land is managed by the Forest Service, but Bartlett Lake is managed by Salt River Project.
Brief description of the general geography, topography, and vegetation	This area is located in Gila County, approximately 35 air miles from downtown Phoenix on the Cave Creek Ranger District. The topography of this area consists of rolling desert hills and steep ridges formed by intermittent streams and desert washes. Elevations throughout this area range from 1,860 – 4,000 feet. This area has vegetation common to the Mojave-Sonoran Desert Scrub (90% of the area), Riparian (3%), Semi-Desert Grassland (4%), and Juniper Grass (3%) Ecological Response Units. Dominant vegetation includes species such as prickly pear, Saguaro and cholla. The riparian vegetation includes cottonwood and willow species.
Current uses and management	Recreation Opportunity Spectrum: 2% Primitive, 49% Semi-Primitive Motorized, 49% Semi-Primitive Non-Motorized Scenic Integrity: 2% Very High, 97% High, 1% Very Low 1985 Plan Management Area: 1B Mazatzal Wilderness, 1F General Management Area, 3A Mazatzal Wilderness, 3I General Management Area Range Allotment: Bartlett, Cross F, Diamond, Sears Club/ Chalk Mountain Adjacent to the Mazatzal Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequent small patch sizes in the area and include giant reed, tamarisk, red brome, and star thistle. Suitable habitat for variety of game and nongame species can be found in the area. Species of special status include southwest willow fly catcher critical habitat, bald eagle, longfin dace, and lowland leopard frog. Undeveloped Quality: There is a high density of authorized motorized routes and a low density of unauthorized in the Mesa District portion of the polygon. The majority of the area has a low density of roads. Most of the polygon is not actively grazed and improvements are not currently functional or being maintained. Approximately 10% of the area is grazed and has a low density of improvements. There are 2 system trails that are non-motorized. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. The area is adjacent to existing designated wilderness. The area sees frequent aircraft flying overhead and sights and sounds of civilization are possible near some roads. Encounters on trails and roads are rare due to ruggedness, and opportunities for solitude are especially high along the east side (80%) of the area, next to the Mazatzal Wilderness.

Factor	Description
	Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality. Examples of primitive recreation opportunities in the area include dispersed camping, back packing, hiking, hunting, and birding. In general, risk and challenge is high. Other Features of Value: Species of special status include the southwest willow fly catcher, southwest willow fly catcher critical habitat, bald eagle, longfin dace, and lowland leopard frog. The area is an identified important bird area. A total of 130 archaeological sites have been recorded to date within this polygon. One hundred and twenty-five of these sites are prehistoric in nature, one dates from the historic period, three are multi-component, and one is of unknown cultural or temporal affiliation. Prehistoric site types include single and multi-room masonry structures, burials, pithouse villages, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Historic site types include habitations (i.e. cabins and homesteads). The Alder Creek watershed is an important watershed on the Tonto NF. Three of the streams flowing through this polygon (Canyon Creek, Sheep Creek, and Davenport Wash) provide reaches of perennial flow that support valuable riparian habitat and native fish. Management to preserve the wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. Range is a minimal concern. The area borders wilderness, access is difficult, minimal unauthorized use, and terrain is very rugged. About 25% of this area is managed as Inventoried Roadless Area.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Evidence of human intervention on the landscape is uncommon and most visitors to the area would not notice any previous human intervention. ● Prevalence of improvements is overall low throughout the area, it may be concentrated in some spots but is more typically dispersed through the area. ● There are known occurrences and populations of species of special status and this area is an important bird area. ● There is an important watershed in this area. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area ● There are abundant opportunities for engaging in primitive and/or unconfined recreation. ● There are 130 known archeological sites.

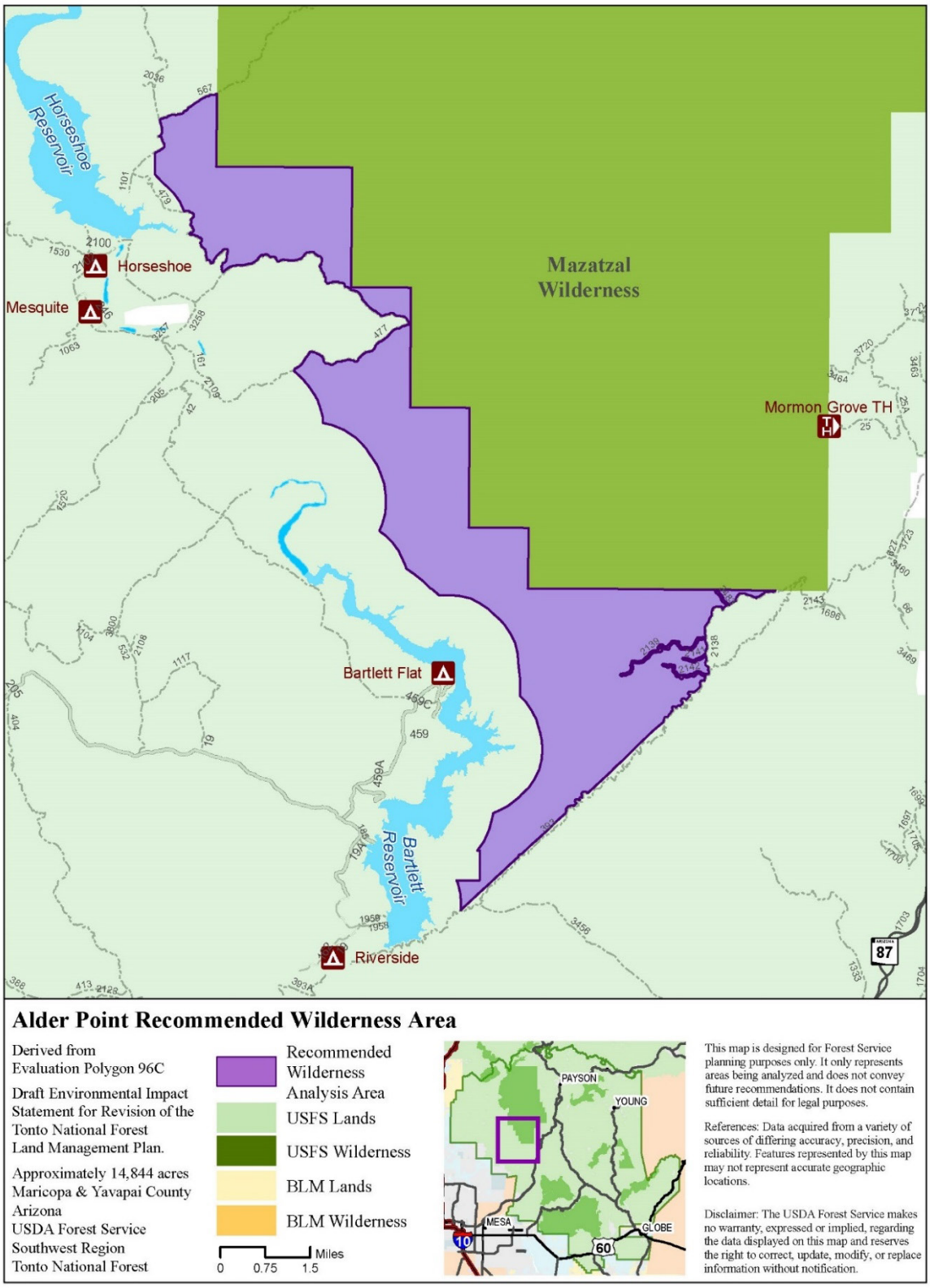
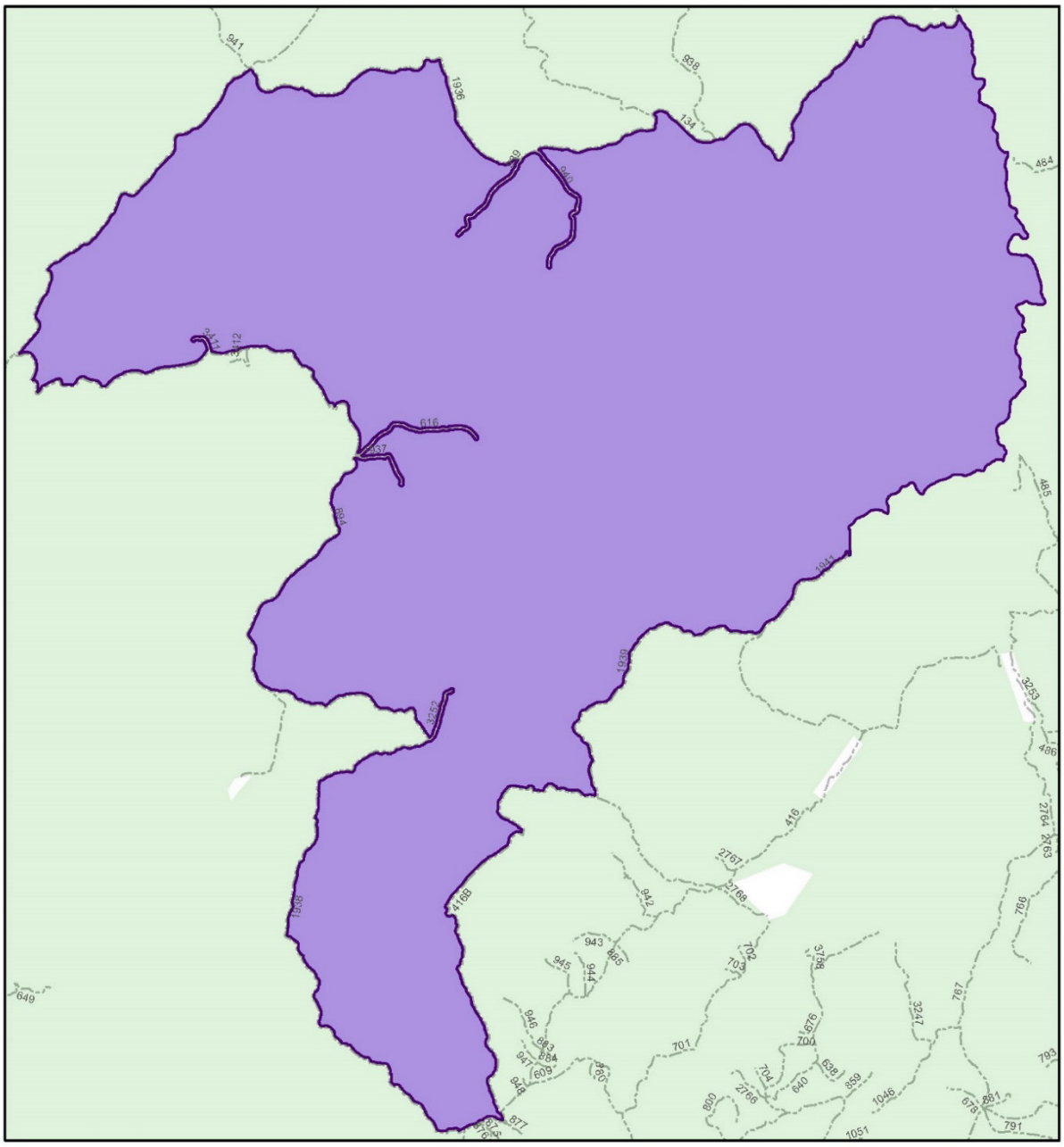


Figure 77. Alder Point recommended wilderness area

Polygon 101a – Gun Creek Recommended Wilderness Area

Factor	Description
Acres	29,657 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, linear improvements on the ground, and Spring Creek, which is a natural feature, making it easy to locate on the ground. These features cause the area to be oddly shaped. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located on the Pleasant Valley Ranger District just southeast of Payson below the Hellsgate Wilderness, this area is approximately 70 air miles from Phoenix. This area can be characterized by areas of steep ridges and deep canyons, including Coffee Pot Canyon and North Fork Brady Canyon. The elevation in this area ranges from 3,800 – 6,300 feet. This area is comprised of a mixture of ecological response units including: Ponderosa Pine – Evergreen Oak (5% of area), PJ Grass (17%), PJ Evergreen Shrub (48%), Madrean Pinyon-Oak Woodlands (7%), Madrean Encinal Woodland (19%), and Juniper Grass (4%). There are also riparian plant communities present in small percentages, including cottonwood, sycamore, elder, and ash.
Current uses and management	Recreation Opportunity Spectrum: 48% Semi-Primitive Motorized, 52% Semi-Primitive Non-Motorized Scenic Integrity: 100% High 1985 Plan Management Areas: 5G General Management Area, 6J General Management Area, and 5D Mogollon Rim-Sierra Ancha Area Range Allotments: Tonto Basin, Soldier Camp, Seventy-Six, and Buzzard Roost.
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There have been no restoration treatments. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Invasive species are infrequent but concentrated along travel routes, mainly bull thistle and star thistle. There are no special status species with exception of a golden eagle breading pair, and suitable habitat for various game and non-game species. High severity wildfire occurred in less than 1% of the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. The presence or appearance of improvements does not detract from apparent naturalness. There are four earthen stock tanks, barbed wire fencing that border allotment boundaries, 3 allotments, sheep driveway, 2 historic line shacks (coffeepot and pigeon creek), and an old helispot for wildfire suppression. Improvements do not distract from the naturalness. Solitude: Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. Encounters with, or evidence of, humans is rare. There is no motorized incursion, it is on motorized routes. Solitude is easy to find in most of area, due to canyon ability to escape to remote areas. Unconfined and Primitive Recreation: There are abundant

Factor	Description
	opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. There is good quality hunting, hiking, horseback riding, moderate camping, limited to no fishing. Opportunities are high risk due to remoteness and unconfined. Other Features of Value: There is a known golden eagle breeding pair is in this area. There are high quality watershed values and Rock Creek and Spring Creek have potential native fish habitat within this polygon. There are unique or outstanding landscape features. Some rock outcropping and outstanding view sheds in the area. A total of eleven archaeological sites have been recorded to date within this polygon. Seven of these sites are prehistoric in nature, and four date from the historic period. Prehistoric site types include multi-room masonry structures and sherd and lithic scatters. Historic site types include habitations (i.e. homestead), mines, mills, ranching operations, and burials. Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. Infrequent access needed for range improvements on 5-10 year cycle. The majority of range improvements in this area are located near the cherry stemmed roads. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The area appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● The area is undeveloped with no known infrastructure. ● There are known occurrences and populations of species of special status. ● Rock Creek and Spring Creek are important watershed features. The social characteristics that provide the basis for suitability are as follows: ● The area significant feeling of being alone or remote from civilization ● Abundant opportunities exist to participate in both primitive and unconfined recreation types. ● There are 11 known archeological sites in the area.



Gun Creek Recommended Wilderness Area

Derived from
Evaluation Polygon 101A

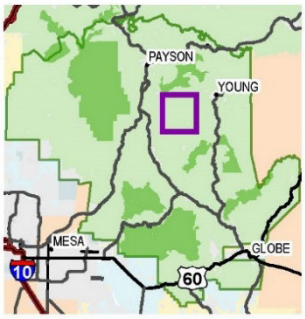
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 29657 acres
Gila County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.5 1 Miles



Author: Marina E. Copeland

This map is designed for Forest Service planning purposes only. It only represents areas being analyzed and does not convey future recommendations. It does not contain sufficient detail for legal purposes.

References: Data acquired from a variety of sources of differing accuracy, precision, and reliability. Features represented by this map may not represent accurate geographic locations.

Disclaimer: The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map and reserves the right to correct, update, modify, or replace information without notification.

Figure 78. Gun Creek recommended wilderness

Polygon 107 – Diamond Butte Recommended Wilderness Area

Factor	Description
Acres	15,498 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Hellsgate Wilderness boundary, and a private land boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located south of the Hellsgate Wilderness on the Pleasant Valley Ranger District, approximately 10 air miles from Payson, Arizona. The area can be characterized by its steep ridges and canyons. Elevations in this area range from 3,955 – 6,330 feet. This area has vegetation common to the PJ Evergreen Shrub (41% of area), Madrean Encinal Woodland (39%), PJ Grass (10%), Juniper Grass (8%), and Riparian (2%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 71% Semi-Primitive Motorized, 29% Semi-Primitive Non-Motorized Scenic Integrity: 100% High 1985 Plan Management Area: 5B Hellsgate Wilderness, 5G General Management Area Range Allotment: Diamond Butte, Soldier Camp Adjacent to the Hellsgate Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation does not appear natural in isolated spots or is scattered. Evidence of human intervention on the landscape is uncommon and most visitors to the area would not notice any previous human intervention. Range improvements and treatments (juniper pushes) exist that persist for a long time on east flank (20%), no fuel breaks. The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. Invasive species are along roads and disturbed areas, red brome, thistle, and cat claw. This is designated critical habitat for spike dace, known golden eagle pair, suitable habitat for variety of game and non-game species. Undeveloped Quality: Unnoticeable or unobjectionable human influence. Prevalence of improvements is overall low throughout the area; it may be concentrated in some spots but is more typically dispersed through the area. There is a sheep driveway, two allotments, fencing that is evenly distributed, earthen stock tanks concentrated in west and center, unauthorized routes concentrated in certain areas, approved drinkers with above ground pipeline, historic mine shack, and historic line cabin in southwest corner. Solitude: Common or significant feeling of being alone or remote from civilization throughout the area. Views of high human impact areas are absent or seldom. Encounters with, or evidence of, humans is rare. It is easy to find solitude, once off main routes encounters are rare. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. There is good hunting, wildlife viewing, limited fishing, dispersed camping, good horseback riding, good rock climbing, and good hiking, at high risk. Other Features of Value: There is a known golden eagle pair that nest

Factor	Description
	in this area. There is an outstanding view shed in the northern section of this area. A total of six archaeological sites have been recorded to date within this polygon. Four of these sites are prehistoric in nature, and two have evidence of human occupation in both the prehistoric and historic time period. Prehistoric site types include multi-room masonry structures, fieldhouses, agricultural features and sherd and lithic scatters. Historic site types include cairns and gowahs. Spring creek is an important watershed feature that is perennial, flows through a narrow scenic canyon, and is an eligible WSR. Management to preserve the area's wilderness characteristics are possible throughout most of the area. There are some projects or management plans that would impact the wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are scattered. There are not many roads, cherry stem. There is Wildland Urban Interface (WUI), potential maintenance on range improvements on 5-10 year cycle, possible future juniper grassland treatments and restoration. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and has high opportunities for primitive and unconfined recreation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Evidence of human intervention on the landscape is uncommon and most visitors to the area would not notice any previous human intervention. ● Prevalence of improvements is overall low throughout the area, it may be concentrated in some spots but is more typically dispersed through the area. ● There are known occurrences and populations of species of special status. ● There is an important watershed feature in this area. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area ● There are abundant opportunities for engaging in primitive and/or unconfined recreation. ● There are 6 known archeological sites. ● There is an outstanding view shed.

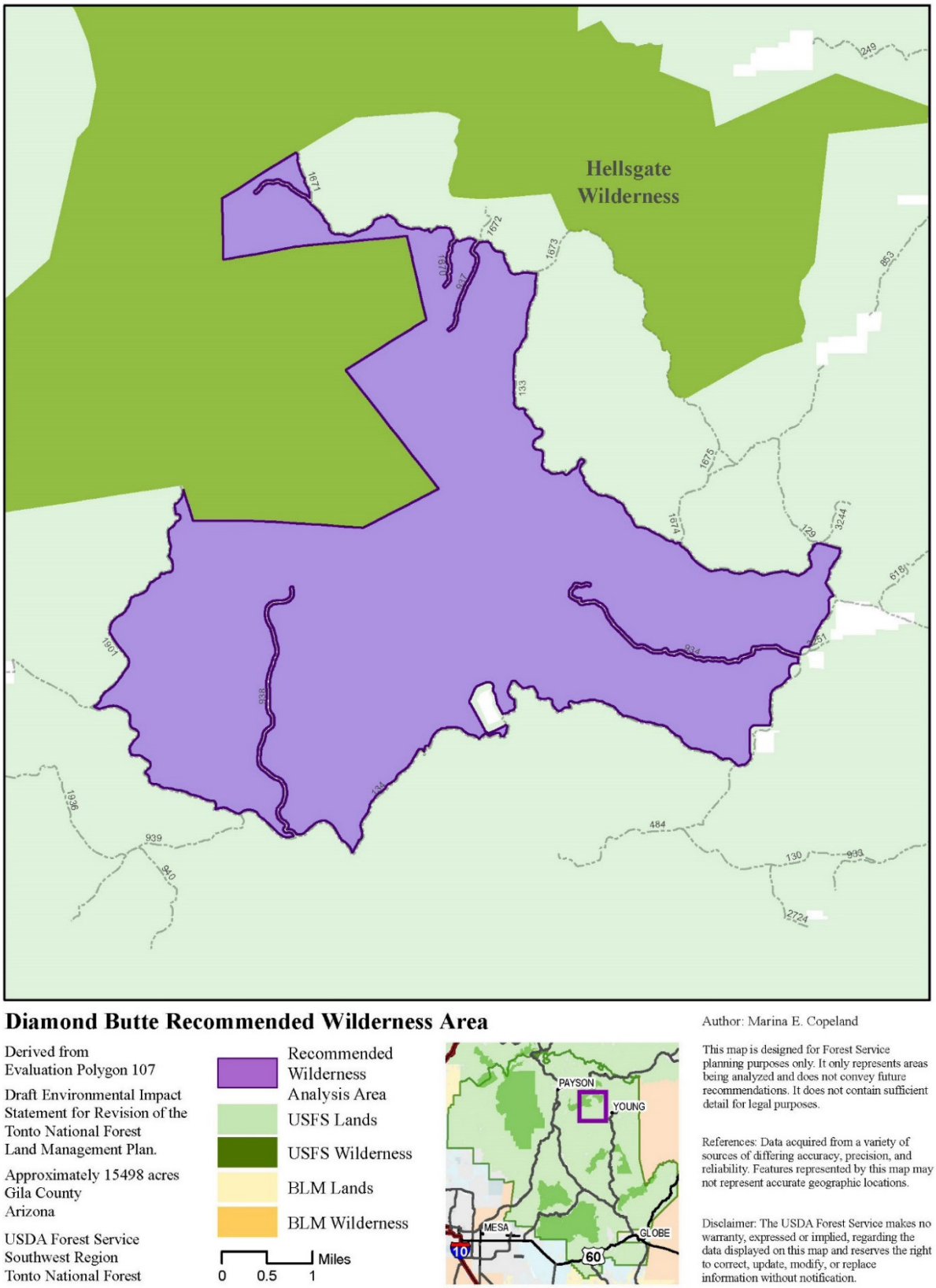


Figure 79. Diamond Butte recommended wilderness area

Polygon 108 – Smokey Hollow Recommended Wilderness Area

Factor	Description
Acres	1,634 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads and the Hellsgate Wilderness boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located south of the Hellsgate wilderness on the Pleasant Valley Ranger District, approximately 13 air miles from Payson, Arizona. This area has little topographic relief with gradual slopes to ridge tops and some canyons. Elevations in this are range from 4,420 – 5,610 feet. This area has vegetation common to the PJ Evergreen Shrub (86%) and Madrean Encinal Woodland (14%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High 1985 Plan Management Area: 5B Hellsgate Wilderness, 5G General Management Area Range Allotment: Diamond Butte Adjacent to the Hellsgate Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There have been no timber or fuels recently in area, only dozer road into tank. Juniper push on eastern third from the 1990s that has juniper "skeletons" (2%). The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequent small patch sizes in the area and include yellow blue stem and thistle. There is suitable habitat for variety of game and non-game species, and no known significant species. Undeveloped Quality: Little or no evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. The presence or appearance of improvements does not detract from apparent naturalness. It is rare to see improvements. There are three earthen tanks evenly distributed, fence on eastern side, one allotment, and one trail (non-motorized, non-mechanized). Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Views of high human impact areas occur infrequently, but are possible. Encounters with, or evidence of, humans is uncommon. Seasonally high use during fall and winter along road. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and/or unconfined recreation. These opportunities are of high quality and/or risk. There is great camping, good horseback riding, open year round, high quality hiking, and camping, moderate risk. When considered with the adjacent wilderness. Opportunities for primitive recreation are abundant and high quality. Some high quality hunting opportunity exist in the area, dispersed camping, rock climbing/canyoneering opportunities. Free and unrestricted use. Other Features of Value: None known Management to preserve the wilderness characteristics is easy throughout the area. There are no projects or management plans that would impact the

Factor	Description
	wilderness characteristics of the area. The presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The areas is adjacent to Hellsgate Wilderness. There are some unauthorized routes and potential range improvement management on 5-10 year cycle. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Little or no evidence of human influence on the landscape. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area. ● There are abundant opportunities for engaging in primitive and/or unconfined recreation.

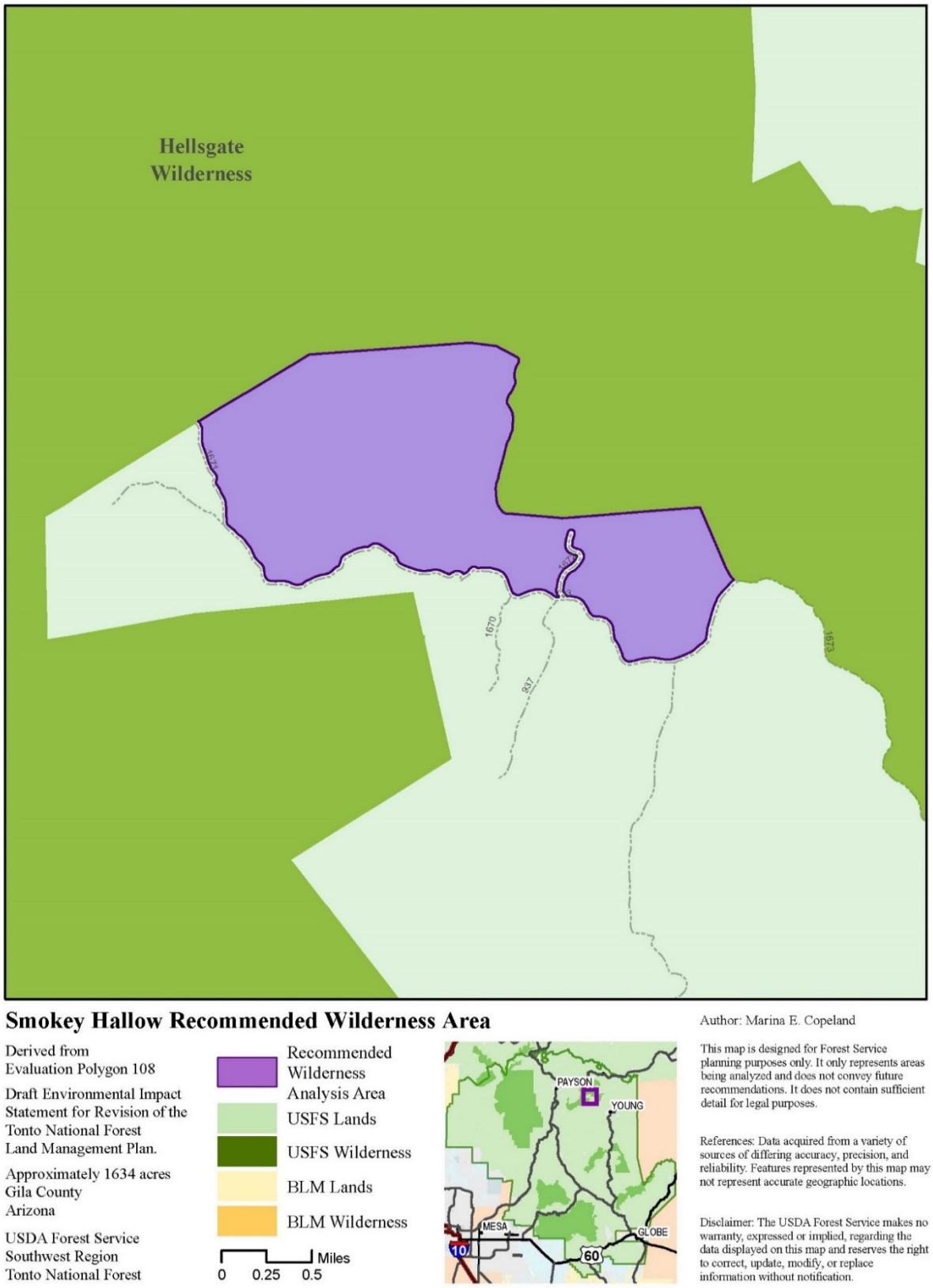


Figure 80. Smokey Hollow recommended wilderness area

Polygon 119a – Lime Creek Recommended Wilderness Area

Factor	Description
Acres	56,771 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, private land boundaries, Bureau of Reclamation first form withdrawal lands, and along linear improvements (e.g., powerlines). Though the area can be easily delineated on a map, the diversity in boundary markers make this area difficult to locate on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is approximate 40 miles north of Phoenix, just west of Horseshoe Lake on the Cave Creek Ranger District. Within this one area there are canyons, grass covered ridgetops, sharply upthrust mountain peaks, and flat volcanic mesas. Lime Creek, an ephemeral, intermittent stream, runs through the center of this area, ultimately draining into the Verde River. There are high ridges on either side of the canyon, and a few tributary drainages. Elevations range from 2,040 - 5,490 feet. This area has vegetation common to the Mojave-Sonoran Desert Scrub (36%), Juniper Grass (28%), Semi-Desert Grassland (13%), PJ Evergreen Shrub (12%), Interior Chaparral (9%), and Riparian (2%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 23% Roaded Natural, 12% Semi-Primitive Motorized, 65% Semi-Primitive Non-Motorized Scenic Integrity: 91% High, 8% Moderate, 1% Low, 1% Very Low 1985 Plan Management Area: 1F General Management Area Range Allotment: Blackjack, Cartwright, Red Creek, Sears Club/ Chalk Mountain, St Clair
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Some tamarisk removal has occurred in the riparian area, but does not detract from apparent naturalness. The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequent small patch sizes in the area and include red brome and fountain grass. In riparian areas, native vegetation includes cottonwood and willow, while nonnative plants include tamarisk, cattail and giant reed. Species of special status include Arizona cliff rose, bald eagle, golden eagle, northern Mexican garter snake proposed critical habitat, Gila top minnow, yellow billed cuckoo, lowland leopard frog, longfin dace, peregrine falcon, desert sucker, southwestern willow flycatcher, Sonoran Desert tortoise, and parker beetle. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. The presence or appearance of improvements does not detract from apparent naturalness. Improvements include Lime creek fish barrier, some barbed wire fence, and evidence of historic mining, low density of unauthorized routes, several tanks, a pipeline and a system trail. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. The northern part of the polygon has an active grazing allotment. Use of the polygon is moderate. About 80% of the area a high degree of opportunities for solitude, though overall, opportunities for solitude are moderate due to the presence and extent of cattle in the area. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality. Some recreation opportunities include fishing, backpacking,

Factor	Description
	hunting, hiking, horseback riding, birding, and rock climbing. Other Features of Value: Species of special status include Arizona cliff rose, bald eagle, golden eagle, northern Mexican garter snake proposed critical habitat, Gila top minnow, yellow billed cuckoo, lowland leopard frog, longfin dace, peregrine falcon, desert sucker, southwestern willow flycatcher, Sonoran Desert tortoise, and parker beetle. Lime creek is an eligible Wild and Scenic River for fisheries. There are outstanding landscape features and view sheds caused by the topographic relief in the area. A total of 287 archaeological sites have been recorded to date within this polygon. Two hundred and fifty-nine of these sites are prehistoric in nature, nine date from the historic period, sixteen have evidence of occupations from both time periods, and three are of unknown cultural or temporal affiliation. Prehistoric site types include single and multi-room masonry structures, rock shelters, mounds, hilltop forts, petroglyphs, pithouse villages, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Historic site types include mining operations, habitation (i.e. homesteads and farmsteads), evidence of Yavapai/Apache occupation, CCC administration and recreation facilities, ranching operations and trash middens. Tangle creek and lime creek are eligible Wild and Scenic Rivers. Tangle Creek has an instream flow water right claim and is a scenic perennial stream in the Sonoran Desert that supports native fish and valuable riparian habitat. Lime Creek is also a perennial stream in the desert that supports native fish. Management to preserve the area's wilderness characteristics is possible throughout most of the area. Approximately 70% of the area is in an Inventoried Roadless Area. Some management challenges include the presence of an existing mining claim, many cherry stem roads, motorized access, maintenance needs for management of range improvements, and the presence of private land inholdings within the polygon. Additionally, due to the popularity of developed sites in the south of the area, including Horseshoe reservoir, there is a high degree of motorized travel adjacent to the polygon and limited ability to inhibit motorized trespass due to fairly open landscape. A variety of improvements within this area are managed by Salt River Project (e.g., Tangle creek gauge, Lime creek fish barrier).
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Little or no evidence of human influence on the landscape. ● There are known occurrences and populations of species of special status. ● Portion of this area is classified as an important bird area The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. ● There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality. ● There are 287 known archeological sites.

Factor	Description
	● Outstanding landscape features and view sheds.

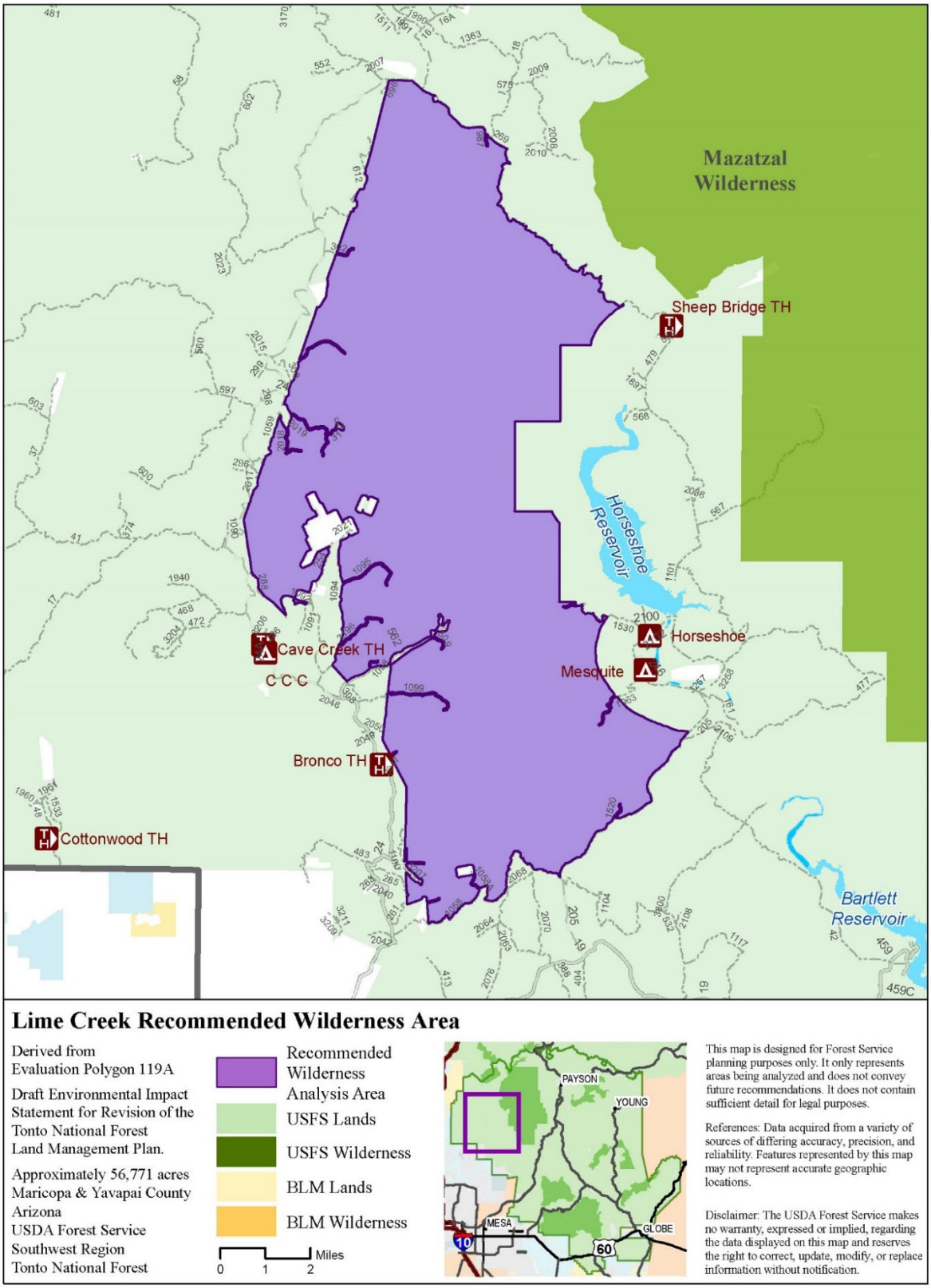


Figure 81. Lime Creek recommended wilderness area

Polygon 119b – Mullen Mesa Recommended Wilderness Area

Factor	Description
Acres	3,661 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Mazatzal Wilderness boundary, and Bureau of Reclamation first form withdrawal lands. Though the area can be easily delineated on a map, the diversity in boundary markers make this area difficult to locate on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This long, skinny area is located approximately 55 miles from downtown phoenix, just west of the Mazatzal Wilderness on the Cave Creek Ranger District. The area has a fair amount of topographic relief with elevations ranging from 2,120 – 2,735 feet. Within this area there are canyons, river basins, rocky hillsides, grassy ridgetops, and flat volcanic mesas. Vegetation common to the Mojave-Sonoran Desert Scrub (87%), Riparian (4%), and Sonora-Mojave Mixed Salt Desert Scrub (9%) Ecological Response Units can be found in this area.
Current uses and management	Recreation Opportunity Spectrum: 2% Primitive, 29% Semi-Primitive Motorized, 69% Semi-Primitive Non-Motorized Scenic Integrity: 1% Very High, 99% High. 1985 Plan Management Area: 1B Mazatzal Wilderness, 1F General Management Area Range Allotment: Sears Club/ Chalk Mountain Adjacent to the Mazatzal Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Suitable habitat for a variety of game and non-game species can be found in the area. Species and habitat of special designation including narrow-headed gartersnake and critical habitat, golden eagle, bald eagle, southwest willow flycatcher, peregrine falcon, and yellow billed cuckoo. Undeveloped Quality: Appearance of improvements detract from apparent naturalness in some areas. Sheep Bridge and historic sheep bridge, two system non-motorized trails, spring gauge, rock ring around a hot spring, and a dirt airstrip are in the polygon. Range improvements include some fence line, a gate, and a PVC pipe dispersed throughout the northern portion of the polygon in fairly low density. Some unauthorized routes can be found in the south of the polygon in low density. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. Opportunities to experience solitude are possible throughout the area. Few signs of civilization detract from solitude in the area. Low use in general throughout the area. Cherry stem road does not get used much. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality and risk. Hiking, hunting, backpacking, and horseback riding can all be found in the area. Other Features of Value: Species and habitat of special designation including Narrow headed gartersnake and critical habitat, golden eagle, bald eagle, southwest willow flycatcher, peregrine falcon, and yellow billed cuckoo. There are archaeological sites have been recorded to date within

Factor	Description
	this polygon. Historic site types include possible structures and trash middens. Management to preserve the area's wilderness characteristics is possible throughout most of the area. There are few management activities that would degrade the wilderness characteristics. The eastern portion of the polygon borders the wilderness. About 95% of the area is in an Inventoried Roadless area. Range management activities occur seasonally and use motorized/mechanized tools and transportation.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of being alone or remote from civilization is possible throughout the area. ● There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality and risk. ● There are known archeological sites. ● Outstanding landscape features and view sheds.

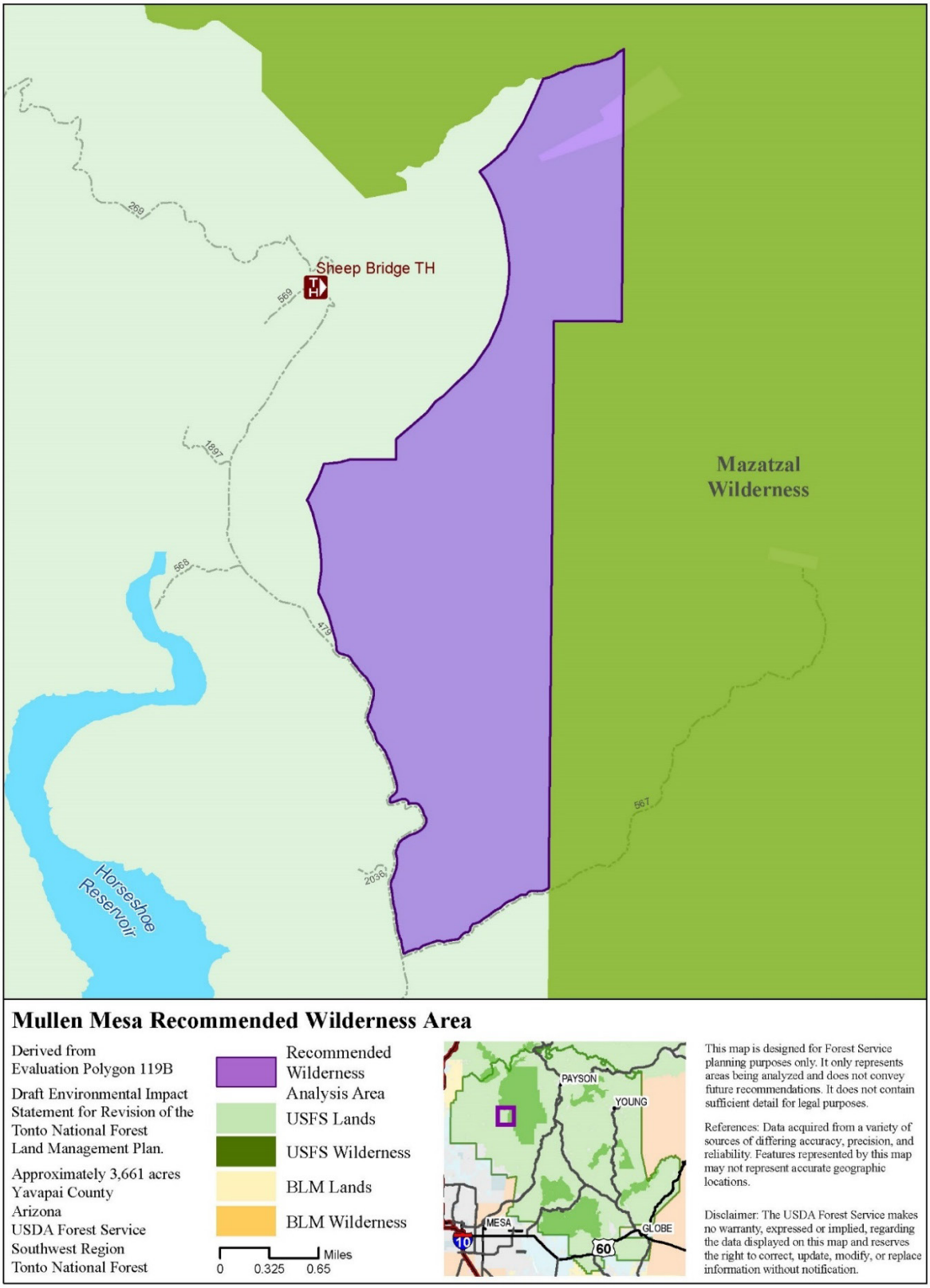


Figure 82. Mullen Mesa recommended wilderness area

Polygon 119e – Dugan Recommended Wilderness Area

Factor	Description
Acres	1,805 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Mazatzal Wilderness boundary, and Bureau of Reclamation first form withdrawal lands. Though the area can be easily delineated on a map, the diversity in boundary markers make this area difficult to locate on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This long, skinny area is located approximately 55 miles from downtown phoenix, just west of the Mazatzal Wilderness on the Cave Creek Ranger District. Elevations in this area range from 2,320 – 3,730 feet. Within this area there are cliff faces, rocky hillsides, grassy ridgetops, and flat volcanic mesas. Vegetation common to the Mojave-Sonoran Desert Scrub (31%), Juniper Grass (33%), Semi-Desert Grassland (35%), and Riparian (1%) Ecological Response Units can be found in this area.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 100% High 1985 Plan Management Area: 1F General Management Area Range Allotment: Red Creek Adjacent to the Mazatzal Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. In semi desert, nonnatives include red brome. Suitable habitat for a variety of game and non-game species can be found in the area. Species and habitat of special designation including Narrow headed gartersnake and critical habitat, golden eagle, bald eagle, southwest willow flycatcher, peregrine falcon, and yellow billed cuckoo. Undeveloped Quality: Appearance of improvements detract from apparent naturalness in some areas. There are non-motorized trails, a spring gauge, and a dirt airstrip are in the polygon. Range improvements include some fence line. Some unauthorized routes can be found in the polygon in low density. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. Opportunities to experience solitude are possible throughout the area. Few signs of civilization detract from solitude in the area. Low use in general throughout the area. Road along the northern boundary road does not get used much. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality and risk. Hiking, hunting, backpacking, and horseback riding can all be found in the area. Other Features of Value: Species and habitat of special designation including Narrow headed gartersnake and critical habitat, golden eagle, bald eagle, southwest willow flycatcher, peregrine falcon, and yellow billed cuckoo. There are known archaeological sites that have been recorded within this polygon. Most of the sites are prehistoric in nature, including petroglyphs, burials, pithouse villages, fieldhouses,

Factor	Description
	hornos, agricultural features and sherd and lithic scatters. Red Creek is a scenic perennial stream in the desert, which supports riparian habitat and native fish. Management to preserve the area's wilderness characteristics is possible throughout most of the area. The eastern portion of the polygon borders the wilderness. This area contains at least one Salt River Project (SRP) improvement and/or right of way. Range management activities occur seasonally and use motorized/mechanized tools and transportation.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of being alone or remote from civilization is possible throughout the area. ● There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality and risk. ● There are known archeological sites. ● Outstanding landscape features and view sheds.

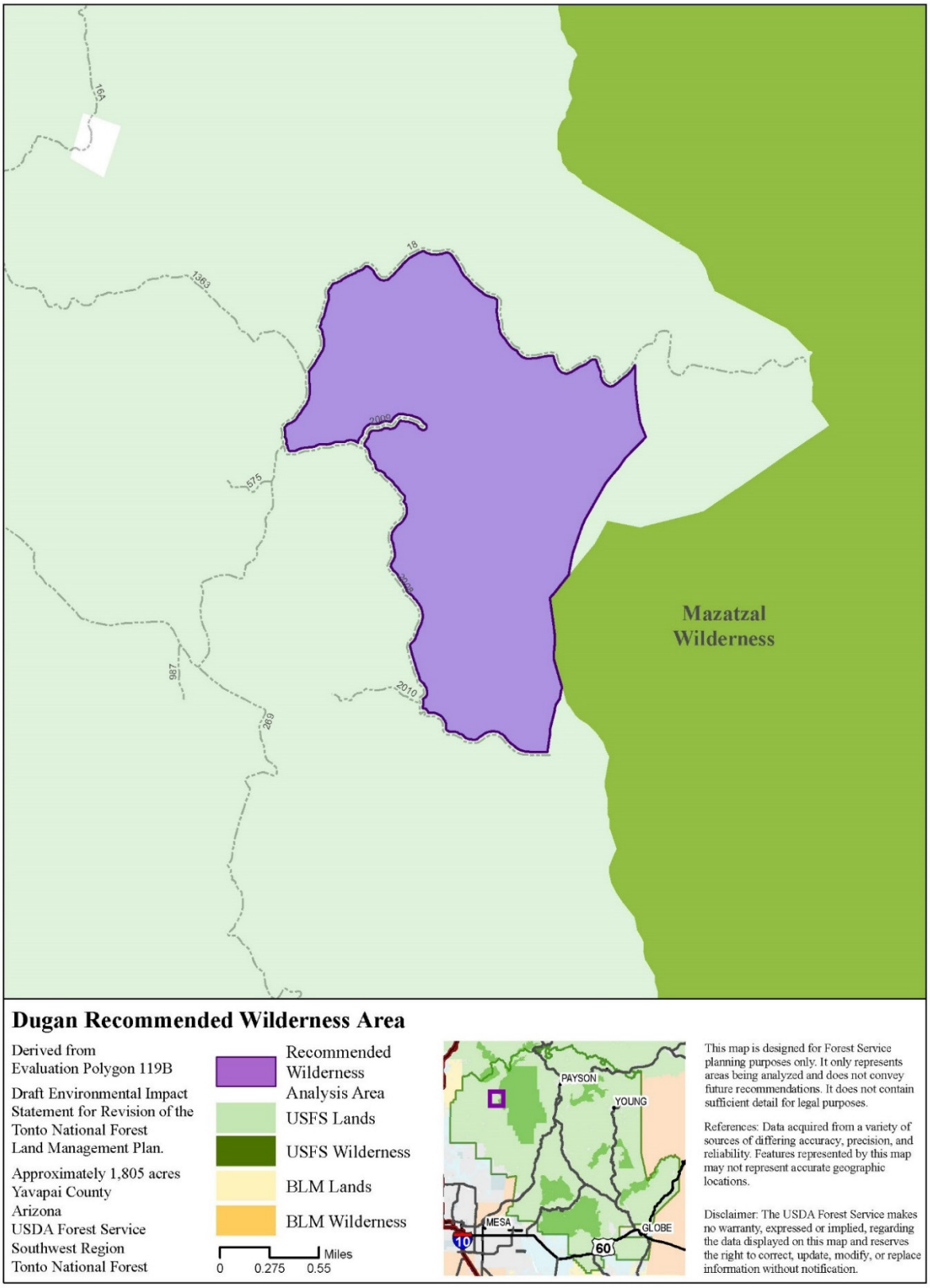


Figure 83 Dugan recommended wilderness area

Polygon 119f – Rugged Mesa Recommended Wilderness Area

Factor	Description
Acres	11,292 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Mazatzal Wilderness boundary, linear improvements (e.g., powerlines), and Bureau of Reclamation first form withdrawal lands. Though the area can be easily delineated on a map, the diversity in boundary markers make this area difficult to locate on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This long, skinny area is located approximately 55 miles from downtown phoenix, just west of the Mazatzal Wilderness on the Cave Creek Ranger District. The area has a fair amount of topographic relief with elevations ranging from 2,315 – 4,820 feet. Within this area there are canyons, river basins, rocky hillsides, grassy ridgetops, and flat volcanic mesas. Vegetation common to the Mojave-Sonoran Desert Scrub (47%), Juniper Grass (35%), Semi-Desert Grassland (16%), and Riparian (2%) Ecological Response Units can be found in this area.
Current uses and management	Recreation Opportunity Spectrum: 47% Semi-Primitive Motorized, 53% Semi-Primitive Non-Motorized Scenic Integrity: 99% High, 1% Very Low 1985 Plan Management Area: 1B Mazatzal Wilderness, 1F General Management Area Range Allotment: Red Creek, Skeleton Ridge Adjacent to the Mazatzal Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Some cottonwood, willow, and nonnative tamarisk and giant reed can be found within riparian areas. Suitable habitat for a variety of game and non-game species can be found in the area. Species and habitat of special designation including Narrow headed gartersnake and critical habitat, golden eagle, bald eagle, southwest willow flycatcher, longfin dace, peregrine falcon, lowland leopard frog, yellow billed cuckoo, and razor back sucker. Undeveloped Quality: Appearance of improvements detract from apparent naturalness in some areas. Sheep Bridge and historic sheep bridge, two system non-motorized trails, spring gauge, rock ring around a hot spring, and a dirt airstrip are in the polygon. Range improvements include some fence line, a gate, and a PVC pipe dispersed throughout the northern portion of the polygon in fairly low density. Some unauthorized routes can be found in the south of the polygon in low density. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. Opportunities to experience solitude are possible throughout the area. Few signs of civilization detract from solitude in the area. Low use in general throughout the area. Cherry stem road does not get used much. Unconfined and Primitive Recreation: There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality and risk. Hiking, hunting, backpacking, and horseback riding can all be found in the area. Other Features of Value: Species and habitat of special designation

Factor	Description
	including Narrow headed gartersnake and critical habitat, golden eagle, bald eagle, southwest willow flycatcher, longfin dace, peregrine falcon, lowland leopard frog, yellow billed cuckoo, and razor back sucker. Archaeological sites have been recorded within this polygon, mostly prehistoric including structures, petroglyphs, burials, pithouse villages, fieldhouses, hornos, agricultural features and sherd and lithic scatters. Red Creek, in the southern portion of this area, is a scenic perennial stream in the desert which supports riparian habitat and native fish. Management to preserve the area's wilderness characteristics is possible throughout most of the area. The eastern portion of the polygon borders the wilderness. This area contains at least one Salt River Project (SRP) improvement and/or right of way. Range management activities occur seasonally and use motorized/mechanized tools and transportation.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate overall wilderness characteristic ranking and had high opportunities for primitive and unconfined recreation
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of being alone or remote from civilization is possible throughout the area. ● There are abundant opportunities for engaging in primitive and unconfined recreation and these opportunities are of high quality and risk. ● There are known archeological sites. ● Outstanding landscape features and view sheds.

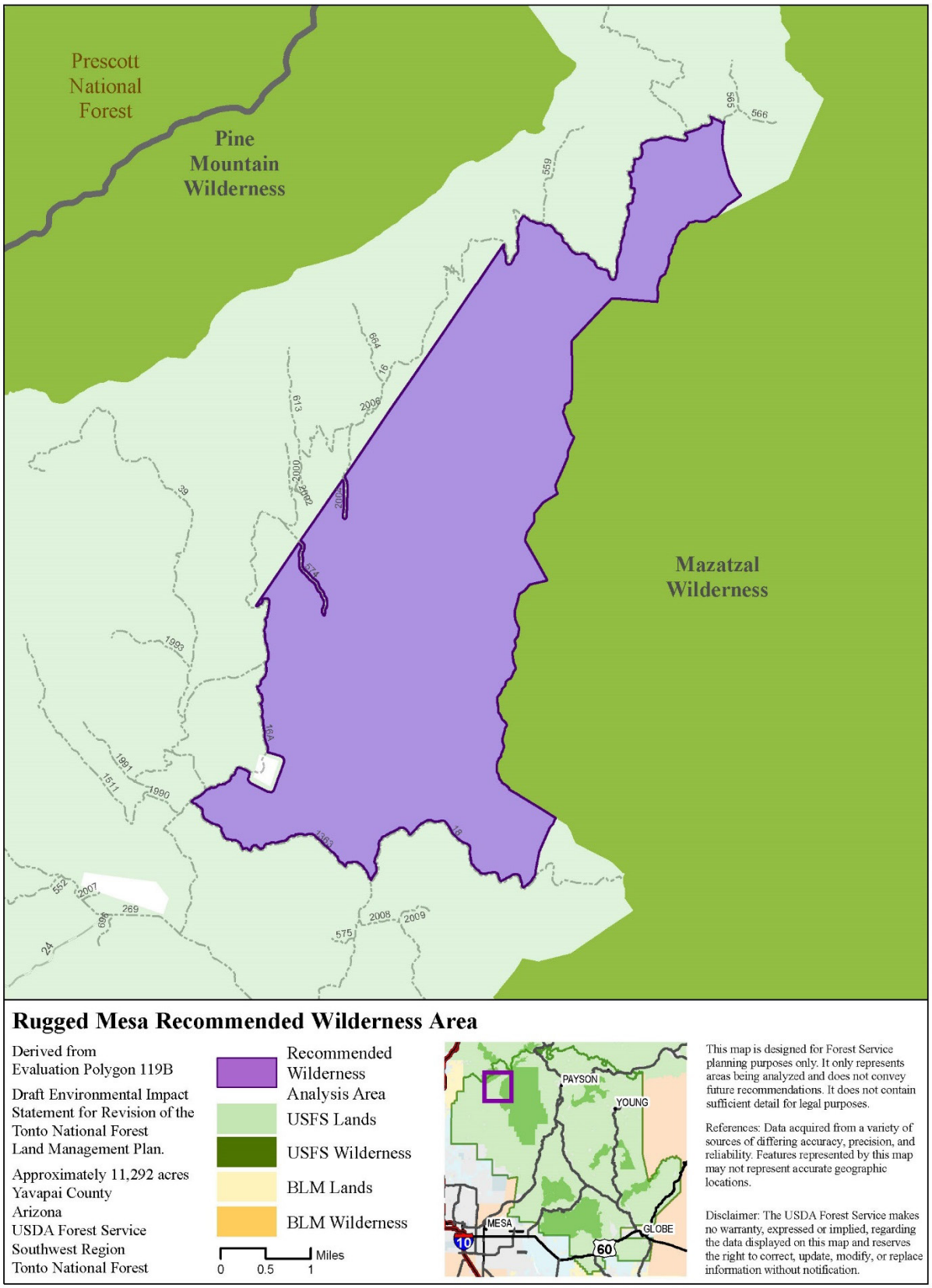


Figure 84. Rugged Mesa recommended wilderness area

Polygon 123a – Tumbleweed Recommended Wilderness Area

Factor	Description
Acres	4,722 acres
Summarized description of the recommended boundary	The boundary follows the Pine Mountain Wilderness boundary and topographical features on the ground, consistent with the boundary of the Pine Mountain Wilderness Contiguous Roadless Area. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area, located in Yavapai County on the Cave Creek Ranger District, spreads from the Southwestern point of the Pine Mountain Wilderness towards the east, west, and south. The area is mostly flat with some rolling desert covered hills. Elevations in this area range from 1,065 – 1,675 feet. This area has vegetation common to the Juniper Grass (83%), Mojave-Sonoran Desert Scrub (7%), Interior Chaparral (5%), and PJ Woodland (5%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 17% Semi-Primitive Motorized, 83% Semi-Primitive Non-Motorized Scenic Integrity: 100% High. 1985 Plan Management Area: 1A Pine Mountain Wilderness, 1F General Management Area Range Allotment: Copper Creek, Red Creek, Six Bar Adjacent to the Pine Mountain Wilderness 100% of this area is managed as the Pine Mountain Contiguous Roadless Area.
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative species include some red brome, thistle and mountain grass. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Appearance of improvements detract from apparent naturalness in most areas. Range improvements include tanks, wells, fence line, and pipe line at moderate density, clustered in the northwest corner of the area and just south of the Pine mountain wilderness. There are no system trails in the area. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. A high level of range improvements are frequent reminders of civilization and make it difficult to experience solitude. High desert scrub provides little screening from improvements or other evidence of human activities. When closer to the wilderness boundary, some opportunities to experience solitude are possible. In approximately 50% of the area opportunities for solitude are possible. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation. Most existing opportunities are poor quality with low risk. A limited amount of hiking, dispersed camping, horseback riding and hunting can be found in the area. When used in conjunction with the adjacent wilderness, opportunities for primitive recreation improve. Primitive recreation opportunities are generally fairly low quality. Other Features of Value: Species or habitats of special status include

Factor	Description
	Lowland leopard frog and Gila chub critical habitat. Silver creek is an important watershed feature on the Forest due to its role in supporting the Gila chub. Management to preserve the area's wilderness characteristics is possible throughout most of the area. The area is adjacent to the wilderness, has terrain limitations that would inhibit the development of user created routes off of adjacent roads.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate ranking for its wilderness characteristics, but significant public comment in the evaluation step warranted further analysis.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● There are known occurrences of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area, though signs of civilization are possible.

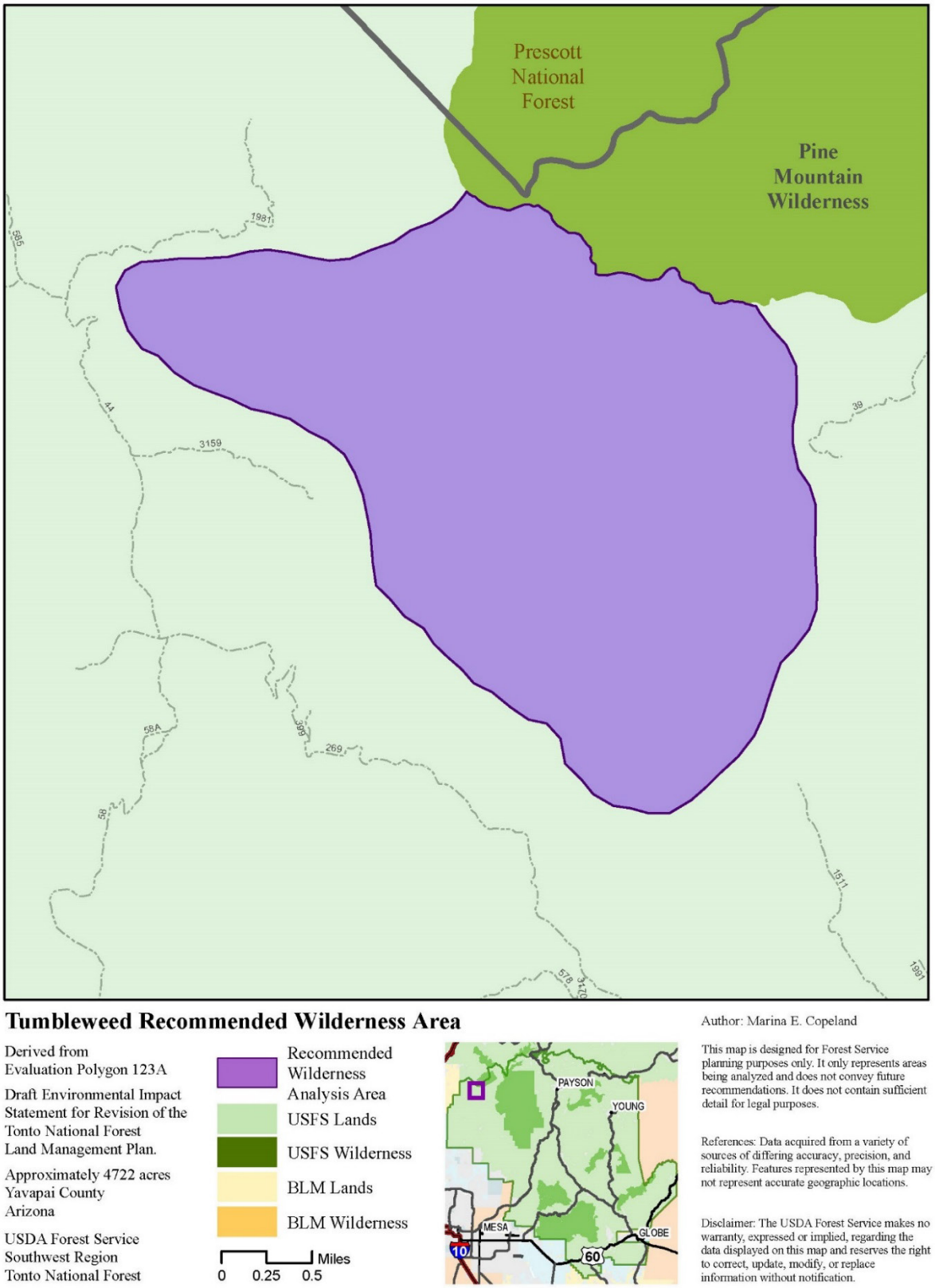
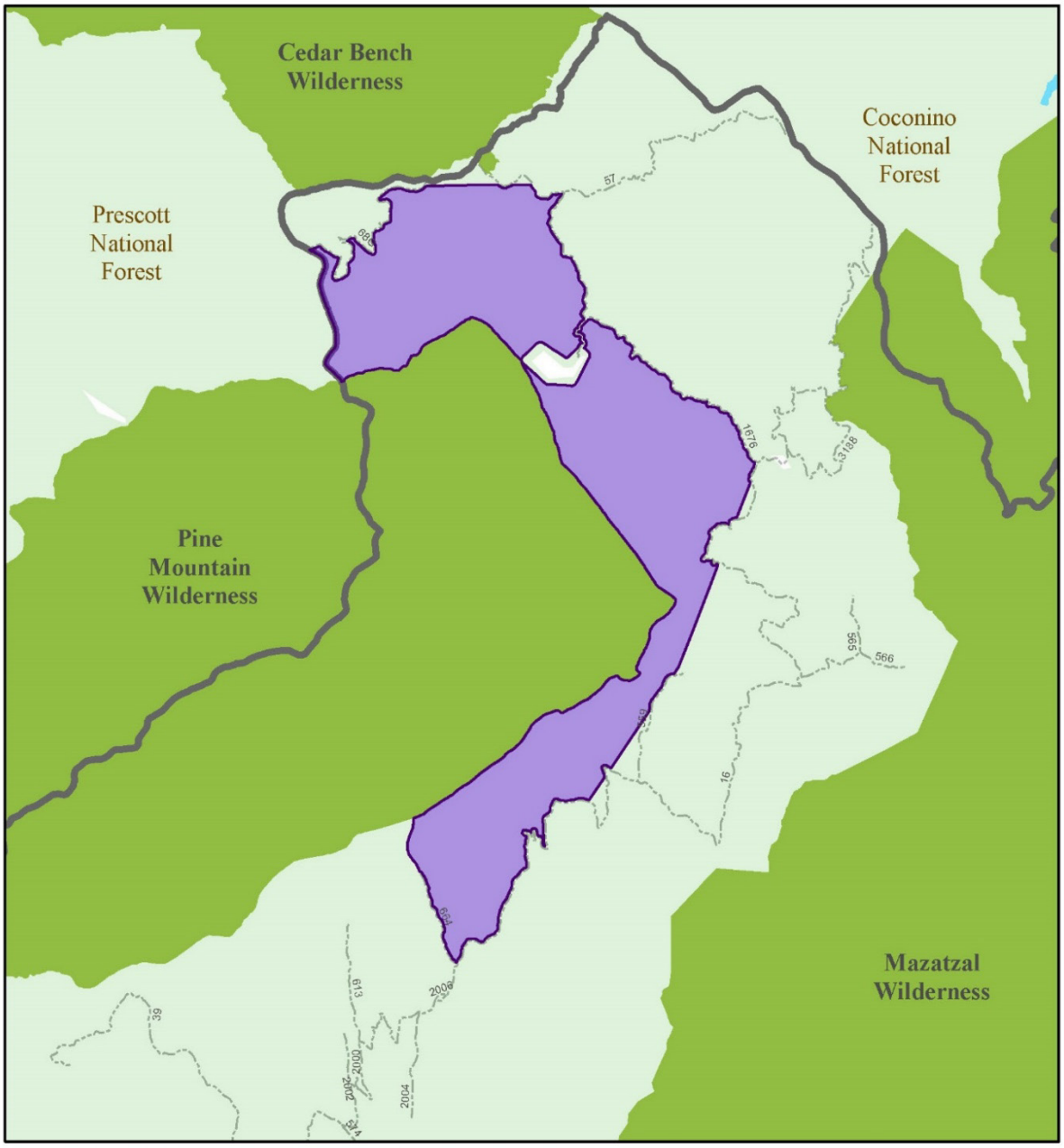


Figure 85. Tumbleweed recommended wilderness area

Polygon 123b – Pigeon Creek Recommended Wilderness Area

Factor	Description
Acres	5,828 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Pine Mountain Wilderness boundary, and is buffered around private land boundaries, making it fairly easy to locate on the map, but difficult to locate from on the ground due to change in boundary features. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	Located in Yavapai County on the Cave Creek Ranger District, this area is bordered on the north, west and south by Cedar Bench Wilderness, Arnold Mesa Roadless Area, and Pine Mountain Wilderness. Elevations in this area range from 915 – 1,830 feet. Topography in this area is similar to the neighboring wilderness areas with hot dry mesas, scant water, desert mountains, and rugged canyons. Vegetation in this area is common to the Juniper Grass (88%), Ponderosa Pine – Evergreen Oak (7%), PJ Evergreen Shrub (3%), and Riparian (2%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 99% High, 1% Very Low. 1985 Plan Management Area: 1A Pine Mountain Wilderness, 1F General Management Area Range Allotment: Red Creek, Skeleton Ridge Adjacent to the Pine Mountain Wilderness 50% of this area is managed as the Pine Mountain Contiguous Roadless area.
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. Nonnative species include some red brome, thistle and mountain grass. Species or habitats of special status include Lowland leopard frog and Gila chub critical habitat. Suitable habitat for a variety of game and non-game species can be found in the area. Undeveloped Quality: Appearance of improvements detract from apparent naturalness in most areas. There is a large concentration of range improvements, including fence line and spring developments. There are no system trails in the area, though a low density of authorized motorized routes can be found in some areas. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. A high level of range improvements are frequent reminders of civilization and make it difficult to experience solitude. When closer to the wilderness boundary, some opportunities to experience solitude are possible. In approximately 50% of the area opportunities for solitude are possible. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation. Most existing opportunities are poor quality with low risk. A limited amount of hiking, dispersed camping, horseback riding and hunting can be found in the area. When used in conjunction with the adjacent wilderness, opportunities for primitive recreation improve. Primitive recreation opportunities are generally fairly low quality.

Factor	Description
	Other Features of Value: None identified Management to preserve the area's wilderness characteristics is possible throughout most of the area, though the presence of the private ranch inholding and range improvements would present some management challenges. The area is adjacent to the wilderness, has terrain limitations that would inhibit the development of user created routes off of adjacent roads. Some evidence of historic mining exists.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a moderate ranking for its wilderness characteristics, but significant public comment in the evaluation step warranted further analysis.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area, though signs of civilization are possible.



Pigeon Creek Recommended Wilderness Area

Derived from
Evaluation Polygon 123B

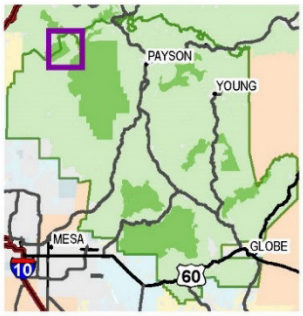
Draft Environmental Impact Statement for Revision of the Tonto National Forest Land Management Plan.

Approximately 5828 acres
Yavapai County
Arizona

USDA Forest Service
Southwest Region
Tonto National Forest

Recommended Wilderness Analysis Area
USFS Lands
USFS Wilderness
BLM Lands
BLM Wilderness

0 0.5 1 Miles



Author: Marina E. Copeland

This map is designed for Forest Service planning purposes only. It only represents areas being analyzed and does not convey future recommendations. It does not contain sufficient detail for legal purposes.

References: Data acquired from a variety of sources of differing accuracy, precision, and reliability. Features represented by this map may not represent accurate geographic locations.

Disclaimer: The USDA Forest Service makes no warranty, expressed or implied, regarding the data displayed on this map and reserves the right to correct, update, modify, or replace information without notification.

Figure 86. Pigeon Creek recommended wilderness area

Polygon 126 – Childs Recommended Wilderness Area

Factor	Description
Acres	402 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Cedar Bench Wilderness boundary, linear improvements (e.g., powerlines), and Bureau of Reclamation first form withdrawal lands, and the Tonto National Forest boundary. Though the area can be easily delineated on a map, the diversity in boundary markers make this area difficult to locate on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This area is located in Yavapai County on the Cave Creek Ranger District along the border between the Tonto National Forest and the Coconino National Forest. The topography in this area consists of a range of grassy ridgetops with elevations ranging from 3,400 – 4,410 feet. This area has vegetation common to Juniper Grass (100%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 100% Semi-Primitive Motorized Scenic Integrity: 93% High, 7% Very Low 1985 Plan Management Area: 1F General Management Area Range Allotment: Skeleton Ridge Adjacent to Cedar Bench Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There are no known vegetation treatments in the area. The presence of exotic, invasive and/or non-native plant and animal communities are found in infrequent small patch sizes in the area including scattered red brome in the grassland and tamarisk, giant reed and fountain grass in the riparian. Suite of nonnative game fish can also be found in the river. Suitable habitat for a variety of wildlife species are found in the area. Species of special status include Sonoran sucker, desert sucker and Bald eagle. Critical habitat for the narrow headed gartersnake and the Northern Mexican gartersnake are identified in the polygon. Undeveloped Quality: There is a low density of range improvements include earthen stock tanks and fence along the perimeter and river. Terrain limits the presence of unauthorized routes. Solitude: Common or significant feeling of being alone or remote from civilization is possible throughout the area. Unconfined and Primitive Recreation: There are few opportunities to engage in primitive and unconfined recreation. Most existing opportunities are poor quality with low risk. Kayaking, hiking, hunting, dispersed camping, horseback riding possible, but generally low quality. Other Features of Value: None Identified Management to preserve the wilderness characteristics is possible throughout the area. There are no projects or management plans that would impact the wilderness characteristics of the area and the presence and extent of management activities and other uses that detract from wilderness characteristics are isolated. The polygon is part of an active range allotment, but improvements are minimal. A small piece of the polygon is adjacent to the Cedar Bench Wilderness.

Factor	Description
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● Vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● There is a low density of noticeable improvements. ● There are known occurrences and populations of species of special status. The social characteristics that provide the basis for suitability are as follows: ● Common or significant feeling of being alone or remote from civilization is possible throughout the area.

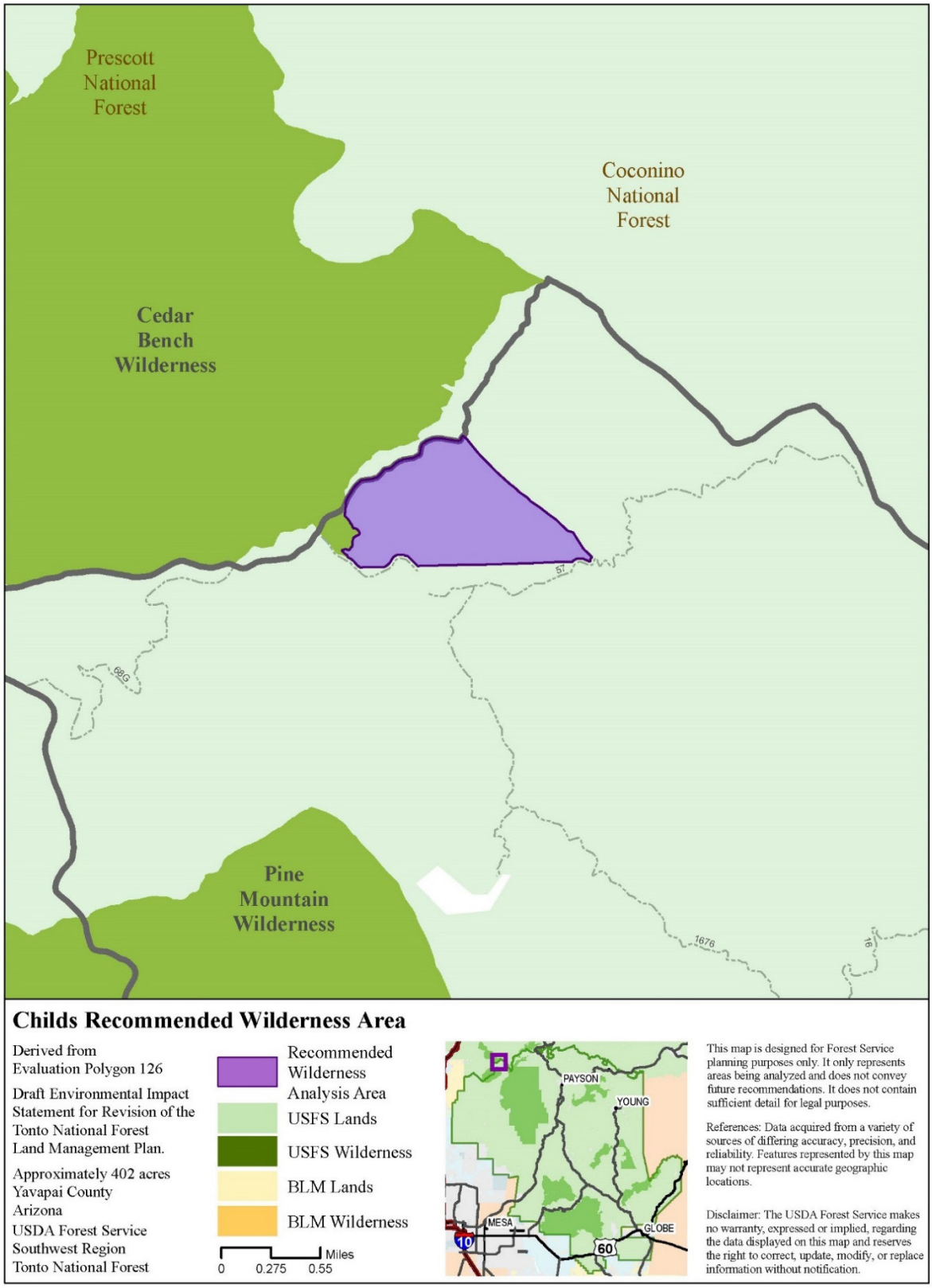


Figure 87. Childs recommended wilderness area

Polygon 131 – Fossil Springs Recommended Wilderness Area

Factor	Description
Acres	30 acres
Summarized description of the recommended boundary	The boundary follows the National Forest System roads, the Tonto National Forest boundary, and the Mazatzal Wilderness boundary, making it fairly easy to locate on the map and on the ground. All adjacent land is managed by the Forest Service.
Brief description of the general geography, topography, and vegetation	This small parcel is located in the Payson Ranger District along the boundary of the Tonto National Forest and Coconino National Forest in Gila County. The small area has little topographic relief with elevations ranging from 3,480 – 3,635 feet. The majority of this area is located in the canyon bottom of Fossil Creek. This area has vegetation common to Juniper Grass (93%) and Riparian (7%) Ecological Response Units.
Current uses and management	Recreation Opportunity Spectrum: 100% Primitive Scenic Integrity: 100% Very High 1985 Plan Management Area: 4A Mazatzal Wilderness Range Allotment: Deadman Mesa Adjacent to Mazatzal Wilderness
Description of the wilderness characteristics and the Forest's ability to protect and manage the area so as to preserve its wilderness characteristics	Natural Quality: To the average forest visitor the vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. There have been no known vegetation treatments in the area. There is a high density of native species (e.g., round tail chub, desert sucker, longfin dace, and Sonora sucker). The presence of exotic, invasive and/or non-native plant and animal communities are sparse to absent in the area. There are some non-native crayfish common in Fossil Creek. Giant fescue in naturalized but is nonnative to the area. Undeveloped Quality: Little or no evidence of human influence on the landscape. Prevalence of improvements is rare or scattered. The presence or appearance of improvements does not detract from apparent naturalness. There are no known improvements. Solitude: Opportunities to feel alone are possible in much of the area, though signs of civilization are possible. Encounters with, or evidence of humans is uncommon. There are no system trails, but a part of the Fossil creek WSR limited entry area (April-Oct) runs through the polygon. Visitors can disperse freely throughout the area and dense vegetation and the sound of creek cover any signs of nearby uses. Unconfined and Primitive Recreation: There are some opportunities for engaging in primitive and/or unconfined recreation. At least some of these opportunities are of high quality and/or risk. Hunting and fishing (Oct-April) occur, but is highly regulated. The fishing season in Fossil Creek is from the first Saturday of October through the end of April - outside of Fossil's high use season. Fishing is catch and release using single barbless hooks only, no live bait, no nets, or any other means for catching fish. Visitors are not allowed to camp, but day use activities include bird watching and kayaking. Other Features of Value: There is a high density of native fish species including round tail chub, desert sucker, longfin dace, Sonora sucker The Fossil Creek Wild and Scenic River runs adjacent to this area and has

Factor	Description
	unique travertine features, a riparian view shed, and high water quality condition rating. When managed in conjunction with the adjacent wilderness, management to preserve wilderness characteristics is possible. Motorized incursions are limited by the river and existing regulations. There is a limited entry permit system already in place. The area is a Traditional Cultural Property. This area is within the 4FRI footprint.
Brief summary of the factors considered and the process used in evaluating the area and developing the alternatives	● The area received a high overall wilderness characteristic ranking in the evaluation.
Brief summary of the ecological and social characteristics that would provide the basis for suitability for inclusion in the National Wilderness Preservation System	The ecological characteristics that provide the basis for suitability are as follows: ● The vegetation appears natural, reflects healthy ecosystem function, and shows little to no influence of previous human intervention. ● Little or no evidence of human influence on the landscape. ● There is a high density of native fish species. ● Fossil Creek Wild and Scenic River has high water quality conditions. The social characteristics that provide the basis for suitability are as follows: ● Opportunities to feel alone are possible in much of the area. ● There are some opportunities for engaging in primitive and/or unconfined recreation. ● There are outstanding landscape features associated with Fossil Creek. ● Fossil Creek is a Traditional Cultural Property.

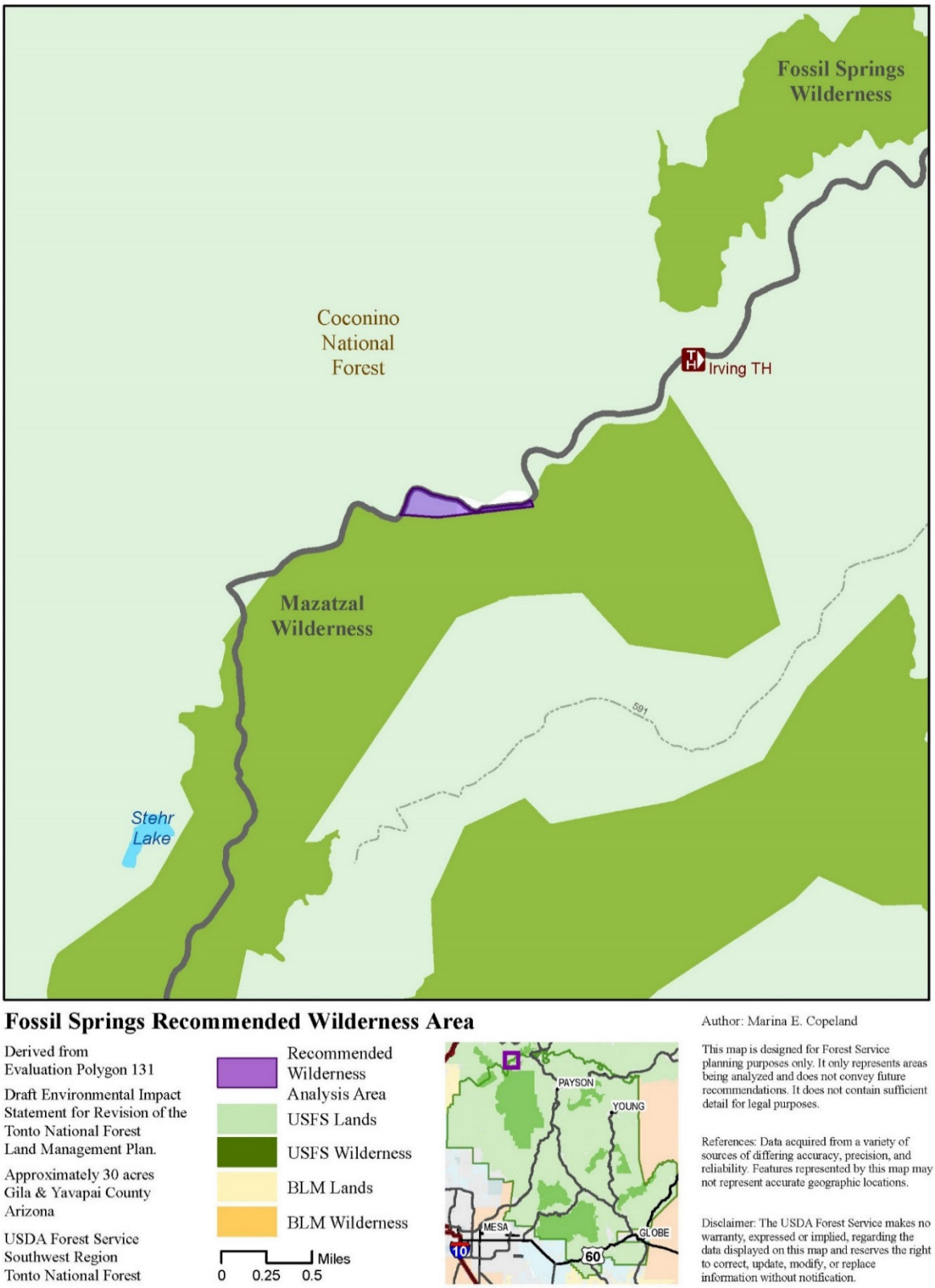


Figure 88. Fossil Springs recommended wilderness area

Step 4: Recommendation

As part of the finalized forest plan and the signing of the record of decision, the forest supervisor of the Tonto National Forest may recommend suitable lands for National Wilderness Preservation System designation to the Chief of the U.S. Forest Service (assuming that the record of decision contains such suitable lands identified as recommended wilderness areas). That recommendation may then be forwarded to the Secretary of Agriculture, and ultimately to Congress, for their consideration and possible designation. Congress has reserved the authority to make final decisions on wilderness designation.

Management of Recommended Wilderness Areas

Recommended wilderness areas have interim protection measures outlined in the Tonto National Forest revised forest plan. Chapter 70 of the 2012 Planning Rule provides direction for the interim management of Forest Service identified recommended wilderness areas.

1. Plan components applicable to a recommended area must protect and maintain the social and ecological characteristics that provide the basis for wilderness recommendation.
2. The plan may include one or more plan components for a recommended wilderness area that:
    a. Enhance the ecological and social characteristics that provide the basis for wilderness designations;
    b. Continue existing uses, only if such uses do not prevent the protection and maintenance of the social and ecological characteristics that provide the basis for wilderness designation;
    c. Alter existing uses, subject to valid existing rights; or
    d. Eliminate existing uses, except those uses subject to valid existing rights.

These protection measures apply until a decision is made of the future use the area. Only Congress may make final decisions on wilderness designation.

Appendix E. Wild and Scenic Rivers Eligibility Process

Introduction

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve rivers that contain outstanding natural, cultural, and recreational values in a free-flowing system, and are for the enjoyment of present and future generations.

Over the past thirty years several wild and scenic rivers eligibility studies were conducted on rivers and river segments on the Tonto National Forest. Those studies include the 1984 Arizona Wilderness Act, a Resource Information Report for Potential Wild, Scenic, Recreational River Designations, National Forest of Arizona (1993), and the Fossil Creek Resource Assessment (2009). As a result of this earlier work the Tonto National Forest identified 26 river segments as potentially eligible for wild and scenic rivers designation. Determinations for eligibility were made using the process outlined in the Wild and Scenic Rivers Act of 1968.

As part of the Tonto National Forest plan revision process, under the direction of the 2012 Planning Rule (36 CFR Part 219), a new wild and scenic rivers eligibility study was conducted for the Tonto National Forest planning area[13]. When beginning this process, the interdisciplinary team reviewed the earlier work from the 1993 effort and determined that an additional, more comprehensive study was required to fulfill the mandates set forth in the 2012 Planning Rule. In the 1993 study not all named streams were evaluated and a region of comparison was not used to evaluate each segment. Therefore, the potentially eligible segments from the 1993 study were evaluated along with all other named streams during this process.

For a river to be eligible for the wild and scenic rivers designation, it must be free flowing, and possess one or more outstandingly remarkable values[14]. Outstanding remarkable values include: scenery, recreation, fish, historic and cultural, geography, and other values. Further information on the process of selecting national wild and scenic rivers can be found in Chapter 80 of the Land Management Handbook.[15] In this study, every named and free flowing stream and river within the Tonto National Forest planning area were considered for wild and scenic river eligibility, including all segments from the 1993 study. The results of the comprehensive study are included in this document.

Relevant laws, Regulations, and Policy

National Wild and Scenic River System Act of 1968

Congress passed the Wild and Scenic Rivers Act of 1968 for the purpose of preserving rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is recognized for safeguarding the special character of these rivers, while also allowing for their appropriate use and development. The Act promotes river management across political boundaries and public participation in the development of direction for river protection.

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[13] [13]For more information about this eligibility study and a list of all segments considered see https://www.fs.usda.gov/detailfull/tonto/landmanagement/planning/?cid=fseprd594556&width=full.

[14] The management corridor for eligible wild and scenic rivers includes National Forest System land, generally encompassed within one-quarter mile of the riverbanks ordinary high water mark on either side of a river studied for eligibility or suitability that contains the river and its outstandingly remarkable values (FSM 1909.12, 80.5)

15 15 Accessible on the USDA Forest Service 2012 Planning Rule website: https://www.fs.usda.gov/detail/planningrule/home/?cid=stelprd3828310.

During the forest plan revision process, the Forest Service must review all streams for their potential eligibility for designation in the National Wild and Scenic Rivers System as directed under section 5(d)(1) the Wild and Scenic Rivers Act of 1968, as amended).

Section 1(b) of the Act expresses Congressional policy for America's rivers:

> It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital conservation purposes.

Regulations

The National Forest Management Act requires the Forest Service to develop a planning rule under the principles of the Multiple-Use Sustained-Yield Act of 1960, which sets the process for the development and revision of land management plans. In 2012, 36 CFR Part 219 was passed to codify the direction in the National Forest Management Act and the Multiple-Use Sustained-Yield Act. This regulation is known as the 2012 Planning Rule. The 2012 Planning Rule's Final Directives (Forest Service Handbook 1909.12 Chapter 80) provide additional guidance for conducting a wild and scenic rivers eligibility study during the forest plan revision. The Tonto National Forest used this guidance to conduct the wild and scenic rivers eligibility study for the Tonto National Forest's planning area.

Wild and Scenic River Eligibility Process

As part of forest plan revision, under the 2012 National Forest Planning Rule, the Tonto National Forest is analyzing rivers and streams that may be eligible for inclusion in the National Wild and Scenic River System. No wild and scenic river designation will be made as a result of plan revision as Congress has reserved the authority to make the final decision regarding all wild and scenic river designations.

The eligibility study was conducted through a series of meetings and workshops aimed at each of the three steps below. Much of the base information was developed from geographic information systems, such as the base maps, determining the number and location of all "named streams", and identifying the location of developments along or nearby these rivers and streams. Specific resource information about each river and stream was gathered from maps and professional knowledge provided by Tonto National Forest resource specialists and comments received by the public using ArcGIS online, an online mapping tool. The mapping tool allowed the public to submit comments on specific stream segments about the potential outstandingly remarkable values and the classification of the eligible segments.

Steps as Part of the Plan Revision Process

Step 1: Eligibility

The Tonto National Forest identified all rivers and streams that are named, free flowing, and contain at least one outstandingly remarkable value in relation to similar streams in an established region of comparison. Outstandingly remarkable values include scenery, recreation, fish, historic and cultural, geography, and other values. Three main components to this step are described in this study:

- Identify all free-flowing named streams/rivers.
- Identify the region of comparison used for the outstandingly remarkable values.
- Evaluate all free-flowing named streams and determine if they possess outstandingly remarkable values within the region of comparison.

Step 2: Classification

Each identified eligible segment is assigned a classification. Congress classifies wild, scenic and recreational rivers into one of three different classifications based on different levels of development and access that exist at the time of the designation. These classifications are:

- Wild – 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 – Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- Recreation – 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.

Criteria used for the classification is directly from the Land Management Planning Handbook 1909.12, chapter 80.

Step 3: Documentation of Eligibility

As part of the forest plan, the Tonto National Forest identified eligible segments providing the basis for making the eligibility determination. The results of the eligibility process are contained in this wild and scenic rivers eligibility study document as well as in data spreadsheets. Specific river data, description tables, and maps are located in the Documentation of Eligibility section of this document.

Management direction for the eligible segments is provided in the revised Tonto National Forest plan. These segments will be managed to protect the outstandingly remarkable values for which they are eligible and to retain their classification identified.

Steps Outside of the Plan Revision Process

Step 4: Suitability and Recommendation

Any eligible river may be studied for its suitability for inclusion in the National Wild and Scenic River System at any time. A suitability study provides the basis for determining which eligible rivers or river segments should be recommended to Congress as potential additions to the National System. The Tonto National Forest will not be pursuing suitability or recommendation as part of the plan revision effort.

Step 5: Designation

The final step in the wild and scenic river evaluation process is Congressional designation. The Tonto National Forest will not pursue designation as part of the forest plan revision effort as this step follows a suitability study and associated recommendation. For a detailed description of the process from inventory through designation, please refer to the Forest Service Land Management Planning Handbook 1909.12, chapter 80.

Eligibility

The purpose of the eligibility step is to identify all rivers and streams that are named, free flowing, and contain at least one outstandingly remarkable value in relation to similar streams in an established region of comparison. Outstandingly remarkable values include scenery, recreation, fish, historic and cultural, geography, and other values.

Identifying all Free-Flowing Named Streams and Rivers

The named streams were identified using the National Hydrography Dataset flowline feature class. The National Hydrography Dataset and associated stream names from the geographic names information system were cross checked with a 7.5 minute quad for accuracy.

The Wild and Scenic Rivers Act defines "free-flowing" as existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence of low dams, diversion works, or other minor structures at the time any river is proposed for inclusion in the national system does not automatically disqualify it for designation, but future construction of such structures is not allowed. The guidelines state, "The fact that a river segment may flow between large impoundments will not necessarily preclude its designation. Such segments may qualify if conditions within the segment meet the eligibility criteria."

"Free flowing" rivers are able to engage in channel forming processes and move across the landscape naturally. Rivers with intermittent flows that are enough to maintain the outstandingly remarkable values are considered "free flowing."

When applying this definition to the named streams, all free-flowing named rivers and streams within the Tonto National Forest's planning area, were identified. Previously identified rivers and streams were reviewed to determine if there were any changes to their free-flowing characteristics since the earlier 1993 eligibility study. Through this review, it was determined that there are 345 named rivers and streams within the Tonto National Forest's planning area. Figure 89 displays all named streams that were studied for eligibility.

Once the named rivers and streams within the Tonto National Forest planning area were identified as free flowing, the Tonto National Forest hosted three Wild and Scenic River Educational Forums. These occurred in in June 2016 with meetings in Payson, Globe, and Scottsdale, Arizona. The purpose of these meetings was to educate the public about the Wild and Scenic Rivers Act, describe each outstandingly remarkable value, review the wild and scenic river eligibility process, which would be a part of the overall plan revision process, and demonstrate how to use the Wild and Scenic River Story Map, an online collaborative mapping tool used for submitting feedback and sharing information. To make the information available to those who could not attend in person, the power point presentation shown at these meetings was made available to the public on the Tonto National Forest's forest plan revision website: www.fs.usda.gov/goto/tontoplan.

Upon further review requested within public comments on the draft environmental impact statement (March 2020), the Tonto National Forest has removed the Lower Salt River from eligibility in the National Wild and Scenic Rivers System based on its inability to meet the definition of free-flowing. More information on this determination can be found in the Changes between Draft and Final section, below. Since it went through the entire wild and scenic river eligibility process, it is included on maps within this document showing the reviewed streams.

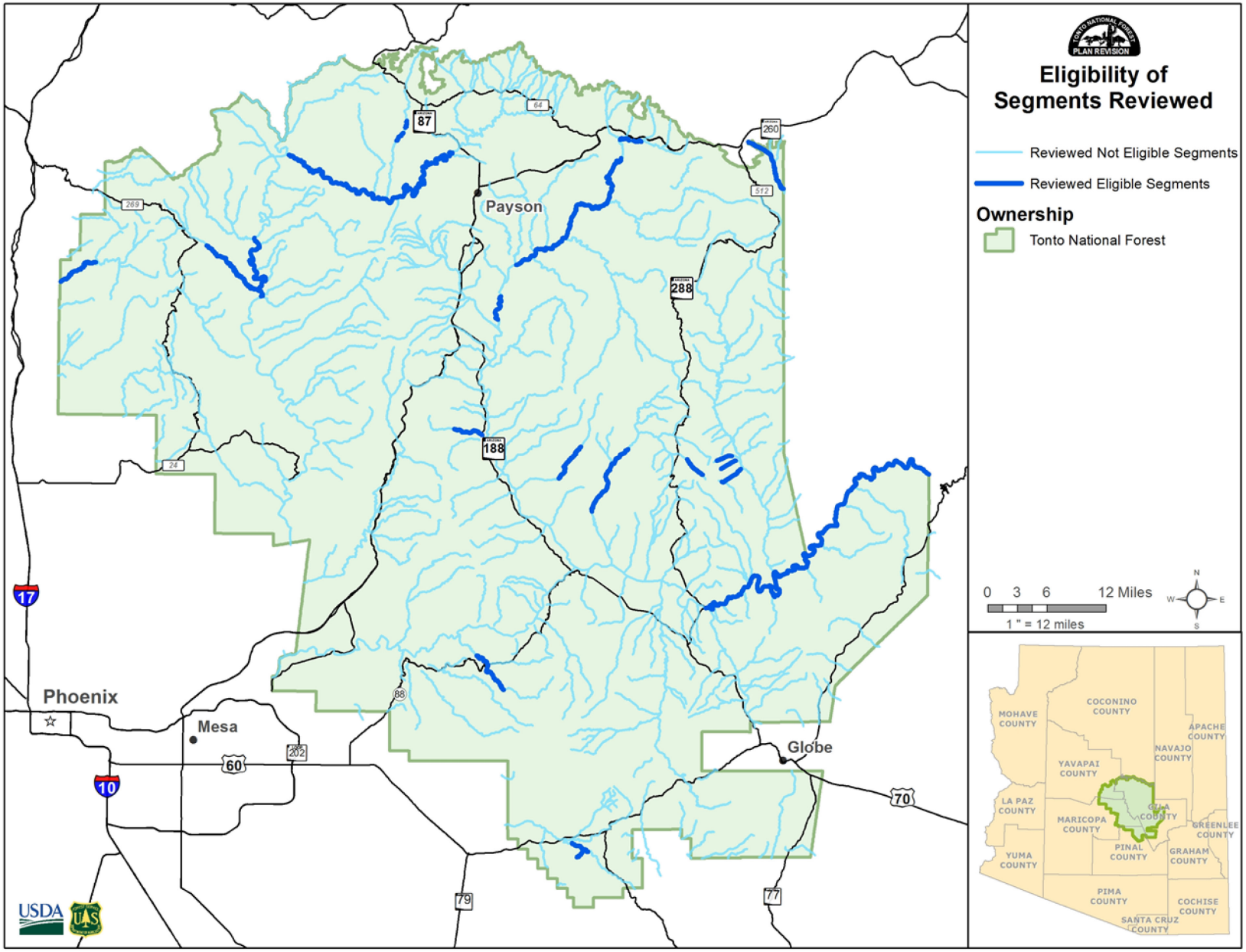


Figure 89. All named streams reviewed for eligibility.

Following the educational forums, the public was encouraged to submit feedback on outstandingly remarkable values using the Wild and Scenic River Story Map. The first informal comment period ran from July 1, 2016 – August 1, 2016. The public was asked to make comments on the specific locations (streams and river segments) that possess an outstandingly remarkable value and to indicate any known improvements that might affect the free-flowing function. In addition to comments on the story map the Tonto National Forest accepted comments through emails and letters. A summary of public input received in this comment period are as follows:

- 15 streams were identified by the public as potentially having scenery outstandingly remarkable values
- 8 streams were identified by the public as potentially having recreation outstandingly remarkable values
- 1 stream was identified by the public as potentially having geologic outstandingly remarkable values
- 2 streams were identified by the public as potentially having fish outstandingly remarkable values
- 3 streams were identified by the public as potentially having wildlife outstandingly remarkable values
- 1 stream was identified by the public as potentially having cultural or historic outstandingly remarkable values
- 21 streams were identified by the public as potentially having either other outstandingly remarkable values or a general comment was made about the stream segment

These comments were compiled and used in an internal workshop held in August 2016 to evaluate all named streams on the Tonto National Forest and identify segments with outstandingly remarkable values. As a result of public comments additional segments were included in the outstandingly remarkable value discussions and a stronger knowledge about each segment was provided.

More information on the internal eligibility workshop can be found in the next sections.

Identifying the Region of Comparison

The region of comparison is a geographic area that provides the basis for meaningful comparative analysis of potentially eligible rivers. The Tonto interdisciplinary team was tasked with identifying the region of comparison for the resources of scenery, geology, recreation, wildlife, fisheries, cultural resources, plants and other natural features (and outstandingly remarkable value within each resource) which would then serve as the basis for meaningful comparative analysis. The following further describes aspects and importance of the region of comparison (FSH 1909.12 Chapter 82.73):

- The region of comparison may vary for different rivers and for different resource outstandingly remarkable values. For example, the appropriate region of comparison for scenic values may be an entire national forest or grassland, while for cultural values it may be the portion of the state in which the river is located
- The region of comparison should be scaled at an appropriate level for the type of river value being evaluated.
- Alternatively, the responsible official may conclude that a single region of comparison can encompass the evaluation of outstanding remarkable values.
- Once the region of comparison is identified, a river's values can then be analyzed in comparison with other rivers in that area. Each value may have its own region of comparison and, thus, multiple regions of comparison may be used to evaluate one river.

During the August wild and scenic river workshop, the team discussed potential ideas for regions of comparison to represent each of the resources of scenery, geology, recreation, wildlife, fisheries, cultural resources, plants and other natural features. Outstandingly remarkable values are those values that still distinguish themselves as unique or exemplary in the region of comparison. Many potential areas were considered for the region of comparison such as: the Arizona Department of Water Resources Geographic Planning Areas, Central Highlands physiographic Province, Hydrologic Unit Code 4 merged, the state of Arizona, Forest Service Region 3 boundaries, Tonto National Forest boundary, etc. Initially, the group chose the Tonto National Forest as their region of comparison for all outstandingly remarkable values, but upon further discussion and analysis, decided the Tonto National Forest boundary would not lead to meaningful comparison. The Tonto National Forest's planning area is large with a wide variety of unique resource and river values, it was recognized that a larger region of comparison would be necessary to adequately study the eligible rivers and streams. It was decided that each of the outstandingly remarkable values could share the same region of comparison as long as it was large enough to capture the outstandingly remarkable value characteristics.

After considerable discussion, the team chose the boundary of the state of Arizona as the region of comparison for the wild and scenic eligibility study (figure 90) because it meets the needs as described in the paragraph above. This region of comparison was acceptable for all resource areas and served as the basis for meaningful comparative analysis in the eligibility process. State boundaries have also been used for other eligibility studies with successful comparison. In addition, the 1993 eligibility study was conducted for the State of Arizona and it would seem that if there was a region of comparison documented in that study, it would have been the State of Arizona.

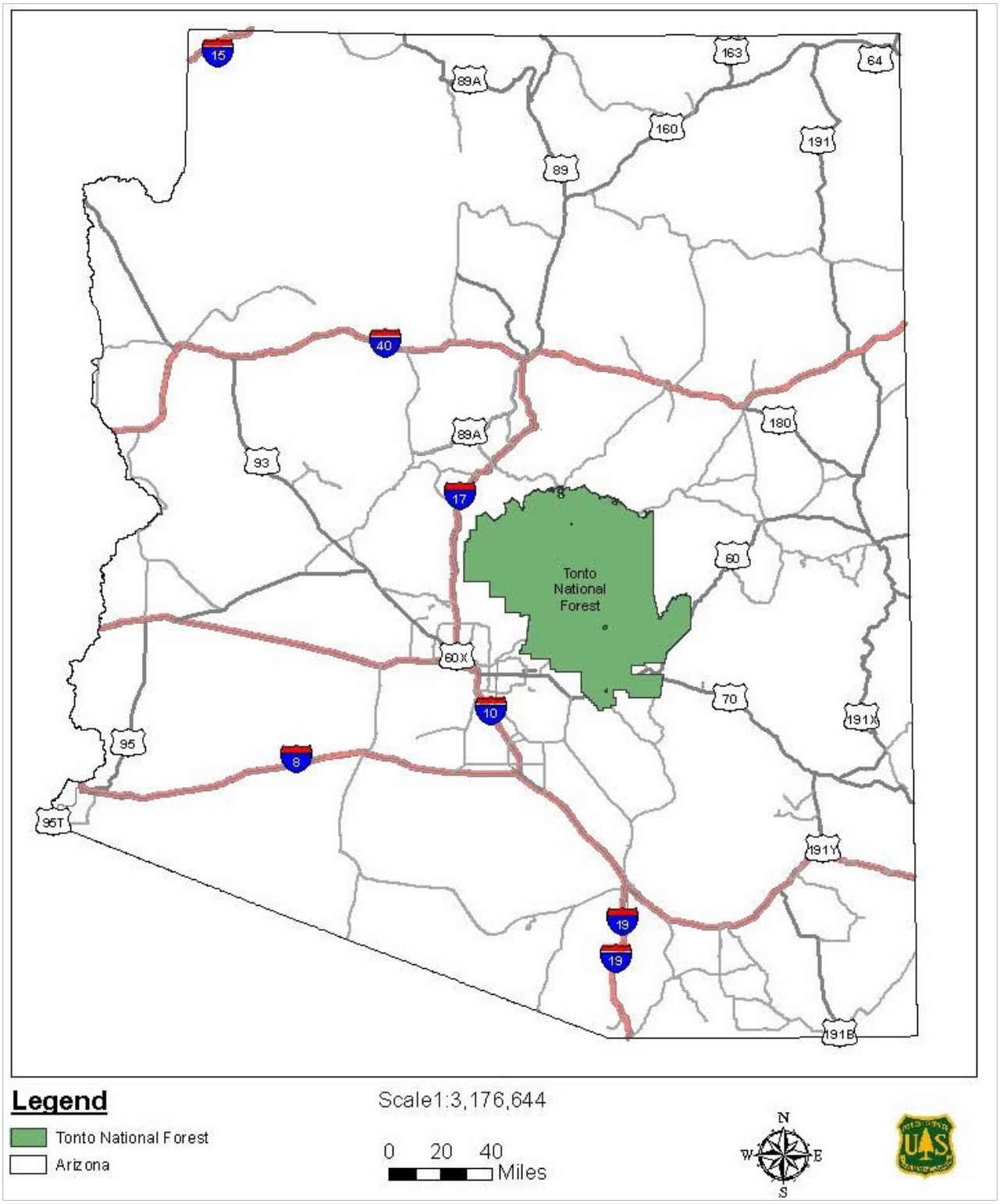


Figure 90. The Tonto National Forest shown within the state of Arizona, which is the region of comparison for wild and scenic river eligibility determinations

Evaluating all Free-Flowing Named Streams for Outstandingly Remarkable Values

The Wild and Scenic Rivers Act establishes a set of categories for determining the outstandingly remarkable values for resource areas. The Forest Service has further established baseline criteria to foster greater consistency within the agency and with other Federal river-administering agencies in evaluating eligibility under Forest Service Handbook (FSH) 1909.12, chapter 82.14a. The evaluation criteria, as outlined by the directives, are minimum thresholds in the establishment of each outstandingly remarkable value. The criteria within the resource category may be modified and additional criteria may be included to make them more meaningful in the area of comparison.

During the August 2016 wild and scenic river internal workshop, the team established baseline evaluation criteria for scenery, recreation, geology, fish populations and habitat, wildlife populations and habitat, historic and cultural resources, and other natural river related values. This information was fine-tuned from the directives, based on public input received during the Wild and Scenic River Educational Forum, the public commenting period, and resource specialist knowledge. The final evaluation criteria for each resource area are documented on page 355. No "additional criteria" were identified for the Tonto National Forest. These criteria were applied in the 2016 eligibility study process.

Final Evaluation Criteria

Scenery

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions, that provide river users with scenery that is spectacular and/or not common to other rivers in the region. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed, may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

Recreation

Recreational opportunities are, or have the potential to be, popular enough to attract visitors from throughout or beyond the region of comparison or are unique or rare within the region. River-related opportunities include, but are not limited to, sightseeing, interpretation, wildlife observation, camping, photography, hiking, fishing, hunting, and boating. The river may provide settings for national or regional usage or competitive events.

Geologic

The river, or the area within the river corridor, contains one or more examples of a geologic feature, process, or phenomenon that is unique or rare within the region of comparison. The feature(s) may be in an unusually active stage of development, represent a "textbook" example, and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, or other geologic structures).

Fisheries

Fish values may be judged on the relative merits of either fish populations or habitat, or a combination of these river-related conditions.

Populations: The river is nationally or regionally an important producer of resident or anadromous fish species. Diversity of fish species or the presence of wild stocks or Federal or State listed species with a

status of endangered, threatened, proposed or candidate, species of conservation concern, or species of greatest conservation need are of particular significance.

Habitat: The river provides uniquely diverse or high quality habitat for fish species indigenous to the region of comparison. Exemplary habitat for wild stocks or Federal or State listed species with a status of endangered, threatened, proposed or candidate, species of conservation concern, or species of greatest conservation need are of particular significance.

Wildlife

Wildlife values may be judged on the relative merits of either wildlife populations or habitat, or a combination of these river-related conditions.

Populations: The river or river corridor contains nationally or regionally important or uniquely diverse assemblage populations of indigenous wildlife species, particularly Federal or State listed species with a status of endangered, threatened, proposed or candidate, species of conservation concern, or species of greatest conservation need.

Habitat: The river or river corridor provides uniquely diverse or uniquely high quality habitat for wildlife of national or regional significance (e.g., Federal or State listed species with a status of endangered, threatened, proposed or candidate, species of conservation concern, or species of greatest conservation need), particularly where such habitats meet the year-round or important seasonal biological needs of the species and free of harmful nonnative species.

Historic

The river, or area within the river corridor, contains important evidence of occupation or use by humans. Sites may have national or regional importance for interpreting history or prehistory.

History: Site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare or one-of-a-kind in the region. A historic site or feature, in most cases, is 50 years old or older.

Prehistory: Sites may have unique or rare characteristics or exemplary human interest value; represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups, or may have been used for rare sacred purposes.

Natural

Values for botanical, riparian, and ecological outstandingly remarkable values were judged on the condition of the system, plant population or habitat, or a combination of these river related characteristics.

Botanical: The river or river corridor contains nationally or regionally important or diverse populations of plant species, particularly Federal or State listed or candidate threatened or endangered species or species of conservation concern.

Riparian: The quality of the riparian vegetation within the river corridor is unique or rare within the region of comparison. This may represent a “text-book” example of a riparian system, or represent a unique and rare riparian ecosystem.

Ecological: All other ecological values were judged on the ecological condition of the river or river corridor as it compares to the region of comparison. This includes soil structure, impact of invasive species, and water quality.

Review of Segments for Eligibility

The review of all free-flowing named streams was conducted in two phases. The detailed information and review results from each phase can be found in the sections below.

Wild and Scenic River Eligibility Review Phase One

During the August 2016 wild and scenic river internal workshop, the interdisciplinary team systematically reviewed all 345 named free-flowing streams and compared them to the final evaluation criteria to identify the presence of outstandingly remarkable values utilizing public comments received throughout the process. Additionally, 3 streams from internal sources and 2 streams from public comments were examined for potential outstandingly remarkable values for a total of 350 streams, about 2,400 miles, reviewed. The interdisciplinary team applied the evaluation criteria to each stream along with the following requirements from the Wild and Scenic Rivers Act:

- outstandingly remarkable values must be river related,
- be located in the river or on its immediate shore lands (generally within 0.25 miles on either side of the river, but may include adjacent areas needed to protect identified values),
- contribute substantially to the functioning of the river ecosystem, or
- owe the location or existence to the presence of the river.

The interdisciplinary team considered the area within 0.25 miles of the high water marks on both sides of a river, as well as other features outside this corridor, such as tributaries supporting rearing and spawning habitat, if their inclusion is essential for the protection of the river's outstandingly remarkable values. Additional factors considered by the interdisciplinary team for each stream were:

- determine if resource values and attributes are unique, rare, or exemplary within the region of comparison, which is the State of Arizona, and
- determine if a river may qualify for a given resource value based upon an aggregate of important values, none of which would confer eligibility standing alone. For example, a series of unusual and distinctive river-related geologic features may together qualify a segment as exhibiting an “outstandingly remarkable geologic value” even though no one element meets the criteria alone.

The determination that a river area does or does not contain one or more outstandingly remarkable values is a professional judgment on the part the responsible official as informed by an interdisciplinary team, best available scientific information, and public participation (FSH 1909.12 Ch. 82.17).

The systematic approach used by the interdisciplinary team included reviewing the streams identified through public input, previous studies, and professional judgement. ArcMap, a tool for working with maps and geographic information, was used to display the named streams in context with spatial data representing attributes of the resource themes associated with identification of outstandingly remarkable values (location of critical habitat, special status species occurrence data, cultural resources etc.).

In the phase one of the wild and scenic river eligibility review, the interdisciplinary team identified the streams with potential outstandingly remarkable values based on application of the evaluation criteria and comparison to other similar resources on the Tonto National Forest (see tables in the planning record for details). For each resource value the interdisciplinary team determined if the values and attributes were unique, rare, or exemplary. This included streams with no known outstandingly remarkable values and streams that potentially had outstandingly remarkable values, but further study was needed. The results of the coarse-first look at the free-flowing named streams during the August 2016 wild and scenic river internal workshop resulted in approximately 80 streams remaining on the list of streams to be studied

further. This information can be found on "Named Streams" tab in the Wild and Scenic River Eligibility Rationale Spreadsheet.

Wild and Scenic River Eligibility Review Phase Two

Further review of the 80 streams reviewed in Phase 1 as "further study needed" was conducted during meetings in January and February 2017. The interdisciplinary team members coordinated with Tonto National Forest staff, regional office staff, and other agencies (for example, U.S. Fish and Wildlife Service and the Arizona Department of Game and Fish) prior to the meetings regarding any questions or clarification on resource information directly related to potential outstandingly remarkable values. All 80 streams were analyzed using the state of Arizona boundary for meaningful comparison. The information gathered from stakeholders and resource specialists was used to closely examine the 80 streams and determine if there is an outstandingly remarkable value within the river and river corridor. The rationale can be found on "Segments Further Studied" tab of the Wild and Scenic River Eligibility Rationale Spreadsheet.

Phase 2 Results: Eligible Stream Segments

The phase 2 review resulted in a draft list of 23 stream segments with outstandingly remarkable values. These eligible segments and the identified outstandingly remarkable values categories are found in table 45.

Table 45. Eligible stream segments and outstandingly remarkable values categories[16]

Stream Name	Ranger District	Outstandingly Remarkable Values Categories
Arnett Creek/Telegraph Canyon	Globe	Fisheries, Scenic
Canyon Creek	Pleasant Valley	Wildlife
Cold Spring Canyon	Pleasant Valley	Ecological
Devil's Canyon*	Globe	Geologic
Devil's Chasm	Pleasant Valley	Historic/Cultural
Dude Creek*	Payson	Fisheries
Fish Creek	Mesa	Ecological, Recreation
Green Valley Creek*	Payson	Ecological
Greenback Creek	Pleasant Valley, Tonto Basin	Historic/Cultural
Ledni Líí Creek	Cave Creek	Cultural
Lime Creek*	Cave Creek	Fisheries
Lower Salt River*	Mesa	Wildlife, Historic, Recreation
Lower Tonto Creek	Tonto Basin	Recreation
Pine Creek	Payson	Geologic
Pueblo Canyon	Pleasant Valley	Ecological, Historic, Scenic
Queen Creek*	Mesa, Globe	Cultural
Reno Creek	Tonto Basin	Cultural
Salome Creek	Pleasant Valley, Tonto Basin	Recreation, Scenic
Tangle Creek	Cave Creek	Ecological, Scenic
Upper Salt River	Tonto Basin, Globe	Geologic, Recreational, Historical
Upper Tonto Creek	Payson	Wildlife, Recreation, Scenic, Historical
Verde River	Cave Creek	Fisheries, Wildlife, Historical, Recreation
Workman Creek	Pleasant Valley	Ecological, Scenic

Determination of Classification

Upon determining draft eligibility, the Tonto National Forest classified the streams or stream segments as wild, scenic, or recreational, per Chapter 80 of the Land Management Handbook.[17] Criteria for the classifications can be found in table 46. Classifications are based on what exists today, not what might be desired in the future.

Once a watercourse has been determined potentially eligible the level of development needs to be reviewed to determine which preliminary classification category applies to the entire stream or segments of the stream.

Potential classifications were based on the situation existing at the time of the study. The interdisciplinary team did not take expected future development, or other changes along the river corridor, into consideration. A variety of things were considered regarding classification include shoreline development, accessibility, water quality, special lands uses (such as utility corridors and other special use permits),

16 Segments indicated by a * were determined not eligible through a comment period that occurred after this step of the process. See the determination of classification and changes between draft environmental impact statement and final environmental impact statement sections below.

17 Accessible on the USDA Forest Service 2012 Planning Rule website: https://www.fs.usda.gov/detail/planningrule/home/?cid=stelprd3828310.

livestock grazing, and past management activities (such as timber harvesting, or exploration and development of oil and gas).

The 1968 Wild and Scenic Rivers Act states that "It is important to understand each criterion, but it is more important to understand their collective intent. Each river segment and its immediate environment should be considered as a unit. The basis for classification is the degree of naturalness, or stated negatively, the degree of evidence of man's activity in the river area. The most natural rivers will be classified wild; those somewhat less natural, scenic, and those least natural, recreational. Although each classification permits certain existing development, the criteria do not imply that additional inconsistent development is permitted in the future."

Team members evaluated the 23 potentially eligible streams and rivers for preliminary classification. Table 46 describes the classification criteria used by the interdisciplinary team in determining the classification. These criteria are directly from the 2012 Planning Rule's final directives (FSH 1909.12 chapter 80). In addition to these criteria, the interdisciplinary team referred to maps and geographic information systems data to look at the level of development and access to the area. This preliminary classification is described in the river description form for all potentially eligible rivers (see the Documentation of Eligibility section).

Eligible rivers may be divided into segments having differing classifications when the levels of human use and activity create different degrees of development within the study area. In cases where a river has one or more classification, each river segment identified should be of sufficient length to warrant its own unique management. FSH 1909.12 Chapter 80.62 states that, "there is no minimum length of a segment, but segment length should be sufficient to enable protection of the outstandingly remarkable values if the area were managed, apart from other segments, as a wild, scenic, or recreational river."

Table 46. Classification criteria for wild, scenic, and recreational rivers

Attribute	Wild	Scenic	Recreational
Water Resource Development	Free of impoundment.	Free of impoundment.	Some existing impoundment or diversion. The existence of low dams, diversions, or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development	Essentially primitive. Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable. A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	Largely primitive and undeveloped. No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable. The presence of grazing, hay production, or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Some development. Substantial evidence of human activity. The presence of extensive residential development and a few commercial structures is acceptable. Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvest.
Accessibility	Generally inaccessible except by trail. No roads, railroads, or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the area are acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.
Water Quality *Note: where no water quality data exists, it will be assumed that the waterway meets or exceeds federal/state water quality criteria.	Meets, or exceeds criteria, or federally approved State standards for aesthetics, for propagation of fish, and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	No criteria are prescribed by the Wild and Scenic Rivers Act. The Federal Water Pollution Control Act Amendments of 1972 have made it a national goal that all waters of the United States are made fishable and swimmable. Therefore, rivers will not be precluded from scenic classification because of poor water quality at the time of their study, provided a water quality improvement plan exists, or is being developed in compliance with applicable Federal and State laws.	No criteria are prescribed by the Wild and Scenic Rivers Act. The Federal Water Pollution Control Act Amendments of 1972 have made it a national goal that all waters of the United States are made fishable and swimmable. Therefore, rivers will not be precluded from recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists, or is being developed in compliance with applicable Federal and State laws.

Following the preliminary classification of the eligible segments the Tonto National Forest released a map on the Wild and Scenic Rivers Story Map displaying these preliminary classifications for public comment. This comment period was open from May 2, 2017 – May 17, 2017. The public was asked to provide feedback on the preliminary classification(s) of the eligible river segments.

A summary of public input received in this comment period are as follows:

- Additional information was provided on the level of development on some of the eligible stream segments to provide more information as a basis for the classification.
- The Tonto National Forest was asked to reevaluate the classifications of some eligible streams including the Upper Salt River, Verde River, and Tonto Creek.
- Members of the public commented on the changes of eligibility and classification made on the segments from the 1993 Potential Wild, Scenic, and Recreational River Designation Report.
    - When starting this process, the Tonto National Forest staff thought the potentially eligible segments from 1993 had been evaluated within a region of comparison, but after digging into the study further, we realized this was not the case and the study could not be used. Therefore, the potentially eligible segments from the 1993 study were evaluated along with all other named streams during this process. In this evaluation, some of the potentially eligible segments in the 1993 study were not found to have outstandingly remarkable values in the region of comparison, or they had changed circumstances, which is why you do not see them on this map.

Following the public comment period, the interdisciplinary team reevaluated the eligibility and classification of all possibly eligible segments, utilizing comments received from the public. As a result of public comment and internal review, classifications were finalized for the eligible segments. Additionally, through this review it was determined that Green Valley Creek, Queen Creek, and Devil's Canyon were not eligible for the Wild and Scenic River System, dropping the number of eligible segments down to 20. Though specialists had identified unique features on these segments, the features were not determined to be outstandingly remarkable in the region of comparison.

Table 47 outlines the eligible segments, their classification, and the rationale for the classification. Figure 91 displays a map of the eligible segments and their classifications.

Table 47. Classification of eligible segments[18]

Stream Name	Ranger District	Final Classification	Classification Rationale
Arnett Creek / Telegraph Canyon	Globe	Recreational (3.5 miles)	Though there is no water resource development within this segment, there is a fish barrier just upstream from the segment. There is a lot of work along this corridor, including a lot of shoreline development including fences and stock tanks. This segment is easily accessible, with roads viewable within the river corridor. Water quality is impaired on both Arnett Creek and Telegraph Canyon.
Canyon Creek	Pleasant Valley	Recreational (7.2 miles)	There is a diversion near the OW Ranch with a few cement structures and a low bridge crossing. Dispersed campsites and evidence of human activity within the river corridor. There are multiple road crossings along this segment, making it very accessible. No known water quality issues on this segment.
Cold Spring Canyon	Pleasant Valley	Wild (1.7 miles)	No known impoundments. Very primitive in this area. Most of the corridor is located in the Sierra Ancha Wilderness, with access only by trail. No information known about the water quality.
Devil's Chasm	Pleasant Valley	Wild (2.5 miles)	No known impoundments. Very primitive in this area. Most of the corridor is located in the Sierra Ancha Wilderness, with access only by trail. Water quality is inconclusive.
Dude Creek*	Payson	Recreational (3.2 miles)	There are existing historic water structures and diversions in this segment. It is primitive with historic evidence of human activities, such as an old CCC habitat improvement. There are a few roads that reach the segment. No information known about water quality.
Fish Creek	Mesa	Wild (3 miles), Scenic (2.7 miles)	No impoundments on either portion of this segment. In the portion outside of the wilderness boundary, there is substantial parking areas and evidence of human activity in the river corridor. The portion inside the wilderness boundary is primitive. The portion outside of the wilderness boundary is easily accessible by the Apache Trail, which crosses this segment. Inside the wilderness boundary this segment can only be access by trails. Water quality on this segment is unknown.
Greenback Creek	Pleasant Valley, Tonto Basin	Scenic (5 miles)	There is a diversion along this segment that diverts the base flows from the creek to private land. Little shoreline development in this area. No roads reach this segment, difficult to access. No known information on water quality.
Ledni Líí Creek	Cave Creek	Scenic (5.3 miles)	This segment is free of impoundments. Grazing is apparent in the river corridor, evidence of past human activity, primarily historic. No roads within the river corridor. No water quality concerns.
Lime Creek*	Cave Creek	Scenic (7.9 miles)	This segment is free of impoundments. Grazing is apparent in the river corridor, but largely primitive and undeveloped. Can see the Humboldt satellite from the creek. The stream is accessed primarily by foot. High water quality values.
Lower Salt River*	Mesa	Recreational (13.2 miles)	Flow rate in this segment is controlled by the Salt River Project. Many developed recreation sites along this segment. Lots of evidence of human activity throughout. This segment is easily accessible with roads running parallel, reaching, and crossing the river. Impaired for dissolved oxygen.
Lower Tonto Creek	Tonto Basin	Scenic (3 miles)	No known impoundments along this segment. There is evidence of grazing in this area. Limited access to this area only through private property. This segment is water quality limited for nutrients.

[18] Segments indicated by a * were determined not eligible through a comment period that occurred after this step of the process. See the changes between draft environmental impact statement and final environmental impact statement section below.

Stream Name	Ranger District	Final Classification	Classification Rationale
Pine Creek	Payson	Recreational (2.6 miles)	There are diversions near the areas with shoreline development. There is a state park, with developed facilities, within the river corridor. Also, there are powerlines and roads within the river corridor. This segment is easily accessible with roads that reach and cross the segment. No known information on water quality.
Pueblo Canyon	Pleasant Valley	Wild (1.7 miles)	No known impoundments. Very primitive in this area. Only evidence of human activity are historic mines. Most of the corridor is located in the Sierra Ancha Wilderness, with access only by trail. No information known about the water quality.
Reno Creek	Tonto Basin	Scenic (3.5 miles)	No known impoundments on this segment. There is a historic road and evidence of human activity in the area. Accessible by a road running parallel to the segment. No known water quality concerns.
Salome Creek	Pleasant Valley, Tonto Basin	Wild (8.5 miles)	No known impoundments. Limited amounts of grazing. The only way to access this segment is by trail. No known information on water quality.
Tangle Creek	Cave Creek	Scenic (7 miles), Recreational (2.6 miles)	Both segments of this creek are free of impoundments. In the recreational portion there is substantial evidence of human activity including fences, roads, and admin sites. There is no substantial development in the scenic portion. The recreational portion is easily accessed by FSR269 and public comments also indicated the accessibility of this segment. The scenic portion is mostly undisturbed with inconspicuous roads running parallel. No known water quality concerns.
Upper Salt River	Tonto Basin, Globe	Wild (27.9 miles), Scenic (13.8 miles)	This segment directly reflects the classifications as outlined in the 1993 Study. All portions of this segment are free of impoundment. There is no shoreline development throughout the wild portion of the river corridor. Evidence of human activity is apparent in the portions with Scenic and Recreational classifications, where the river borders the Indian Reservations. In the wild portion of this segment, the river is only accessible by trail. Roads reach, run parallel to, and cross the river in both the scenic and recreational portions. Water quality is not impaired within the river corridor, but there are areas within the recreational and scenic portions of this segment that likely do not meet water quality standards.
Upper Tonto Creek	Payson	Scenic (21.6 miles)	No known impoundments on this segment. This segment is part of an active grazing allotment. Grazing is currently limited. Within a wilderness area, so only accessible by trail. Water quality is impaired for mercury for fish tissue in this segment.
Verde River	Cave Creek	Wild (9.3 miles), Scenic (1.4 miles)	Both portions of the segment are free of water resource development. North of the confluence of Tangle Creek there is no shoreline development. South of the confluence with Tangle Creek there is some shoreline development, including Sheeps Bridge. North of the confluence with Tangle Creek there is limited access, with no roads reaching the river. South of the confluence with Tangle Creek there are many road that reach, or cross, the river. There is good water quality throughout this segment.
Workman Creek	Pleasant Valley	Recreational (2.3 miles)	There is a stream gauge upstream of Workman Creek Falls. There are multiple day-use sites within the river corridor. Substantial evidence of human activity. There is a road that runs parallel along this segment. The water quality is inconclusive for dissolved oxygen.

Draft Wild and Scenic Rivers Eligibility Study

The third comment period for this process, which asked for feedback on the Draft Wild and Scenic Rivers Eligibility Study, was completed in October 2017. A summary of public input received in this comment period are as follows:

- Information was provided on some of the eligible streams to enhance the descriptions of the segments and their outstandingly remarkable values.
- Members of the public asked for additional consideration of
- Comments received expressed a concern over the management of multiple uses on the Tonto National Forest and what it would mean for uses, such as grazing, on a segment that is considered eligible.
- Comments received asked for the effects of management on the eligible wild and scenic rivers to be disclosed and analyzed in the environmental impact statement.
- The public provided information on how eligible wild and scenic river segments impact the activities and resources they enjoy on the Tonto National Forest, both positively and negatively.

Public feedback on eligible segments was incorporated into this documentation. The Tonto National Forest reached out to resource specialists about any segment where we were asked to take additional consideration, but it was determined that the values identified in these areas were not outstandingly remarkable in the region of comparison. Segments that were determined not eligible, and the associated rationale, can be found in the Wild and Scenic River Eligibility Rationale Spreadsheet. Figure 91 displays segments determined to be eligible.

Concerns about multiple use management were taken into consideration when developing management direction for the eligible segments in the revised forest plan. See the Management of Eligible Wild and Scenic Rivers section for more information on the development of management direction. The effects of various forest plan alternatives to eligible wild and scenic river segments are disclosed in the environmental impact statement for forest plan revision.

Changes between Draft Environmental Impact Statement and Final Environmental Impact Statement

The final comment period for this process was during the comment period for the draft plan and draft environmental impact statement for forest plan revision. This comment period was from December 2019 – March 2020.

As a response to public comments, a review was made on the following rivers for potential outstandingly remarkable values: East Verde River, Christopher Creek, Ellison Creek, Haigler Creek, Spring Creek, Cherry Creek, Parker Creek Canyon, Devil's Canyon, Sycamore Creek, and Pinto Creek.

- The following segments do not have outstandingly remarkable values and there was no change to eligibility for the following segments: Ellison Creek, Haigler Creek, Spring Creek, Devil's Canyon, Cherry Creek, Parker Creek Canyon, Sycamore Creek, and Pinto Creek.
- The following segments had a change to eligibility based on identification of outstandingly remarkable values: Christopher Creek and the East Verde River.

The Forest reviewed the following rivers to validate the existing outstandingly remarkable values and free-flowing condition: Upper Tonto Creek, Lower Tonto Creek, Salome Creek, Lower Salt River, Greenback Creek, Verde River, and Arnett Creek.

- The following segments had no change to eligibility: Greenback Creek, Upper Tonto Creek, Lower Tonto Creek, and Salome Creek.
- The following segments had new information provided that resulted in identification of a new outstandingly remarkable value: Arnett Creek
- The following segment had a change to outstandingly remarkable values: Arnett Creek
- The following segment had a change to eligibility based on free-flow characteristics: Lower Salt River.

Descriptions of all eligible segments were reviewed to provide clarification and updated information on descriptions of outstandingly remarkable values within the river segment. These updates are reflected in the segment descriptions below. During this review, Tonto resource specialists identified segments that, when looked at in greater detail, did not meet the criteria for outstandingly remarkable within the region of comparison. This included Lime Creek and Dude Creek, which had been considered for a potential fisheries outstandingly remarkable values.

While we recognize that segments may have some regional importance, many not possess a river-related value that is unique, rare, or exemplary when compared with similar values from other rivers at a regional or national scale. Those streams with a resource that was found to be unique, rare, or exemplary when compared to other streams in the region of comparison were rated with an outstandingly remarkable value and documented in this appendix. Only streams with outstandingly remarkable values were identified as eligible for inclusion in the National Wild and Scenic River System.

Detailed Changes for Added, Changed, or Removed Segments

This section detail the rationale for the changes made between the draft environmental impact statement and the final environmental impact statement. Many changes were as a result of public comments and reevaluation of potentially eligible segments. Figure 91 displays the segments determined to be eligible following comments on the draft plan and draft environmental impact statement.

Arnett Creek

Through reevaluation we determined that Arnett creek does not have an outstandingly remarkable value for Fish habitat or populations for listed fish or other native fish when compared with other such habitats in the state. Recent conditions in Arnett Creek have not been favorable for fish. Dry conditions have resulted in insufficient habitat for reintroduced Gila topminnow (*Poeciliopsis occidentalis occidentalis*). Recent surveys have found no fish remaining. Additionally, recent, intense flooding may be an issue for future fish populations.

That said, through the review on Arnett Creek resource specialists agree that the segment has a riparian outstandingly remarkable value. These perennial desert ecosystems are rare in the state of Arizona and on the Tonto. While there are similar Sonoran Desert riparian areas within the state (notably further south), Arnett Creek is different than those areas in that it is positioned within the upland division of the Sonoran Desert (northern most extent of the Sonoran Desert). Also, there are not many riparian areas in the state that have such complex geology and paloverde mixed-cacti plant communities within the riparian zone.

Christopher Creek

Christopher Creek has been identified as eligible with a recreational outstandingly remarkable value. This segment is 2.3 miles in length and has a recreational classification due to multiple recreation sites within the river corridor, private property bordering the river segment, substantial evidence of human activity,

and a road that runs parallel along this segment. Details on the eligibility of this segment can be seen in the individual segment write-up for Christopher Creek below.

Dude Creek

Through reevaluation we determined that Dude Creek does not have an outstandingly remarkable value for Fish habitat or populations for listed fish or other native fish when compared with other such habitats in the state. While streams with wild Gila trout are valuable, Dude Creek is not the only such stream in the state of Arizona with these characteristics. Chase creek, Ash Creek, Marijilda Creek, and portions of Frye Creek are also recovery habitat. Additionally, hatchery raised Gila trout are available Frye Mesa Reservoir, Goldwater Lake, and west fork of Oak Creek. Gila trout were only recently stocked in Dude Creek; however, they do seem to have solid recruitment within the segment.

East Verde River

As a result of public comments, the East Verde River has been identified as eligible with a scenery outstandingly remarkable value. This segment is 32.7 miles in length. It has a recreational classification for 20 miles due to factors such as private properties along the river segment and multiple forest routes that provide access to this popular area, leading to substantial evidence of human activity. The other 12.7 miles are classified as scenic due to a stream gauge within the river corridor, historic structures in the river corridor, and management activities that occur along the segment. Details on the eligibility of this segment can be seen in the individual segment write-up for the East Verde River below.

Lime Creek

Through reevaluation we determined that Lime Creek does not have an outstandingly remarkable value for fish habitat or populations for listed fish or other native fish when compared with other such habitats in the state. Gila topminnow that have been found within this segment for a long time, but it has been a rocky existence. The Cave Creek Complex fire took a big toll on the fish in the past. Both Gila topminnow and longfin dace were detected as of last year.

Lower Salt River

Upon further review of the eligibility requested within public comments, the Tonto National Forest has removed the Lower Salt River from eligibility in the National Wild and Scenic Rivers System. In order to be eligible, a segment must be free flowing, and possess one or more outstandingly remarkable values. Though there are recreation and cultural values on the on the Lower Salt River, it does not qualify for eligibility for the National Wild and Scenic River System because it does not meet the definition of free-flowing.

Free-flowing is defined in the Wild and Scenic Rivers Act as “existing or flowing in a natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway.” (FSH 1909.2 Ch. 80 Sec 82.71). Waters flowing within the Lower Salt River are dictated by water delivery obligations as part of a Federal reclamation project, and therefore do not flow in a natural condition. While the USDA-USDI Guidelines state “a river segment may flow between large impoundments will not necessarily preclude its designation,” this section of the Salt River, south of Stewart Mountain Dam, does not meet the eligibility criteria because the flow rates on the Lower Salt River are artificial and intermittent dependent on water demand from the Phoenix Metropolitan area. In essence, this stretch of river functions as a water delivery canal rather than a natural free-flowing river segment.

While there are places where eligibility has been maintained for river segments between large impoundments, the flow of water from them does not regularly fluctuate in response to demand to the extent of the Lower Salt River. For example, the Custer-Gallatin received comments of concern on

eligibility of a segment due to the presence of energy dams upstream of the eligible segment. These dams, specific to hydroelectric energy production, do not regularly alter flow like the dams on the Tonto do because they store water long-term to ensure a reliable supply during periods of drought.

Additionally, free-flowing rivers are able to engage in channel forming processes and move across the landscape naturally. The flow of the Lower Salt has been altered from its natural condition by six major reservoirs and dams which impound and control the flows. Flows on the Lower Salt, as controlled by releases from these impoundments, restricts the channel forming process and the ability for the segment to move across the landscape naturally.

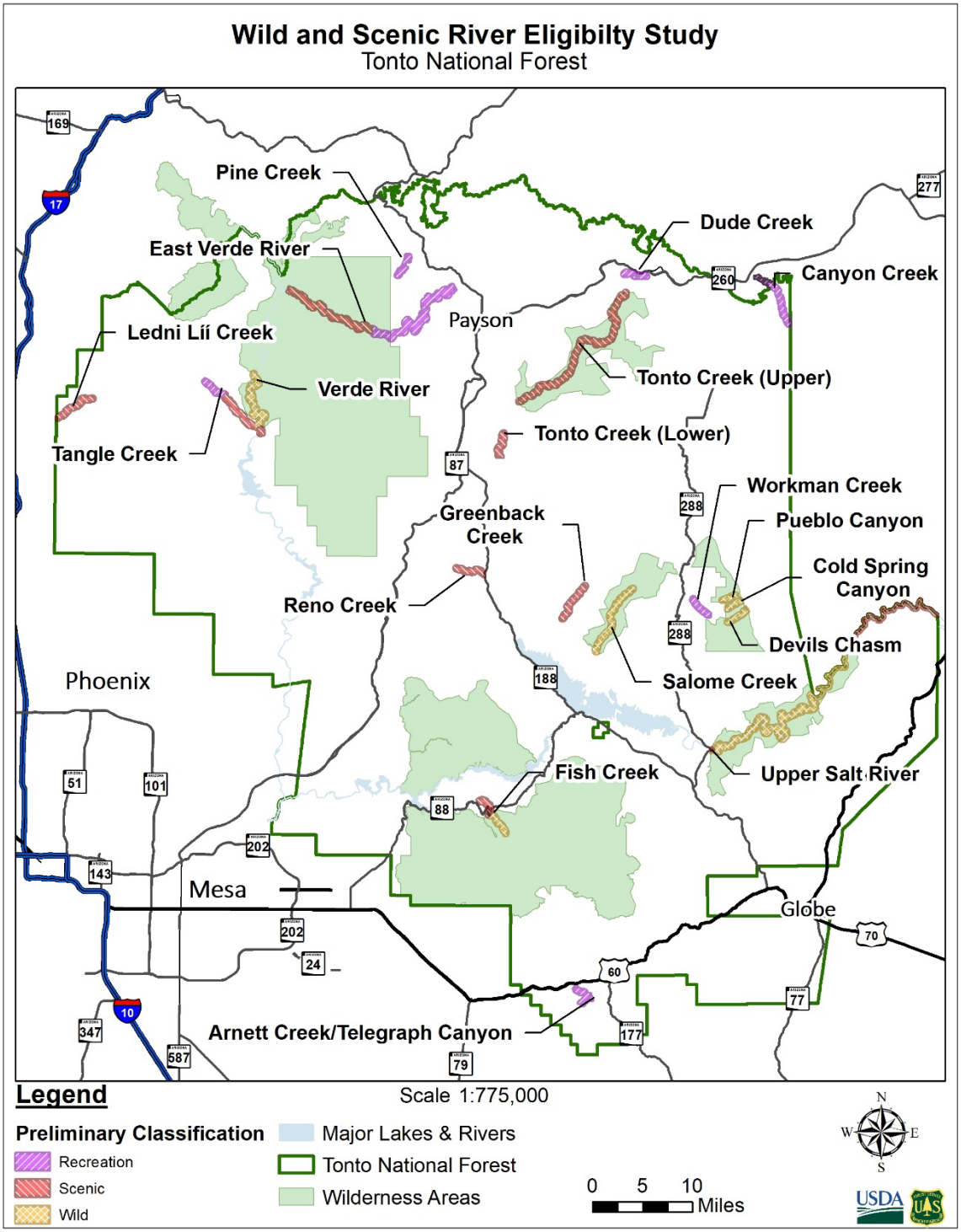


Figure 91. Segments determined eligible for the National Wild and Scenic Rivers System

Documentation of Eligible Segments

The maps and tables within this section provide a detailed description of the stream segments determined eligible through the wild and scenic river's process. These segments, their outstandingly remarkable values, and classifications were determined through internal meetings with resource specialists and public comments at multiple stages. The following descriptions provide the basis for the eligibility determination. A summary of all eligible segments can be seen in table 48.

Table 48. Summary table of eligible wild and scenic rivers, including classifications and outstandingly remarkable values

Stream Name	Ranger District	Segment Length	Classification	Outstandingly Remarkable Values
Arnett Creek / Telegraph Canyon	Globe	3.5 miles	Recreational	Scenery, Ecological
Canyon Creek	Pleasant Valley	7.2 miles	Recreational	Wildlife
Christopher Creek	Payson	2.3 miles	Recreational	Recreation
Cold Spring Canyon	Pleasant Valley	1.7 miles	Wild	Natural
Devil's Chasm	Pleasant Valley	2.5 miles	Wild	Historic
East Verde River	Payson	33.2 miles	Scenic, Recreational	Scenery
Fish Creek	Mesa	5.7 miles	Wild, Scenic	Natural
Greenback Creek	Pleasant Valley, Tonto Basin	5.1 miles	Scenic	Historic
Ledni Líí Creek	Cave Creek	5.2 miles	Scenic	Historic
Lower Tonto Creek	Tonto Basin	3.2 miles	Scenic	Recreation
Pine Creek	Payson	2 miles	Recreational	Geologic
Pueblo Canyon	Pleasant Valley	1.7 miles	Wild	Scenery, Historic
Reno Creek	Tonto Basin	3.6 miles	Scenic	Historic
Salome Creek	Pleasant Valley, Tonto Basin	8.5 miles	Wild	Recreation, Scenery
Tangle Creek	Cave Creek	9.5 miles	Scenic, Recreational	Natural, Scenery
Upper Salt River	Tonto Basin, Globe	59.4 miles	Wild, Scenic	Geologic, Recreation, Historic, Scenery
Upper Tonto Creek	Payson	21.7 miles	Scenic	Recreation, Scenery, Wildlife, Historic
Verde River	Cave Creek	10 miles	Wild, Scenic	Fisheries, Wildlife, Recreation, Historic
Workman Creek	Pleasant Valley	2.3 miles	Recreational	Natural, Scenery

Arnett Creek and Telegraph Canyon

Located in Pinal County, within the Tonto National Forest in the Upper Gila River Basin, Arnett Creek and Telegraph Canyon are two short, but special, streams that come together southwest of the town of Superior, Arizona, just south of U.S. Highway 60. This segment is considered eligible for its scenery and fisheries outstandingly remarkable values. The entire segment would be classified as "recreational" due to the level of shoreline development and substantial evidence of human activity. This segment was previously identified in the 1993 Wild and Scenic River Study.

Classification: Recreational

Miles of each segment: 3.5

Location: Globe Ranger District

Arnett: Begins where Arnett Creek exits private land in SWNW section 16, T. 2 S., R. 12 E. and ends at an unnamed tributary in SWNE section 7, T. 2 S. R. 12 E.

Telegraph: Begins at National Forest System Road 4 road crossing in section 17, T. 2 S., R. 12 E. and ends at confluence with Arnett Creek.

Outstandingly Remarkable Values

Scenery and Riparian

Arnett Creek and Telegraph Canyon were identified as having outstandingly remarkable scenic and fisheries resource values when compared to similar resources across the State of Arizona. Scenic values of Arnett Creek and Telegraph Creek are remarkable due to the very complicated geology and vegetation in the area. The distinctive gorges and broad canyons with solid rock vertical walls provide many novel rock forms. Bare soil, desert pavement, barren rock textures with unique stringers of riparian deciduous trees along the creeks and nearby botanical gardens creates a unique area juxtaposed with the vast surrounding undistinguished desert.

Arnett Creek and Telegraph Canyon were identified as having outstandingly remarkable riparian resources for their well developed tree, shrub, and herbaceous components, which contribute to excellent diversity in both species and vegetative structure. The perennial desert ecosystems present in Arnett Creek are rare in the State of Arizona and on the Tonto. While there are similar Sonoran Desert riparian areas within the state (notably further south), Arnett Creek is different than those areas in that it is positioned within the upland division of the Sonoran Desert, which is the northern most extent of the Sonoran Desert. The densely forested riparian areas on these streams are in stark contrast to the paloverde mixed cacti series on the adjoining uplands, which is dominated by saguaro, cholla cacti, and catclaw. The two tree-sized willow species dominate the overstory, with lesser amounts of sycamore, Fremont cottonwood, and ash. There are few riparian areas in the state that have such complex geology and paloverde mixed-cacti plant communities within the riparian zone.

Other Information

This segments proximity to Boyce Thomson Arboretum has introduced nonnative plant species to the area, but the Forest Service is actively working to improve the ecological conditions. Along with the ecological restoration projects, work is being done to increase the quality of recreational opportunities in the area through trail development and maintenance.

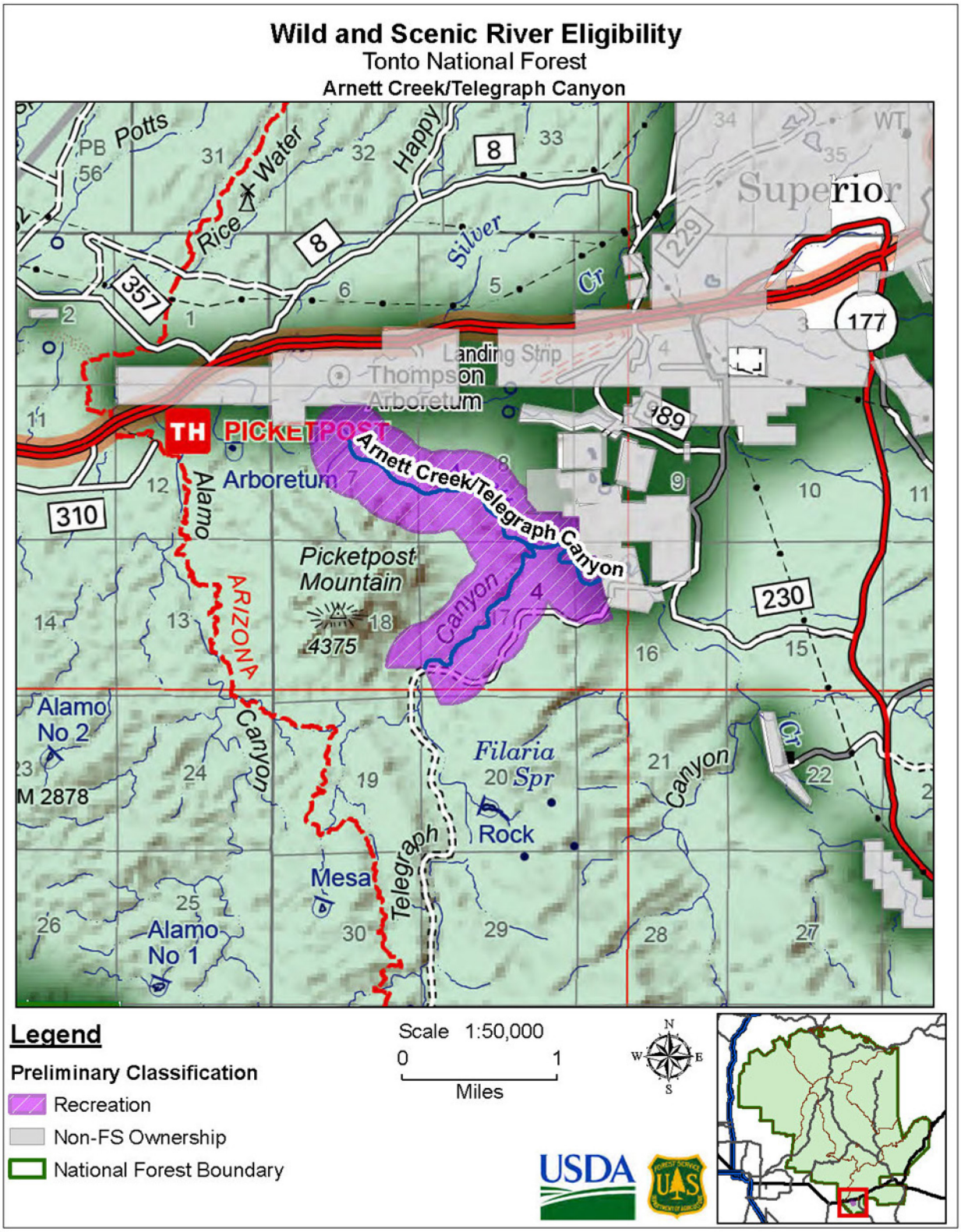


Figure 92. Wild and scenic river eligibility study: Arnett Creek/Telegraph Canyon

Canyon Creek

Located in Gila County, Canyon Creek's headwaters are above the Mogollon Rim, approximately 30 miles east of Payson, Arizona. This segment is considered eligible for its wildlife outstandingly remarkable values. The entire segment would be classified as "recreational" due to fencing and bridge crossings along the creek. This segment was previously identified in the 1993 Wild and Scenic River Study.

Classification: Recreational

Miles of each segment: 7.2

Location: Pleasant Valley Ranger District

> Begins at the boundary with the Tonto National Forest in NWSW section 27, T. 11 N., R. 14 E. and ends at the boundary with the Fort Apache Indian Reservation in section 2, T. 10 N., R. 15 E.

Outstandingly Remarkable Values

Wildlife

Canyon Creek was identified as having outstandingly remarkable wildlife values. Several species of conservation concern including the American dipper, olive-sided flycatcher, red-faced warbler, MacGillivray's warbler, and Pacific wren utilize Canyon Creek and the surrounding river corridor habitat. The Arizona Breeding Bird Atlas documents only 4 detections of breeding Pacific wrens and one of those detections came from Canyon Creek, making it remarkable for the state as one of the few breeding areas for this species. Additionally, Canyon Creek has proposed critical habitat for the narrow-headed gartersnake, and in the upper reach of Canyon Creek, the highest known density of narrow-headed gartersnakes on the Tonto and possibly one of the largest wild populations within the State of Arizona.

Other Information

Canyon Creek is managed as a "blue ribbon" fishery and is a very popular recreation area during the cool summer months. This segment is different than most of the other streams coming off the Mogollon Rim, with a wide valley bottom and prairie in the middle. There are dispersed camping areas in close proximity to this segment and exclosures help to keep elk and cows away from the stream.

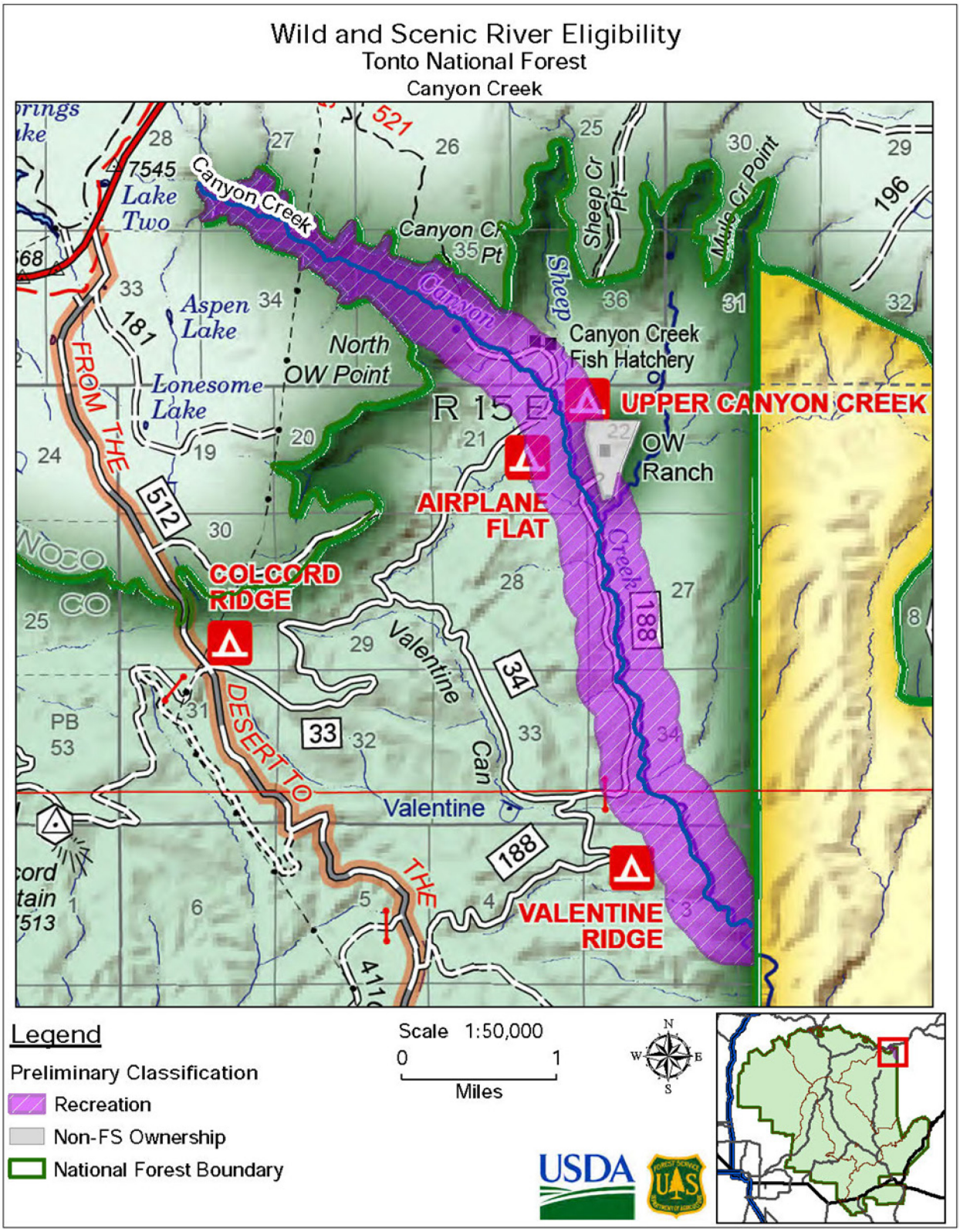


Figure 93. Wild and scenic river eligibility study: Canyon Creek

Christopher Creek

Located in Gila County just below the Mogollon rim, Christopher Creek provides high quality recreation opportunities on the Payson Ranger District. This segment is considered eligible for its recreation outstandingly remarkable values.

Classification: Recreational

Miles of each segment: 2.3

Location: Payson Ranger District

Begins near the Christopher Creek Campground at the NWSW section 25, T. 11 N., R. 12 E., and ends at the confluence with Tonto Creek at section 27, T. 11 N., R. 12 E.

Outstandingly Remarkable Values

Recreation

This segment of Christopher Creek, above the confluence with Upper Tonto Creek, is home to several recreational activities including fishing, canyoneering, and climbing. It is also revered by the elite steep creek kayaking community as one of, if not the best, relatively rare steep class V+ creek segments in Arizona. The creek quickly drops into a prolonged slot canyon composed of a series of very difficult and dangerous waterfalls that are runnable only by elite kayakers looking for a challenge. This Outstanding Remarkable Value for recreation is enhanced by its relatively short length and its accessibility by road, making it possible to run twice in one day.

Other Information

This segment is popular among those seeking refuge from the heat during the summer months in Arizona. Each spring, Christopher Creek is stocked with rainbow trout, allowing anglers the opportunity to cast their hearts out for rainbows as well as brook and brown trout. Other recreational opportunities in the area include biking, bird watching, hiking, horseback riding, and swimming.

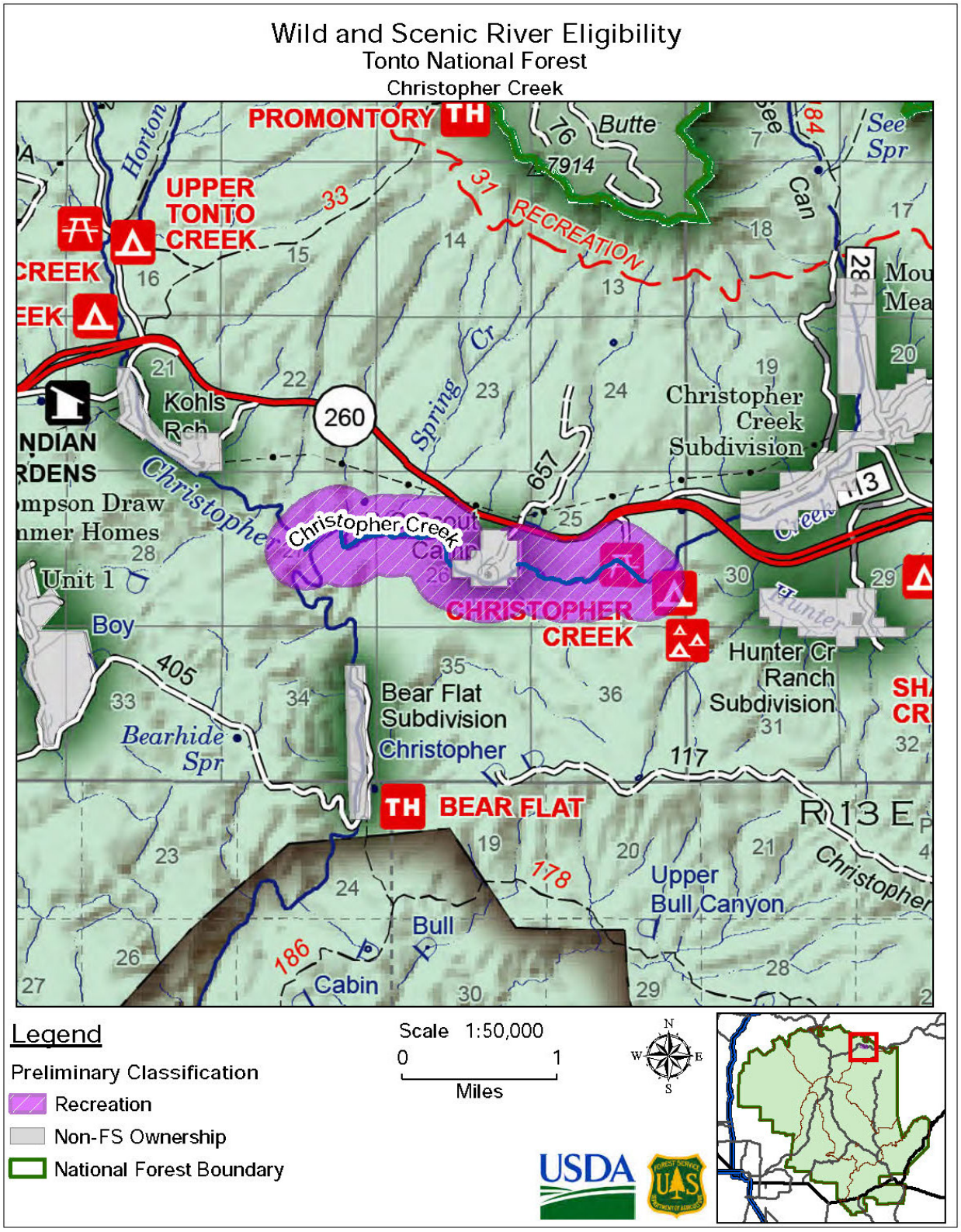


Figure 94. Wild and scenic river eligibility study: Christopher Creek

Cold Spring Canyon

Located in Gila County, within the Tonto National Forest, Cold Spring Canyon is a remarkable stream flowing through a deep narrow canyon, surrounded by the Sierra Ancha Wilderness. This segment is considered eligible for its natural outstandingly remarkable values. The entire segment would be classified as “wild” due to the primitive nature of the stream.

Classification: Wild

Miles of each segment: 1.7

Location: Pleasant Valley Ranger District

> Begins where National Forest Road 139 crosses Cold Spring Canyon in NWNW section 35, T. 6 N., R. 14 E. and ends where Cold Spring Canyon exits the Sierra Ancha Wilderness in SWNE section 25 T. 6 N., R. 14 E.

Outstandingly Remarkable Values

Natural

Cold Spring Canyon was identified as having outstandingly remarkable natural (botanical) values when compared with similar resources in the State of Arizona. Cold Spring Canyon's unusual geologic formations, vegetation and topography in the canyon setting result in unique habitat conditions, including low light and dripping cliffs, for a high number of endemic, rare and sensitive plant species. The Sierra Ancha fleabane (*Erigeron anchana*) and the Arizona bugbane (*Cimicifugia arizonica*) are two examples. The population of Arizona bugbane is possibly the largest in the Sierra Ancha Mountains.

Other Information

There is a small cliff dwelling in this canyon that is well preserved. Architectural and cultural features such as this are common to the Sierra Ancha Wilderness. The canyon itself is deep and narrow, making it difficult to access, which reduces human disturbance of the stream.

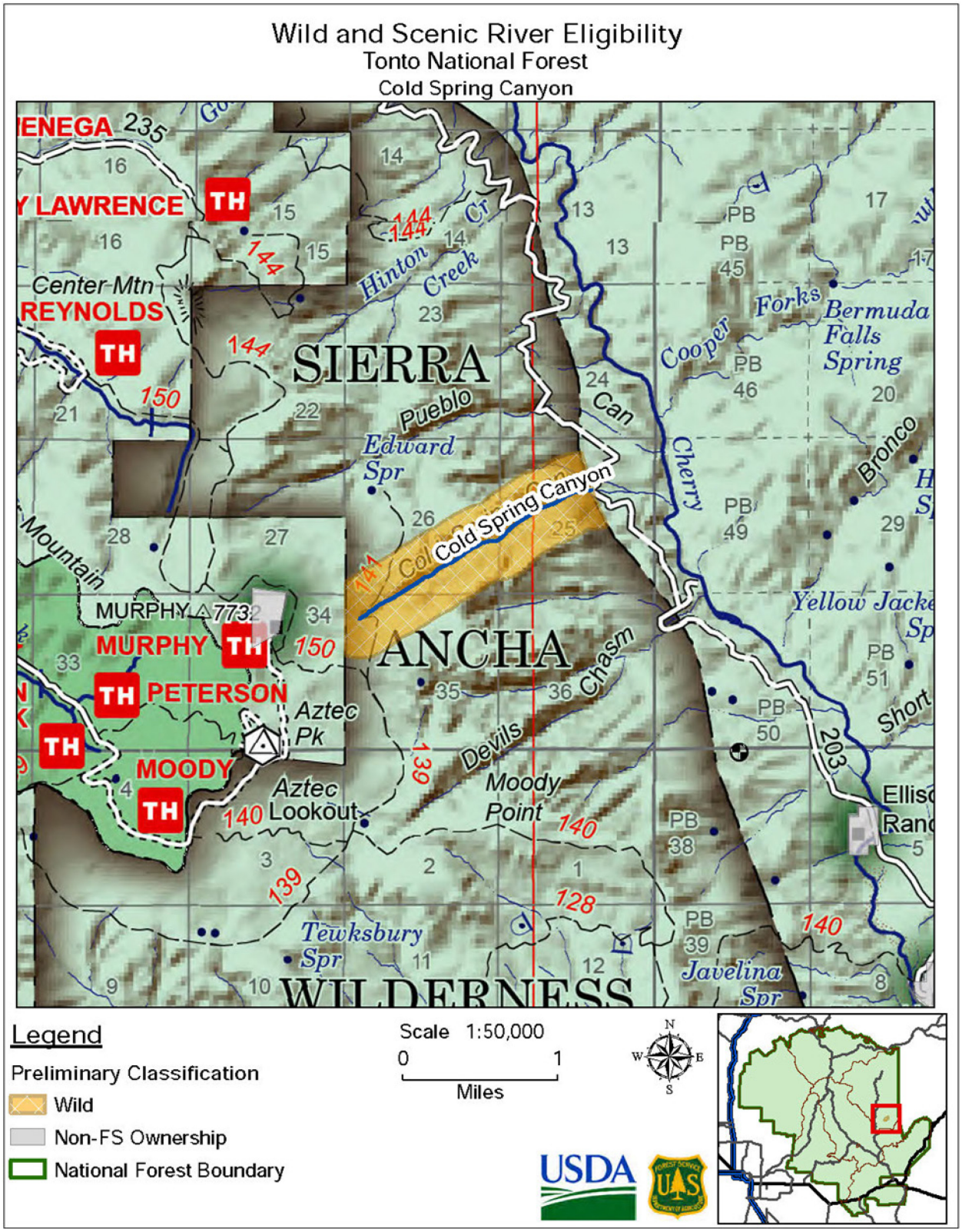


Figure 95. Wild and scenic river eligibility study: Cold Spring Canyon

Devils Chasm

Located in Gila County on the Tonto National Forest, Devil's Chasm is a culturally unique stream within the Sierra Ancha Wilderness. This segment is considered eligible for its cultural outstandingly remarkable values. The entire segment would be classified as "wild" due to the primitive nature of the stream and difficulty of access.

Classification: Wild

Miles of each segment: 2.5

Location: Pleasant Valley Ranger District

> Begins where Devils Chasm crosses National Forest Road 139 in SWNW section 2, T. 5 N., R. 14 E. and ends where Devils Chasm exits the eastern boundary of the Sierra Ancha Wilderness in NWNW section 31, T. 6 N., R. 15 E.

Outstandingly Remarkable Values

Historic

Devil's Chasm was identified as having outstandingly remarkable cultural resource values when compared to similar resources across the nation. Devil's Chasm contains a unique, relatively intact, high country pueblo and represents the northern extent of the Hohokam pueblo features. The area includes a rare rounded building that is unique within the nation. The cliff dwellings are considered world class and unique due to their uncommon melding and blending of different cultural types representing use of the area by multiple cultures/tribes.

Other Information

Devil's Chasm is located entirely in the Sierra Ancha Wilderness. The Sierra Ancha Wilderness is home to a high number of endemic plant species. The geological formations, vegetation and topography at canyon settings produce unique habitat conditions for several sensitive and at-risk plant species.

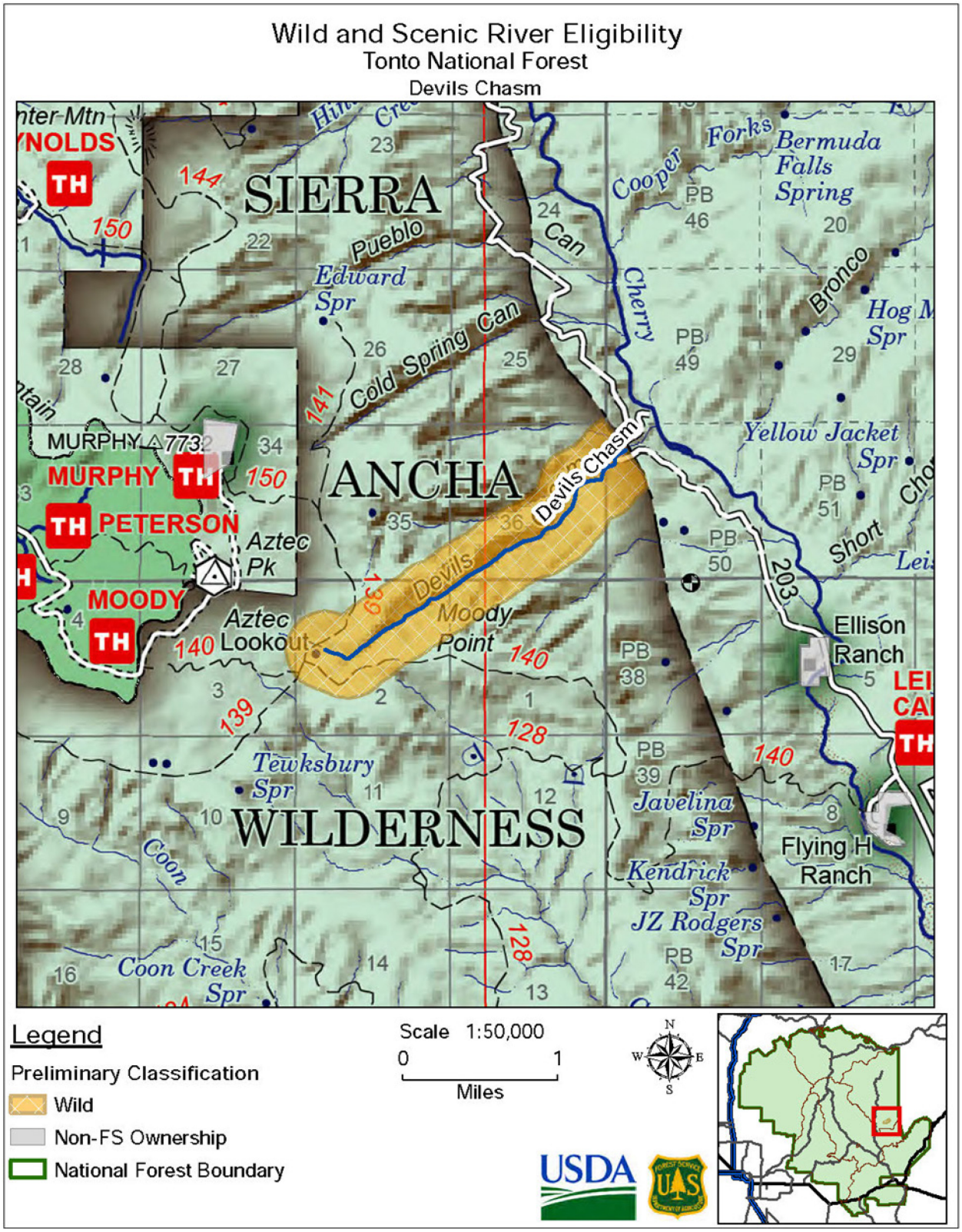


Figure 96. Wild and scenic river eligibility study: Devils Chasm

East Verde River

Located in Gila County, within the Tonto National Forest, the East Verde River headwaters start in a Ponderosa pine/mixed conifer forest at the Mogollon Rim, north of Payson, Arizona. The river flows south-west through chaparral woodlands and makes a final descent into the Sonoran Desert where it joins the Verde River. Easy access and high recreational use occur where the river crosses State Highway 67 between the towns of Payson and Pine. The river becomes more remote as it flows west into the Mazatzal Wilderness. This segment is considered eligible for its scenic outstandingly remarkable values. The segment is classified as both scenic and recreational.

Classification: Scenic and Recreational

Miles of each segment:

Recreational: 20

Scenic: 12.7

Location: Payson Ranger District

Recreational: Begins at the west boundary of the "East Verde Park Estates" in NWSW section 18, T. 11 N., R. 10 E., and ends at the west boundary of the L.F. Ranch at Section 11, T. 10 N., R. 8 E.

Scenic: Begins at the west boundary of the L.F. Ranch, Section 11, T. 10 N., R. 8 E., and ends at the river corridor for the designated Verde Wild and Scenic River in Section 20, T. 11 N., R. 7 E.

Outstandingly Remarkable Values

Scenery

In the East Verde River's 34-mile descent to its confluence with the Verde River, it travels past and through a myriad of geologic layers and life zones giving it a wide variety of truly beautiful scenery rarely found elsewhere in the area of comparison, Arizona. Starting in the ponderosa pine forest of the Payson area, the river proceeds through deep canyons that are composed of the same Paleozoic layers that make the Grand Canyon famous but also intruded by more recent volcanic events. The scenically renowned Bright Angel Shale and Tapeats Sandstone eventually give way to a stunning canyon of bright pink Payson Granite unique to the East Verde River which forms a series of waterfalls that land in beautiful, peaceful pools. The scenery is enhanced by riparian vegetation including big shady Cottonwoods and an unusual amount of Arizona Cypress. Later, as it winds down to the Sonoran Desert it drops into multiple black gorges of Precambrian rock which further contribute to the beauty of the surrounding desert.

Other Information

The East Verde River flows through deep rounded bluff sided canyons. The stream starts in a pine/juniper transitional zone and ends in grass/chaparral. Many old and large cottonwood trees combine with the riparian vegetation to give welcome shade to the sometimes-broad stream bank. Recreational users derive social benefits from the opportunities for solitude, relaxation, viewing of scenery, and wildlife in an area with preserved unique and natural condition. Recreational activities include hiking and backpacking, car-camping, picnicking, swimming, fishing, hunting, and off-highway driving.

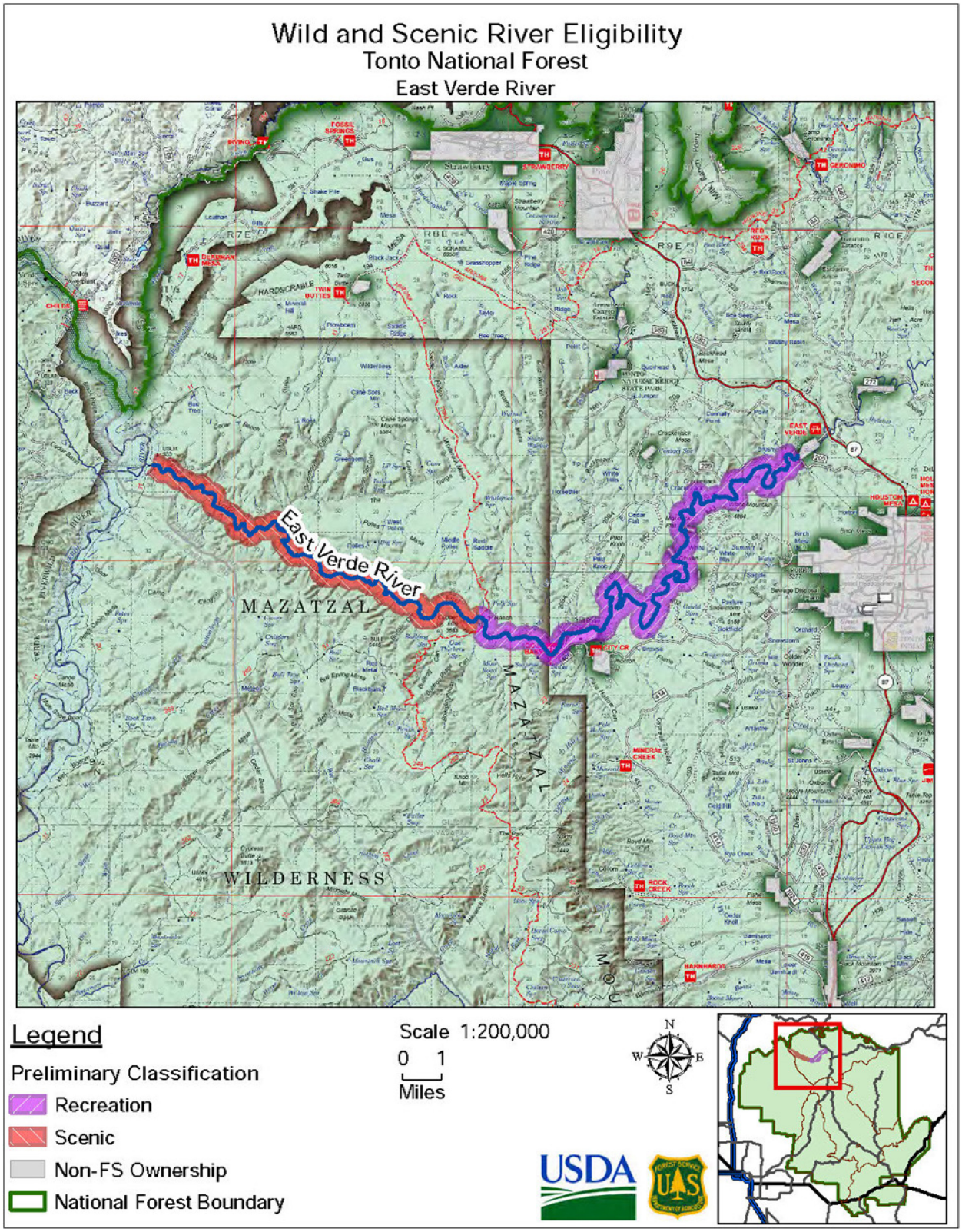


Figure 97. Wild and scenic river eligibility study: East Verde River

Fish Creek

Located in Maricopa County on the Tonto National Forest, Fish Creek, a tributary to the Salt River downstream of Canyon Lake, flows from the Superstition Wilderness to the Apache Trail (State Route 88). This segment is considered eligible for its outstandingly remarkable natural values. One portion of this segment, located within the Superstition Wilderness, would be classified as "wild" due to its primitive nature. The other portion of this segment would be classified as "scenic" due to the access by the Apache Trail.

Classification: Wild and Scenic

Miles of each segment:

Wild: 3

Scenic: 2.7

Location: Mesa Ranger District

Wild: begins at confluence of Fish Creek Canyon and Lost Dutch Canyon in SWSE section 24, T. 2 N., R. 10 E. and ends at the State Route 88 Crossing of Fish Creek in SESE section 10, T. 2 N., R. 10 E.

Scenic: begins at the State Route 88 crossing of Fish Creek in SESE section 10, T. 2 N., R. 10 E., and ends at the confluence with an unnamed tributary in SENE section 4, T. 2 N., R. 10 E.

Outstandingly Remarkable Values

Natural

Fish Creek was identified as having outstandingly remarkable natural (botanical) values when compared with similar resources within the State of Arizona. The rare annual plant, Fish Creek fleabane (*Erigeron piscaticus*), endemic to Arizona, has only three known locations in the state, one of which is on Fish Creek. Pima Indian mallow (*Abutilon parishii Wats*), a sensitive species, is also present in the area and represents the northernmost distribution of the species. Additional endemic species include Mapleleaf false snapdragon (*Mabrya acerifolia*) and the Gila rock daisy (*Perityle gilensis*).

Other Information

The historic Apache Trail (also known as State Route 88) crosses Fish Creek. Many locals and seasonal visitors enjoy leisurely drives on the Apache Trail to view the desert vegetation, Salt River Lakes, and magnificent geology. Fish Creek provides tall rock walls popular for rock climbing and rappelling. Fish Creek also has some of the area's largest cottonwood trees, making it a popular place for photography, short hikes, and dispersed picnicking in the shade. Additionally, two reaches within this segment are going to be assessed as potential introduction sites for native fish populations. Many prehistoric Yavapai sites line this segment.

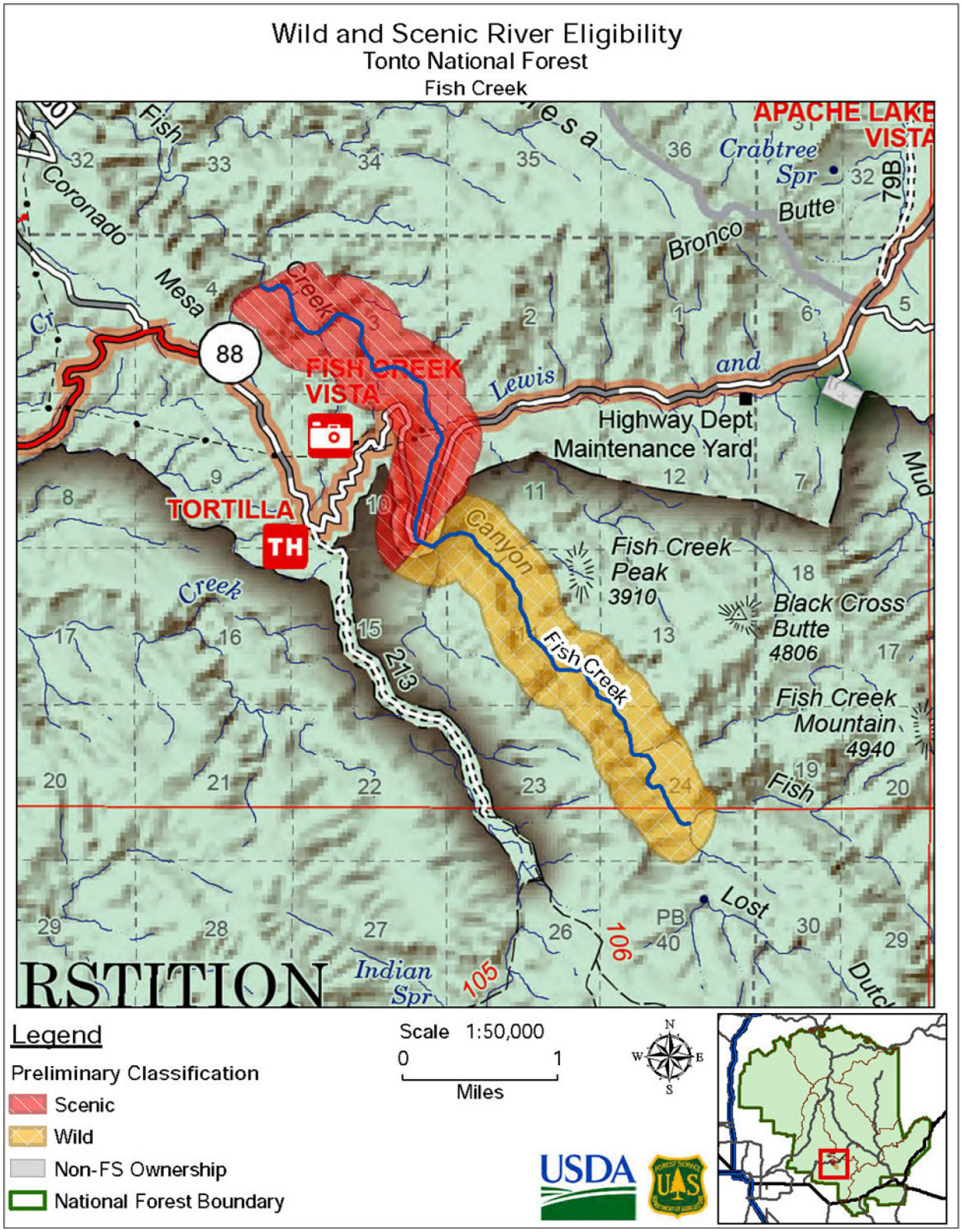


Figure 98. Wild and scenic river eligibility study: Fish Creek

Greenback Creek

Located in Gila County, on the Tonto National Forest, Greenback Creek is a beautiful perennial stream in Tonto Basin, Arizona. This segment is considered eligible for its historic outstandingly remarkable values. The entirety of this segment would be classified as "scenic" due to a diversion to private land.

Classification: Scenic

Miles of each segment: 5.1

Location: Pleasant Valley and Tonto Basin Ranger Districts

> Begins at the boundary with private land in SESE section 17, T. 6 N., R. 12 E. and ends at a stream diversion in NENW section 1, T. 5 N., R. 11 E.

Outstandingly Remarkable Values

Historic

Greenback Creek was identified as having outstandingly remarkable cultural and historic resource values when compared to similar resources in the state and country. Greenback Creek river corridor has a high density of pre-historic sites owing to habitation of Apaches in the area. The river corridor contains a rare, large, multi-room pueblo, unique within the State of Arizona. Greenback Creek corridor contains the site of one of the earliest cavalry fights on the Tonto National Forest and continued fighting by the Arizona Volunteers, an important group of individuals hired by the army to fight the Apaches. The area contains important evidence of past occupation and use by humans as well as sites and features associated with significant events in the history of Arizona and the United States.

Other Information

This perennial stream is home to a number of native fish, but there are also nonnative bullfrogs. With restoration, this segment could be an ideal candidate for the reintroduction of threatened and endangered fish species.

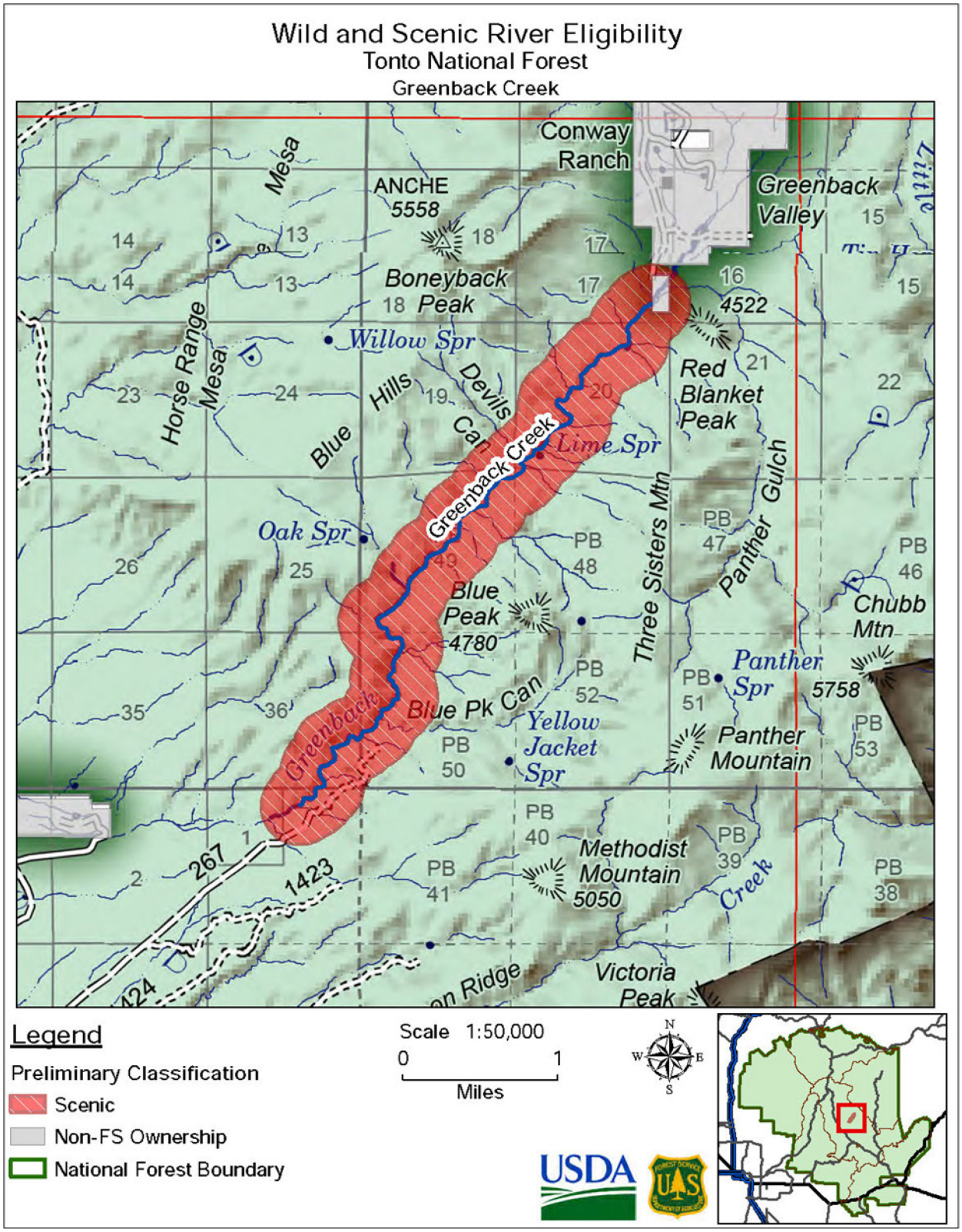


Figure 99. Wild and scenic river eligibility study: Greenback Creek

Ledni Líí Creek

Located in Yavapai County, Ledni Líí Creek is an intermittent stream on the Cave Creek Ranger District. This segment is considered eligible for its historic outstandingly remarkable values. The entire segment would be classified as "scenic" due to evidence of past human activity and grazing within the river corridor.

Classification: Scenic

Miles of each segment: 5.2

Location: Cave Creek Ranger District

> Begins at the confluence of North Fork Ledni Líí Creek with the main stem of Ledni Líí Creek in NWNE, Section 13, T. 9 N., R. 3 E. and ends at the Forest boundary in NWNW, Section 28, T. 9 N., R. 3 E.

Outstandingly Remarkable Values

Historic

Ledni Líí Creek was identified as having outstandingly remarkable cultural and historic resource values when compared with similar resources across the state and country. Due to the remoteness of the location, it is one of the most intact examples of Salado culture (approximately 1150 CE through the 15th century) within the State of Arizona. The area has a high number of high-quality rock art sites, major sites next to the creek for water access, field houses, pueblos (including multi-room), and plazas. Over 3,000 sites are suspected to be in the area. Ledni Líí Creek and the surrounding river corridor sites and features are considered an archaeological district due to the area possessing a significant concentration, linkage, and continuity of sites, buildings, structures, and objects united historically.

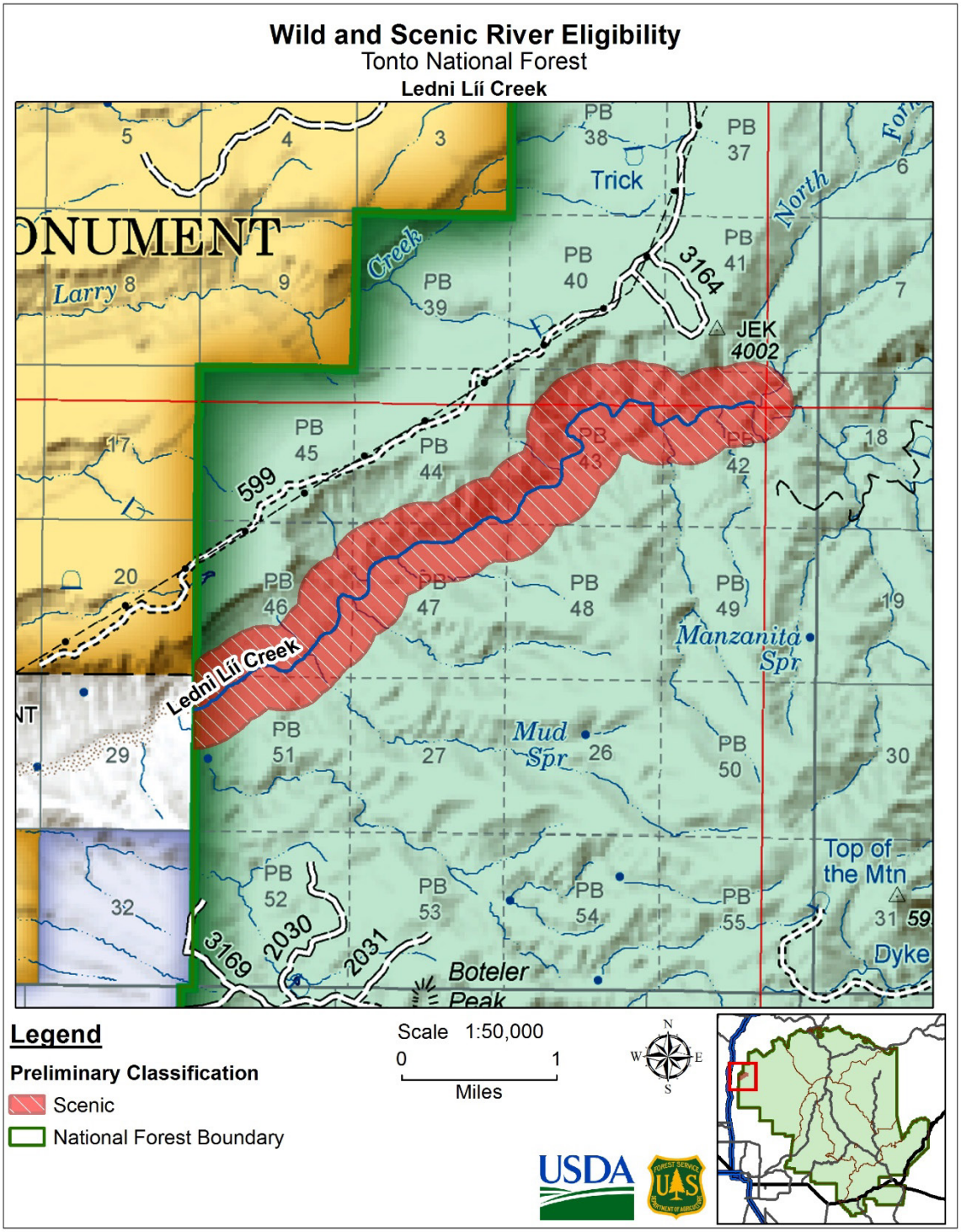


Figure 100. Wild and scenic river eligibility study: Ledni Líí Creek

Lower Tonto Creek

Located in Gila County, Lower Tonto Creek provides high quality recreational opportunities just north of Tonto Basin and Roosevelt Lake. This segment is considered eligible for its recreation outstandingly remarkable values. The entire segment would be classified as "scenic" because though it is difficult to access the water is impaired and there is limited amounts of grazing within the corridor. This segment was previously identified in the 1993 Wild and Scenic River Study.

Classification: Scenic

Miles of each segment: 3.2

Location: Pleasant Valley and Payson Ranger Districts

> Begins at the confluence of Cocomunga Canyon with Tonto Creek in NWSW section 36, T. 9 N., R. 10 E. and ends at the boundary with private land on the southern boundary of section 12, T. 8 N., R. 10 E.

Outstandingly Remarkable Values

Recreation

The lower portion of Tonto Creek was identified as having outstandingly remarkable recreation resource values when compared to similar river resources across Arizona and the nation. There are no developed sites or facilities within the segment, but dispersed recreation activities are popular and include hiking, backpacking, fishing, some (minimal) white water boating, wildlife viewing and canyoneering. The accessibility, beauty and geologic structure of the canyon provides unique, large group canyoneering opportunities that draw visitors from within and beyond the State of Arizona.

Other Information

Lower Tonto Creek has one of the highest density breeding populations of threatened yellow-billed cuckoo and endangered southwestern willow flycatcher. Further, Tonto Creek is proposed critical habitat for northern Mexican and narrow-headed gartersnakes. Many migratory bird species pass through or breed along this stretch of Tonto Creek. Additionally, the river area has the largest population of flycatchers in the state and this critical habitat provides important landscape connectivity for these and other wildlife species. This segment is good habitat for many fish species, both native and nonnative.

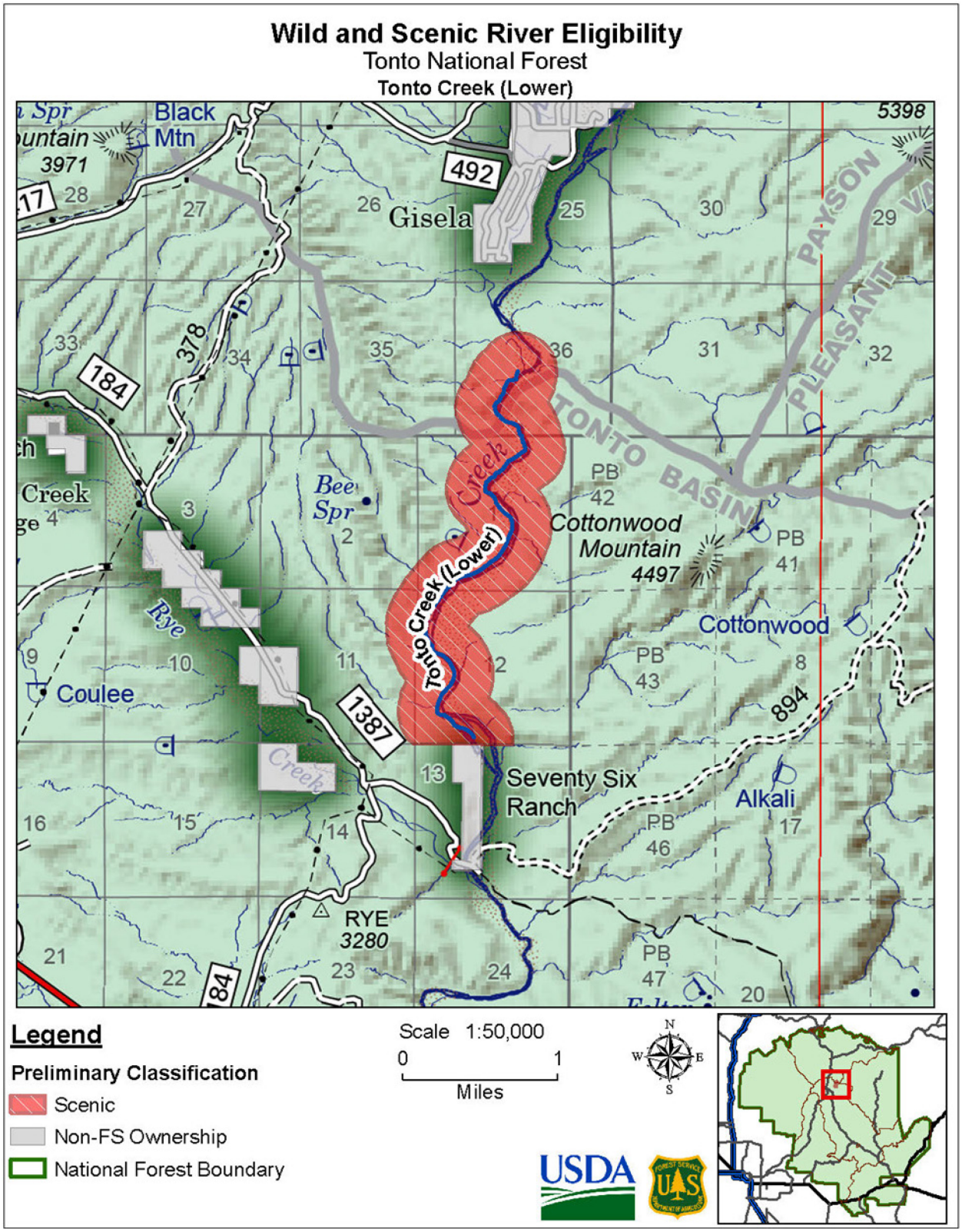


Figure 101. Wild and scenic river eligibility study: Lower Tonto Creek

Pine Creek

Located in Gila County just north of Payson, Arizona, Pine Creek provides the opportunity for visitors to see the largest known travertine bridge in the world. This segment is considered eligible for its geologic outstandingly remarkable values. The entire segment would be classified as "recreational" because of the ease of accessibility and development in the river corridor.

Classification: Recreational

Miles of each segment: 2

Location: Payson Ranger District

Begins below the lower boundary with private land in SESE section 32, T. 11.5 N., R. 9 E. and ends at the confluence with Tank Gulch at SWSE section 7, T. 11 N., R. 9 E.

Outstandingly Remarkable Values

Geologic

Pine Creek was identified as having outstandingly remarkable geologic resource values when compared to other similar resources across the nation. The area within the river corridor contains the largest known travertine natural bridge in the world, measuring 180 feet high, 400 feet long and approximately 100 feet thick on top. The bridge was formed by a small stream flowing through a shady canyon in the wooded foothills of the Mogollon Rim. The area surrounding the bridge was made into a state park, Tonto Natural Bridge State Park (June 29, 1991), and draws visitors from across the state and country.

Other Information

The Tonto Natural Bridge, and Pine Creek with its perennial waters attract visitors accessing recreational opportunities in the area, such as hiking. The area is also known for its nesting pair of American peregrine falcons.

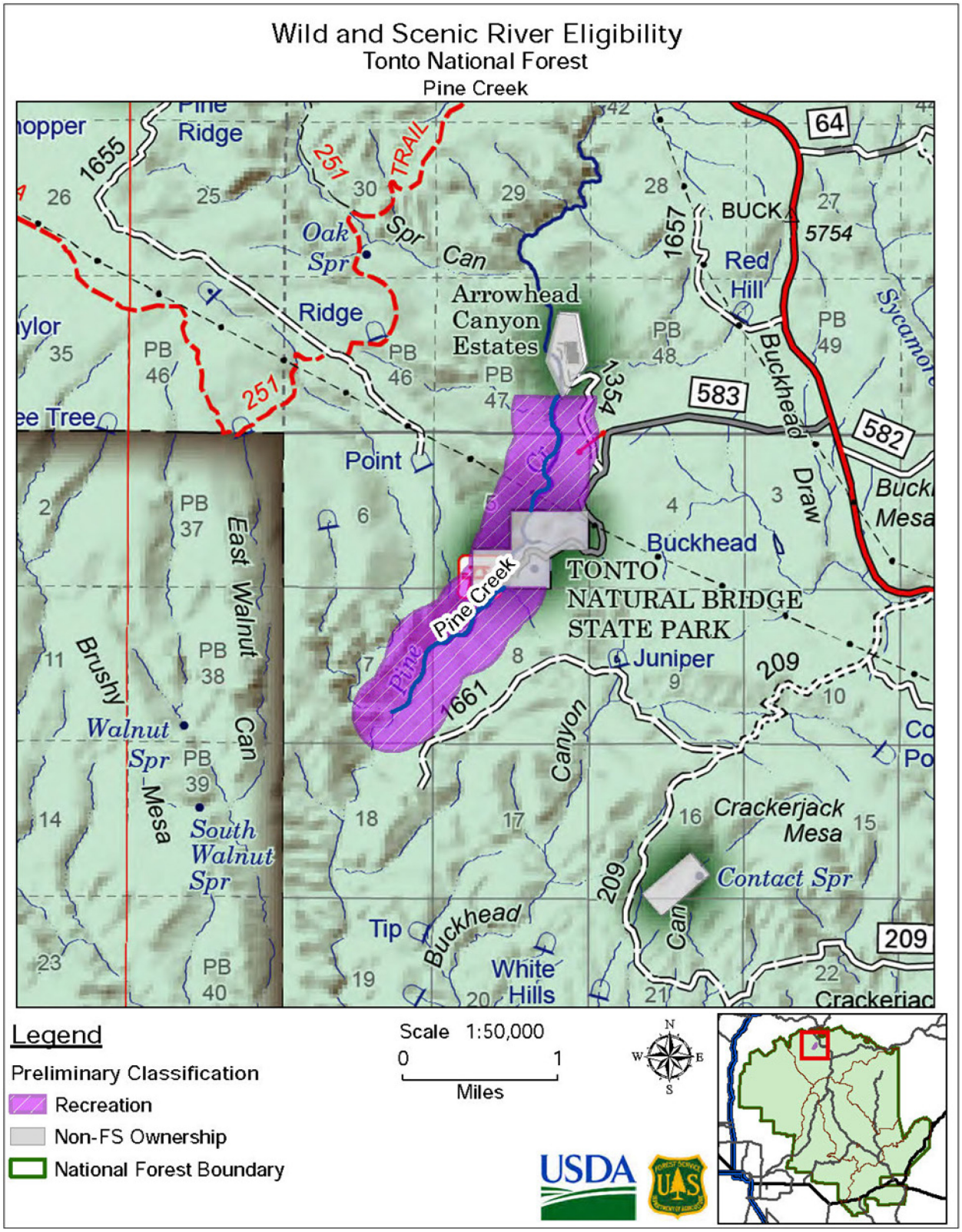


Figure 102. Wild and scenic river eligibility study: Pine Creek

Pueblo Canyon

Located in Gila County, Pueblo Canyon is a beautiful, and culturally significant, stream located in the Sierra Ancha Wilderness. This segment is considered eligible for its historic and scenery outstandingly remarkable values. The entire segment would be classified as "wild" because of the primitive and undeveloped nature of the area.

Classification: Wild

Miles of each segment: 1.7

Location: Pleasant Valley Ranger District

> Begins at the confluence of an unnamed tributary with the main stem of Pueblo Canyon in SWNE section 27, T. 6 N., R. 14 E. and ends where Pueblo Canyon meets National Forest System Road 203 (commonly referred to as Cherry Creek Road).

Outstandingly Remarkable Values

Scenery and Historic

Pueblo Canyon was identified as having outstandingly remarkable scenic and cultural resource values when compared to similar rivers and resources across the State of Arizona. Pueblo canyon is named after the large, fairly intact pueblo located in the river corridor. This feature is one of only two examples in the state that are as intact as this one and provides a high quality example of what these structures looked like prior to European settlement.

Scenic values in Pueblo Canyon were identified as being outstandingly remarkable. The unique display of hanging gardens, colorful geologic formations, huge monolith granite walls, waterfalls and cultural resources (i.e., cliff dwellings and cliff drawings) provide river users with scenery that is spectacular and unique in Arizona. While the area is secluded, owing to a high degree of preservation in the area, people travel from all over the world to see this area.

Other Information

The geologic formations, vegetation, and canyon setting at Pueblo Canyon create unique habitat conditions that support several endemic, sensitive or at-risk plant species including Arizona bugbane (endemic) and California redbud (rare).

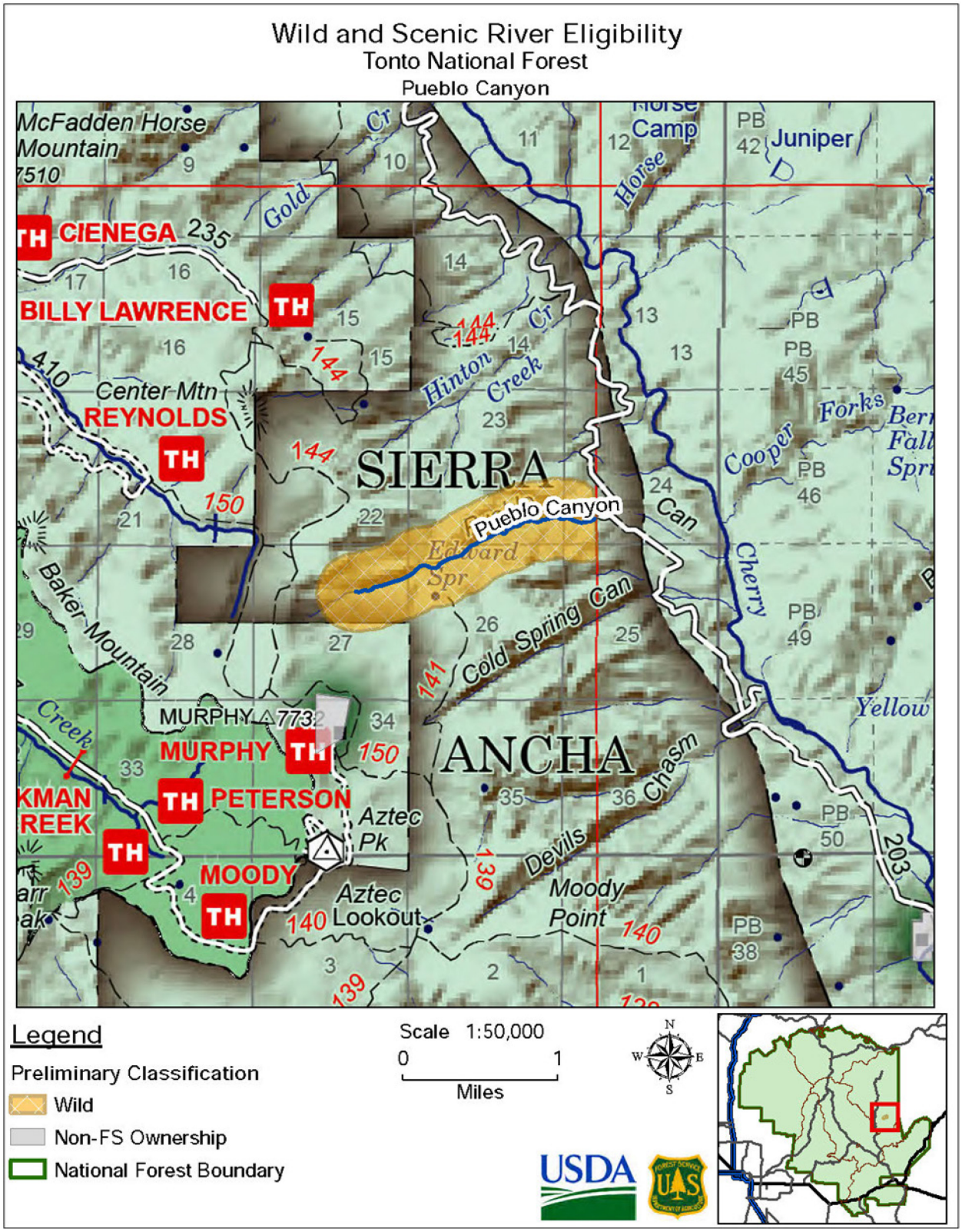


Figure 103. Wild and scenic river eligibility study: Pueblo Canyon

Reno Creek

Located in Gila County, Reno Creek offered a source of water for those staying at a military camp during the Apache wars. This segment is considered eligible for its historic outstandingly remarkable values. The entire segment would be classified as "recreational" because of the number of roads and development within the river corridor.

Classification: Scenic

Miles of each segment: 3.6

Location: Tonto Basin Ranger District

Begins where Reno Creek crosses the Western boundary of section 8 T. 6 N., R. 10 E. and ends at the boundary with private land in SESE section 10, T. 6 N., R. 10 E.

Outstandingly Remarkable Values

Historic

Reno Creek was identified as having outstandingly remarkable cultural and historic resource values when compared to similar resources across the state and country. Reno Creek, and the area within its river corridor, contain important evidence of occupation and use by humans including one of the earliest military camps established for use during the Apache wars. The military camp was built as a result of Reno Road (1870s) that facilitated movement from Phoenix to Tonto Basin/Payson and ultimately provided passage for the first pioneers to the area and opened up the northern part of Arizona for settlement. The road functioned until the early 20th century. High quality examples of pre-historic ranching and mining sites and features are also found in the area.

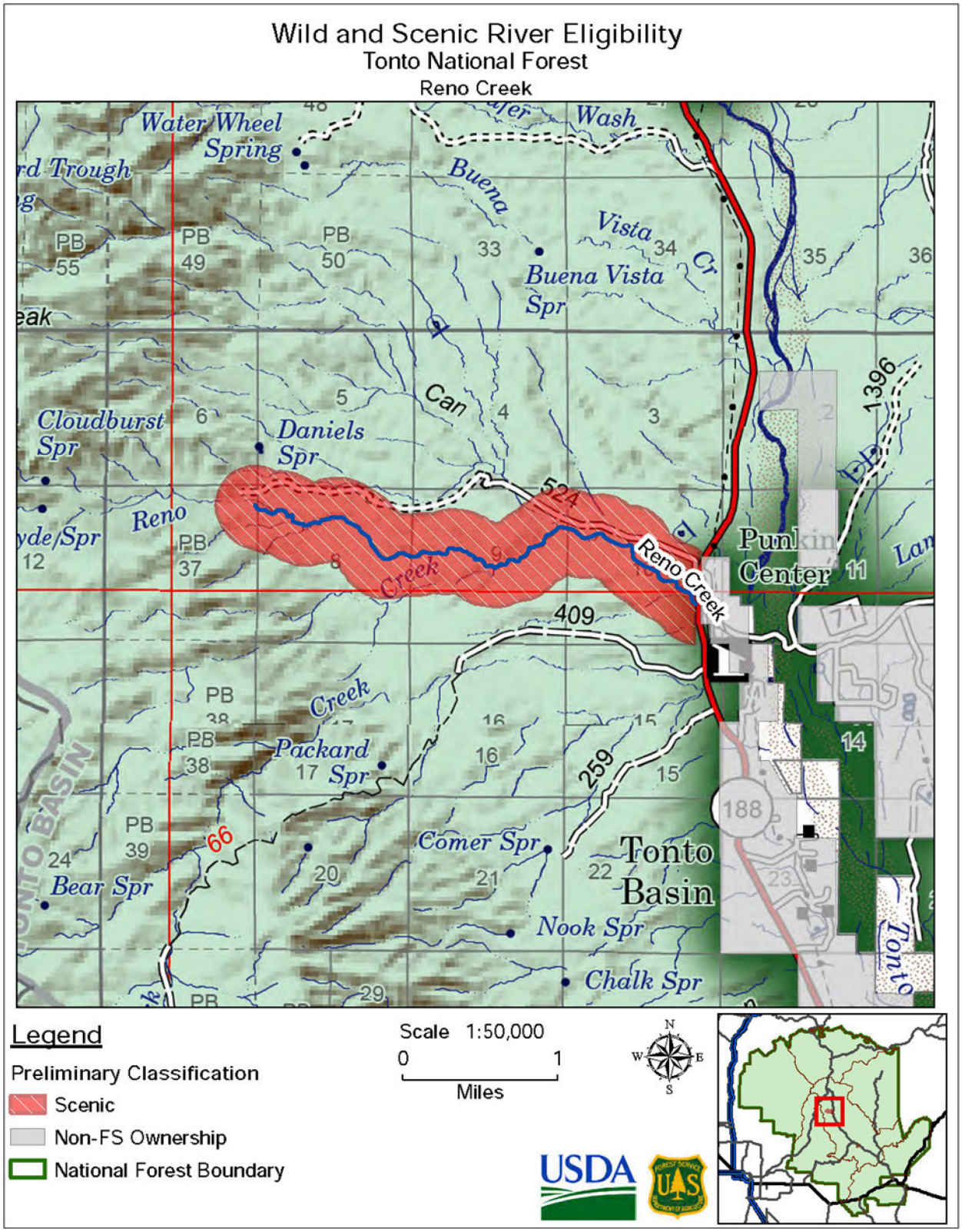


Figure 104. Wild and scenic river eligibility study: Reno Creek

Salome Creek

Located in Gila County, Salome Creek flows through the Salome Wilderness where the topographic terrain offers notable scenery and a mile-long, 200-foot deep gorge. This segment is considered eligible for its recreation and scenery outstandingly remarkable values. The entire segment would be classified as "wild" because of the primitive nature and only limited amount of livestock grazing in the corridor. This segment was previously identified in the 1993 Wild and Scenic River Eligibility Study.

Classification: Wild

Miles of each segment: 8.5

Location: Pleasant Valley and Tonto Basin Ranger Districts

> Begins at the confluence of two unnamed tributaries with the main stem of Salome Creek in NWNE section 19, T. 6 N., R. 13 E. and ends where Salome Creek exits the Salome Wilderness in SENE section 21, T. 5 N., R. 12 E.

Outstandingly Remarkable Values

Recreation and Scenery

Salome Creek was identified as having outstandingly remarkable scenic and recreational resource values when compared with similar rivers and resources across the State of Arizona. The landscape elements of landform, vegetation, water, and color result in exemplary visual features and spectacular scenery in Salome Creek. The deep, narrow slot canyon gives little indication that it exists until you are upon it. The canyon winds through the Salome Wilderness and along the base of Dutchwoman Butte. The creek is interrupted by water slide rocks, cascades, deep seasonal pools, and many water falls, including one over thirty feet tall. The deep gorge is so narrow in places the solid rock walls of each side are only 5 to 6 feet apart. The very narrow shaded canyon walls, in conjunction with the stream, provide a cooler microclimate during the hot summer months. The sheer, narrow, water-smoothed canyon walls create an unusual and spectacular scenic experience that is rare within the region of comparison, Arizona State.

Recreation was also identified as being outstandingly remarkable in Salome Creek. The steep, narrow nature of the canyon, set in the Salome Wilderness, provides outstanding canyoneering opportunities in a unique remote setting. Visitors come from across the State to take advantage of unique canyoneering opportunities including a whirlpool/plunge pool that visitors repel down into. Other primitive recreation opportunities in the area include hiking, backpacking, picnicking, fishing and hunting. Commercial outfitting and guiding of hunting, fishing and hiking related activities occur in the area.

Other Information

In Salome Creek, local structural and erosional influences have created deep gorges and steep cliffs rising up to 200 feet above the creek. Access to the creek is limited to only dirt roads and hiking trails, which increases the wild characteristics of this eligible segment. In the 1993 study, wildlife was identified as a value on this river segment, with moderate to good riparian habitat for a variety of special wildlife species.

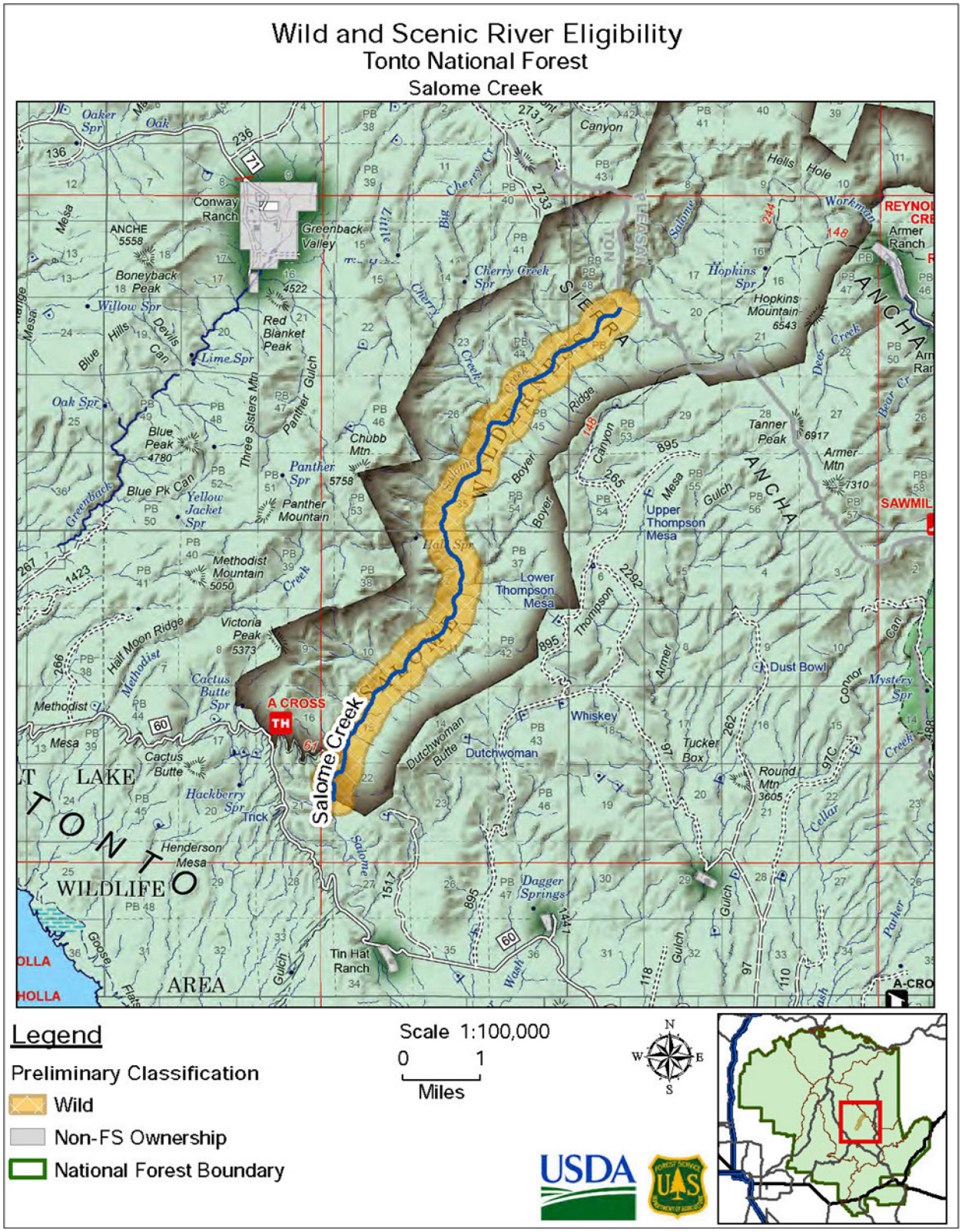


Figure 105. Wild and scenic river eligibility study: Salome Creek

Tangle Creek

Located in Yavapai County, Tangle Creek is a unique desert stream on the Cave Creek Ranger District. This segment is considered eligible for its ecological and scenery outstandingly remarkable values. The upper portion of this segment would be classified as "recreational" due to ease of access and number of stream crossings, whereas the lower portion of this segment would be classified as "scenic" because of the level of grazing and ability to see developed sites from the corridor.

Classification: Recreational and Scenic

Miles of each segment:

Recreational: 2.5

Scenic: 7

Location: Cave Creek Ranger District

Recreational: Begins at the confluence of Round Tree Canyon and Tangle Creek in section 2, T. 9 N., R. 5 E. and ends at the farthest east crossing of National Forest System Road 269 in NWSE section 7, T. 9 N., R. 6 E.

Scenic: Begins at the farthest east crossing of National Forest System 269 in NWSE section 7, T. 9 N., R. 6 E. and ends at the confluence with the Verde River.

Outstandingly Remarkable Values

Natural and Scenery

Tangle Creek was identified has having outstandingly remarkable natural (riparian) and scenic resource values when compared to similar resources across the State of Arizona. Tangle Creek is one of the best examples of a Sonoran Desert riparian area in the State of Arizona. The good quality, mixed broad-leaf community has a fairly extensive reach and is home to a variety of grasses, sedges, and other hydric plants. The unique desert riparian area also provides habitat for a wide variety of migratory birds and other wildlife.

Scenic resource values were also identified as meeting the criteria for outstandingly remarkable in Tangle Creek and are directly related to the unique riparian habitat found there. Tangle creeks unique assemblage of desert vegetation and trees that produce spectacular fall colors provides visitors to the river corridor with scenery that is spectacular and not common to other rivers in the State. This desert vegetation assembled with fall color producing trees comprises less than 1 percent of the Arizona landscape.

Other Information

This segment has great habitat for wildlife due to its unique riparian ecosystem. The fall colors in the desert draws visitors to this area from the Phoenix metropolitan area.

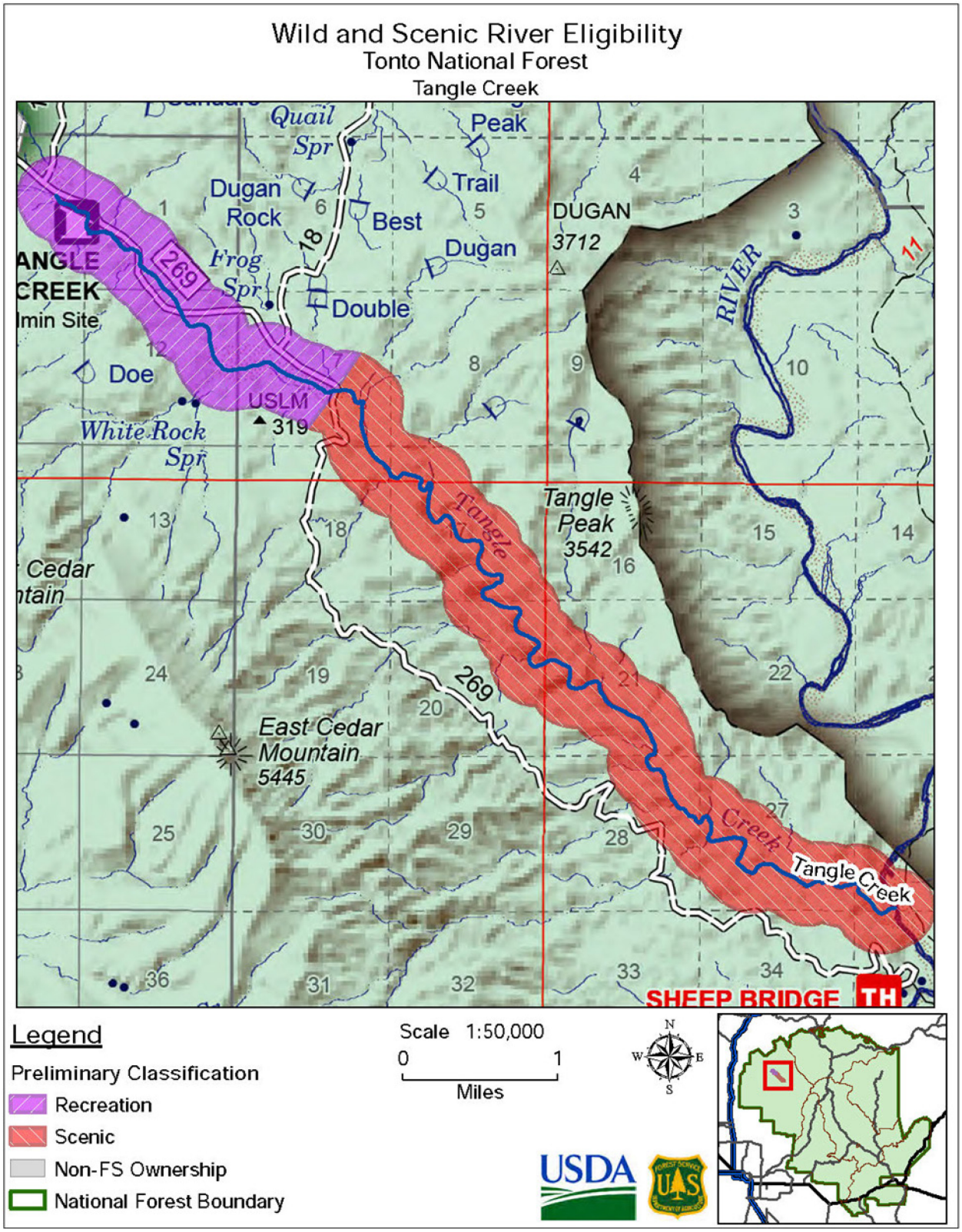


Figure 106. Wild and scenic river eligibility study: Tangle Creek

Upper Salt River

Located in Gila County, the Upper Salt River is a breathtaking river located to the north of Globe, Arizona. It is a nationally known white-water river, flowing through spectacular canyons. This segment is considered eligible for its geologic, scenery, historic, and recreation outstandingly remarkable values. The classification of this segment is broken into two separate portions. The first portion would be classified as "wild" and is located entirely in the Salt River Canyon Wilderness. The second portion would be classified as "scenic" where it runs along the border of the Tonto National Forest with the Fort Apache Indian Reservation.

This segment was previously identified in the 1993 Wild and Scenic River Eligibility Study.

Classification: Wild and Scenic

Miles of each segment:

Wild: 39.1

Scenic: 20.3

Location: Tonto Basin and Globe Ranger Districts

Scenic: Begins at the western boundary of the San Carlos Indian Reservation and ends at the northeast boundary of the Salt River Canyon Wilderness.

Wild: Begins at the northeast boundary of the Salt River Canyon Wilderness and ends at the Highway 288 bridge.

Outstandingly Remarkable Values

Geologic, Recreation, Cultural, and Scenic

The Upper Salt River was identified as having outstandingly remarkable geologic, scenic, recreational, and cultural resource values when compared with similar river resources in the State of Arizona. The river segment is located southwest of the Colorado Plateau Province, flowing through the Transition Zone, and Basin and Range Provinces of Arizona. The geology is complex and the Upper Salt River canyons offer excellent exposures, which help define the geological evolution of southern Arizona. Geologic attractions within the canyon include a monocline with fully exposed structural features, salt-bank accumulations to which the Salt River owes its name, Proterozoic igneous, sedimentary, and metamorphic rock units, and Tertiary intrusives and sedimentary deposits. A clear view of the nature of the Precambrian basement is available. The upper Salt River has been referred to as one of the most imposing scenic and geologic entities in all of Arizona.

Cultural and historic resource values are outstandingly remarkable in the Upper Salt River and corridor. The river was one of the few perennial water riverways and received both pre-historic and historic use. Available site data indicate a prehistoric utilization of the area by the Salado, during the period from AD 1150-1400. Types of sites range from small, detached masonry rooms to continuous multiroom pueblos. Historic usage is primarily associated with ranching dating from the late 19th century to the present. The river corridor contains the site of one of the last battles of the Apache war and many hilltop defensive sites are known to be in the area.

The Upper Salt River also provides recreation opportunities that draw people from across the state and region. River related opportunities include white water river running, fishing, long distance hiking and backpacking. River running is so popular a lottery is used to allocate a limited number of permits. Running the Upper Salt River is comparable to running the Grand Canyon and it is one of only a very few

comparable opportunities in the state and country. The river is remote, but still draws a high number of visitors to the area.

This segment of the Salt River was identified as having outstandingly remarkable scenic resource values. The river is characterized by mountains and mesas consisting of a fault block with varying degrees of tilting. The river has cut a deep gorge with sheer walls through these blocks and is referred to as "little" or "mini" Grand Canyon. Steep slopes, cliffs and many unique rock forms are common throughout the stretch of river. Sandy beaches, desert pavement, and barren rock are common to the area. The Salt River itself provides a wide range of spectacular water scenery, from huge waves to quiet pools. There are very few places in the state where you can experience this type of scenery and represents one of the very few rivers to flow through the saguaro cactus forest of the Arizona Sonoran Desert.

Other Information

The Upper Salt River has very high biodiversity similar to the Verde River but with a different type of environment (canyon country). Tributaries have a rich concentration of terrestrial species including yellow-billed cuckoo, narrow-headed gartersnake, peregrine falcon, bald eagle; and a variety of riparian species that all contribute to the diversity in the area. The area also contains critical habitat for threatened and endangered plant and animal species.

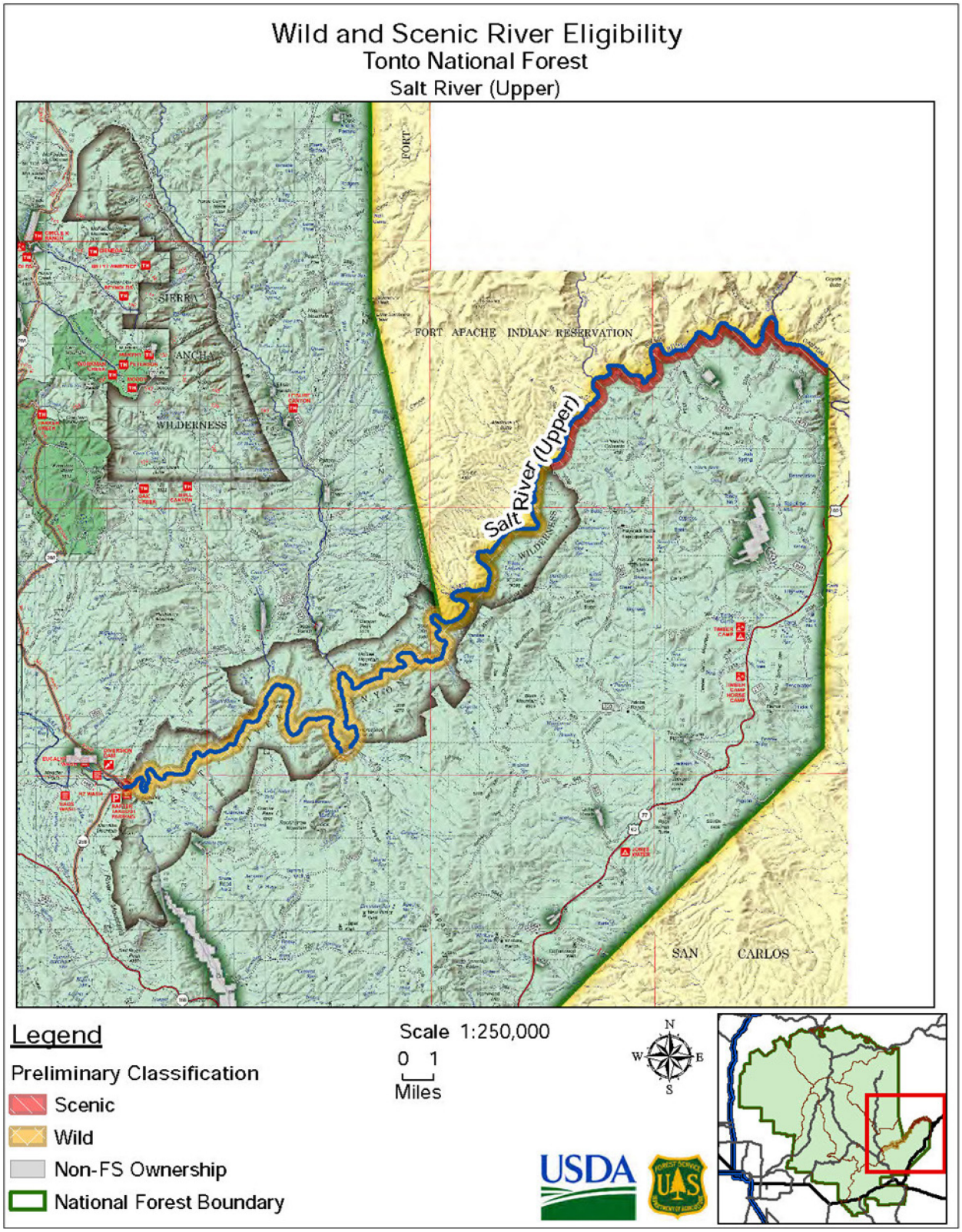


Figure 107. Wild and scenic river eligibility study: Upper Salt River

Upper Tonto Creek

Located in Gila County, Upper Tonto Creek flows traverses the Hellsgate Wilderness, flowing through some of the most rugged, diverse terrain found on the Tonto National Forest. This segment is considered eligible for its wildlife, scenery, historic, and recreation outstandingly remarkable values. Though it flows through the wilderness, Upper Tonto Creek would be classified as "scenic" for being water quality limited. This segment was previously identified in the 1993 Wild and Scenic River Eligibility Study

Classification: Scenic

Miles of each segment: 21.7

Location: Payson and Tonto Basin Ranger Districts

> Begins where Tonto Creek enters the Hellsgate Wilderness and ends where Tonto Creek exits the Hellsgate Wilderness.

Outstandingly Remarkable Values

Recreation, Scenery, Wildlife, and Historic

This segment of Tonto Creek was identified as having outstandingly remarkable scenic, recreation, and wildlife resource values when compared to similar river resources across the state. The exemplary visual features and attractions of this segment of the Tonto River provide users with scenery that is spectacular and not common to other rivers in the State of Arizona. The creek flows through the Hellsgate Wilderness as it winds through a narrow, deep distinctive canyon that contains many deep pools. The creek flows through an ecotonal transition area presenting visitors with the highly diverse experience of seeing desert vegetation (chaparral/creosote) give way to hanging gardens, riparian deciduous vegetation, and finally ponderosa pine all in one stream segment.

There are no developed sites or facilities in this segment, and the spectacular geologic and botanical beauty of the area draws visitors from across the state and country to hunt, fish, rock climb and canyoneer in a remote setting. Canyoneering in this area is considered very high quality and unique within the State. The remoteness, limited access, and scenic quality of this creek combine to create a true wilderness experience.

Tonto Creek also provides uniquely high quality habitat for wildlife of regional and national significance including several State or federally listed species (bald eagle, Southwest willow-flycatcher, and northern Mexican Gartersnake). Many game species also occur in this area including deer, elk, band-tailed pigeon, quail, dove, rabbits, bear, collared peccary, mountain lion, and tree squirrels. The high quality habitat and presence of regionally and nationally significant wildlife species meets the criteria for outstandingly remarkable wildlife values for this segment of Tonto Creek.

Other Information

Upper Tonto Creek is a valued sport fishery on the Tonto National Forest. The remoteness, limited access, and scenic quality of this segment combine to create a true wilderness experience. Recreational users benefit from this area for the opportunities for solitude, relaxation, and viewing of wildlife and scenery. Upper Tonto Creek is an active grazing allotments, so there is the potential for grazing impacts to be noticed within the river corridor.

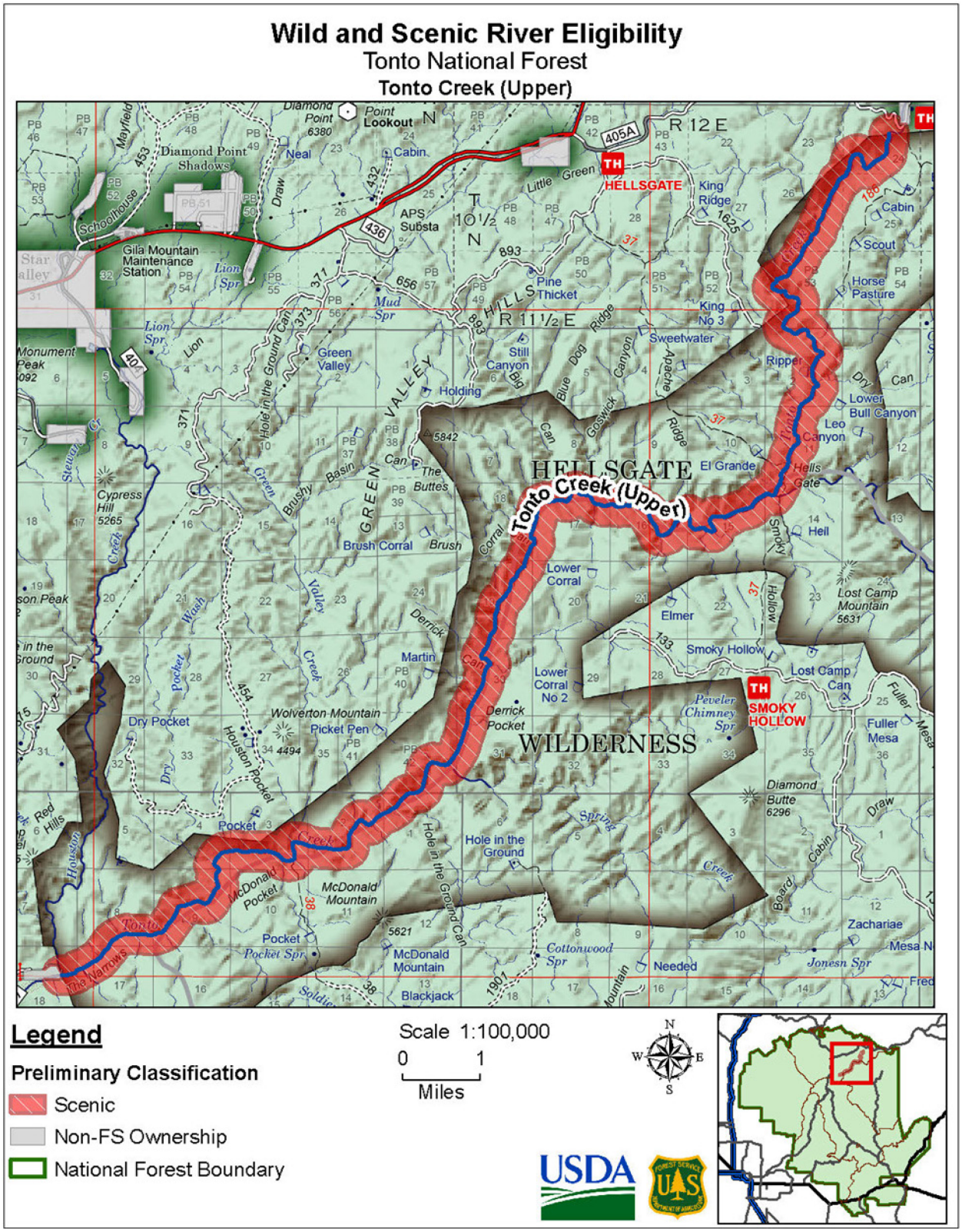


Figure 108. Wild and scenic river eligibility study: Upper Tonto Creek

Verde River

Located in Yavapai and Gila Counties, the Verde River is a major desert river located north of Phoenix and the Horseshoe Reservoir. This segment is considered eligible for its wildlife, fish, recreation, and historic outstandingly remarkable values. The classification for this segment is divided into two portions. The first portion would be classified as "wild" as it flows through the Mazatzal Wilderness until the confluence with Tangle Creek. The second portion would be classified as "scenic" from the confluence with Tangle Creek to Sheeps Bridge, because of the accessibility of the segment at that point. This segment was previously identified in the 1993 Wild and Scenic River Eligibility Study.

Classification: Wild and Scenic

Miles of each segment:

Wild: 9 miles

Scenic: 1 miles

Location: Cave Creek Ranger District

Wild: Begins at the confluence with Red Creek and ends at the confluence with Tangle Creek.

Scenic: at the confluence with Tangle Creek and ends at Sheeps Bridge.

Outstandingly Remarkable Values

Fish, Wildlife, Recreation, and Historic

This segment of the Verde River was identified as having outstandingly remarkable fish, wildlife, recreational and cultural resource values when compared to similar river resources across the State of Arizona. The riparian community and the river itself provide high quality, contiguous habitat for a large and diverse suite of fish and wildlife species including important sensitive species like bald eagles, Northern-Mexican gartersnake and southwestern willow-flycatcher. The area provides valuable winter habitat for migratory waterfowl and birds, including important foraging habitat for bald eagles and critical habitat for the Southwestern willow-flycatcher. The Verde River is one of the primary breeding areas for bald eagles in the State of Arizona. This segment of the Verde River supports a high diversity and concentration of State and Federally listed fish species including razorback sucker, spikedace, roundtail chub, Loach minnow, and Colorado pikeminnow. The river provides uniquely diverse and high quality habitat for fish species indigenous to Arizona, including the only critical habitat for razorback sucker.

This section of the Verde River is also rich in cultural and historic resources. There are many known sites within the potential river area and available data suggests an extensive prehistoric occupation by the Hohokam people: evidence ranges from sherd and lithic scatters to large villages with pithouses and pueblo architecture that dates from approximately AD 800 to 1400. Spaniards first touched the Verde River in 1583 looking for gold. The area was used by the Yavapai Indians beginning around AD 1700 until the establishment of reservations. In the late 1820s, Anglo fur trappers explored the Verde from its confluence with the Salt River upstream to the headwaters in chino Valley. Cattle and sheep grazing occurred beginning around 1900 leading to the need for a safe livestock crossing over the Verde River. Sheep's Bridge was originally constructed for flocks of sheep to cross the river, and was used for this purposed from 1943 until 1979. Sheep's Bridge is now on the National Register of Historic Places and represents a unique feature that is not found anywhere else in the state. The area is one of the few intact locations where there is an interaction of prehistoric transportation and resource procurement.

Recreation values have also been identified as outstandingly remarkable for this segment of the Verde River. The majority of the river area is in the Mazatzal Wilderness area and provides opportunities to engage, year round, in dispersed recreation activities including hiking, backpacking, camping, horseback riding, hunting, fishing, and river running. These opportunities are abundant and high quality, occur in a rugged and remote setting, provide a high level of challenge and risk, and are considered unique and exemplary when compared to similar resources in the State of Arizona.

Other Information

This segment is characterized by various land formations including cliffs, mesas, gently rolling hills, and six confluence areas. North of this segment is the Verde River Designated Wild and Scenic River Area. This segment was considered during the study that led to the 1984 designation of the Verde Wild and Scenic River areas, but dropped due to a proposed flood control project, which ultimately fell through.

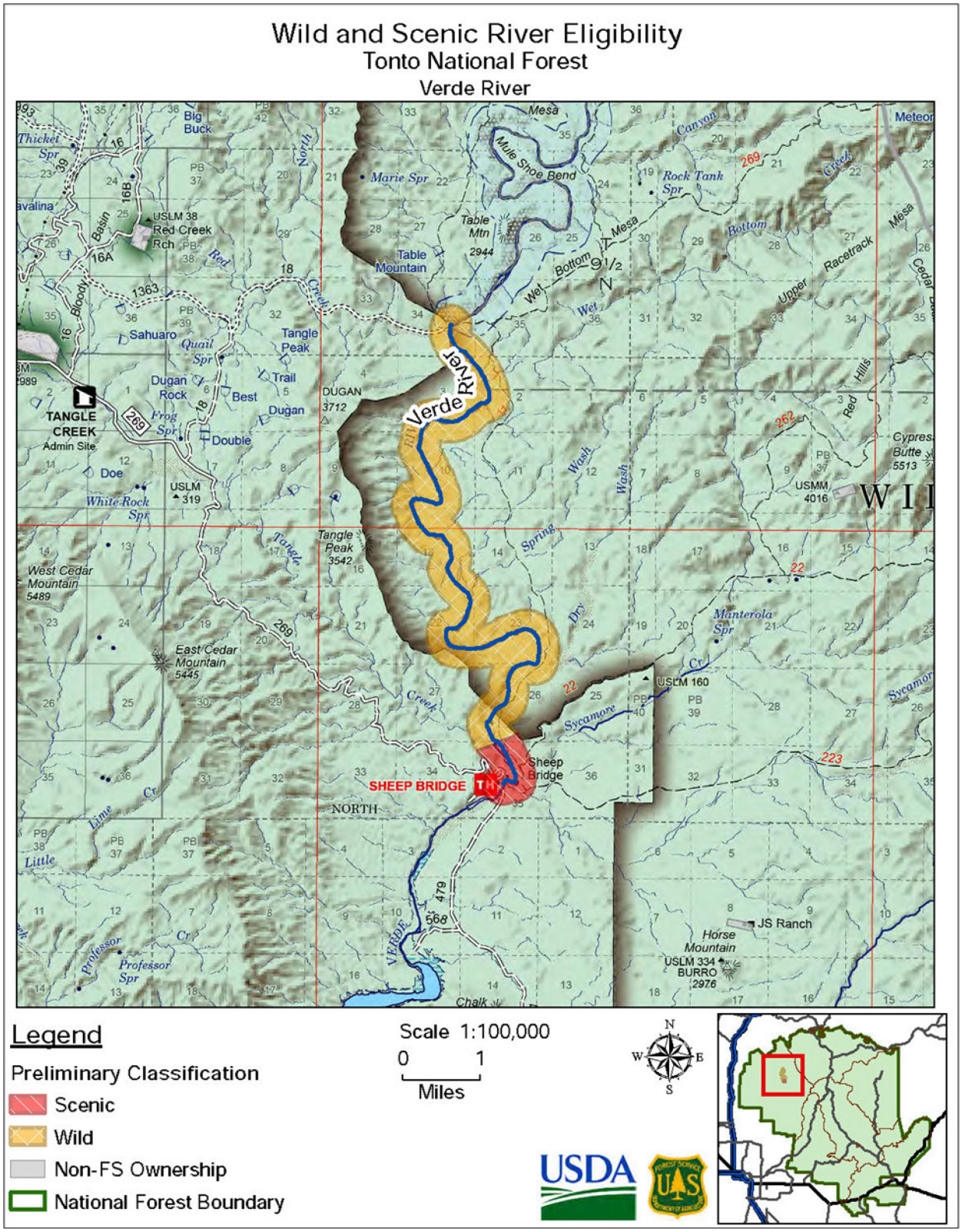


Figure 109. Wild and scenic river eligibility study: Verde River

Workman Creek

In Gila County, Workman Creek is a located just 20 miles south of Young, Arizona. Workman Creek Falls is a central feature on the eastern end. This segment is considered eligible for its natural and scenic outstandingly remarkable values. The classification would be “recreational” for the level of human activity and shoreline development in the river corridor. This segment was previously identified in the 1993 Wild and Scenic River Eligibility Study.

Classification: Recreation

Miles of each segment: 2.3

Location: Pleasant Valley Ranger District

> Begins at the confluence of the North and South Forks of Workman Creek in NWSW section 33, T. 6 N., R. 14 E. and ends where Workman Creek crosses National Forest System Road 3221 in NWNE section 30, T. 6 N., R.14 E.

Outstandingly Remarkable Values

Natural and Scenery

Workman Creek has been identified as having outstandingly remarkable scenic and natural (botanical) resource values when compared with similar resources across the State of Arizona. Workman Creek Falls (the tallest known falls on the Tonto National Forest and one of the tallest perennial waterfalls in the state) is a central feature on the eastern end of the canyon. This stream, on its way to the Salome Wilderness, drops into stunning solid rock pools. Workman Creek is an ecotone (transition area between two biomes), resulting in diverse vegetation with a mixture of pine and fir created by the microclimate of the narrow canyon. The combination of the unique plant and animal species, in conjunction with its high scenic quality, create a unique stream environment.

Workman Creek has also been identified as having outstandingly remarkable natural (botanical) resource values when compared with other similar resources and areas within the state. As mentioned above, the creek falls sharply as it descends, and moves through many transitional areas, different slope aspects and elevation bands creating unique habitats that harbor a diverse suite of plants and unique plant groupings. The creek has two riparian dependent Forest Service sensitive species: Chiricahua/Blumer's dock (*Rumex orthoneurus*) one of the few known natural populations, and Arizona bugbane (*Cimicifuga arizonica*). Additionally, there is a high number of endemic plant species and the habitat has the potential to harbor more rare and narrowly distributed plant species due to its unique environment.

Other Information

This area is a transition zone between two habitats that allow for greater habitat diversity. Sierra Ancha is a unique mountain range on the forest and supports habitat for many threatened and endangered species. This segment is home to several State and Federal threatened and endangered species which live in the narrow floodplain.

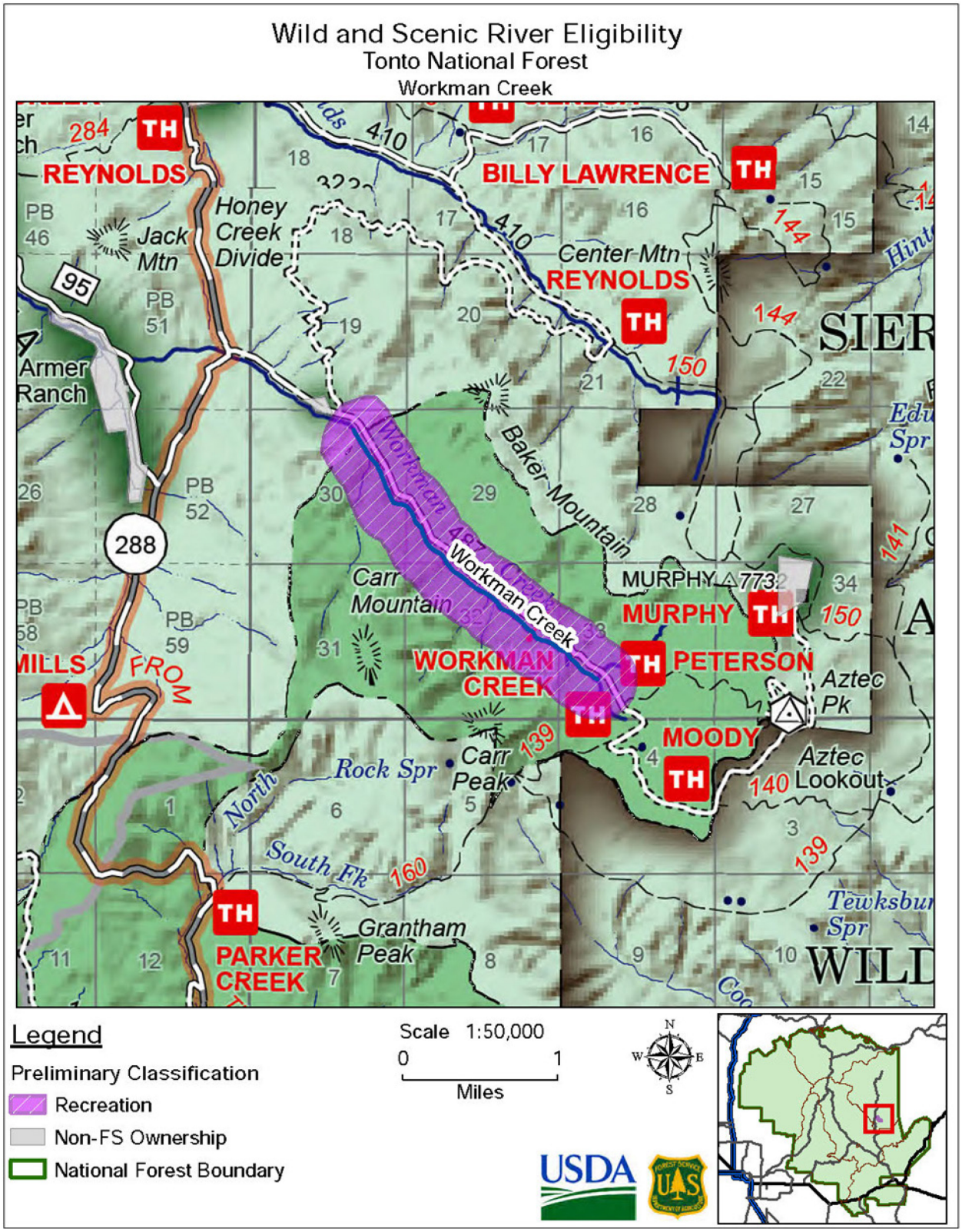


Figure 110. Wild and scenic river eligibility study: Workman Creek

Management of Eligible Wild and Scenic Rivers

Rivers determined to be eligible within the national system must have certain interim protection measures. These protection measures apply until a decision is made of the future use of the river and the adjacent lands through an act of Congress or a determination that the river is not suitable. Along with the interim protective measures additional statutory, regulatory, or policy requirements may apply if the study river is located within a wilderness area or other designated area. In case of conflict between the provisions of the Wilderness Act and FSH 1909.12 chapter 80 the more restrictive provisions shall apply.

The 2012 Planning Rule provides direction for the interim management of Forest Service identified eligible rivers/streams. This can be found in 36 CFR 219.10 (b, v).

> (b) The plan must provide plan components, including standards and guidelines, to provide for:
>
> > (v) Protection of designated wild and scenic rivers as well as management of rivers found to be eligible or determined to be suitable for the National Wild and Scenic River system to protect the values that provide the basis for their suitability for inclusion in the system.

Site-specific projects and activities on National Forest System lands within eligible corridors may be authorized where the project and activities are consistent with the following:

- The free-flowing character of the identified river is not adversely modified by the construction or development of stream impoundments, diversions, or other water resources projects.
- Outstandingly remarkable values of the identified river are protected.
- Classification of an eligible river or stream on National Forest System lands must be maintained as inventoried (eligible) unless a suitability study is completed that recommends management other than the preliminary classification.

Agency identified eligible river protection continues unless a river is determined not suitable for designation. Any eligible river may be studied for its suitability for inclusion in the National System at any time. A suitability study provides the basis for determining which eligible rivers or river segments should be recommended to Congress as potential additions to the National Wild and Scenic Rivers System. The timing for conducting a suitability study may vary. In the case of the Tonto National Forest suitability will be conducted either in response to a project proposal that could affect the river's eligibility, or if a proposed project has the potential to impact the free-flow of any eligible segment. The Tonto National Forest will not be pursuing suitability or recommendation as part of the plan revision effort.

Appendix F. Evaluation of Designated and Proposed Areas

As part of the plan revision effort, all designated research natural areas, recommended (proposed) research natural areas, and recommended botanical areas were evaluated. Research natural areas and botanical areas are a type of special area that provide opportunities for study, monitoring, and promote educational activities and research. Formal designation of recommended special areas is done through a separate environmental impact statement after the revised forest plan is signed and implemented.[19]

Designated Research Natural Areas

A research natural area is a type of special area within the National Forest System designated for their unique or special characteristics (FSM 1905 – Definitions). Research natural areas are defined as "physical or biological units" in which current natural conditions are maintained insofar as possible. These conditions are ordinarily achieved by allowing natural physical and biological processes to prevail without human intervention. Research natural areas are principally for non-manipulative research, observation and study (FSM 4063). They are designated to "maintain a wide spectrum of high quality representative areas that represent the major forms of variability found in forest, shrubland, grassland, alpine, and natural situations that have scientific interest and importance that, in combination, form a national network of ecological areas for research education, and maintenance of biological diversity" (FSM 4063.02).

Evaluation Process

Management of each individual research natural area must support and promote the objectives and purposes for which it was established and comply with the following standards set forth in FSM 4063.3. Therefore, it is appropriate to evaluate conditions and management direction for establishment or disestablishment of research natural areas. Key evaluation criteria include whether current management direction is sufficient at protecting research natural areas against human-caused environmental disruptions, how well natural physical and biological processes are being allow to prevail without human intervention, and whether or not the area retains the characteristics for which it was designated (i.e. no significant changes).

Results

All designated research natural areas on the Tonto National Forest were determined to still possess the characteristics and values they were designated for. Designated areas will have the appropriate management direction to maintain or enhance the characteristics in which the areas were designated for both in the existing forest plan and the proposed forest plan and alternatives (see chapter 3 of the DEIS). The evaluation and results for each designated research natural areas is described below. See figure 111 and figure 112 for maps displaying the location of designated research natural areas.

Buckhorn Mountain Designated Research Natural Area

Buckhorn Mountain Research Natural Area lies in the vicinity of Four Peaks in the southern portion of the Mazatzal Mountains in the Tonto Basin Ranger District. Approximately two-thirds of the research natural area is within Four Peaks Wilderness area. Lands around Buckhorn Mountain in the Four Peaks vicinity of the Mazatzal Mountains are extensively mantled by dense Arizona chaparral vegetation. A variety of

[19] Research natural areas can be designated by the regional forester (and can be delegated to the forest supervisor) if less than 100,000 acres, or by the Secretary of Agriculture if greater than 100,000 acres.

chaparral plant associations exists on the steep, rugged topography of the northeasterly trending drainages of Buckhorn Mountain. The research natural area was established to provide a minimally disturbed example of Arizona chaparral. Two watersheds (Baldy Canyon and upper Buckhorn Creek) are present in the area and in the event of fire, it is improbable that both watersheds would be equally burned, and thus researchers and managers would have a good opportunity to study fire succession and fire physiology of different chaparral species. The area also serves as an un-manipulated baseline to compare against grassland conversion experiments (prescribed fire) conducted just outside the research natural area.

The existing forest plan does provide resource protection in the form of standards and guidelines to manage dispersed recreation at low intensity reduced service level, and restricts off-highway vehicle use. Management emphasis is to manage for wilderness values, wildlife habitats and natural ecological processes while allowing livestock grazing and recreation opportunities that are compatible with maintaining these values and processes.

Conditions have not been significantly altered within the Buckhorn Mountain research natural area and the area still represents a prime example of Arizona chaparral vegetation (interior chaparral ecological response unit). Additionally, Arizona chaparral is an important vegetation type in Arizona that covers an estimated 3.46 million acres with the majority of the distribution located on the Tonto and Prescott National Forests. For these reasons, it is appropriate that the Buckhorn Mountain Research Natural Area remain in the research natural area program of the Southwestern Region.

Bush Highway Designated Research Natural Area

The Bush Highway Research Natural Area is located in the Mesa Ranger District, approximately 1.5 miles north of Saguaro Lake on the Salt River. The old Bush Highway traverses the west side of the area. Bush Highway was signed and designated by the chief in August of 1973. The research natural area is typical of the palo verde-cactus shrub type representative of the hyperthermic temperature regime rather than thermic temperature regime as represented at Picketpost Mountain. This area is typical of a relatively large area in the foothills at the lower elevations of Arizona under the influence of desert climatic conditions. The area has been used for grazing in the past, which has possibly had an effect on the existing vegetation; closure to grazing will allow for observations on vegetation changes over a period of years.

The existing forest plan does provide resource protection in the form of standards and guidelines to manage dispersed recreation at low intensity reduced service level, restricts off-highway vehicle use, and excludes livestock grazing.

The Bush Highway Research Natural Area is in fair condition and will likely continue in that state. Recent drought conditions have impacted the vegetation, and are not likely to resolve soon. There have been past reports of trespass livestock and off-road vehicles in the area, so fencing may be required to reduce impacts in the area, In addition, the area boundary may need adjustment to improve management of the area (e.g., boundary that follows natural topographic features). While there may be changed conditions in some areas, the Bush Highway Research Natural Area still represents a benchmark example of the Sonoran Desert ecosystem under a hyperthermic temperature regime and its inclusion in the research natural area program of the Southwestern Region is justified.

Haufer Wash Designated Research Natural Area

The Haufer Wash Research Natural Area is located 3.5 miles north of Punkin Center and adjacent to SR 188 in the Tonto Basin Ranger District. The area has important benchmark value because it contains semi-desert grassland and desert scrub vegetation following a half-century of recovery after livestock

exclusion. The area was originally established as a range exclusion in the 1930s. The vegetation, soil, landform, and climate of the area is representative of thousands of acres with ongoing livestock management within Tonto Basin, as well as adjacent allotments.

The existing forest plan does provide resource protection in the form of standards and guidelines to manage dispersed recreation at low intensity reduced service level, restricts off-highway vehicle use, and excludes livestock grazing.

Conditions have not been significantly altered within the Haufer Wash Research Natural Area and the area retains the conditions for which it was designated. For these reasons, it is appropriate that the Haufer Wash Research Natural Area remain in the research natural area program of the Southwestern Region.

Recommended Research Natural Areas

Evaluation Process

In addition to public input (through public comments and meetings) and internal review, the Regional Research Natural Area Inventory and Assessment (2015) was referenced to evaluate additional areas for inclusion as recommended designated areas in the revised plan and associated environmental impact statement. The region-wide inventory of existing and previously proposed research natural areas as identified in existing forest plans was completed by examining existing forest plans and research natural area GIS files and establishment records. All records were reviewed and organized by national forest. Research natural areas were considered designated only if they had received formal approval complete with the appropriate signatures as documented in the establishment records. This inventory resulted in a list of 18 designated or formally established research natural areas in the Southwestern Region, and 28 research natural areas that were previously proposed (recommended) and included in forest plans but never formally established.

Established and previously proposed research natural area boundaries were digitized, and placed into GIS layers, organized by national forest. To assist the coarse-filter analysis of research natural area representativeness in the region, the inventory was organized by vegetation type, and four main GIS ecological datasets were reviewed to help determine how well the established and previously proposed research natural areas represent vegetation types and ecosystems in the Southwest, including: R3 Climate Regime analysis, The Nature Conservancy (AZ) Priority Conservation Areas, ecoregions by Cleland et al. (2007), and Region 3 Ecological Response Units formally referred to as Potential Natural Vegetation. Additionally, 16 ecological GIS datasets also were used to aid in the identification of ecological areas that might be representative of essential research natural area reference areas.

Once the GIS research natural area inventory was compiled, it was used to organize the data needed to provide a coarse-filter analysis of existing established research natural areas, and help evaluate the need for additional research natural areas in the region. This analysis assessed the representativeness of existing research natural area within the region, while identifying underrepresented ecosystems. The objective of this effort was to support an effective ecological distribution of research natural areas across major climate gradients, biophysical settings (ecological response units), and to some extent, across important vegetation types within life zones. A simultaneous effort was made to consider the geographic distribution of research natural areas across ecological sections and subsections of the region (Cleland et al. 2007). In the process, they considered the distribution of biophysical settings across other reserve designations (e.g., wilderness) to help prioritize the establishment of additional research natural areas.

For this assessment, the distribution of existing research natural areas and other protected lands, inside and outside the agency, were compared with the distribution of ecological response unit classes (general ecosystem types), ecological sections, and Terrestrial Ecological Unit Inventory (TEUI) climate gradients (Winthers et al. 2005). This assessment was conducted under the assumption that future proposed research natural areas would be designated for the purposes of research and establishing reference sites across all major ecosystem types. This assessment also considered the value of other reserve lands, such as wilderness or National Monument lands, that are not designated as research natural areas but still serve as reference areas by the way they're managed for natural values. As a result, while some ecosystems types may be poorly represented in the R3 network of research natural areas (e.g., Colorado Plateau/Great Basin Grasslands), they are nevertheless accommodated through other management designations, and therefore may be lower priority for designating additional research natural areas .

Also, this simple assessment is not meant to replace assessments by others, including the Southwestern Region Research Natural Area Progress Report (Schmidt et al., 1984), but to supplement other assessments and revisit the distribution of research natural areas, considering different strata (e.g., climate gradient), at a time when forest plans are being revised across the region. The 1984 assessment is not outdated, and in large part corroborates the current effort. Many of the proposed research natural areas identified in 1984 respond well to research natural area needs identified in the current effort.

Research natural area representativeness rankings were derived based on a scale of 1 to 3, where 1 reflects the least degree of representativeness at a given scale (less than 1 percent of the area) and 3 reflects the highest representativeness (over 10 percent of the area). Need for additional research natural area lands ranked low, moderate and high, where low reflects the least degree of need according to those criteria of representativeness used for this assessment. In this assessment, ranks moderate and high are considered to be appropriate for research natural area recommendations. Table 49 displays the results of the assessment, but only for ecosystem types that are relevant to the Tonto National Forest (i.e., only those that occur on the forest).

Table 49. Region 3 research national area (RNA) assessment results for ecosystems on the Tonto National Forest

Ecological Response Unit	Acres across all lands[1]	Acres with protective status[2]	RNA representativeness	Need for Additional RNAs
Juniper Grassland	2,670,609	23,637	1	High
Cottonwood Willow Riparian Forest	534,391	47,526	2	Moderate
Madrean Encinal Woodland	1,074,748	91,912	2	Moderate
PJ Evergreen Shrub	5,438,977	380,795	2	Moderate
PJ Woodland (persistent)	17,766,745	1,109,601	2	Moderate
Ponderosa Pine Forest	7,857,154	687,424	2	Moderate
Semi-Desert Grassland	14,525,349	430,733	2	Moderate
Desert Communities (high sun)	15,441,940	363,476	2	Low
Desert Communities (low sun)	22,444,974	4,382,800	3	Low
Interior Chaparral	2,641,358	362,843	3	Low
Madrean Pine-Oak Woodland	1,423,304	201,905	3	Low

Ecological Response Unit	Acres across all lands[1]	Acres with protective status[2]	RNA representativeness	Need for Additional RNAs
Mixed Broadleaf Deciduous Riparian Forest	194,534	27,294	3	Low
Mixed Conifer - Frequent Fire	963,611	222,015	3	Low
Mixed Conifer w/ Aspen (Cold)	997,999	218,433	3	Low
Mixed Conifer w/ Aspen (Mild)	29,796	11,086	3	Low
Ponderosa Pine - Evergreen Oak	1,414,481	166,576	3	Low

1 NFS lands and other ownership in Region 3 (AZ and NM)

2 Protective status acres includes areas within established/designated research natural areas, areas within wilderness areas, and areas within national monuments.

In addition to evaluating areas based on the regional need for research natural areas, the following factors were also considered for all recommended research natural areas:

- Whether or not the area contributes to a wide spectrum of high quality, representative areas of the major forms of ecological variability and natural situations of scientific interest or importance that in combination form a national network of areas for research, education and maintenance of biological diversity.
- How the area contributes to the preservation and maintenance of genetic diversity, including threatened, endangered and species of conservation concern and/or aquatic systems.
- How the area serves as a baseline or reference area for the study of long-term biological, disturbance, hydrologic or other processes or climate change.
- How the area serves as a control for comparing results from manipulative research.
- Whether or not the area is large enough to provide essentially unmodified conditions within its interior, maintain ecological processes and the features or qualities for which the research natural area is proposed.
- If the area has evidence of major disturbances by humans (Have activities affected the area beyond its ability to recover?).
- How well the area reflects its original, near-pristine condition as closely as possible.

Results

All previously recommended research natural areas and additional areas was reviewed internally by evaluating criteria described in the evaluation process (above). Additionally, the forest held a round of public meetings in November 2017. At the meetings, participants described the resources of values (research, botanical, geological significance, etc.) on the forest. Specific values for the special areas mentioned included botanical resources, cultural resources, fish and wildlife, and scenery. Suggestions for areas included riparian areas (Haigler Creek, Upper Christopher Creek), areas with representative examples of chaparral and ponderosa pine vegetation and areas with scenic values such as Hackberry Mesa.

After internal and external review, it was determined that all previously recommended research natural areas (Picketpost Mountain and Upper Forks Parker Creek) still have important benchmark research value and have attributes of the types of areas the public expressed interest in. Additionally, these areas fulfill the identified need for underrepresented research natural areas within Southwestern Region and represent unique ecosystem types on the Tonto National Forest. Based off the Regional Research Natural Area Inventory and Assessment, internal review, and public input, two new areas were recommended for research natural area designation – Dutchwoman Butte and Three Bar. These areas also fulfill the identified need for underrepresented research natural areas within Southwestern Region.

The existing forest plan has management areas referred to as natural areas. Natural areas were identified through the Arizona State Parks board Natural Area program. Natural areas and are intended for demonstration and study purposes in a natural undisturbed setting. Natural areas were proposed by the Arizona Parks Board, but never officially designated. After reviewing these areas with the evaluation criteria, it was determined that the Blue Point Cottonwood Natural Area and Sycamore Creek Natural area (both recommended for having unique Sonoran Desert riparian habitat) should not be carried forward as recommended research natural areas. The proposed Sycamore and Blue Point Cottonwood Natural Areas have not been formally managed as natural areas on the ground and do not meet the criteria of research natural areas. The Sycamore Creek Natural Area is located in heavily used areas along Sycamore Creek just downstream of National Forest System Road 402. This area receives intense recreational pressure from off-highway vehicles, target shooting, and camping. The proposed Blue Point Cottonwood Natural Area is located along the Lower Salt River where the area is being managed as a recreation area. For these reasons, maintain existing conditions and natural processes and providing research opportunities would be low for the Sycamore Natural Area and Blue Point Natural Area. Additionally, it was determined that other areas have better representative examples of unique Sonoran Desert ecosystems on the forest (e.g., Mesquite Wash recommended botanical area, Arnett Creek within the Picket Post Mountain recommended research natural area) and could be better managed as research natural areas. The Fossil Creek Natural is being proposed as a botanical area in the revised forest plan (see the Recommended Botanical Areas section below).

Recommended Research Natural Areas Carried Forward

The following is the evaluation results and description of areas carried forward as recommended research natural areas. In addition to internal and external interest, these areas would fulfill the identified need to include under-represented ecosystem types within the Southwest Regional network of research natural areas. See figure 114 through figure 117 for maps displaying the location of recommended research natural areas.

Picketpost Mountain Recommended Research Natural Area

The recommended Picket Post Mountain research natural area is located in the Globe Ranger District (figure 115). The area was previously proposed and included in the existing forest plan. The area was never formally designated. The recommended Picket Post Mountain research natural area contains excellent examples of the Sonoran Desert in many of its varied plant community associations on foothill and piedmont topography. The eastern piedmont, bounded by cliffs along Telegraph Canyon and Arnett Creek, represents the Sonoran Desert on gentle upland slopes. Stretches of Arnett Creek are included in the area and have perennial flow that supports a riparian gallery forest (which is rare in the state and on the forest). The varied topography and soils around Picket Post Mountain display a number of unique plant communities within a small area and also represents the limiting cold temperature boundary of the Saguaro cactus distribution. Arnett Creek and the adjacent uplands serve as excellent benchmark examples for Sonoran Desert plant communities and deciduous riparian forests. The area also serves as an

important gene pool for Sonoran flora (especially cacti) and fauna, and as a control to study the effects of grazing management (at areas excluded from livestock grazing). The area has high research interest. There is a long record of research in and around the area and opportunities for continued study or educational use are available in a wide range of biological and environmental fields. Additionally, the neighboring Boyce Thompson Arboretum and the University of Arizona is actively working to develop new research opportunities in the area.

The existing forest plan (alternative A) does provide resource protection in the form of standards and guidelines to manage dispersed recreation at low intensity reduced service level, restricts off-highway vehicle use, and excludes livestock grazing.

While Arnett Creek within the Picket Post Mountain research natural area has become an increasingly popular destination for recreationist, efforts to redirect uses from the riparian area are underway (e.g., trails are being relocated out of the riparian area, and exclosures have been installed to exclude livestock) to maintain and improve riparian conditions. Other locations of the area are naturally isolated from disturbances (off-highway vehicle use and livestock grazing) due to the terrain and topography and have been minimally impacted. While there is not a high need for additional desert communities within the regional network of research natural areas, the varied desert plant communities over a short distance within the recommended Picketpost Mountain research natural area is unique on the forest and within the region. There is a high need for Cottonwood Willow riparian areas within the regional network of research natural areas and Arnett Creek within the recommended Picketpost Mountain research natural area would fulfil this need. For these reasons, the recommended Picketpost Mountain research natural area would be a good candidate for inclusion in the research natural area program of the Southwestern Region.

Upper Forks Parker Creek Recommended Research Natural Area

The Upper Forks Parker Creek recommended research natural area is located in the Pleasant Valley Ranger District (figure 117). The area was previously proposed and included in the existing forest plan. The area was never formally designated. The Upper Forks Parker Creek recommended research natural area contains excellent examples of canyon bottom forests consisting of mixed broad-leaf riparian forests – including sycamore-walnut-Arizona alder forests near the headquarters to white fir-big-toothed maple forests at higher elevations. Riparian vegetation is present along both upper and lower forks within chaparral and mixed conifer forests on canyon side slopes and summits. The absence of Arizona cypress from the canyon above the headquarters makes this area unique compared to other mixed broad-leaf canyon bottom riparian forests typically found below the Mogollon rim (such as what is commonly found on the Coronado National Forest). There is a long record of research in and around the area and opportunities for continued study or educational use are available in a wide range of biological and environmental fields.

The existing forest plan (alternative A) does provide resource protection in the form of standards and guidelines to manage dispersed recreation at low intensity reduced service level, restricts off-highway vehicle use, and excludes livestock grazing.

Conditions have not been significantly altered within the proposed Upper Forks Parker Creek research natural area and the area still has the conditions in which it was recommended for. While the Upper Forks Parker Creek was primarily recommended for its prime example of a canyon bottom mixed broadleaf riparian area, the adjacent vegetation communities in the area does include Madrean woodland, Ponderosa Pine, and Pinyon Juniper communities which are under-represented within the regional network of research natural areas. For these reasons, the recommended Upper Forks Parker Creek research natural

area would be a good candidate for inclusion in the research natural area program of the Southwestern Region.

Dutchwoman Butte Recommended Research Natural Area (new)

The Dutchwoman Butte recommended research natural area is not in the existing forest plan. The Dutchwoman Butte recommended research natural area is located in the Tonto Basin Ranger District, seven miles north of Roosevelt Arizona (see figure 114). The 86-acre area is an isolated butte that contains a relict semi-desert grassland community that has not been grazed by domestic livestock, largely due to the steep topography. The vegetation has elements of higher elevation woodlands (e.g., the presence of turbinella oak; *Quercus turbinella*) but is predominately more similar to that of semi-arid grasslands with a climate at the extreme cool/moist end of the semi-arid grassland gradient.

The Dutchwoman Butte recommended research natural area serves as a valuable reference area in that it represents one of the very few semi-desert grasslands that have not been impacted by domestic livestock grazing and it can be used to assess the impacts that have occurred on managed sites with similar ecosystems. Semi-desert grasslands are also poorly represented within the research natural area program of the Southwestern Region. For these reasons, this area would be a good candidate for inclusion in the research natural area program of the Southwestern Region.

Three Bar Recommended Research Natural Area (new)

The Three Bar recommended research natural area is not in the existing forest plan. The Three Bar recommended research natural area is located in the Tonto Basin Ranger District (see figure 116). The 22,920 acre area abuts the designated Buckhorn Mountain research natural area and the Four Peaks Wilderness area to the west and extends about 5 miles to the east towards Roosevelt Lake. The terrain consists mostly of steep slopes and rocky ravines and the dominant ecological response units (ecosystem types) include interior chaparral, Sonoran palo verde-mixed cactus scrub, semi-desert grassland, and some inclusions of deciduous riparian woodlands (mainly Arizona sycamore-Fremont cottonwood). The area has been ungrazed by livestock since the 1940s. The area has high research value and interest from the public. There have been a number of past and ongoing wildlife studies and research in the area. Additionally, the area serves as a valuable reference area in that it contains a variety of ecosystems types that have been ungrazed and can be used to assess the impacts that have occurred on managed sites with similar ecosystems.

The recommended Three Bar research natural area includes the area currently managed as the Three Bar Wildlife management area in the existing forest plan. Based on internal review, it is the opinion of resource specialists that the area has high research value and would be a good candidate for special area designation as a research natural area. Dominate vegetation includes semi-desert grassland vegetation that has been ungrazed since the 1940s and is under-represented within the regional network of research natural areas. For these reasons, the recommended Three Bar research natural area would be a good candidate for inclusion in the research natural area program of the Southwestern Region.

Recommended Botanical Areas

Botanical areas contains plants, plant groups, or plant communities that are significant because of their form, rarity, or other features. The Tonto National Forest has some of the most diverse vegetation and ecosystems, including rare and unique plant communities. The Tonto National Forest could arguably be one of the most floristically diverse forests within the Southwest Region (AZ and NM).

Evaluation Process

Similar to the evaluation process for recommended research natural areas, public input (through public comments and meetings) and internal input identified a need to include special management for unique ecosystems and plant communities. The Regional Research Natural Area Inventory and Analysis (2015) was also referenced to evaluate potential botanical areas. This assessment was referenced because it identified underrepresented ecosystem types that may also harbor unique and or rare plant associations. The following were primary considerations for evaluating botanical areas:

- How significant the area is in terms of rare and unique plant communities and rare species on the forest and within the Southwest region.
- How significant the area is in terms of threatened, endangered and species of conservation concern.
- How significant the area is in terms of other landscape features including geology, soils, climate, and landform.
- The scenic, research, and education interest and opportunities in the area (e.g., popular places for botany fieldtrips, wildflower viewing and photography).
- Whether or not the area is large enough to provide essentially unmodified conditions within its interior, maintain botanical values and the features or qualities for which the botanical areas is proposed.
- If the area has evidence of major disturbances by humans (Have activities affected the area beyond its ability to recover?).
- How well the area reflects its original, near-pristine condition as closely as possible.

Other criteria evaluated included the location and abundance of endemic plants, unique plant associations, unique soils and geology, and rare plant occurrences. Hodgson et al. (2013) produced distribution maps (current and predicted distribution) for endemic plant species for the State of Arizona. This report was also referenced in the evaluation of botanical areas.

Results

There were no previously recommended botanical areas in the existing plan. New areas were considered and evaluated following the criteria described in the evaluation process above. Input was also received from the public. The forest held a round of public meetings in November 2017. At the meetings, participants described the resources of values (research, botanical, geological significance, etc.) on the forest. Specific values for the special areas mentioned included botanical resources, cultural resources, fish and wildlife, and scenery. Suggestions for areas included riparian areas (Haigler Creek, Upper Christopher Creek), areas with representative examples of chaparral and ponderosa pine vegetation and areas with scenic values such as Hackberry Mesa. Most of the suggestions and areas were better suited for research natural area considerations (see the Recommended Research Natural Area evaluation section above), and less so for botanical area considerations. After internal and external review, there were only four areas evaluated – all of which were determined to possess unique botanical values (criteria described in the evaluation process above) suitable for special area designation.

Recommended Botanical Areas Carried Forward

The following is the evaluation results and descriptions of areas carried forward as recommended botanical areas. The evaluation resulted in the recommendation of four new botanical areas; Fossil Springs, Horseshoe, Little Green Valley Fen, and Mesquite Wash. Similar to research natural areas, these

special areas would contribute to a network of unique and rare plant communities within the southwest region. See figure 118 through figure 121 for maps displaying the location of recommended botanical areas.

Fossil Springs Recommended Botanical Area

The Fossil Springs recommended botanical area is located in the Payson Ranger District (figure 118). This area is currently being managed as the Fossil Springs Natural Area under the existing Forest Plan. The area serves as a benchmark example of a rare spring ecosystem in Arizona – one with a highly diverse riparian deciduous forest, a large and complex spring system, and travertine geology. The springs in Fossil Creek are situated in the bottom of a wide, deep canyon. The springs are responsible for the formation of extensive travertine beds about 1 mile long and on-half mile wide. The springs issue from Redwall limestone and as a result contain moderate amounts of dissolved solids, primarily calcium, magnesium, and bicarbonate. The springs and these geologic features produce the "fossilized" appearance of debris that collects at the bottom of the stream bed. The floral diversity is high due to the combination of water, elevation and both north and south facing slopes. The vegetation changes markedly from pine forest to more xeric, lower elevation species as one descends into Fossil Creek Canyon. Luxurious, dense growth of riparian plants are found in the immediate area of the springs. A dense understory of annual and perennial plant species is found throughout the area – over two feet tall in some places. The stream, riparian area, and vegetation also support a high diversity of aquatic and wildlife species. The recommended Fossil Springs botanical areas is located within the Fossil Creek Wild and Scenic River corridor[20]. While the area does receive high visitation from the public, the area has been managed to retain and or restore conditions.

Horseshoe Recommended Botanical Area

The recommended Horseshoe Botanical Area, located in the Cave Creek Ranger District (figure 119), includes limestone outcrops within the *Larrea tridentata-Canotia holacantha* (creosote and crucifixion thorn) association of the palo verde-mixed cactus series (Brown 1982). The boundary for the botanical area was delineated to capture the major limestone outcrops and portions of the surrounding creosote-crucifixion association located along Horseshoe Lake in the Cave Creek ranger district. There are two subareas – one located at the southwest side of Horseshoe Lake just west of Horseshoe Recreation area, and the other subarea is located at the north and northeast side of the lake. The differences in soils and soil chemistry in the area produce striking differences in species composition. The limestone outcrops harbor a number of rare, endemic, sensitive and at-risk plant species including the Arizona cliffrose (*Purshia subintegra*). The only known occurrences of Ripley's wild buckwheat (*Eriogonum ripleyi*) and Rusby's milkwort (*Polygala rusbyi*) on the forest are located in this area and they both are northern-region species (from the Colorado Plateau) that are disjunct into the Sonoran Desert (i.e., uncommon in the Sonoran Desert). The horseshoe deer vetch (*Lotus mearnsii* var. *equisolensis*) is only found in this area and at the Verde Valley botanical area on the Coconino National Forest. For these reasons, the area has high research value and botanical value. Vegetation is minimally disturbed. There are a few recreation facilities near the lake bordering the area but there have been no noticeable impacts (e.g., trampling of vegetation from hikers or off-highway vehicle users).

Little Green Valley Fen Recommended Botanical Area

The Little Green Valley Fen recommended botanical area, located in the Payson Ranger District (figure 120), serves as a benchmark example of a rare and sensitive wetland meadow with peat soils that are rare

20 The Coconino National Forest oversees the on-the-ground management and is in the process of developing the comprehensive river management plan (CRMP).

in Arizona. Additionally, the alternating layers of peat and gravel (observed in the headcut) reveal the evolutionary sequence of landform processes which has allowed researchers to reconstruct past climate, vegetation, and disturbances. The boundary was delineated to capture the wetland meadow and portions of Green Valley Creek. This area includes the wetland and southern portion of Green Valley Creek where the tributary enters the creek from the southeast. The meadow is about 0.25 miles wide but narrows down to a small outlet of less than 100 feet at the southwestern end where Green Valley Creek leaves the meadow. The lower end of the meadow is constantly wet at the lower end and drier at the upper end. The organic layer is about 7 meters thick at the outlet end of the fen. The meadow supports a diversity of grasses, sedges, and wetland herbaceous species. The surrounding vegetation is ponderosa pine oak forest with scattered occurrences of pinyon and juniper. There are little management conflicts in the area and most of the vegetation is undisturbed. There are efforts underway to address the headcut in the area and to exclude livestock and elk grazing (by fencing the area).

Mesquite Wash Recommended Botanical Area

The Mesquite Wash recommended botanical area is located along Sycamore Creek in the Mesa Ranger District (figure 121). This is a unique desert riparian area within Sycamore Creek – rare on the forest and within the state. The boundary was delineated to capture the riparian area, mesquite stands along the northern side of the creek (bounded by the existing pipe rail), and portions of the southern side of the creek where the riparian area transitions into desert scrub. The western extent ends where the channel becomes intermittent along Sycamore Creek. Arizona Walnut and willows are abundant along the channel with mesquite occupying the terraces and upper banks. The more or less permanent water source and spring at Mesquite Wash produce a striking level of plant diversity and a stark difference to the surrounding vegetation outside the riparian area. There are also many important birds, other wildlife, and aquatic species in the area. There is high public interest in the area for its botanical values and the area is regularly visited by botany students, botanists, researchers, and recreationists. While there is high recreational use (specifically off-highway vehicle use) in the area, pipe rail has been installed to keep off-highway vehicle use out of the Mesquite Wash to protect the sensitive wetland. Pipe rail would need to be maintained occasionally as floods have been known to wash out railing at locations. Occasional negative impacts from livestock trespassing have been noted in the area but they have been quickly resolved. Recreational shooting has recently increased in the vicinity and may become a concern at Mesquite Wash. Recreational shooting can cause direct damage to plants from shooting, and impair soil conditions and plant vigor through the accumulation of lead from ammunition. Additionally, this area is frequented by large groups of people (e.g., wildlife watching, botany fieldtrips, hikers) and recreational shooting in the area increases safety concerns.

Alternative Comparison for Recommended Research Natural Areas and Botanical Areas

This section only discusses recommended research natural areas and botanical areas – all designated research natural areas would be carried forward under all alternatives. Effects of the special areas to other resources are disclosed in the appropriate section of the EIS.

Two recommended research natural areas would be included under alternative A because they are already in the existing 1985 forest plan[21] – the Upper Forks Parker Creek and Picketpost Mountain recommended research natural areas. There is a high need for Cottonwood Willow riparian areas within the regional network of research natural areas and Arnett Creek within the recommended Picketpost Mountain research natural area would fulfil this need. While the existing forest plan (alternative A) does provide

21 These areas were recommended and included in the 1985 Forest Plan but never officially designated.

some level of resource protection for designated and recommended research natural areas, the forest plan is silent on other uses and activities (e.g., trail construction, overnight camping and recreation fires) that could negatively ecological impact conditions. All action alternatives (alternatives B, C, and D) would provide improved management direction (more standards and guidelines) to address these concerns.

Alternatives B and C would include two additional recommended research natural areas (Dutchwoman Butte and Three Bar) that have prime examples of semi-desert grasslands that are relatively undisturbed. Semi-desert grasslands have been dramatically reduced regionally (from fire suppression, shrub encroachment, livestock grazing, and urban development) and these ecosystems were identified as being poorly represented within the Southwest regional network of research natural areas. These alternatives would also include four recommended botanical areas, three of which (Mesquite Wash, Little Green Valley Fen, and Fossil Springs) represent rare and unique riparian ecosystems that are limited in the Southwest. There would be increased management emphasis and resource protection (through additional standards and guidelines) for rare, endemic, and at-risk plant species (species of conservation concern and federally listed) by recommending the Horseshoe Botanical Area for special area designation.

Alternative D was developed to address public comments that expressed a desire for easier access and multiple use opportunities on the Tonto National Forest. Related comments received on the notice of intent, preliminary proposed plan, and public engagement focused on providing more accessible recreation opportunities, and having fewer restrictions on land uses including no additional recommended wilderness acres or other special area designations. Therefore, there would be no recommended research natural areas or botanical areas under alternative D – instead these areas would be managed through forest-wide desired conditions, standards, and guidelines. Table 50 displays the recommended and designated research natural areas and recommended botanical areas by alternative in the environmental impact statement for the forest plan.

Table 50. Recommended and designated research natural areas (RNA) and botanical areas (BOT) by alternative ("Yes" indicates an area is included, "No" indicates it is not)

Area Name)	Acres	Ranger District	Alternative A	Alternative B	Alternative C	Alternative D
Buckhorn Mountain Designated RNA	2,800	Tonto Basin	Yes	Yes	Yes	Yes
Bush Highway Designated RNA	516	Mesa	Yes	Yes	Yes	Yes
Haufer Wash Designated RNA	751	Tonto Basin	Yes	Yes	Yes	Yes
Dutchwoman Butte Recommended RNA	86	Tonto Basin	No	Yes	Yes	No
Picketpost Mountain Recommended RNA	1,164	Globe	Yes	Yes	Yes	No
Three Bar Recommended RNA	22,920	Tonto Basin	No	Yes	Yes	No
Upper Forks Parker Creek Recommended RNA	1,441	Pleasant Valley	Yes	Yes	Yes	No
Fossil Springs Recommended BOT	9	Payson	No	Yes	Yes	No
Horseshoe Recommended BOT	3,877	Cave Creek	No	Yes	Yes	No
Little Green Valley Fen Recommended BOT	53	Payson	No	Yes	Yes	No

Area Name)	Acres	Ranger District	Alternative A	Alternative B	Alternative C	Alternative D
Mesquite Wash Recommended BOT	10	Mesa	No	Yes	Yes	No

Maps

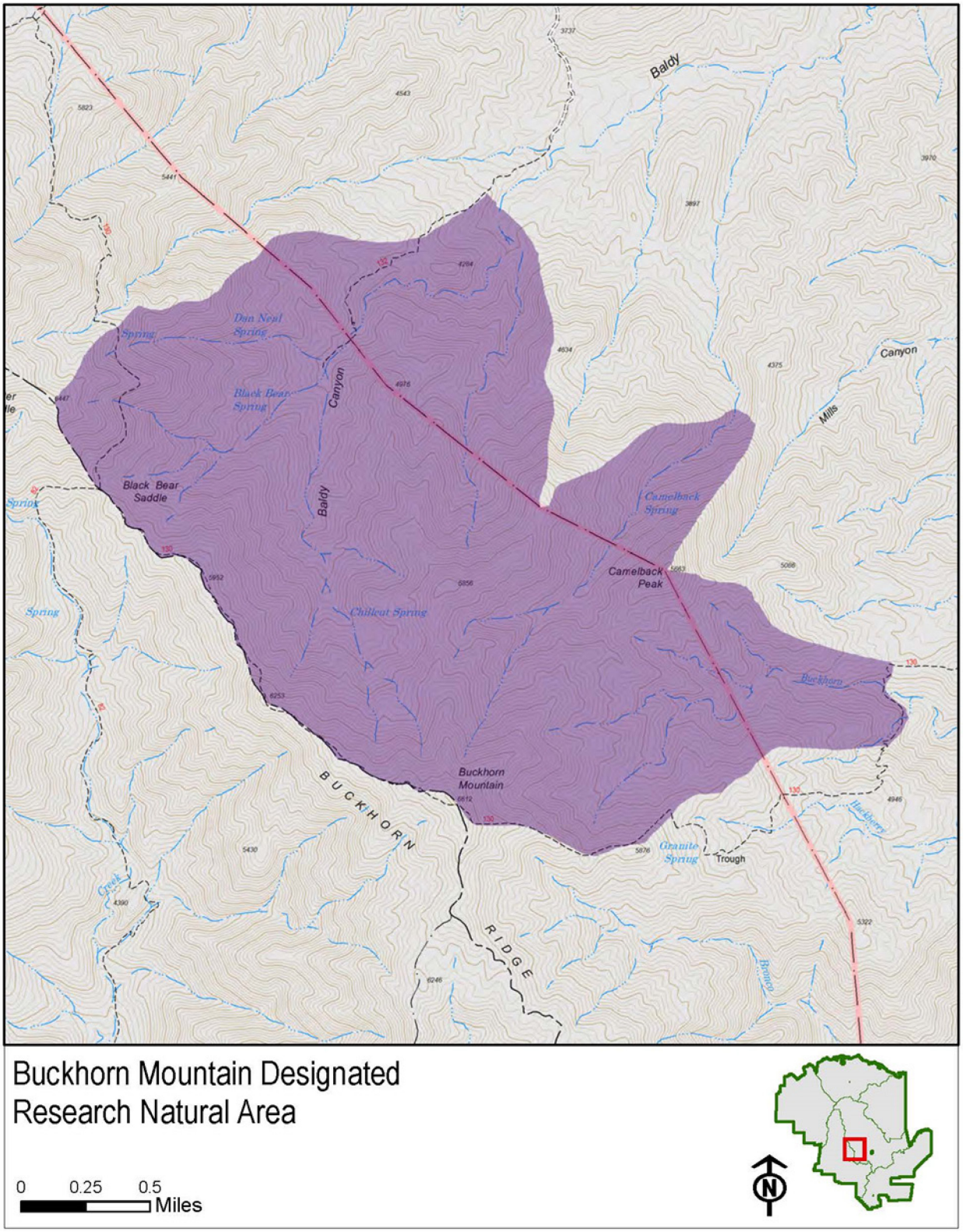


Figure 111. Buckhorn Mountain Designated Research Natural Area

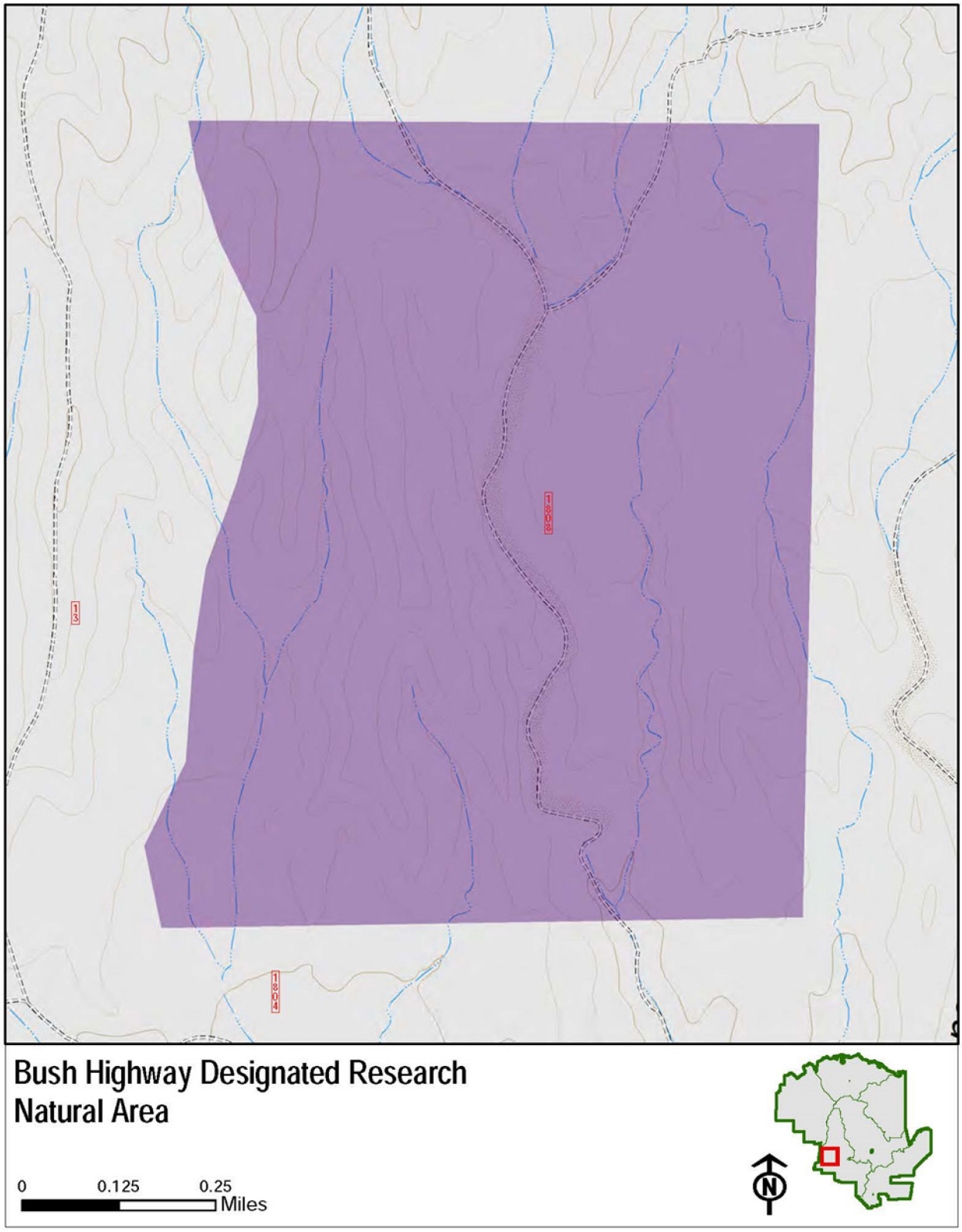


Figure 112. Bush Highway Designated Research Natural Area

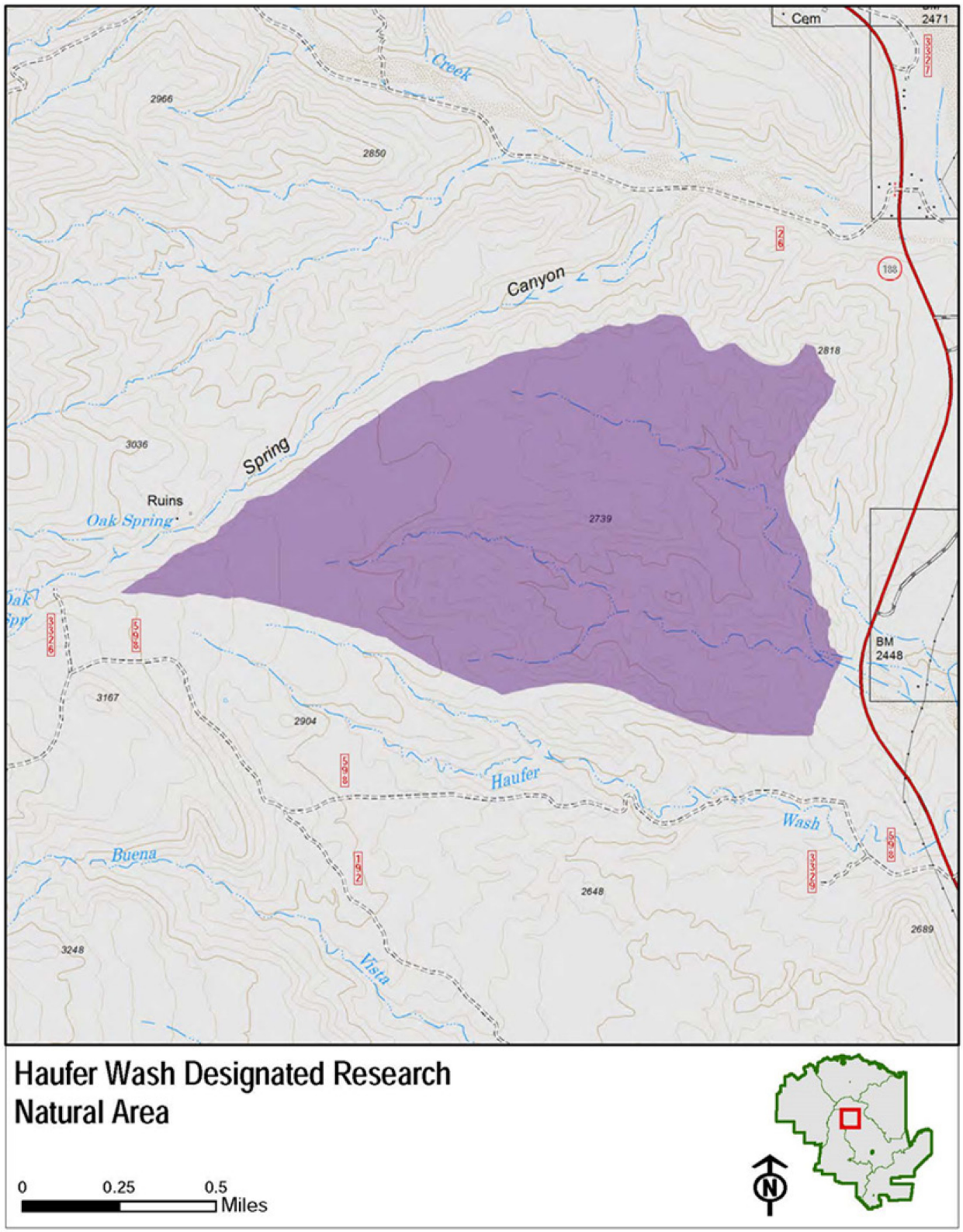


Figure 113. Haufer Wash Designated Research Natural Area

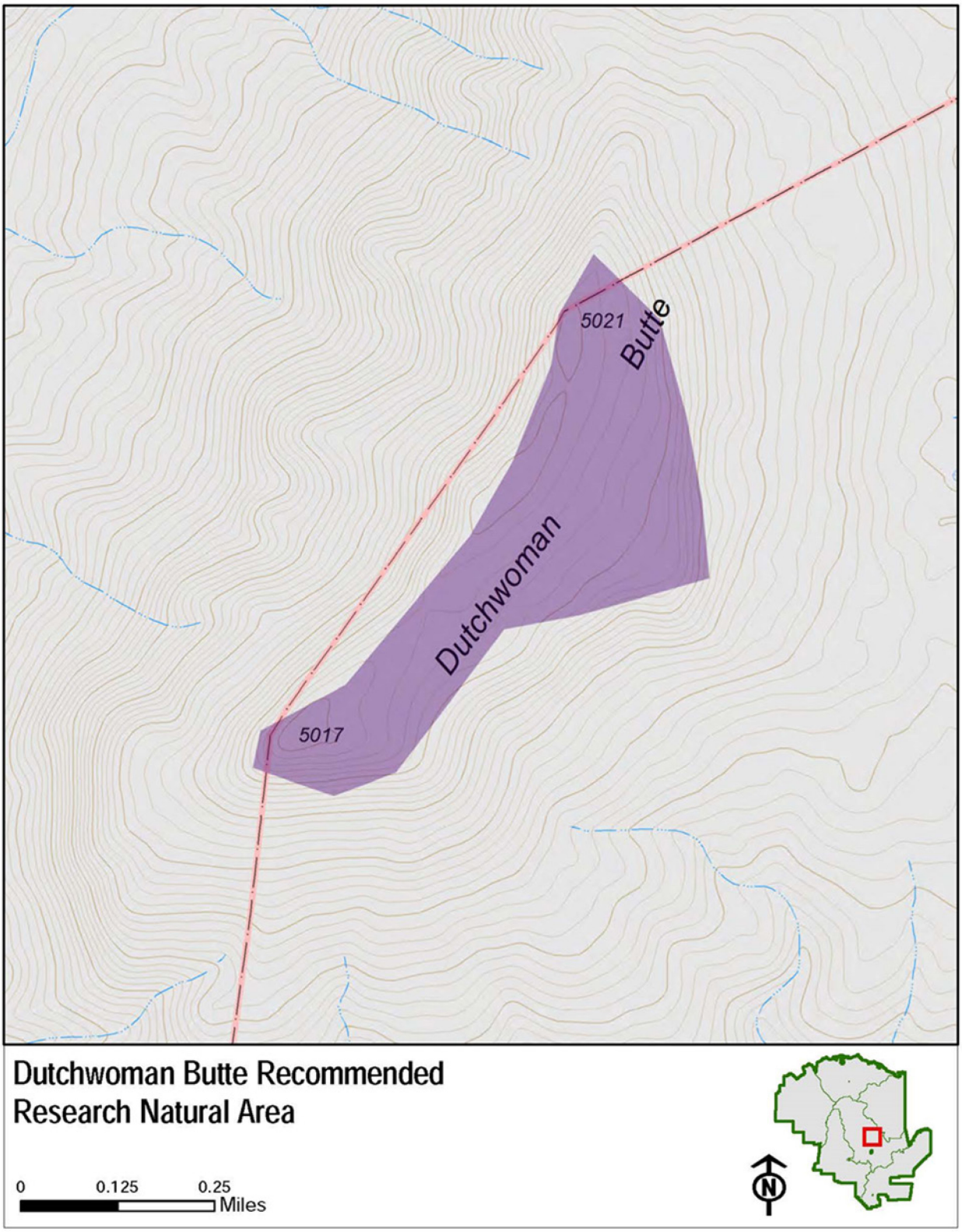
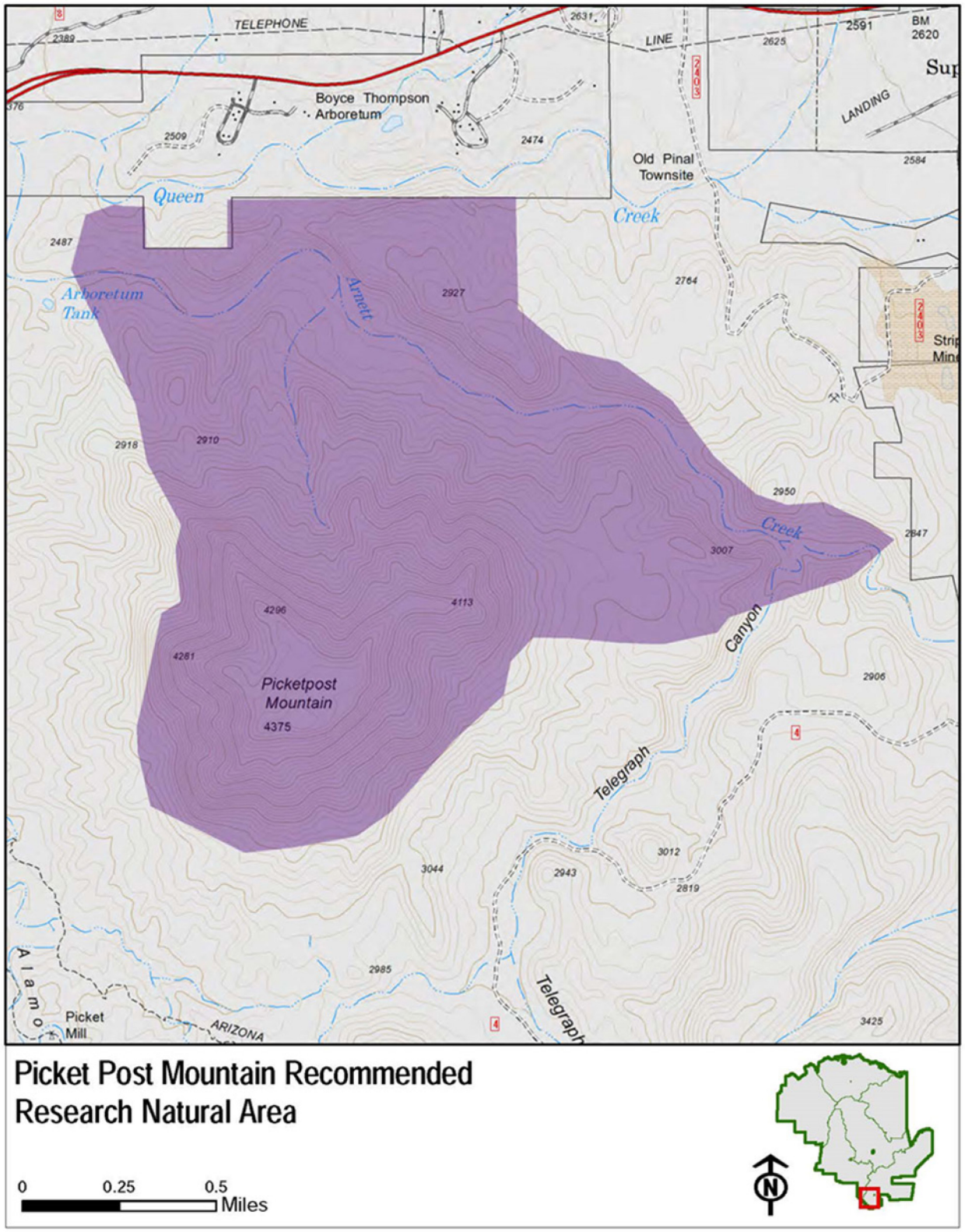


Figure 114. Dutchwoman Butte recommended research natural area



Picket Post Mountain Recommended Research Natural Area

Figure 115. Picket Post Mountain recommended research natural area

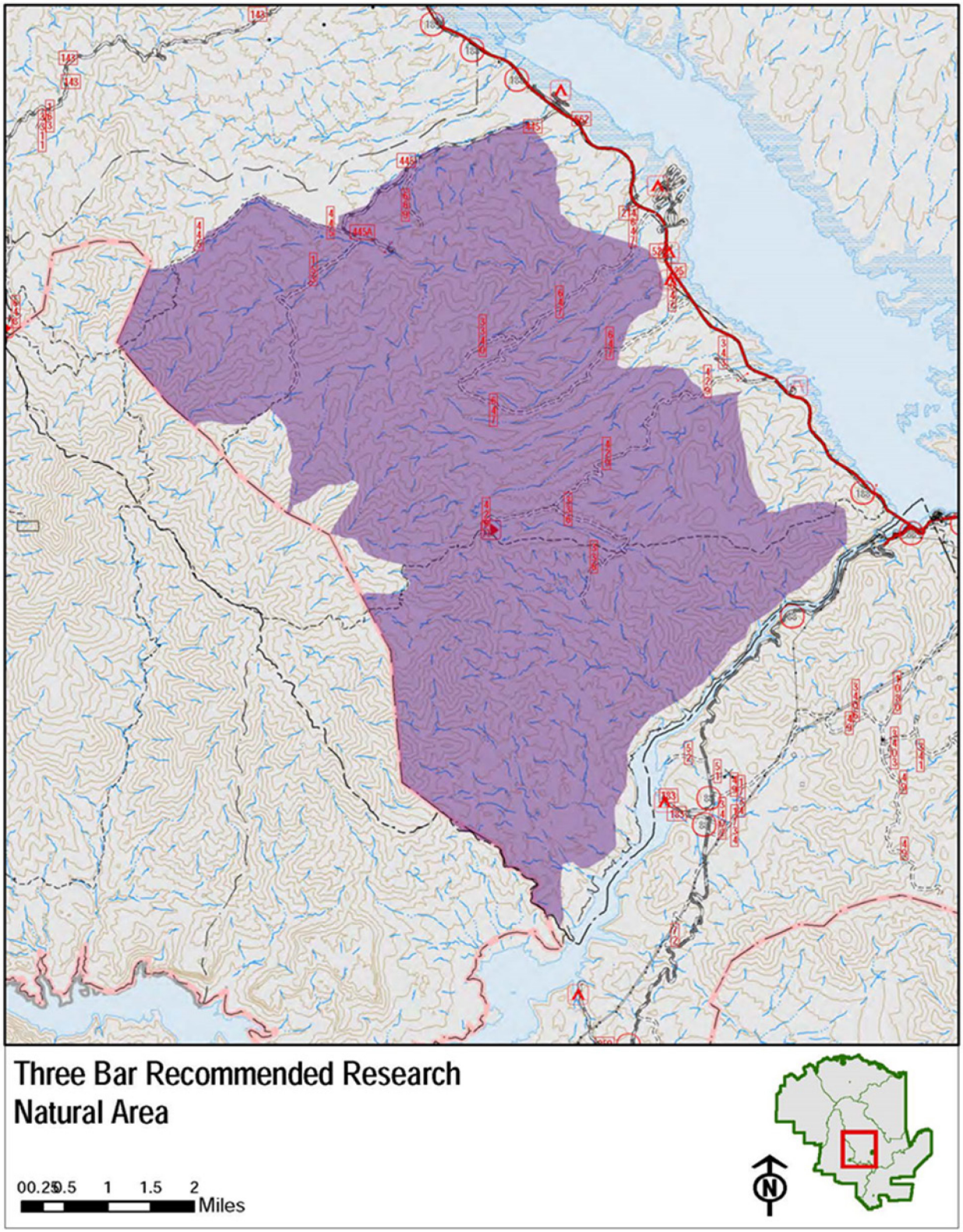


Figure 116. Three Bar recommended research natural area

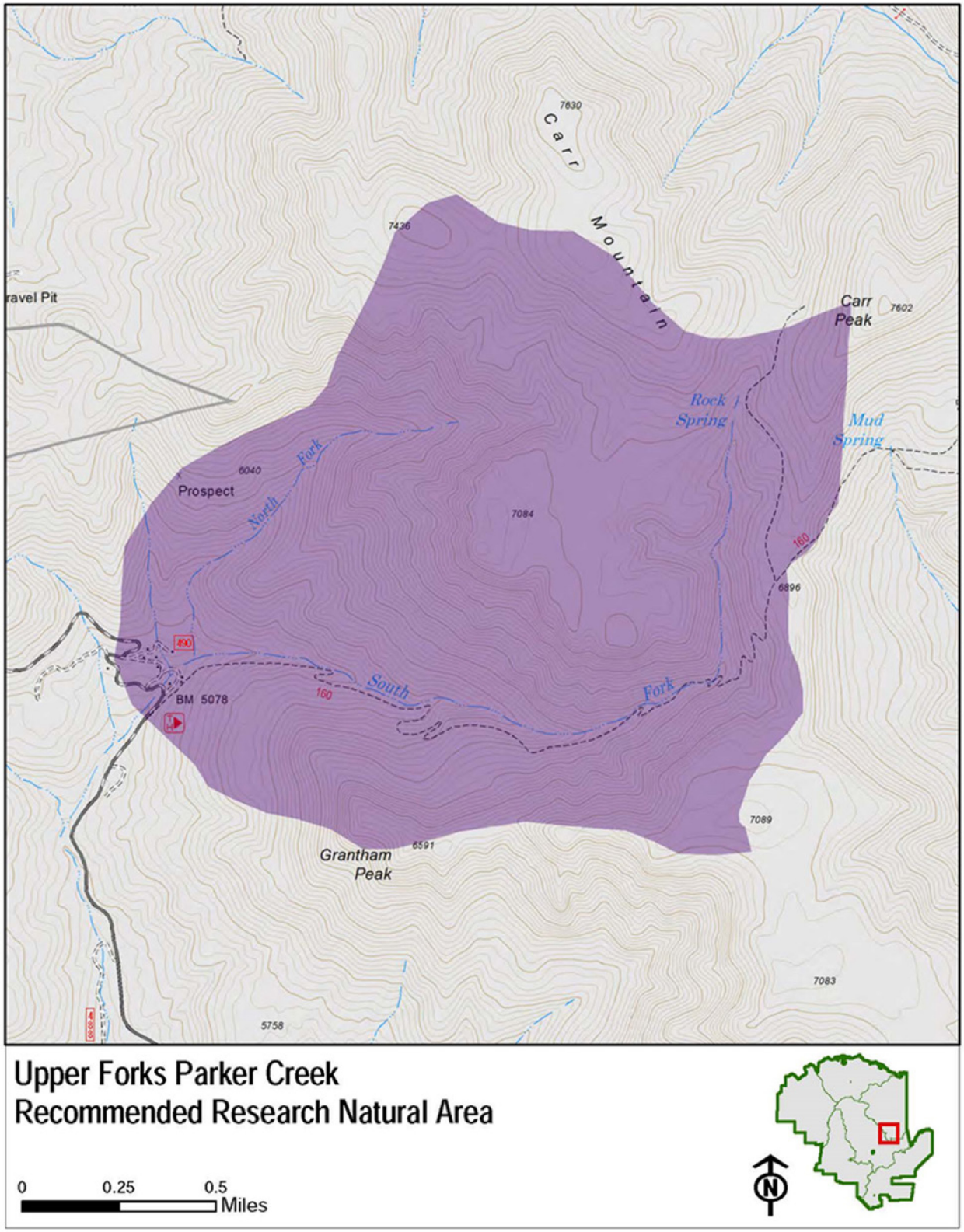


Figure 117. Upper Forks Parker Creek recommended research natural area

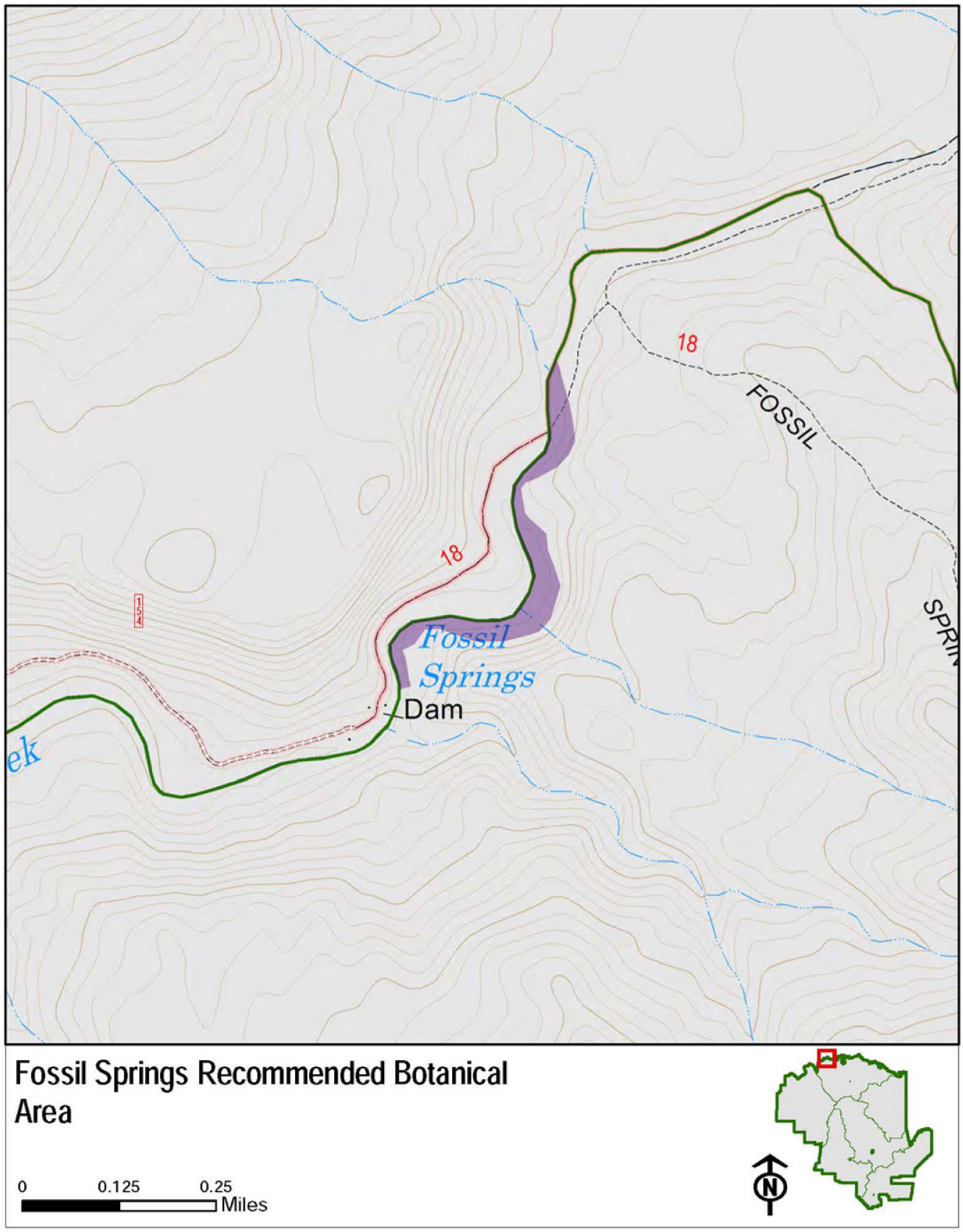


Figure 118. Fossil Springs recommended botanical area

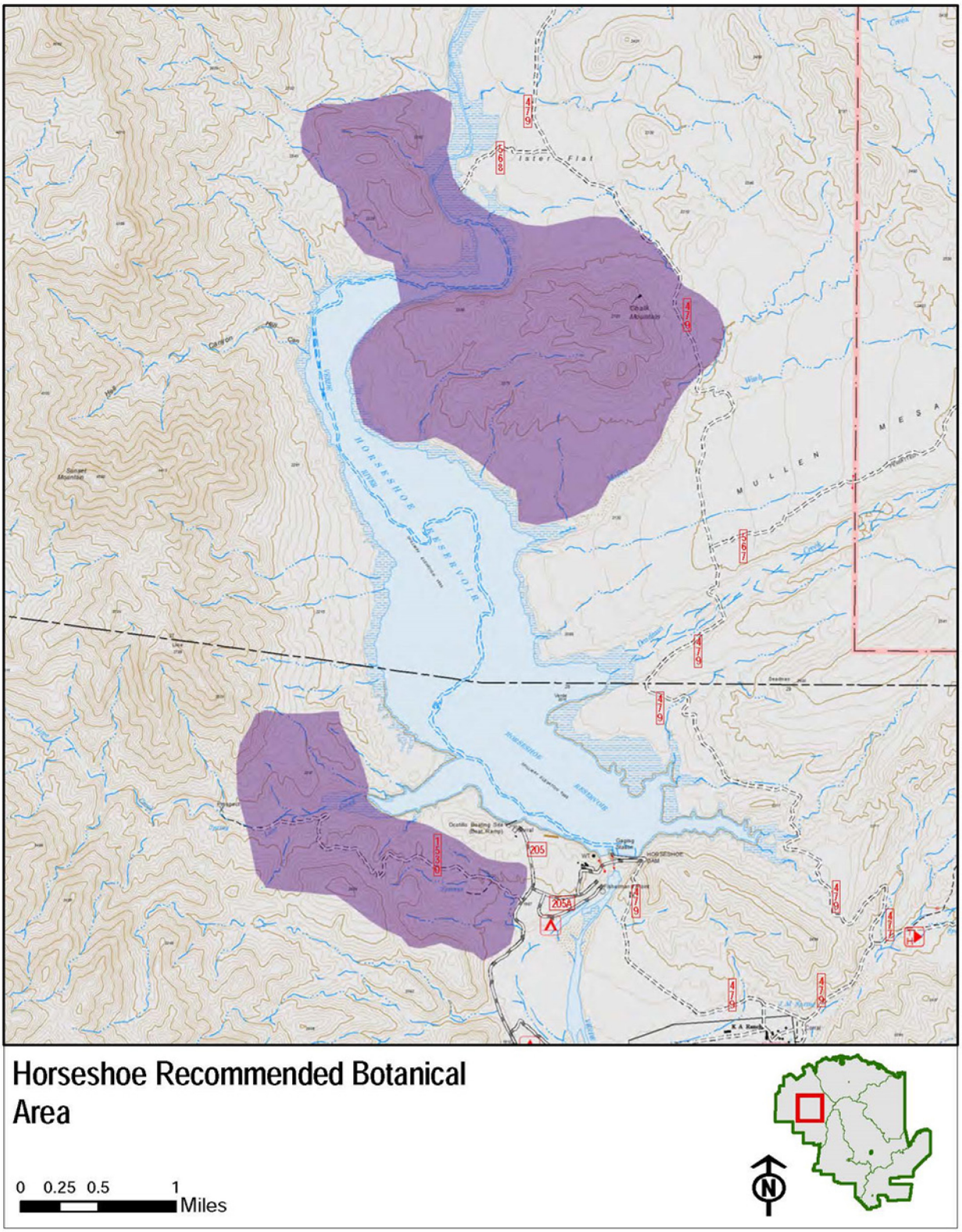


Figure 119. Horseshoe recommended botanical area

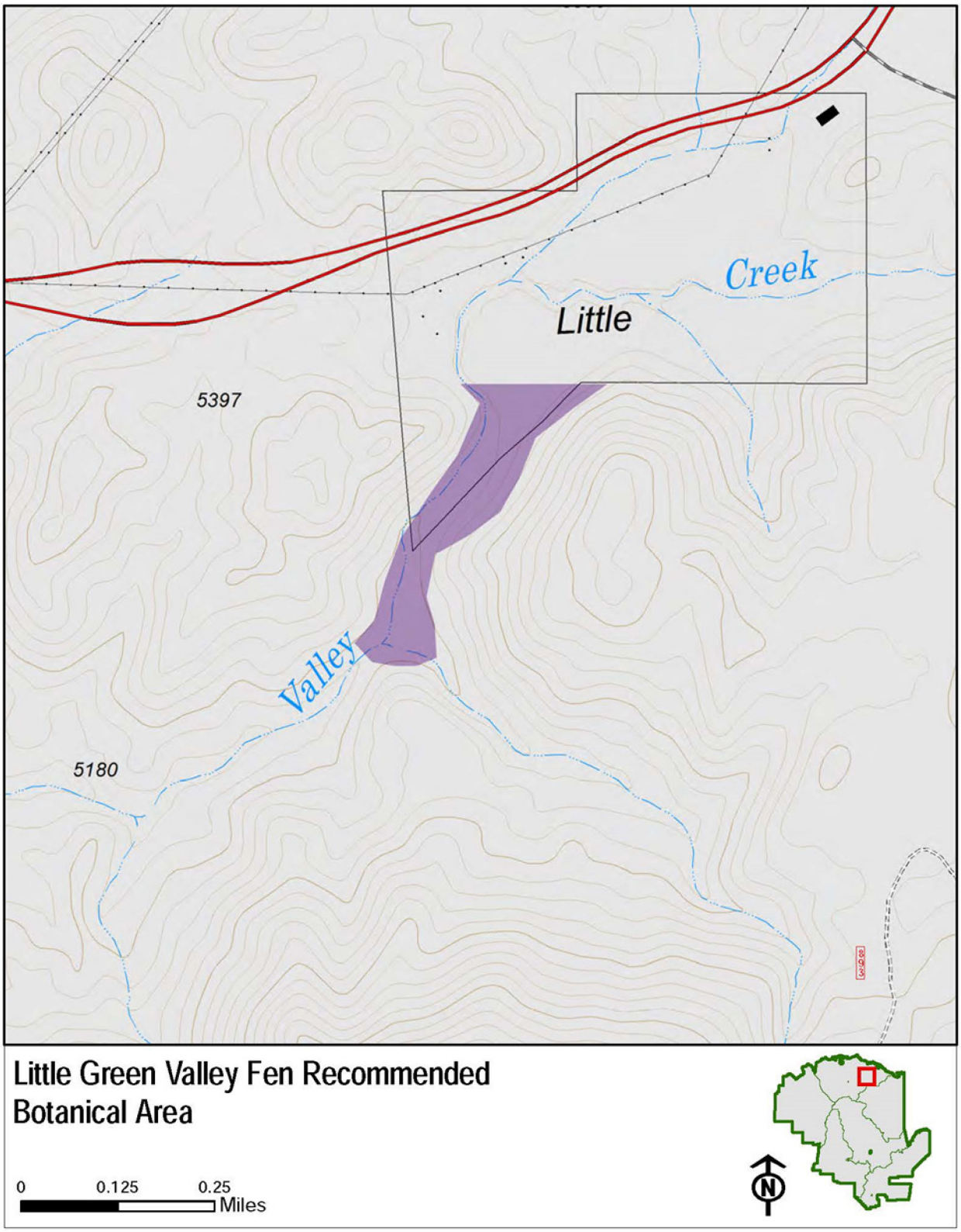


Figure 120. Little Green Valley Fen recommended botanical area

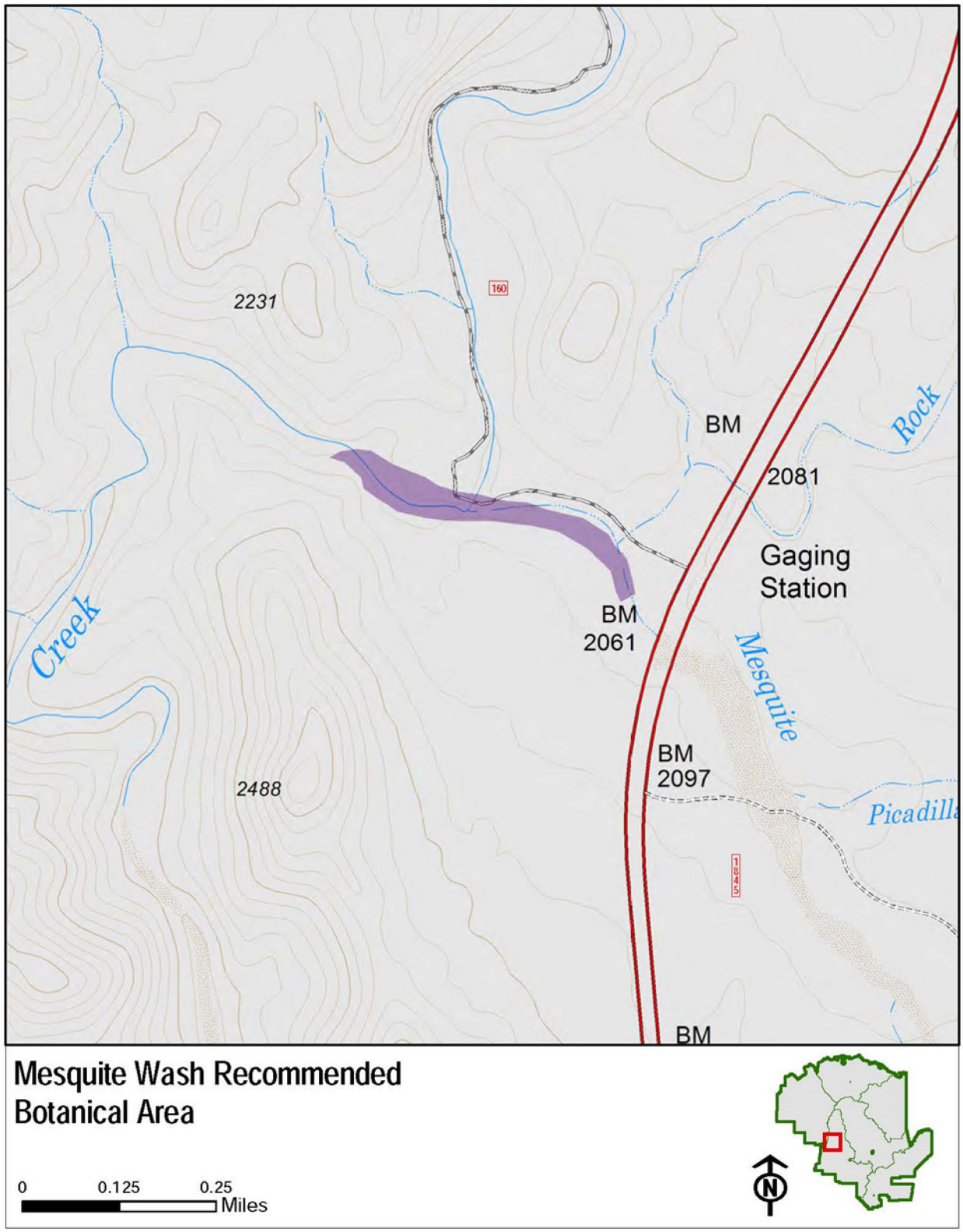


Figure 121. Mesquite Wash recommended botanical area

Appendix G. Analysis of At-Risk Species

Crosswalk of Ecological Conditions and At-Risk Species

This appendix has been included in order to show the plan components that provide ecological conditions necessary to contribute to the recovery of threatened and endangered species, conserve proposed and candidate species, and maintain viable populations of species of conservation concern. As the conditions that affect species are integrated throughout many different forest programs, so too are the plan components that address the various conservation issues that pose a risk to their persistence. This crosswalk of plan components, species, and threats to persistence serves to demonstrate where and how necessary ecological conditions are addressed through the forest plan as required by 36 CFR 219.9(b). It is not intended to guide project-level compliance but may help inform such work as directed by the most current regulation or policy.

Plan Codes

The forest plan uses a coding system to reference plan components more easily and to determine where the plan components apply. Codes consist of a series of letters and numbers to establish what resource area and plan component is being referenced. The coding is structured in an AA-BB-CC-## format. The first series of letters reference a specific resource area (e.g., ERU for ecological response units or REC for recreation). The middle two series of letters reference the sub-resource (level 2 and level 3) of the specific resource area if present. These can include lands of specific character or use type (e.g., DES for desert ecosystems or DIS-WB for dispersed recreation water-based) found within the resource.

The last series of letters reference the type of plan component (e.g., **DC** for desired condition, **O** for objective, **S** for standard, and **G** for guideline). Each code then ends with a number that aligns with the individual plan component to differentiate between similar type plan components. All plan components have an associated code, but it is important to note that they may not include every series of letters within the coding structure. Examples of the coding system for different resource levels can be seen in figure 122 and figure 123 below.

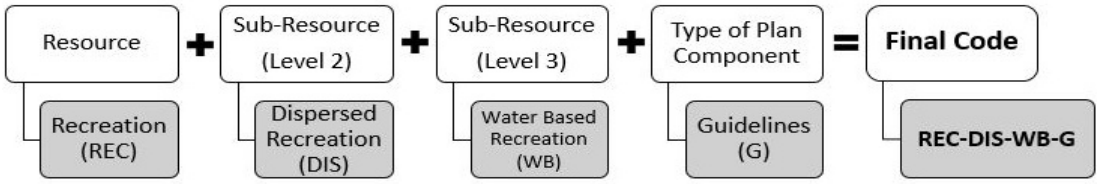


Figure 122. Examples of forest plan coding for guidelines related to water based recreation

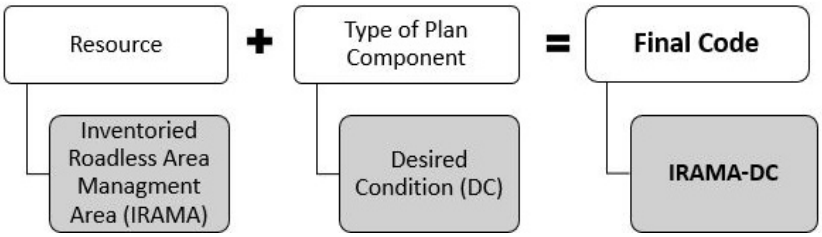


Figure 123. Example of forest plan coding for desired conditions of inventoried roadless areas

A list of acronyms used in the forest plan codes can be found below in table 51.

Table 51. Acronyms used for plan codes

Acronym	Term
ALSMA	Apache Leap Special Management Area
AQ	Air Quality
CUH	Cultural and Historic Resources
CVK	Caves and Karsts
DWMA	Designated Wilderness Management Area
DWSRMA	Designated Wild and Scenic Rivers Management Area
EG	Energy Production and Delivery
ERU	Vegetation and Ecological Response Units
ERU-DES	Desert Ecosystems
ERU-IC	Interior Chaparral
ERU-MCD	Mixed Conifer–Frequent Fire
ERU-MCW	Wet Mixed Conifer/Mixed Conifer with Aspen
ERU-MEWMPO	Madrean Encinal Woodland and Madrean Pinyon Oak
ERU-PJC	Pinyon-Juniper Evergreen Shrub
ERU-PJJUG	Pinyon-Juniper Grass and Juniper Grass
ERU-PJO	Pinyon-Juniper Woodland
ERU-PPE	Ponderosa Pine-Evergreen Oak
ERU-PPF	Ponderosa Pine Forest
ERU-PG	Perennial Grass Subclass
ERU-SDG	Semi-Desert Grasslands
ERU-SS	Shrub Subclass
EWSRMA	Eligible Wild and Scenic Rivers Management Area
FC	Facilities
FF	Fire and Fuels
FP	Forestry and Forest Products
GRZ	Rangelands, Forage, and Grazing
INS	Invasive species
IRAMA	Inventoried Roadless Areas Management Area
LA	Lands and Access
LRMA	Lakes and Rivers Management Area
MMAM	Mining, Minerals, and Abandoned Mines
NTMA	National Trails Management Area
PV	Partnerships and Volunteers
RD	Roads
REC	Recreation
REC-DEV	Developed Recreation
REC-DIS	Dispersed Recreation
REC-DIS-MO	Motorized Recreation
REC-DIS-NMO	Non-Motorized Recreation
REC-DIS-RS	Recreational Shooting
REC-DIS-WB	Water Based Recreation
REC-WR	Wildlife Based Recreation
RERU	Riparian Ecological Response Units
RMZ	Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones
RNBAMA	Designated and Recommended Research Natural Areas and Botanical Areas Management Area
RWMA	Recommended Wilderness Management Area
SC	Scenery
SCMA	Significant Caves Management Area
SL	Soils
SRHMA	Salt River Horse Management Area
SU	Special Uses
SWBMA	Saguaro Wild Burro Territory Management Area
TRB	Tribal Relations and Areas of Tribal Importance
WAT	Watersheds and Water Resources
WFP	Wildlife, Fish, and Plants

Crosswalk

The following tables describe threats to persistence for each at-risk species and identified plan components which provide the ecological conditions necessary to 1) maintain a viable population of each species of conservation concern in the plan area, or 2) contribute to the recovery of federally listed species. These ecological conditions may be those provided for through a coarse filter approach (ecosystem integrity emphasis) or through a fine filter (species-specific) approach.

Some threats to species are not directly addressed by plan components (e.g., restricted distribution or inbreeding depression). This generally occurs because such actions are not within the Forest Service's authority, or the inherent capability of the plan area is insufficient to provide needed conditions. Predicting long-term viability of each at-risk and SCC species here was based on availability of published literature, information gleaned from reputable species or guild-specific websites, professional judgement, plus accrued Forest Service and Fish and Wildlife Service experience managing a species or its analogous requisite habitat. Determinations here are derived from numerous factors, and viability outcomes are not solely based on the influence of one plan component. For many SCC species, there is inadequate life history, known distribution, or basic ecological information available to conclude if individual plan components will or will not directly influence species viability on the forest.

In our analysis, however, few species are limited by a single factor. For species where insufficient information is available, it is anticipated that providing for the inherent ecological conditions and limiting disturbance of the area where the species occurs would benefit the species. In cases where coarse-filter, habitat-related plan direction is insufficient to provide necessary ecological conditions, then additional, species-specific (or fine-filter) plan components, including standards or guidelines, have been included in the plan to provide such ecological conditions. On the Tonto National Forest, such plan components are rarely relevant to only a single species, but threats to species persistence and their accompanying plan components generally apply to groups of species. We considered plan components for the species listed below to be sufficient to provide ecological conditions that maintain populations of all identified SCC and contribute to recovery of federally listed species in the planning area.

A mayfly (*Fallceon eatoni*) - Species of Conservation Concern

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-01
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Allen's big-eared bat (*Idionycteris phyllotis*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
loss of old trees, dead trees (snags), downed wood (coarse woody	ERU-MCD-DC-03; ERU-PPF-DC-01; ERU-PPF-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-06; ERU-PPE-	FP-G-01; FP-S-03; FP-G-03; FP-S-05; FP-G-05; FP-S-06; FP-S-07; ERU-PPE-G-02; ERU-MCD-G-01; ERU-PPF-G-02; RMZ-G-06; ERU-G-09; ERU-G-13; ERU-G-16; ERU-MCW-G-1

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
debris), and structure diversity	SS-DC-01; ERU-PPE-SS-DC-02; ERU-DC-05; ERU-MCW-DC-1	
more frequent or intense drought	GRZ-DC-02; RERU-DC-10; RERU-DC-13; RERU-DC-15; WAT-DC-04	GRZ-G-03
recreation impacts to caves, vandalism of caves, mine shaft and adit closures	CVK-DC-1; CVK-DC-3	CVK-G-1; CVK-G-2; SCMA-S-1; MMAM-G-6
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

American dipper (*Cinclus mexicanus*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
limited available habitat on the forest	WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-04; WFP-G-07
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Ancha Mountainsnail (*Oreohelix anchana*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
altered moisture regimes	ERU-MEW-DC-05; ERU-MCD-DC-05; ERU-PPF-DC-05; ERU-PPE-PG-DC-08; ERU-PPE-SS-DC-04; RERU-DC-09; RERU-DC-14; ERU-DC-13; WAT-DC-08; ERU-MCW-DC-02; ERU-MCW-DC-06	ERU-G-16
habitat loss or departure	See associated ERU sections: PPE; MCD	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Aravaipa sage (*Salvia amissa*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan

components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
habitat loss or departure	See associated ERU sections: RMZ; WAT; IC; MEW; PJC	
high fuel loads	FF-DC-02; FF-DC-04; FF-DC-05; FF-DC-07; ERU-DC-22; ERU-DC-24	FF-S-04; FF-G-05; FF-G-07; ERU-G-17
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

Arizona bugbane (*Cimicifuga arizonica syn. Actaea arizonica*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
altered moisture regimes	ERU-MEW-DC-05; ERU-MCD-DC-05; ERU-PPF-DC-05; ERU-PPE-PG-DC-08; ERU-PPE-SS-DC-04; RERU-DC-09; RERU-DC-014; ERU-DC-013; WAT-DC-08; ERU-MCW-DC-02; ERU-MCW-DC-06	ERU-G-16
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
habitat loss or departure	See associated ERU sections: RMZ;WAT;PPE;MCD	

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
high fuel loads	FF-DC-02; FF-DC-04; FF-DC-05; FF-DC-07; ERU-DC-22; ERU-DC-24	FF-S-04; FF-G-05; FF-G-07; ERU-G-17
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-01
limited available habitat on the forest	WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-04; WFP-G-05; WFP-G-07
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

Arizona cliffrose (*Purshia subintegra*) - Endangered

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-012
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08; RNBAMA-S-03
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-01
mining activity and development	MMAM-DC-01; MMAM-DC-2	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
off-road vehicle use	DWMA-DC-08; REC-DIS-MO-DC-03; RNBAMA-DC-6	RNBAMA-G-02; DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-MO-G-02; REC-DIS-MO-G-03; RWMA-G-01; RWMA-S-01; RD-G-01; RD-S-01; RD-G-02; WAT-G-08; REC-WR-G-1
poor reproduction	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

Arizona giant sedge (syn. Cochise sedge) (*Carex ultra*) - Endangered

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
loss of streamside vegetation	RERU-DC-01; RERU-DC-05; RERU-DC-06; RERU-DC-12; RERU-DC-16; RERU-DC-17; RERU-DC-18	RERU-G-01; RERU-G-02; RERU-G-04
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Arizona hedgehog cactus (*Echnocereus triglochidiatus* var. *arizonicus*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-2	GRZ-G-03; WAT-G-12
damage from wildlife	No specific plan components address this issue	No specific plan components address this issue
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
mining activity and development	MMAM-DC-01; MMAM-DC-2	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
trampling	RNBAMA-DC-06; GRZ-DC-03	RWMA-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11
unlawful collection	WFP-DC-06	FP-G-07; FP-G-09

Bezy's night lizard (*Xantusia bezyi*) - Endangered

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
departed fire regime	ERU-IC-DC-02; ERU-MEW-DC-05; ERU-MEW-DC-06; ERU-MCD-DC-05; ERU-MCD-DC-07; ERU-PJC-DC-03; ERU-PJJUG-DC-02; ERU-PJO-DC-02; ERU-PPF-DC-03; ERU-PPF-DC-05; ERU-PPE-PG-DC-07; ERU-PPE-PG-DC-10; ERU-PPE-SS-DC-03; ERU-PPE-SS-DC-05; ERU-DC-06; ERU-DC-07; ERU-DC-13; ERU-DC-19; ERU-DC-25; ERU-MCW-DC-02; ERU-MCW-DC-07	RNBAMA-G-01; FF-S-04
highly endemic	WFP-DC-01; WFP-DC-02; WFP-DC-03; WFP-DC-04; WFP-DC-05; WFP-DC-06; WFP-DC-07; WFP-DC-08	FP-G-07; FP-G-09; WFP-O-02; WFP-G-03; WFP-G-04
poor reproduction	WFP-DC-03; WFP-DC-04	WFP-G-04
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11

Blumer's dock (*Rumex orthoneurus*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
closed canopy state	ERU-DES-DC-01; ERU-DES-DC-02; ERU-IC-DC-01; ERU-IC-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-02; ERU-MCD-DC-02; ERU-PJC-DC-01; ERU-PJC-DC-02; ERU-PJJUG-DC-01; ERU-PJJUG-DC-04; ERU-PJO-DC-01; ERU-PJO-DC-04; ERU-PPF-DC-04; ERU-PPE-PG-DC-01; ERU-PPE-SS-DC-04; ERU-SDG-DC-01; ERU-MCW-DC-01; ERU-MCW-DC-2	
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03; WFP-G-05
departed fire regime	ERU-IC-DC-02; ERU-MEW-DC-05; ERU-MEW-DC-06; ERU-MCD-DC-05; ERU-MCD-DC-07; ERU-PJC-DC-03; ERU-PJJUG-DC-02; ERU-PJO-DC-02; ERU-PPF-DC-03; ERU-PPF-DC-05; ERU-PPE-PG-DC-07; ERU-PPE-PG-DC-10; ERU-PPE-SS-DC-03; ERU-PPE-SS-DC-05; ERU-DC-06; ERU-DC-07; ERU-DC-13; ERU-DC-19; ERU-DC-25; ERU-MCW-DC-02; ERU-MCW-DC-07	RNBAMA-G-01; FF-S-04
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03 RD-G-07; RD-G-09; RD-G-10; RD-G-11
habitat loss or departure	See associated ERU sections: RMZ;WAT;MEW;PPE;PPF;MCD	

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
high fuel loads	FF-DC-02; FF-DC-04; FF-DC-05; FF-DC-07; ERU-DC-22; ERU-DC-24	FF-S-04; FF-G-05; FF-G-07; ERU-G-17
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-4	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
limited available habitat on the forest	WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-04; WFP-G-05; WFP-G-07
low genetic diversity	RNBAMA-DC-02; ERU-DC-11; WFP-DC-03; WFP-DC-04; WFP-DC-05; WFP-DC-08	FP-G-07; WFP-G-03; WFP-G-04; WFP-G-05; WFP-G-07; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
road construction and maintenance	RD-DC-04; RD-DC-05; RD-DC-06	DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; IRAMA-S-02; RWMA-S-01; RD-O-01; RD-S-02; RD-S-03; RD-S-04; RD-G-01; RD-G-02; RD-G-03; RD-G-04; RD-G-05; RD-G-06; RD-G-07; RD-G-09; RD-G-10; WAT-G-08; WFP-G-08
trampling	RNBAMA-DC-06; GRZ-DC-03	RNBAMA-G-06; RWMA-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

Broadleaf lupine (*Lupinus latifolius ssp. leucanthus*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan

components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
altered moisture regimes	ERU-MEW-DC-05; ERU-MCD-DC-05; ERU-PPF-DC-05; ERU-PPE-PG-DC-08; ERU-PPE-SS-DC-04; RERU-DC-09; RERU-DC-14; ERU-DC-13; WAT-DC-08; ERU-MCW-DC-02; ERU-MCW-DC-06	ERU-G-16
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
closed canopy state	ERU-DES-DC-01; ERU-DES-DC-02; ERU-IC-DC-01; ERU-IC-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-02; ERU-MCD-DC-02; ERU-PJC-DC-01; ERU-PJC-DC-02; ERU-PJJUG-DC-01; ERU-PJJUG-DC-04; ERU-PJO-DC-01; ERU-PJO-DC-04; ERU-PPF-DC-04; ERU-PPE-PG-DC-01; ERU-PPE-SS-DC-04; ERU-SDG-DC-01; ERU-MCW-DC-01; ERU-MCW-DC-2	
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
habitat loss or departure	See associated ERU sections: RMZ;WAT;IC;PPF;MCD	
high fuel loads	FF-DC-02; FF-DC-04; FF-DC-05; FF-DC-07; ERU-DC-22; ERU-DC-24	FF-S-04; FF-G-05; FF-G-07; ERU-G-17
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
invasive, non-native species (grasses)	RERU-DC-11; SL-DC-04; ERU-DC-10	INS-S-01; INS-O-01; INS-G-01; INS-G-02; INS-O-02; INS-G-03; INS-G-08; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11
unlawful collection	WFP-DC-06	FP-G-07; FP-G-09
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04
wetland degradation	REC-DIS-DC-01; RMZ-DC-01; WAT-DC-05; WAT-DC-08	REC-DIS-G-04; EG-G-03; FC-G-02; FF-G-04; FF-G-07; FP-S-01; FP-G-06; LRMA-G-03; GRZ-G-02;

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
		RERU-G-03; RD-G-05; RD-G-07; WAT-S-02; WAT-G-04; WAT-G-08

Chihuahuan sedge (*Carex chihuahuensis*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
wetland degradation	REC-DIS-DC-01; RMZ-DC-01; WAT-DC-05; WAT-DC-08	REC-DIS-G-04; EG-G-03; FC-G-02; FF-G-04; FF-G-07; FP-S-01; FP-G-06; LRMA-G-03; GRZ-G-02; RERU-G-03; RD-G-05; RD-G-07; WAT-S-02; WAT-G-04; WAT-G-08
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-2	GRZ-G-03; WAT-G-12

Chiricahua leopard frog (*Lithobates chiricahuensis*) - Threatened

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-2	GRZ-G-03; WAT-G-12
habitat loss or departure	See associated ERU sections: RMZ;WAT	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-04	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
mining activity and development	MMAM-DC-01; MMAM-DC-2	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
pesticides or other pollutants	AQ-DC-03; RD-DC-06	INS-G-01; INS-G-05; WAT-S-1; WAT-G-05
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Chiricahua Mountain alumroot (*Heuchera glomerulata*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
wetland degradation	REC-DIS-DC-01; RMZ-DC-01; WAT-DC-05; WAT-DC-08	REC-DIS-G-04; EG-G-03; FC-G-02; FF-G-04; FF-G-07; FP-S-01; FP-G-06; LRMA-G-03; GRZ-G-02; RERU-G-03; RD-G-05; RD-G-07; WAT-S-02; WAT-G-04; WAT-G-08
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1

Colorado pikeminnow (*Ptychocheilus lucius*) - Endangered, experimental population, non-essential

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-2	GRZ-G-03; WAT-G-12
fire suppression activities	FF-DC-02; FF-DC-04	FF-G-03; FF-G-04; FF-G-06; FF-G-08; FF-G-09; FF-G-10
habitat loss or departure	See associated ERU sections: RMZ;WAT	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-04	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
pesticides or other pollutants	AQ-DC-03; RD-DC-06	INS-G-01; INS-G-05; WAT-S-1; WAT-G-05

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
road construction and maintenance	RD-DC-04; RD-DC-05; RD-DC-06	DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; IRAMA-S-02; RWMA-S-01; RD-G-01; RD-O-01; RD-G-02; RD-S-02; RD-S-03; RD-G-03; RD-S-04; RD-G-04; RD-G-05; RD-G-06; RD-G-07; RD-G-08; RD-G-10; RD-G-11; WAT-G-08; WFP-G-08
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Davidson sage (*Salvia davidsonii*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
altered moisture regimes	ERU-MEW-DC-05; ERU-MCD-DC-05; ERU-PPF-DC-05; ERU-PPE-PG-DC-08; ERU-PPE-SS-DC-04; RERU-DC-09; RERU-DC-14; ERU-DC-13; WAT-DC-08; ERU-MCW-DC-02; ERU-MCW-DC-06	ERU-G-16
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-2	GRZ-G-03; WAT-G-12
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Desert pupfish (*Cyprindon macularius*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
habitat loss or departure	See associated ERU sections: RMZ;WAT	
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Fish Creek fleabane (*Erigeron piscaticus*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated

land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: RMZ;WAT;IC	
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
poor watershed condition	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
streambank loss or instability	RMZ-DC-02; RMZ-DC-05; RERU-DC-18	FP-S-01; LRMA-G-02; LRMA-G-03; RMZ-G-04; RD-G-07; RD-G-08; WAT-O-05

Fish Creek rock daisy (*Perityle saxicola*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-2	GRZ-G-03; WAT-G-12
closed canopy state	ERU-DES-DC-01; ERU-DES-DC-02; ERU-IC-DC-01; ERU-IC-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-02; ERU-MCD-DC-02; ERU-PJC-DC-01; ERU-PJC-DC-02; ERU-PJJUG-DC-01; ERU-PJJUG-DC-04; ERU-PJO-DC-	

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
	01; ERU-PJO-DC-04; ERU-PPF-DC-04; ERU-PPE-PG-DC-01; ERU-PPE-SS-DC-04; ERU-SDG-DC-01; ERU-MCW-DC-01; ERU-MCW-DC-2	
habitat loss or departure	See associated ERU sections: MSDS-CB; MSDS; PJC	
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-04	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11

Flagstaff Beardtongue (*Penstemon nudiflorus*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: PPE; PPF	
highly endemic	WFP-DC-01; WFP-DC-02; WFP-DC-03; WFP-DC-04; WFP-DC-05; WFP-DC-06; WFP-DC-07; WFP-DC-08	FP-G-07; FP-G-09; WFP-O-02; WFP-G-03; WFP-G-04; WFP-G-05
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11

Fringed myotis (*Myotis thysanodes*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-04	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
departed fire regime	ERU-IC-DC-02; ERU-MEW-DC-05; ERU-MEW-DC-06; ERU-MCD-DC-05; ERU-MCD-DC-07; ERU-PJC-DC-03; ERU-PJJUG-DC-02; ERU-PJO-DC-02; ERU-PPF-DC-03; ERU-PPF-DC-05; ERU-PPE-PG-DC-07; ERU-PPE-PG-DC-10; ERU-PPE-SS-DC-03; ERU-PPE-SS-DC-05; ERU-DC-06; ERU-DC-07; ERU-DC-13; ERU-DC-19; ERU-DC-25; ERU-MCW-DC-02; ERU-MCW-DC-07	RNBAMA-G-01; FF-S-04
loss of old trees, dead trees (snags), downed wood (coarse woody debris), and structure diversity	ERU-MCD-DC-03; ERU-PPF-DC-01; ERU-PPF-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-06; ERU-PPE-SS-DC-01; ERU-PPE-SS-DC-02; ERU-DC-05; ERU-MCW-DC-1	FP-G-01; FP-S-03; FP-G-03; FP-S-05; FP-G-05; FP-S-06; FP-S-07; ERU-PPE-G-02; ERU-MCD-G-01; ERU-PPF-G-02; RMZ-G-06; ERU-G-09; ERU-G-13; ERU-G-16; ERU-MCW-G-1

Fossil springsnail (*Pyrgulopsis simplex*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
fire suppression activities	FF-DC-02; FF-DC-04	FF-G-03; FF-G-04; FF-G-06; FF-G-08; FF-G-09; FF-G-10
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
highly endemic	WFP-DC-01; WFP-DC-02; WFP-DC-03; WFP-DC-04; WFP-DC-05; WFP-DC-06; WFP-DC-07; WFP-DC-08	FP-G-07; FP-G-09; WFP-O-02; WFP-G-03; WFP-G-04

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
loss of spring water	RMZ-DC-01; RMZ-DC-08; WAT-DC-05; WAT-DC-08	FF-G-07; REC-DIS-NMO-G-02; RMZ-G-01; RMZ-O-02; RD-G-06; WAT-S-02; WAT-G-04
loss of streamside vegetation	RERU-DC-01; RERU-DC-05; RERU-DC-06; RERU-DC-12; RERU-DC-16; RERU-DC-17; RERU-DC-18	RERU-G-01; RERU-G-02; RERU-G-04
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
road construction and maintenance	RD-DC-04; RD-DC-05; RD-DC-06	DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; IRAMA-S-02; RWMA-S-01; RD-G-01; RD-O-01; RD-G-02; RD-S-02; RD-S-03; RD-G-03; RD-S-04; RD-G-04; RD-G-05; RD-G-06; RD-G-07; RD-G-08; RD-G-10; RD-G-11; WAT-G-08; WFP-G-08
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08

Gila chub (*Gila intermedia*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
habitat loss or departure	See associated ERU sections: RMZ; WAT	
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
poor watershed condition	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-2	FF-S-01; FF-G-07; FF-G-11
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Gila rock daisy (*Perityle gilensis* var. *gilensis*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
closed canopy state	ERU-DES-DC-01; ERU-DES-DC-02; ERU-IC-DC-01; ERU-IC-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-02; ERU-MCD-DC-02; ERU-PJC-DC-01; ERU-PJC-DC-02; ERU-PJJUG-DC-01; ERU-PJJUG-DC-04; ERU-PJO-DC-01; ERU-PJO-DC-04; ERU-PPF-DC-04; ERU-PPE-PG-DC-01; ERU-PPE-SS-DC-04; ERU-SDG-DC-01; ERU-MCW-DC-01; ERU-MCW-DC-02	
departed fire regime	ERU-IC-DC-02; ERU-MEW-DC-05; ERU-MEW-DC-06; ERU-MCD-DC-05; ERU-MCD-DC-07; ERU-PJC-DC-03; ERU-PJJUG-DC-02; ERU-PJO-DC-02; ERU-PPF-DC-03; ERU-PPF-DC-05; ERU-PPE-PG-DC-07; ERU-PPE-PG-DC-10; ERU-PPE-SS-DC-03; ERU-PPE-SS-DC-05; ERU-DC-06; ERU-DC-07; ERU-DC-13; ERU-DC-19; ERU-DC-25; ERU-MCW-DC-02; ERU-MCW-DC-07	RNBAMA-G-01; FF-S-04
habitat loss or departure	See associated ERU sections: RMZ; MSDS-CB; MSDS; IC; PJG; PPE	
mining activity and development	MMAM-DC-01; MMAM-DC-02	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic fire in low desert systems	ERU-DES-DC-03; ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-03; ERU-SDG-DC-05	
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08

Gila topminnow (*Poeciliopsis occidentalis occidentalis*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
habitat loss or departure	See associated ERU sections: RMZ; WAT	
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Gila trout (*Oncorhynchus gilae*) - Threatened

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see

WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
habitat fragmentation	LA-DC-01; RMZ-DC-07; WAT-DC-09	RD-G-03; RD-G-04; RD-G-05; RD-G-07; WFP-G-07; WFP-G-08; REC-WR-G-03
habitat loss or departure	See associated ERU sections: RMZ; WAT	
introgressive hybridization	WFP-DC-06	WFP-G-03; WFP-G-04; WFP-G-08
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
pressures from urbanization outside the forest	No specific plan components address this issue	No specific plan components address this issue
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Gilded flicker (*Colaptes chrysoides*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: SDS; MSDS-CB; MSDS; MSDS-SP	
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Grand Canyon century plant (*Agave phillipsiana*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
invasive, non-native species (grasses)	RERU-DC-11; SL-DC-04; ERU-DC-10	INS-S-01; INS-O-01; INS-G-01; INS-G-02; INS-O-02; INS-G-03; INS-G-08; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08
poor reproduction	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
soil compaction	ERU-DES-DC-06; REC-DIS-DC-03; RMZ-DC-03; RERU-DC-17	REC-DIS-G-03; REC-DIS-NMO-G-02; SL-G-01; SU-S-04
uncharacteristic fire in low desert systems	ERU-DES-DC-03; ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-03; ERU-SDG-DC-05	
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

Hodgson's fleabane (*Erigeron hodgsoniae*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
closed canopy state	ERU-DES-DC-01; ERU-DES-DC-02; ERU-IC-DC-01; ERU-IC-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-01; ERU-MEW-DC-02; ERU-MCD-DC-02; ERU-PJC-DC-01; ERU-PJC-DC-02; ERU-PJJUG-DC-01; ERU-PJJUG-DC-04; ERU-PJO-DC-01; ERU-PJO-DC-04; ERU-PPF-DC-04; ERU-PPE-PG-DC-01;	

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
	ERU-PPE-SS-DC-04; ERU-SDG-DC-01; ERU-MCW-DC-01; ERU-MCW-DC-02	
habitat loss or departure	See associated ERU sections: RMZ; IC; PJC; PPE	
high fuel loads	FF-DC-02; FF-DC-04; FF-DC-05; FF-DC-07; ERU-DC-22; ERU-DC-24	FF-S-04; FF-G-05; FF-G-07; ERU-G-17
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Hohokam agave (*Agave murpheyi*) - Species of Conservation Concern

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03; WFP-G-05
habitat loss or departure	See associated ERU sections: RMZ; MSDS-CB; MSDS; IC	
invasive, non-native species (grasses)	RERU-DC-11; SL-DC-04; ERU-DC-10	INS-S-01; INS-O-01; INS-G-01; INS-G-02; INS-O-02; INS-G-03; INS-G-08; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08
pressures from urbanization outside the forest	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
uncharacteristic fire in low desert systems	ERU-DES-DC-03; ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-03; ERU-SDG-DC-05	
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Horseshoe deer vetch (*Lotus mearnsii var. equisolensis*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: SDS; MSDS-CB; MSDS	
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

James' rubberweed (*Hymenoxys jamesii*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
habitat loss or departure	See associated ERU sections: RMZ; WAT; PPE	
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

Loach minnow (*Tiaroga cobitis*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
fire suppression activities	FF-DC-02; FF-DC-04	FF-G-03; FF-G-04; FF-G-06; FF-G-08; FF-G-09; FF-G-10
habitat loss or departure	See associated ERU sections: RMZ; WAT	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
road construction and maintenance	RD-DC-04; RD-DC-05; RD-DC-06	DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; IRAMA-S-02; RWMA-S-01; RD-G-01; RD-O-01; RD-G-02; RD-S-02; RD-S-03; RD-G-03; RD-S-

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
		04; RD-G-04; RD-G-05; RD-G-06; RD-G-07; RD-G-08; RD-G-10; RD-G-11; WAT-G-08; WFP-G-08
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Lowland leopard frog (*Lithobates yavapaiensis*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-04	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Mapleleaf false snapdragon (*Mabrya acerifolia*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
mining activity and development	MMAM-DC-01; MMAM-DC-02	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
pressures from urbanization outside the forest	No specific plan components address this issue	No specific plan components address this issue
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08

Marsh rosemary (*Limonium limbatum*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan

components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
loss of spring water	RMZ-DC-01; RMZ-DC-08; WAT-DC-05; WAT-DC-08	FF-G-07; REC-DIS-NMO-G-02; RMZ-G-01; RMZ-O-02; RD-G-06; WAT-S-02; WAT-G-04
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
more frequent or intense drought	GRZ-DC-02; RERU-DC-10; RERU-DC-13; RERU-DC-15; WAT-DC-04	GRZ-G-03

Metcalfe's tick-trefoil (*Desmodium metcalfei*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Mexican spotted owl (*Strix occidentalis lucida*) - Threatened

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see plan components WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Plan components presented in Table 97 (final EIS Vol 2) will benefit the structure, function, and composition of multiple Ecological Response Units (ERUs), thereby benefiting multiple wildlife species, including Mexican Spotted Owl. The integration of Forestry and Forest Products (FP) and ERU plan

components indicate large trees, snags, and downed woody debris will be retained during restoration treatments (FP-DC-01, FP-G-03, ERU-PPE-G-02, ERU-PPF-G-01, ERU-MCD-G-01, ERU-MCW-G-01, ERU-DC-03, ERU-MCW-DC-03). Implementation of conservation measures on a project-by-project basis will allow greater conservation of MSO Primary Constituent Elements Related to Forest Structure, Prey Base, Adequate Prey Species, and Elements Related to Canyon Habitat[22].

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: RMZ; JUG; PJC; PPE; PPF; MCD	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-04	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
loss of old trees, dead trees (snags), downed wood (coarse woody debris), and structure diversity	ERU-MCD-DC-03; ERU-PPF-DC-01; ERU-PPF-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-06; ERU-PPE-SS-DC-01; ERU-PPE-SS-DC-02; ERU-DC-05; ERU-MCW-DC-1	FP-G-01; FP-S-03; FP-G-03; FP-S-05; FP-G-05; FP-S-06; FP-S-07; ERU-PPE-G-02; ERU-MCD-G-01; ERU-PPF-G-02; RMZ-G-06; ERU-G-09; ERU-G-13; ERU-G-16; ERU-MCW-G-1
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09

Mexican wolf (*Canis lupus baileyi*) - Endangered, experimental population, non-essential

To date, relatively few Mexican wolves have been observed on the Tonto National Forest. To our knowledge, no packs, dens, or rendezvous sites have yet been established on the forest. However, the planning area falls within Zones 1 and 2 of the Mexican Wolf Experimental Population Area. As such, we expect that wolves will have an increased presence in the future, either through dispersal, translocations, or new releases.

Plan components in the forest plan direct the forest generally to recover federally-listed threatened and endangered species, including the Mexican wolf. Desired conditions call for habitat conditions that support self-sustaining populations of species, are resilient to disturbance, and support recovery of

[22] More information on these Primary Constituent Elements can be found in the 2021 LMP Biological Opinion, pp 146-155.

federally-listed species generally (WFP-DC-01; WFP-DC-02; WFP-DC-03). Projects, activities, and future authorizations should seek to minimize human-wildlife conflicts and minimize human disturbances, which is particularly important to large carnivores such as wolves (WFP-DC-07).

The forest plan does not apply species-specific components for the Mexican wolf, but instead purposefully incorporates, by reference, objectives and species protection measures from approved recovery plans (WFP-G-01), conservation agreements (WFP-G-02), and the best available science and/or conservation measures (WFP-G-02). This is done to be consistent with the multi-agency/partner effort to recover Mexican wolves, which is guided by an approved recovery plan (U.S. Fish and Wildlife Service 2022) and a collaborative agreement (Memorandum of Understanding for Mexican Wolf Recovery and Management 2019). In this way, the revised forest plan directs the forest to support numerous recovery and management actions.

Examples of management actions that may be considered on the Tonto National Forest in coordination with the Mexican Wolf Interagency Field Team include but are not limited to:

- Supporting wolf population monitoring activities (e.g., capture and telemetry flights or remote camera surveys)
- Coordinating forest activities, programs, and authorizations with the field recovery program to minimize impacts to wolves (e.g., wildland fire operations near wolf dens/rendezvous sites)
- Coordinating with the recovery program to minimize conflict with livestock producers (e.g., hazing wolves away from sensitive areas, such as calving pastures or modifying pasture rotations in response to conflict)
- Supporting range-riding programs to help minimize human-wolf conflict
- Providing education and outreach to the public on wolf recovery on the forest
- Supporting introductions, translocations, and cross-foster operations

While Mexican wolves have not yet established on the Tonto National Forest at the time of this analysis, we anticipate that adopting the above plan direction (with reference to approved recovery plans and conservation agreements) will help reduce human-caused mortality, support genetic management, and help increase the overall population. As such, we determine that the plan components considered will provide the ecological conditions necessary to contribute to the recovery of Mexican wolves in the plan area.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
Human-caused mortality (e.g., illegal take, vehicle collisions)	WFP-DC-01; WFP-DC-07	WFP-G-01; WFP-G-02; WFP-G-08;
Inbreeding depression	WFP-DC-01; WFP-DC-03	WFP-G-01; WFP-G-03; WFP-G-04
Small population size	WFP-DC-01; WFP-DC-02	WFP-G-01; WFP-G-03; WFP-G-04

Milk Ranch Talussnail (*Sonorella micromphala*) - Species of Conservation Concern

Very little data concerning species-specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent

viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
construction activities	DWSRMA-DC-05; FC-DC-02	REC-DIS-G-03; FC-G-02; FC-G-03; RMZ-G-03; SU-S-03; WFP-G-06; WFP-G-08
habitat loss or departure	PPE	
mining activity and development	MMAM-DC-01; MMAM-DC-02	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
pesticides or other pollutants	AQ-DC-03; RD-DC-06	INS-G-01; INS-G-05; WAT-S-1; WAT-G-05
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09

Monarch butterfly (*Danaus plexippus*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03
loss of milkweed	ERU-DES-DC-04; GRZ-DC-03; ERU-DC-14; WFP-DC-01; WFP-DC-07; WFP-DC-08	INS-G-05; WFP-O-01; WFP-O-02; WFP-G-03; WFP-G-04; WFP-G-07
pesticides or other pollutants	AQ-DC-03; RD-DC-06	INS-G-01; INS-G-05; WAT-S-1; WAT-G-05

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
pressures from urbanization outside the forest	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)

Mt. Dellenbaugh sandwort (*Eremogone aberrans* syn. *Arenarwia aberrans*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
habitat loss or departure	See associated ERU sections: PJO; PPE; PPF	
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Narrow-headed gartersnake (*Thamnophis rufipunctatus*) - Threatened

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
habitat loss or departure	See associated ERU sections: RMZ; WAT	
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
loss of prey base	RERU-DC-10; ERU-DC-14; WFP-DC-01; WFP-DC-05; WFP-DC-07	INS-G-09; RMZ-G-03; RMZ-G-06; RMZ-G-08; WFP-G-08
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
pressures from urbanization outside the forest	No specific plan components address this issue	No specific plan components address this issue
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Net-winged midge (*Agathon arizonicus*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan

components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
disjunct populations	WFP-DC-02; WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-03; WFP-G-04; WFP-G-07; WFP-G-08
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)

Northern Mexican gartersnake (*Thamnophis eques megalops*) - Threatened

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
habitat loss or departure	See associated ERU sections: RMZ; WAT	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
pressures from urbanization outside the forest	No specific plan components address this issue	No specific plan components address this issue

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Ocelot (*Leopardus pardalis*) - Endangered

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat fragmentation	LA-DC-01; RMZ-DC-07; WAT-DC-09	RD-G-03; RD-G-04; WFP-G-07; WFP-G-08; REC-WR-G-03
habitat loss or departure	MEW	
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
pressures from urbanization outside the forest	No specific plan components address this issue	No specific plan components address this issue
road construction and maintenance	RD-DC-04; RD-DC-05; RD-DC-06	DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; IRAMA-S-02; RWMA-S-01; RD-G-01; RD-O-01; RD-G-02; RD-S-02; RD-S-03; RD-G-03; RD-S-04; RD-G-04; RD-G-05; RD-G-06; RD-G-07; RD-G-08; RD-G-10; RD-G-11; WAT-G-08; WFP-G-08
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04

Pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
recreation impacts to caves, vandalism of caves, mine shaft and adit closures	CVK-DC-1; CVK-DC-3	CVK-G-1; CVK-G-2; SCMA-S-1; MMAM-G-6
mining activity and development	MMAM-DC-01; MMAM-DC-02	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06

Pacific wren (*Troglodytes pacificus*) - Species of Conservation Concern

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
loss of old trees, dead trees (snags), downed wood (coarse woody debris), and structure diversity	ERU-MCD-DC-03; ERU-PPF-DC-01; ERU-PPF-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-02; ERU-PPE-PG-DC-06; ERU-PPE-SS-DC-01; ERU-PPE-SS-DC-02; ERU-DC-05; ERU-MCW-DC-1	FP-G-01; FP-S-03; FP-G-03; FP-S-05; FP-G-05; FP-S-06; FP-S-07; ERU-PPE-G-02; ERU-MCD-G-01; ERU-PPF-G-02; RMZ-G-06; ERU-G-09; ERU-G-13; ERU-G-16; ERU-MCW-G-1
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Pringle's fleabane (*Erigeron pringlei*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: IC; PJO; PJC; PJG; PPE	
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Razorback sucker (*Xyrauuchen texanus*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
fire suppression activities	FF-DC-02; FF-DC-04	FF-G-03; FF-G-04; FF-G-06; FF-G-08; FF-G-09; FF-G-10
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Richinbar talussnail (*Sonorella ashmuni*) - Species of Conservation Concern

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
altered moisture regimes	ERU-MEW-DC-05; ERU-MCD-DC-05; ERU-PPF-DC-05; ERU-PPE-PG-DC-08; ERU-PPE-SS-DC-04; RERU-DC-09; RERU-DC-14; ERU-DC-13; WAT-DC-08; ERU-MCW-DC-02; ERU-MCW-DC-06	ERU-G-16
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
mining activity and development	MMAM-DC-01; MMAM-DC-02	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09

Ripley wild buckwheat (*Eriogonum ripleyi*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
disjunct populations	WFP-DC-02; WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-03; WFP-G-04; WFP-G-05; WFP-G-07; WFP-G-08
habitat loss or departure	See associated ERU sections: SDS; MSDS-CB; MSDS	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
limited available habitat on the forest	WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-04; WFP-G-05; WFP-G-07
off-road vehicle use	DWMA-DC-08; REC-DIS-MO-DC-03; RNBAMA-DC-6	RNBAMA-G-02; DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-MO-G-02; REC-DIS-MO-G-03; RWMA-G-01; RWMA-S-01; RD-G-01; RD-S-01; RD-G-02; WAT-G-08; REC-WR-G-1
restricted distribution	No specific plan components address this issue	No specific plan components address this issue

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08

Roosevelt talussnail (*Sonorella rooseveltiana* (+ *S. r. fragilis*)) - Species of Conservation Concern

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
altered moisture regimes	ERU-MEW-DC-05; ERU-MCD-DC-05; ERU-PPF-DC-05; ERU-PPE-PG-DC-08; ERU-PPE-SS-DC-04; RERU-DC-09; RERU-DC-14; ERU-DC-13; WAT-DC-08; ERU-MCW-DC-02; ERU-MCW-DC-06	ERU-G-16
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
mining activity and development	MMAM-DC-01; MMAM-DC-02	MMAM-G-01; MMAM-G-03; MMAM-S-02; MMAM-G-04; MMAM-G-06
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09

Roundtail chub (*Gila robusta*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03
fire suppression activities	FF-DC-02; FF-DC-04	FF-G-03; FF-G-04; FF-G-06; FF-G-08; FF-G-09; FF-G-10
habitat loss or departure	See associated ERU sections: RMZ; WAT	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
poor watershed condition	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
road construction and maintenance	RD-DC-04; RD-DC-05; RD-DC-06	DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; IRAMA-S-02; RWMA-S-01; RD-G-01; RD-O-01; RD-G-02; RD-S-02; RD-S-03; RD-G-03; RD-S-04; RD-G-04; RD-G-05; RD-G-06; RD-G-07; RD-G-08; RD-G-10; RD-G-11; WAT-G-08; WFP-G-08
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08;
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Rusby's milkwort (*Polygala rusbyi* (syn. *Rhinotropis rusbyi*)) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated

land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: SDS; MSDS-CB; MSDS	
limited available habitat on the forest	WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-04; WFP-G-05; WFP-G-07
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-04

Salt River rock daisy (*Perityle gilensis* var. *salensis*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: RMZ; MSDS-CB; MSDS; IC; SDG; PJG	
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08

Senator mine alumroot (*Heuchera eastwoodiae*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Sonoran desert tortoise (*Gopherus morafkai*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
construction activities	DWSRMA-DC-05; FC-DC-02	REC-DIS-G-03; FC-G-02; FC-G-03; RMZ-G-03; SU-S-03; WFP-G-06; WFP-G-08; WFP-G-09
more frequent or intense drought	GRZ-DC-02; RERU-DC-10; RERU-DC-13; RERU-DC-15; WAT-DC-04	GRZ-G-03

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1; WFP-G-09
off-road vehicle use	DWMA-DC-08; REC-DIS-MO-DC-03; RNBAMA-DC-6	RNBAMA-G-02; DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-MO-G-02; REC-DIS-MO-G-03; RWMA-G-01; RWMA-S-01; RD-G-01; RD-S-01; RD-G-02; WAT-G-08; REC-WR-G-1; WFP-G-09
uncharacteristic fire in low desert systems	ERU-DES-DC-03; ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-03; ERU-SDG-DC-05	

Sierra ancha fleabane (*Erigeron anchana*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
habitat loss or departure	See associated ERU sections: RMZ; WAT; IC; PJC; PPE	
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Sierra Ancha talussnail (*Sonorella anchana*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
construction activities	DWSRMA-DC-05; FC-DC-02	REC-DIS-G-03; FC-G-02; FC-G-03; RMZ-G-03; SU-S-03; WFP-G-06; WFP-G-08
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
pesticides or other pollutants	AQ-DC-03; RD-DC-06	INS-G-01; INS-G-05; WAT-S-1; WAT-G-05
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
road construction and maintenance	RD-DC-04; RD-DC-05; RD-DC-06	DWSRMA-G-01; REC-DIS-G-03; REC-DIS-G-04; EWSRMA-G-02; IRAMA-S-02; RWMA-S-01; RD-G-01; RD-O-01; RD-G-02; RD-S-02; RD-S-03; RD-G-03; RD-S-04; RD-G-04; RD-G-05; RD-G-06; RD-G-07; RD-G-08; RD-G-10; RD-G-11; WAT-G-08; WFP-G-08
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09

Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
loss of spring water	RMZ-DC-01; RMZ-DC-08; WAT-DC-05; WAT-DC-08	FF-G-07; REC-DIS-NMO-G-02; RMZ-G-01; RMZ-O-02; RD-G-05; WAT-S-02; WAT-G-04
more frequent or intense drought	GRZ-DC-02; RERU-DC-10; RERU-DC-13; RERU-DC-15; WAT-DC-04	GRZ-G-03
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
unlawful collection	WFP-DC-06	FP-G-07; FP-G-09
wetland degradation	REC-DIS-DC-01; RMZ-DC-01; WAT-DC-05; WAT-DC-08	REC-DIS-G-04; EG-G-03; FC-G-02; FF-G-04; FF-G-07; FP-S-01; FP-G-06; LRMA-G-03; GRZ-

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
		G-02; RERU-G-03; RD-G-05; RD-G-07; WAT-S-02; WAT-G-04; WAT-G-08

Southwestern willow flycatcher (*Empidonax traillii extimus*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
climate change	ERU-PPE-SS-DC-03; GRZ-DC-02; ERU-DC-09; WAT-DC-05; WFP-DC-02	GRZ-G-03; WAT-G-12
habitat loss or departure	See associated ERU sections: RMZ; WAT	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
limited available habitat on the forest	WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-04; WFP-G-07
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
		G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Spikedace (*Meda fulgida*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
fire suppression activities	FF-DC-02; FF-DC-04	FF-G-03; FF-G-04; FF-G-06; FF-G-08; FF-G-09; FF-G-10
habitat loss or departure	See associated ERU sections: RMZ; WAT	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
vegetation and timber management	FP-DC-01; FP-DC-02; FP-DC-05	FP-S-01; FP-G-01; FP-S-02; FP-G-03; FP-S-04; FP-G-04; FP-G-06; FP-S-08; FP-S-09
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Tonto basin agave (*Agave delamateri*) - Species of Conservation Concern

Very little data concerning species specific life history, local distribution, and/or local physical habitat requirements is available. Therefore, without adequate data, the spectrum of plan components, standards and guidelines may or may not support the species future viability on the forest. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
declining population	RERU-DC-01; ERU-DC-14; WFP-DC-01; WFP-DC-04; WFP-DC-06	FP-G-09; WFP-O-01; WFP-G-01; WFP-G-03; WFP-G-05
insects and other pathogens	DWMA-DC-01; RWMA-DC-04; RERU-DC-17; ERU-DC-05; WAT-DC-04	CVK-G-02; INS-S-01; INS-G-06; INS-G-07; INS-G-09; REC-DIS-NMO-G-02; GRZ-G-06; ERU-G-10; ERU-G-11; REC-DIS-WB-G-1
invasive, non-native species (grasses)	RERU-DC-11; SL-DC-04; ERU-DC-10	INS-S-01; INS-O-01; INS-G-01; INS-G-02; INS-O-02; INS-G-03; INS-G-08; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
poor reproduction	WFP-DC-03; WFP-DC-04	WFP-G-04; WFP-G-05
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
uncharacteristic fire in low desert systems	ERU-DES-DC-03; ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-03; ERU-SDG-DC-05	
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
unstable or impaired soils, or soil loss	ERU-DES-DC-01; ERU-DES-DC-06; FC-DC-02; REC-DIS-MO-DC-03; GRZ-DC-03; RMZ-DC-02; RMZ-DC-05; RERU-DC-17; SRH-DC-02; SL-DC-01; SL-DC-02; SL-DC-04; SL-DC-06; ERU-DC-13; WAT-DC-04; WFP-DC-08	FP-S-01; FP-S-06; SL-G-01; SL-S-01; SL-G-03; SL-G-04; WAT-O-4

Toumey groundsel (*Packera neomexicana* var. *toumeyi*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
lack of information necessary for effective conservation	WFP-DC-06	WFP-G-03
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
restricted distribution	No specific plan components address this issue	No specific plan components address this issue

Verde Rim springsnail (*Pyrgulopsis glandulosa*) - Species of Conservation Concern

Current, peer reviewed and/or published data is lacking for species' life history, distribution, and/or physical habitat requirements in order to render a professional judgement if plan components, standards and guidelines would support species future viability on the forest. There is no body of accumulated land management experience or expertise concerning what activities benefit this species. To the extent viable populations and/or species recovery is influenced by the maintenance or improvement of the ecological conditions of the species range within the plan area, the species would benefit from plan components. This species is expected to persist and remain viable within the plan area due to the plan providing for the inherent ecological conditions and minimizing disturbance of the area where the species occurs.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
flooding, sedimentation, and runoff	RMZ-DC-02; RMZ-DC-05; RMZ-DC-06; RERU-DC-10; RERU-DC-13; RERU-DC-15; RD-DC-06; WAT-DC-03; WAT-DC-04	REC-DIS-G-03; RD-G-07; RD-G-09; RD-G-10; RD-G-11
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
loss of spring water	RMZ-DC-01; RMZ-DC-08; WAT-DC-05; WAT-DC-08	FF-G-07; REC-DIS-NMO-G-02; RMZ-G-01; RMZ-O-02; RD-G-05; WAT-S-02; WAT-G-04
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
trampling	RNBAMA-DC-06; GRZ-DC-03	RWMA-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14

Western red bat (*Lasiurus blossevilli*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see

WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
more frequent or intense drought	GRZ-DC-02; RERU-DC-10; RERU-DC-13; RERU-DC-15; WAT-DC-04	GRZ-G-03
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09

Yellow-billed cuckoo (*Coccyzus americanus occidentalis*) - Threatened

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
agricultural development		
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
collisions with tall, man-made structures (towers, antennas, wind turbines)		EG-G-04; FC-G-04; REC-G-03; REC-G-04; RD-G-04; WFP-G-06
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03;

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
		REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
invasive, non-native species	DWMA-DC-06; INS-DC-01; RERU-DC-11; SL-DC-04; ERU-DC-10	INS-G-01; INS-S-01; INS-O-01; INS-S-02; INS-O-02; INS-G-02; INS-G-03; INS-G-04; INS-G-06; INS-G-08; INS-G-09; REC-DIS-NMO-G-02; RMZ-G-03; SU-S-03; ERU-O-04; ERU-G-07; ERU-G-08; REC-DIS-WB-G-01; WFP-G-08
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08

Yellow-eyed junco (*Junco phaeonotus*) - Species of Conservation Concern

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
habitat loss or departure	See associated ERU sections: MEW;MCD	
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
small population size	WFP-DC-03; WFP-DC-04	WFP-G-04
uncharacteristic, high-intensity fire	ERU-DES-DC-04; ERU-IC-DC-02; ERU-SDG-DC-05; ERU-DC-01; ERU-DC-05; ERU-DC-19; ERU-MCW-DC-02; ERU-MCW-DC-02	FF-S-01; FF-G-07; FF-G-11

Yuma Ridgeway's rail (*Rallus obsoletus yumanensis*) - Endangered

Peer reviewed publications, journal articles, and field research concerning the species' life history, distribution, and/or physical habitat requirements are available to render professional judgement that adherence to plan components, standards and guideline will promote species viability on the forest (see

WFP-DC-06 and WFP-G-03). Further, Forest Service and Fish and Wildlife Service accumulated on-the-ground land management experience strongly indicate plan components favor long-term species viability.

Threats to persistence	Desired Conditions	Objectives, Standards, and Guidelines
aquatic habitat departure	See Watersheds and Water Resources (WAT)	See Watersheds and Water Resources (WAT)
habitat loss or departure	RMZ	
impacts from livestock grazing	GRZ-DC-02; GRZ-DC-03	GRZ-O-01; GRZ-G-02; GRZ-G-04; GRZ-G-05; GRZ-G-06; GRZ-G-07; GRZ-G-08
impacts from recreation activities	REC-DIS-DC-01; REC-DIS-DC-03; REC-DIS-DC-05; REC-DIS-MO-DC-03; REC-DC-01; REC-DC-08; REC-DIS-RS-DC-01; REC-DIS-RS-DC-04; REC-DIS-WB-DC-04	REC-DEV-O-01; REC-DEV-S-01; REC-DIS-G-02; REC-DIS-S-02; REC-DIS-G-03; REC-DIS-S-03; REC-DIS-MO-G-01; REC-DIS-MO-S-02; REC-DIS-NMO-G-02; REC-DIS-NMO-G-03; REC-DIS-NMO-G-04; REC-O-03; REC-G-03; REC-O-04; REC-G-04; REC-G-07; REC-G-09; REC-DIS-WB-G-1
limited available habitat on the forest	WFP-DC-04; WFP-DC-05; WFP-DC-08	WFP-G-04; WFP-G-07
potential reproductive isolation	WFP-DC-05	WFP-G-04; WFP-G-08
restricted distribution	No specific plan components address this issue	No specific plan components address this issue
riparian habitat departure	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	See Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)
streamflow or channel alterations	DWSRMA-DC-01; EWSRMA-DC-01; RMZ-DC-02; RMZ-DC-06; WAT-DC-03; WAT-DC-05; WAT-DC-08	EWSRMA-S-01; EWSRMA-S-03; MMAM-G-03; RMZ-G-06; RMZ-G-07; RD-G-05; RD-G-06; RD-G-07; ERU-G-13; WAT-S-02; WAT-O-06; WAT-G-09
water developments	DWSRMA-DC-05	RMZ-G-03; RD-G-07; WAT-G-04; WAT-G-05; WAT-G-08; WAT-G-10; WFP-G-06; WFP-G-08
water withdrawal	MMAM-DC-01; RMZ-DC-06; WAT-DC-01; WAT-DC-02; WAT-DC-05; WAT-DC-06; WAT-DC-08; WAT-DC-09	RMZ-G-01; WAT-S-02; WAT-S-03; WAT-O-06; WAT-G-06; WAT-G-07; WAT-G-09; WAT-G-10; WAT-G-14
wetland degradation	REC-DIS-DC-01; RMZ-DC-01; WAT-DC-05; WAT-DC-08	REC-DIS-G-04; EG-G-03; FC-G-02; FF-G-04; FF-G-07; FP-S-01; FP-G-06; LRMA-G-03; GRZ-G-02; RERU-G-03; RD-G-05; RD-G-07; WAT-S-02; WAT-G-04; WAT-G-08

Appendix H. Plan Components that Maintain or Restore Habitat Connectivity

The 2012 Planning Rule instructs the forest to develop a forest plan that provides for social, economic, and ecological sustainability (36 CFR § 219.8), and that maintains the diversity of plant and animal communities and the persistence of native species (36 CFR § 219.9). The rule outlines an approach that focuses on restoring ecosystem integrity. As required by § 219.8(a), the plan must include plan components, including standards or guidelines, to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area, including plan components to maintain or restore structure, function, composition, and connectivity.

In response to our Tonto National Forest Draft Land and Resource Management Plan, we received numerous comments expressing particular interest in how the plan serves to maintain or restore habitat connectivity. The planning rule defines connectivity as ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long-distance range shifts of species, such as in response to climate change (36 CFR § 219.19).

As shown in this definition, the ecological conditions that contribute to habitat connectivity can depend greatly upon the needs of specific species. For aquatic species, connected habitats may involve sufficient baseflows, periodic flooding, vegetative shade, or absence of impoundments. For some species roads, heavily recreated areas, and human presence can be substantial obstacles to movement. Habitat connectivity may also be influenced by ecological and landscape stressors such as invasive species, woody encroachment, uncharacteristic fire, or extreme drought conditions. Many species considered at-risk on the Tonto National Forest have restricted distributions, are narrow endemics, or rare on the landscape. These patterns in distribution may have occurred over time as a result of various natural processes such as population isolation from historic climate shifts, local geologic conditions, or high levels of specialization.

Similarly, no single section of the forest plan influences the management of habitat connectivity, rather plan direction to maintain or restore connectivity is spread throughout program areas as applicable. Generally, these plan components guide future management by:

- Describing desired conditions in which maintaining or restoring connectivity is a key component
- Directing projects and activities to consider impacts to habitat connectivity
- Calling for strategies that minimize or mitigate impacts to connectivity
- Naming specific strategies to restore connectivity

Because this plan direction is found throughout the revised forest plan, we have compiled the following list of plan components related to the management of habitat connectivity (see table 52). This list is not intended to be all inclusive. Some important areas have been excluded. For example, the full complement of plan components from the ecological sections of the plan (e.g., Vegetation and Ecological Response Units; Watersheds and Water Resources; and Riparian Areas, Seeps, Spring, Wetlands, and Riparian Management Zones) serve to restore ecological integrity, and thus improve habitat connectivity; however, they may not call out connectivity issues specifically, and so have been excluded for brevity.

The Tonto National Forest is committed to maintaining and restoring ecological integrity within Forest Service authority and consistent with the inherent capability of the plan area. This effort includes ensuring that landscapes are sufficiently connected to provide for a diversity of plant and animal communities.

Table 52. Collection of plan components that maintain or restore habitat connectivity

Plan Section	Plan Component
Recreation (REC)	REC-O-05: Every 5 years, take appropriate action (e.g., close, decommission, or convert) on at least 10 miles of motorized and/or non-motorized trails that may not offer recreational value (e.g., unsustainable, low-use, or have no remarkable destination value) or are not needed for administrative use.
Recreation (REC)	REC-G-04: Newly developed and dispersed recreation sites, facilities, and authorized activities should be designed and located in places so as not to degrade water quality, sensitive environments, or prevent wildlife access to water.
Dispersed Recreation (REC-DIS)	REC-DIS-DC-04: Expansion of dispersed sites and evidence of overuse is infrequent. Resource impacts due to recreation use (e.g., soil compaction or lack of vegetation) are minimized.
Dispersed Recreation (REC-DIS)	REC-DIS-DC-06: Unauthorized user-created trails are not evident on the landscape.
Dispersed Recreation (REC-DIS)	REC-DIS-G-03: Newly constructed motorized and non-motorized trails should not be located in or crossing the riparian management zone (which includes riparian areas, meadows, wetlands, seeps, springs, streams, and connected floodplains supporting riparian vegetation), meadows, sacred sites, or areas with high concentrations of significant archeological sites, unless the purpose is to provide for resource protection.
Motorized Recreation (REC-DIS-MO)	REC-DIS-MO-S-01: Motorized vehicle travel shall be managed to occur only on the designated system of National Forest System roads, motorized trails, and motorized areas per the motor vehicle use map.
Motorized Recreation (REC-DIS-MO)	REC-DIS-MO-S-02: Newly constructed motorized trails will follow current sustainable construction and design standards for motorized trail building principles to mitigate erosion and to promote sustainable design.
Motorized Recreation (REC-DIS-MO)	REC-DIS-MO-G-01: When natural barriers are not effective or efficient, other barriers and/or signage should be used to control unauthorized use in areas with a high potential for illegal cross-country motorized vehicle operation.
Motorized Recreation (REC-DIS-MO)	REC-DIS-MO-G-02: Motorized use should be actively managed through a set of engineering, monitoring, education, control, partnership, and enforcement strategies which adapt as population and visitor use increase.
Motorized Recreation (REC-DIS-MO)	REC-DIS-MO-G-03: Unsustainable motorized trails that have low use, no remarkable destination value, and/or are duplicate trails to the same destination, should be decommissioned and rehabilitated to improve environmental resource conditions and reduce negative impacts to ecological natural resources.
Non-Motorized Recreation (REC-DIS-NMO)	REC-DIS-NMO-G-01: Trail maintenance and management priorities should be based on user demand and the need to minimize resource damage, provide appropriate and meaningful recreation opportunities, and to accommodate administrative needs.
Non-Motorized Recreation (REC-DIS-NMO)	REC-DIS-NMO-G-02: Where new and existing designated trails encounter springs, trails should be designed and maintained to minimize negative impacts to the spring (e.g., erosion, trampling, compaction, and introduction of invasive species and disease) while still allowing access for wildlife.
Non-Motorized Recreation (REC-DIS-NMO)	REC-DIS-NMO-G-03: Non-motorized system trails should be decommissioned or improved when: REC-DIS-NMO-G-03c.: Unacceptable resource damage is occurring based on other resources' desired conditions;
Non-Motorized Recreation (REC-DIS-NMO)	REC-DIS-NMO-MA-01: Promote educational programs (e.g., "don't bust the crust") to encourage those participating in non-motorized recreation to use only National Forest System trails.

Plan Section	Plan Component
Wildlife-Related Recreation (REC-WR)	REC-WR-G-03: Wildlife connectivity for economically important and other species should be maintained and/or enhanced.
Wildlife-Related Recreation (REC-WR)	REC-WR-MA-05: Consider recommendations of wildlife planning efforts such as the State Wildlife Action Plan, the North American Waterfowl Management Plan, and other range wide management plans for big game, upland game, and aquatics species.
Special Uses (SU)	SU-DC-06: Utility corridors and communications sites are sized to fit the intended use and obsolete or unused facilities are removed and rehabilitated.
Special Uses (SU)	SU-G-01: Utility corridors and communications sites should utilize existing facilities, sites, and corridors unless new sites can provide better social, economic, and ecological benefits.
Special Uses (SU)	SU-MA-04: Consider using special use authorization terms and conditions as a means of protecting water dependent resources (refer to the Watersheds and Water Resources section) on the forest.
Energy Production and Delivery (EG)	EG-DC-02: Exploration, development, production and transmission of renewable energy resources contribute social and economic benefits to local communities and are conducted in a manner that minimizes adverse long-term impacts to Tonto resources and uses, ecosystem health, and watershed conditions.
Energy Production and Delivery (EG)	EG-DC-03: Energy rights-of-way allow for the operation and maintenance of the facilities and infrastructure as well as desired vegetative conditions and land uses.
Energy Production and Delivery (EG)	EG-G-01: Distribution lines and smaller pipelines should occur within existing road systems or other previously disturbed areas.
Energy Production and Delivery (EG)	EG-G-03: Energy corridors should be planned to avoid or limit disturbance in or near riparian areas, surface water, shallow groundwater, unstable areas, or wetlands.
Energy Production and Delivery (EG)	EG-G-04: New energy facilities and transmission corridors should avoid locations in areas identified as having a demonstrated high risk to at-risk species, cultural resources, or other resources.
Forestry and Forest Products (FP)	FP-DC-01: Personal and commercial timber harvest contributes to watershed health, function, and resilience, enhance wildlife habitat, create small and large business and employment opportunities, and provide wood products.
Forestry and Forest Products (FP)	FP-DC-02: Personal and commercial timber harvest supplement other restoration and maintenance treatments in forested vegetation communities at a scale that achieves and maintains landscape desired conditions over time.
Forestry and Forest Products (FP)	FP-S-09: Harvesting systems shall primarily be selected for their ability to move toward achieving desired conditions (e.g., vegetation, watershed, and riparian) and not for their ability to provide the greatest dollar return or unit output of timber, while remaining as economical as possible.
Mining, Minerals, and Abandoned Mines (MMAM)	MMAM-DC-01: Mining and mineral activities comply with law, regulation, and policy in the development of minerals. Minimize adverse environmental impacts to surface and groundwater resources, watershed and forest ecosystem health, wildlife and wildlife habitat, scenic character, and other desired conditions applicable to the area.
Roads (RD)	RD-DC-04: National Forest System roads have minimal adverse environmental impacts to soil, riparian areas, watercourses, native vegetation, and at-risk species.
Roads (RD)	RD-DC-05: Unauthorized routes are not apparent on the landscape.
Roads (RD)	RD-O-01: Decommission 100 - 600 miles of a combination of unauthorized routes and national forest system roads identified through the travel management process every ten years.
Roads (RD)	RD-S-01: Motor vehicle use by the public is only authorized as designated by the motor vehicle use map , except as authorized.

Plan Section	Plan Component
Roads (RD)	RD-S-04: Temporary roads shall be constructed, decommissioned, and rehabilitated as part of the same project.
Roads (RD)	RD-G-02: Construction of temporary roads in areas designated as Semi-Primitive Non-Motorized (ROS) should be avoided unless required by a valid permitted activity or management action. If authorized, roads should be constructed and maintained at the lowest maintenance level needed for the intended use, then rehabilitated.
Roads (RD)	RD-G-03: Decommissioned roads should be returned to their natural condition.
Roads (RD)	RD-G-04: When designing or maintaining bridges, design elements that reduce mortality and are beneficial to wildlife (e.g., habitat connectivity, roost sites) should be incorporated.
Roads (RD)	RD-G-05: New or reconstructed roads should be located outside of the riparian management zone, or other important water resources (e.g., meadows, wetlands, seeps, and springs), in order to prevent resource damage. If road construction in riparian areas is unavoidable, it should be designed and implemented to minimize effects to natural waterflow, aquatic species, channel morphology, water quality, and native riparian vegetation. The number of stream crossings should be minimized to reduce negative impacts to natural resources.
Roads (RD)	RD-G-06: New or redesigned stream crossings (e.g., bridges and culverts) should be wide enough to pass the bankfull without obstructing or confining the flow.
Roads (RD)	RD-G-07: New or reconstructed roads, culverts, and other water crossing infrastructure should be designed and located to allow for passage of aquatic species and the naturally occurring sediment and debris transported by the stream.
Roads (RD)	RD-G-09: When temporary roads are necessary, stream crossings should be designated to mitigate sedimentation and gradient changes and impacts to channel stability. These crossings should be designated by the appropriate resource specialists, and installed and removed while protecting existing adjacent features.
Roads (RD)	RD-G-10: Reconstruction and rehabilitation of existing roads should be prioritized over new construction.
Roads (RD)	RD-MA-02: Prioritize decommissioning of roads that impact flow regimes, are redundant routes, cause mass movement of soils and sediment, are built within the riparian management zone, or have substantial negative impacts to at-risk species.
Facilities (FC)	FC-DC-02: The construction and operation of facilities has minimal long-term impacts to surrounding soil and vegetation.
Facilities (FC)	FC-G-02: Construction of new facilities in sensitive environments (e.g., floodplains, wetlands) should be avoided or area of disturbance minimized, where practicable.
Lands and Access (LA)	LA-DC-01: Land ownership adjustments (e.g., purchase, donation, exchange, or other authority) improve management activities (e.g., consolidating ownership, reducing wildlife-human conflicts, providing for wildlife habitat connectivity, improving public access, protection of cultural resources, and retaining or acquiring key lands for fish and wildlife).
Lands and Access (LA)	LA-S-01: Authorize a single road access to private property or to a road user association, regardless of subdivision, when the proposal meets the requirements of law, regulation, and policy.
Lands and Access (LA)	LA-G-04:4c: When there are opportunities to acquire or convey non-federal lands by purchase or exchange, where lands are valuable for National Forest System purposes, the Forest Service should consider whether: C) Lands with important characteristics (e.g., cultural resources, riparian and wildlife habitat, and watershed protection) would enhance National Forest purposes mission, including access;

Plan Section	Plan Component
All Upland Ecological Response Units (ERU)	ERU-DC-11: Upland vegetation and riparian zones are ecologically connected based on natural patterns that are consistent with landforms and topography, and provide for upland and aquatic species movements and genetic exchange.
Semi-Desert Grasslands (ERU-SDG)	ERU-SDG-DC-02: Grasslands are connected based on the distribution of soils with most occurring on Aridisols, and some minor inclusions of Vertisols. Entisols support desert grasslands at valley plains and drainages where fluvial processes are taking place .
Semi-Desert Grasslands (ERU-SDG)	ERU-SDG-MA-01: Collaborate with partners and stakeholders on grassland restoration, grassland connectivity, and education.
Riparian Ecological Response Units (RERU)	RERU-DC-05: Well-established mesquite stands and forests, or bosques , generally located at abandoned channels (a former stream channel that is no longer part of the active channel) or terraces, are retained and connected to upland vegetation where the potential exists (based on riparian ecological response unit, Terrestrial Ecological Unit Inventory data or other suitable dataset).
Watersheds and Water Resources (WAT)	WAT-DC-03: Watersheds are functioning properly (based on criteria provided in the Watershed Condition Framework or similar current protocol) and they exhibit high geomorphic, hydrologic, and biotic integrity relative to their potential condition. They support the magnitude, frequency, timing and duration of runoff within a natural range of variability and the movement of water and sediment from the surrounding uplands through the channel system sustains the health and function of the channel and riparian corridors as measured by the Watershed Condition Framework, National Riparian Core Protocol (Merritt et al. 2017) or another equivalent method.
Watersheds and Water Resources (WAT)	WAT-DC-04: Ecological components of the watershed (e.g., soil, vegetation, and fauna) are resilient to human activities and natural disturbances (e.g., fire, drought, flooding, wind, grazing, insects, disease, and pathogens), and maintain or improve water quality and riparian and aquatic species habitat as measured by the Watershed Condition Framework or another equivalent method.
Watersheds and Water Resources (WAT)	WAT-DC-05: The effects of climate variability and change are moderated by watershed conditions that support important ecosystem services (e.g., clean water, groundwater recharge, long-term soil productivity, and base flows in streams, springs, and wetlands).
Watersheds and Water Resources (WAT)	WAT-DC-07: Groundwater discharge maintains water table elevation, supports base flows and water temperature in streams, seeps, fens, springs, and other wetland resources, maintains site productivity and soil moisture characteristics for riparian vegetation, and sustains the function of surface and subsurface aquatic ecosystems.
Watersheds and Water Resources (WAT)	WAT-DC-08: Surface waters provide habitat for aquatic species and riparian species, contribute to connectivity for wildlife across the landscape, provide for local and urban potable water supplies, agricultural uses (e.g., livestock watering and irrigation), and recreation.
Watersheds and Water Resources (WAT)	WAT-DC-09: Water rights to support ecosystem water needs on the Forest have been acquired.
Watersheds and Water Resources (WAT)	WAT-O-05: Apply for state based water rights for instream flow use for at least two streams threatened with dewatering, supporting highly valued resources (e.g., threatened or endangered species, species of conservation concern, river based recreation) or containing unique qualities (e.g., a perennial stream in the Sonoran Desert) within each ten year period.
Watersheds and Water Resources (WAT)	WAT-S-02: New authorizations for wells and pipelines on National Forest System lands shall only be considered where the water removed and/or transported by these facilities would not adversely impact springs, wetlands, riparian areas, surface flows, and other groundwater dependent ecosystems on National Forest System lands.
Watersheds and Water Resources (WAT)	WAT-G-06: New or reconstructed roads and motorized routes, infrastructure, recreation sites, or similar constructed facilities should not be located within

Plan Section	Plan Component
	floodplains or within 300 feet of water resource features (e.g., perennial and intermittent streams, springs, wetlands, and riparian areas), except where necessary for stream crossings or to provide for resource protection to avoid the long-term adverse impacts associated with the occupancy and modification of floodplains and water resource features.
Watersheds and Water Resources (WAT)	WAT-G-07: Provided that they are consistent with existing water rights; permitted water uses, water diversions, or obstructions should allow sufficient water to pass downstream to preserve minimum levels of water flow that maintain riparian and aquatic desired conditions. Watershed condition classification (using the watershed condition framework or similar protocol) should be updated after large-scale disturbance events (e.g., wildfire).
Watersheds and Water Resources (WAT)	WAT-MA-03: Select streams to ensure sufficient flow is provided for protection of riparian and aquatic species and their habitat, and for recreation. Streams prioritized for protection through instream flow water rights would be based on resource values supported by the streams and potential threats to dewatering.
Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	RMZ-DC-06: Stream flow regimes and sediment movement characteristics reflect the natural range of variability, maintain riparian ecosystems, channel and floodplain morphology, groundwater recharge, and water quality.
Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	RMZ-DC-07: Riparian ecosystems exhibit connectivity between and within aquatic systems, riparian areas, and uplands that provide for movement and dispersal of species.
Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	RMZ-G-02: Projects affecting perennial streams should be designed and constructed to allow for natural instream movement of aquatic species, except where barriers are necessary to preclude the movement of nonnative species.
Riparian Areas, Seeps, Springs, Wetlands, and Riparian Management Zones (RMZ)	RMZ-MA-05: Explore opportunities to restore natural flow regimes, connect channels and their floodplains where they have been interrupted, and alleviate key stressors to promote natural recovery.
Wildlife, Fish, and Plants (WFP)	WFP-DC-02: Habitats are sufficiently resilient to withstand foreseeable levels of disturbance and redundant enough to maintain species diversity, enabling species to adapt to changing environmental conditions (e.g., climate change).
Wildlife, Fish, and Plants (WFP)	WFP-DC-03: Habitat condition, distribution, and abundance contribute to self-sustaining populations of plant and animal species, including at-risk species, rare, and endemic species.
Wildlife, Fish, and Plants (WFP)	WFP-DC-04: A diversity of habitat components, including biotic and abiotic features, are available at the appropriate spatial, temporal, compositional, and structural levels to provide adequate opportunity for critical life history needs (e.g., breeding, feeding, and nesting) of species.
Wildlife, Fish, and Plants (WFP)	WFP-DC-05: Habitats within and adjacent to the forest are sufficiently interconnected in order to allow for necessary movements and dispersal of native animal and plants, as well as promote species interactions. Habitats are connected at a landscape scale that includes adjacent lands.
Wildlife, Fish, and Plants (WFP)	WFP-G-04: Projects and activities that may negatively impact at-risk species should consider protections and mitigation measures, especially considering the timing and location of vulnerable life history processes (e.g., reproduction, molting, migration, and hibernation). Examples of mitigations and protections could include but are not limited to: timing restrictions, adaptive percent utilization levels, distance buffers.
Wildlife, Fish, and Plants (WFP)	WFP-G-06: Manmade structures (e.g., fences, steel posts, vent pipes, stock tanks, and drinkers) should be designed, constructed, and maintained to minimize wildlife mortality (e.g., capped fence posts and escape ramps).

Plan Section	Plan Component
Wildlife, Fish, and Plants (WFP)	WFP-G-07: Landscape and vegetation alterations that significantly contribute to uncharacteristic habitat fragmentation should be avoided. Project design should provide for movement and dispersal of species between treated and untreated areas.
Wildlife, Fish, and Plants (WFP)	WFP-G-08: New infrastructure or constructed features (e.g., fences, roads, recreation sites, facilities, drinkers, and culverts) should be designed and maintained to minimize negative impacts to the movement and dispersal of wildlife, fish, and rare plants. Infrastructure and constructed features already present that do negatively impact movement and dispersal should be modified or removed when no longer in use in order to improve connectivity. Barriers may be used to protect native species or prevent movement of nonnative species.
Wildlife, Fish, and Plants (WFP)	WFP-G-09: Projects and activities that may negatively impact Sonoran Desert tortoises should apply mitigations from the Arizona Interagency Desert Tortoise Team's Recommended Standard Mitigation Measures (or similar current guidance) when designing projects in desert tortoise habitat.
Invasive species (INS)	INS-DC-01: Invasive species are present at population levels that do not disrupt ecological functionality, affect the sustainability of native species, cause economic harm, or negatively impact human health.
Designated Wilderness (DWMA)	DWMA-DC-01: Wilderness areas provide opportunities for visitors to experience natural ecological processes with a limited amount of human influence within the untrammeled and natural qualities of wilderness character. Natural ecological processes are fully functioning with limited human intervention. Natural processes such as insect and disease and fires function in their natural ecological role.
Designated Wilderness (DWMA)	DWMA-DC-02: The availability and use of Wilderness as a public lands resource is valued by the public for its contribution to clean air and water, wildlife habitat enhancement, primitive recreation opportunities, and protection of other wilderness characteristics.
Designated Wilderness (DWMA)	DWMA-DC-05: The environment within a wilderness is essentially unmodified. Actions and structures that manipulate the biophysical environment are rare or nonexistent. Natural occurring scenery dominates the landscape.
Recommended Wilderness (RWMA)	RWMA-DC-02: Recommended wilderness areas are valued by the public and contribute to clean air and water, wildlife habitat enhancement, primitive recreation opportunities, and other cultural ecosystem services.
Designated Wild and Scenic Rivers (DWSRMA)	DWSRMA-DC-01: The outstandingly remarkable values, free-flowing condition, and classification of designated wild and scenic river corridors are preserved.
Eligible Wild and Scenic Rivers (EWSRMA)	EWSRMA-DC-01: The existing outstandingly remarkable values, free-flowing condition, and classifications of eligible wild and scenic river corridors are protected or enhanced.
Inventoried Roadless Areas (IRAMA)	IRAMA-DC-01: The roadless character of inventoried roadless areas is protected and conserved.