

# Apache-Sitgreaves National Forests Wilderness Evaluation Report

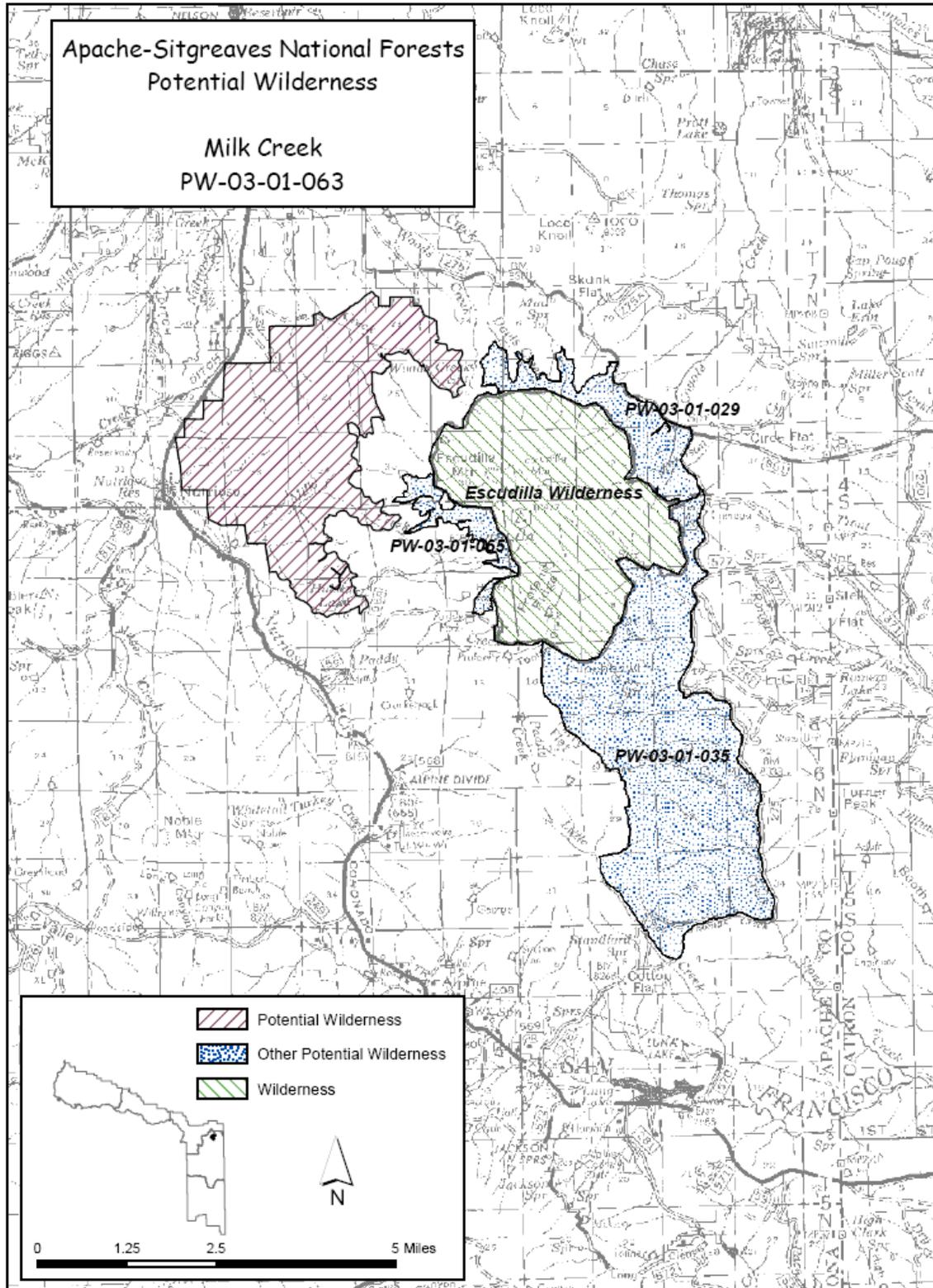
Milk Creek Potential Wilderness

PW-03-01-063

November 2010

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Map created June 2009 by streiman.

## *Introduction*

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As part of the Forest Plan Revision process for the Apache-Sitgreaves National Forests (ASNFs), the Forest Service has prepared this Wilderness Evaluation Report for the Milk Creek potential wilderness.

### *Purpose*

The Forest Service must evaluate all lands possessing wilderness characteristics for potential wilderness during plan revision. Completion of a potential wilderness inventory and evaluation is an essential step in the plan revision process. Wilderness is just one of many special area designations that the Forest Service considers during plan revision, but it is one of only three special area evaluations that are mandatory. If an area is recommended for wilderness designation, then the revised plan would contain desired conditions, objectives, guidelines, and/or standards that would protect its wilderness characteristics.

### *The Process*

The wilderness evaluation process began with an inventory of potential wilderness, which includes areas of federal land over 5,000 contiguous acres and other areas that meet the criteria in FSH 1909.12, Chapter 70, Section 71, and then determined if those areas meet the definition of wilderness. Once a list of potential wilderness areas was created, each area was evaluated for capability, availability, and need. These evaluation factors are described in the introduction to each evaluation step and in Appendix A. This report summarizes the wilderness capability, availability, and need evaluations based on the best available information. This report also presents the potential effects of a wilderness or non-wilderness recommendation.

The ASNFs will use this report to determine whether or not to make a preliminary administrative recommendation for wilderness designation for the Milk Creek potential wilderness. The Responsible Official's (Regional Forester) recommendation will be documented in the final revised Plan and the Environmental Impact Statement Record of Decision. Public comments on this report will be accepted and considered throughout the plan revision process. If a potential wilderness is recommended for wilderness, the recommendation will receive further review by the Chief of the Forest Service and the Secretary of Agriculture. If the Chief of the Forest Service intends to move forward with a wilderness recommendation, the Forest Service will complete a detailed analysis of the trade-offs and impacts in accordance with the National Environmental Policy Act, including further public review and comment. Ultimately, only Congress has the authority to designate wilderness.

## Background

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<b>Name</b>	Milk Creek
<b>Number</b>	PW-03-01-063
<b>Acres</b>	5,387
<b>Ranger District</b>	Alpine
<b>History (if applicable)</b>	N/A
<b>Location, Vicinity, and Access</b>	Approximately 6 miles north northeast of Alpine, Arizona, and immediately east of Nutrioso in southern Apache County. It is located in the ASNFs in eastern Arizona. Primary access is via U.S. Highways 180/191 (The Coronado Trail Scenic Byway), west of the area, and Forest Roads (FR) 8082, 8082D, 8056, and 8096.
<b>Geography and Topography</b>	The area is characterized by steep, dissected, conifer-covered terrain. Elevations range from 7,600 feet to over 8,800 feet. The Datil Formation, which is prone to landslides, is found in the area. The potential wilderness includes Watts, Hulsey, and Milk Creeks.
<b>Surroundings</b>	Private lands delineate most of the north, west, and southeast boundaries <sup>1</sup> . The remainder of the boundary is defined by activity areas. Roads <sup>2</sup> form small sections of the boundary. Multiple pieces of private land adjoin the potential wilderness.  The Hulsey Bench Wildlife Closure and Hulsey Lake Fishing Site are just east of the potential wilderness. The Milk Creek potential wilderness is 1 mile west of Escudilla Wilderness; the Hulsey Bench Wildlife Closure separates the two.
<b>Special Designation</b>	Small portions of the Hulsey Bench Wildlife Closure overlap the potential wilderness on the east side. Public motor vehicle use is restricted in the closure area.
<b>Vegetation</b>	A mosaic of vegetative communities is found within Milk Creek potential wilderness. Vegetation types vary with elevation, aspect, and slope and include ponderosa pine forest, piñon-juniper woodland, dry mixed conifer forest, and wet mixed conifer forest. There are also small areas of Great Basin and montane/subalpine grasslands. There are some areas of old ponderosa pine and other conifers.
<b>Appearance and Key Attractions</b>	The area is characterized by steep, dissected, conifer-covered terrain with rocky bluffs. Landslides in the Datil Formation have left light-colored patches.

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<sup>1</sup> T 06 N, R 30 E, sections 4 and 5 and T 07 N, R 30 E, sections 21, 22, 23, 28, 29, and 32.

<sup>2</sup> Roads may be bounded on one or both sides by the potential wilderness. Where a road is bounded on both sides, a non-potential wilderness corridor or “cherrystem” surrounds the road. Forest roads include 8056, 8056A, 8056B, 8056C, 8056D, 8056G, 8056E, 8056F, 8056Q, 8082, 8082D, and 8096. Roads that end at the potential wilderness boundary are not listed.

## **CURRENT USES**

- Recreation** Current recreation activities are primarily hunting, cross-country hiking, and viewing scenery and wildlife. Hulsey Lake, a minimally developed fishing site, adjoins the southeast boundary. There are no trails. Most of the area has a recreation emphasis of Semi-Primitive Non-Motorized, with the remainder Semi-Primitive Motorized and Roaded Natural.
- Wildlife** Large wildlife species found in the area include elk, mule deer, black bear, and mountain lion. A variety of small animals and birds also inhabit the area. Mexican spotted owl (threatened) protected activity centers are found on lands within and adjoining the potential wilderness. The threatened Little Colorado spinedace is found west of the area in Nutrioso Creek. The potential wilderness is within the secondary Mexican gray wolf recovery zone.
- Range** The potential wilderness is almost completely within the South Escudilla Allotment. A very small portion is in the Boneyard Allotment. There are 1.6 miles of allotment boundary fence within the area.
- Water** Perennial streams include Watts and Hulsey Creeks. There are no springs in the area.
- Minerals** As of 4/18/2009 there are no mining claims, mineral districts, mineral withdrawals, or coal, oil, gas, or geothermal leases in the potential wilderness.
- Heritage Resources** There are known prehistoric or historic resources.
- Fire** Twenty-nine fires (most smaller than ¼ acre and the largest approximately 3 acres) occurred between 1971 and 2008. The majority were caused by lightning. The largest was caused by equipment use.

## Capability Evaluation

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Wilderness capability describes the basic characteristics that make the area appropriate and valuable for wilderness designation, regardless of the area's availability or need. Five factors are used to determine capability: naturalness, level of development, opportunities for solitude or primitive and unconfined recreation, special features, and the ability of the Forest Service to manage the area as wilderness. The first four factors consider how the current conditions of the potential wilderness fit the definition of wilderness. Manageability is slightly different because it evaluates features of the area that would make it more or less difficult to manage as wilderness, such as size, shape, and juxtaposition to external influences. The following summarizes the information found in Appendix B.

### Summary

#### Natural

##### High

The potential wilderness essential natural and has a high degree of vegetation and wildlife diversity. Vegetation types include ponderosa pine, dry mixed conifer, and wet mixed conifer forests; piñon-juniper woodland; and Great Basin and montane/subalpine grasslands. The potential wilderness provides habitat for Mexican spotted owl. No non-native plants have been found in the potential wilderness, but several species have been found west of the area. Non-native species may be present, but no surveys have specifically been conducted in the area. There are two perennial, free-flowing streams; no water quality concerns are known. The night sky is not affected by light from the small, adjacent communities.

#### Undeveloped

##### High

There is little evidence of human activity within the potential wilderness, mostly fences.

#### Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

##### Medium

The potential wilderness has outstanding opportunities for primitive and unconfined recreation because of the terrain and lack of trails. Primitive recreation opportunities include hiking, hunting, and viewing wildlife and scenery. There are opportunities for solitude, but the signs of civilization are noticeable from vantage points on the west and north sides.

#### Special Features and Values

##### Medium

Special features and values include Mexican spotted owl habitat, steep cliffs, panoramic views of the surrounding countryside, and outcrops of the Datil formation, which is prone to landslides.

#### Manageability

##### High

The potential wilderness could be managed to protect its wilderness character. Access is limited by the large amount of adjacent private land. The terrain and a motor vehicle closure restrict motor vehicle use.

**OVERALL CAPABILITY**

**High**

**Potential Boundary Changes**

No boundary changes have been identified for this potential wilderness. However, much of this area is included in a wilderness proposal submitted by the public.

## Availability Evaluation

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Availability criteria indicate the availability of a potential wilderness for wilderness designation by describing other resource and land use potentials for the area. Availability examines the potential impact of designating an area as wilderness to both the current and future land uses and activities. In essence, it is a summary of the trade-offs between wilderness and other uses. The following summarizes the information found in Appendix C.

### Summary

#### Water Yield

**High**

The area is of value for water yield. However, no impoundments are needed.

#### Habitat Management

**High**

Because of the area soils, sediments are often washed into Nutrioso Creek, habitat for Little Colorado River spinedace.

#### Aquatic Restoration

**High**

No aquatic restoration activities within the potential wilderness have been identified.

#### Vegetation Restoration

**Low**

Much of the potential wilderness is within a wildland-urban interface (WUI). WUI treatments to reduce fuels include hand-thinning, mechanical treatment, cutting, and prescribed fire.

#### Public Access Needed

**High**

There are no unique characteristics that would require developed public access.

#### Land Use Authorizations

**Low**

In the northwestern-most part of the area, there is a slope that requires motorized equipment to divert the drainage away from the highway. Other current authorizations, primarily grazing permits, do not conflict with potential wilderness.

#### Adjacent Non-FS Lands

**Medium**

Most of the west and north boundaries adjoin private lands.

#### Minerals

**High**

There is a low potential for future mineral uses

**OVERALL AVAILABILITY**

**Medium**

## Need Evaluation

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The evaluation criteria below indicate how the potential wilderness might fit into the National Wilderness Preservation System, which includes all wilderness areas in the United States. Need is considered at the regional level and must incorporate public participation. The criteria used to evaluate need include consideration of other wilderness and non-wilderness areas that provide opportunities for unconfined outdoor recreation or preservation of certain ecosystem characteristics. The following summarizes the information found in Appendix D. Individual factors are rated in this summary but are not in Appendix D. Appendix D presents only an overall rating.

### Summary

**Factor 1** - The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers.

#### Low

There are adequate wilderness opportunities in the vicinity of Milk Creek potential wilderness. Within 100 miles of this potential wilderness there are 1,326,284 wilderness and primitive area<sup>3</sup> acres. There are no population centers within 100 miles of this potential wilderness.

**Factor 2** - Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation.

#### Medium

According to the 2001 National Visitor Use Monitoring study, approximately 38,000 people visited the three Wilderness areas on the ASNFs. Most of this use was concentrated in the two smaller, more easily accessed Wilderness areas, Mount Baldy and Escudilla. Visitor use in Mount Baldy is locally considered high, while visitor use in Escudilla is considered moderate to high. Use in Bear Wallow Wilderness is lighter because it is less easily accessed and slightly larger. Wilderness users on the ASNFs are predominantly male, white or Hispanic/Latino, between the ages of 31 and 60, and live in the Phoenix and Tucson areas.

Approximately 70 percent of the Arizona visitors to the ASNFs are from the Phoenix (58 percent) and Tucson (11 percent) metropolitan areas. Populations in these areas have increased much faster than in the more rural areas. Visitors from the four counties where the ASNFs are located account for another 20 percent. In general, there has been no to moderate population growth in these counties. Recently, there have been major highway improvements between Phoenix and the ASNFs.

It can be assumed that with increasing populations and improved transportation features, wilderness use on the ASNFs would continue to increase, especially in those areas where the trailheads are easily accessed.

Surrounding National Forests (Coconino, Coronado, Gila, and Tonto) all have much higher numbers of wilderness visits than the ASNFs. Use on the Coconino, Coronado, and Gila is high, while use on the ASNFs and Tonto is medium.<sup>4</sup>

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<sup>3</sup> The Blue Range Primitive Area is the last remaining such area in the United States. It is managed as wilderness in accordance with Forest Service Manual 2320.3(11).

<sup>4</sup> This is based on use categories developed by the Forest Service Wilderness Advisory Group, with low use defined as 0-10,000 visits, medium as 10,001 – 30,000 visits, and high being greater than 30,000 visits. Total wilderness

Regionally, increased demand for additional wilderness in both Arizona and New Mexico should be anticipated based on population growth from 1990 to 2000, which far exceeded the national growth rate. Assuming Arizona continues to grow at a rate much higher than the national rate; visits to wilderness will continue to increase. Arizona, in particular, could benefit from additional wilderness.

Public demand increases with proximity to six population centers: Flagstaff, Phoenix, Tucson, Santa Fe, Taos, and Albuquerque. Wilderness recommendations should be considered within 100 miles of those cities to provide for that demand. Some additional public demand for wilderness in the Southwestern Region will occur from people moving to rural communities near the National Forests.

Nationwide, Wilderness represents 17 percent of all federal agency acres. In the Southwestern Region, 13 percent of the Forest Service lands are Wilderness. Only 6 percent of the federal acres in northeast Arizona are wilderness acres. For wilderness acres in the Southwestern Region to be at the national average would require the addition of about 1 million acres.

**Factor 3** - The extent to which nonwilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences.

**Low**

There are adequate nonwilderness lands on or near the ASNFs that could provide unconfined outdoor recreation experiences. There are no population centers within 100 miles of this potential wilderness.

**Factor 4** - The need to provide a refuge for those species that have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

**Low**

The ASNFs have identified 11 Threatened and Endangered Species, 45 sensitive animal species, and 21 sensitive plant species that occur or are found on the forests. None of these species require a primitive wilderness environment to survive. However, some (Mexican gray wolf, for example) would benefit from reduced disturbance and human encounters.

**Factor 5** - Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

**Medium**

There is little opportunity for management to increase the capacity of Wilderness areas on the ASNFs. Both Mount Baldy and Escudilla Wilderness areas are heavily used, are less than 10,000 acres, are easily accessed by motor vehicles, and have limited trail systems. Encounters with other wilderness visitors in both areas are high. No management changes have been identified for Bear Wallow Wilderness because the use is much lighter and spread throughout the area and there are more trails.

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use for a forest from NVUM was divided by the number of wilderness areas the forest is lead for, to get an average amount of use per wilderness.

**Factor 6** - An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Edwin A. Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, subregional, and regional needs.

**Medium**

This potential wilderness contains two underrepresented ecosystems: 400 acres of Great Basin grassland and 2,039 acres of piñon-juniper woodland.

**OVERALL NEED**

**Low to Medium**, contains two underrepresented ecosystems

*Effects of Recommendations*

	RECOMMENDATION	
	WILDERNESS	NONWILDERNESS
MANAGEMENT DIRECTION	Manage to protect and maintain wilderness characteristics	Manage for multiple use, ecosystem restoration, and social and economic values
Wilderness Characteristics	EFFECTS ON WILDERNESS RESOURCES AND VALUES	
Natural Undeveloped Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation Special Features and Values	Wilderness characteristics would be maintained and protected. The area would remain natural and generally undeveloped. Outstanding opportunities for solitude or primitive and unconfined recreation would continue to be present. Any existing special features and values would be protected.	Wilderness characteristics would be diminished by management activities. Obvious signs of activities would cause the area to be removed from potential wilderness.
Resource/Use	EFFECTS ON OTHER RESOURCES AND USES	
Soils	Long-term soil productivity may increase because the acreage is generally not available for management activities. Shorter-term risks to soil productivity may be increased until fire-adapted ecosystems (especially ponderosa pine) are restored. Soil erosion risk would be reduced.	The natural functions of watersheds could be affected by activities. The threat of soil erosion from associated motorized uses and land-disturbing activities would increase with the degree of use. However, mitigation would be required. Compaction from recreation uses in popular areas would likely continue. Treatments may reduce soil loss by reducing the risk of uncharacteristic wildfire.

RECOMMENDATION		
	WILDERNESS	NONWILDERNESS
Water Quality and Quantity	The natural functions of watershed systems would be maintained. The risk of human-caused alterations, other than fire, affecting the watershed condition would be primarily limited to localized recreation activities. There could be short-term risks to watersheds until fire-adapted ecosystems (especially ponderosa pine) are restored. Water quality would more likely be affected by management outside of wilderness.	Water quality could be affected by management activities. However, mitigation would be required to reduce effects to water quality. Management activities could be conducted to increase water yield. Treatments may reduce sedimentation by reducing the risk of uncharacteristic wildfire.
Air Quality	There would be no direct effects to air quality specifically from wilderness designation. Wilderness designation would not preclude the use of prescribed fire or wildland fire for resource benefit, which may result in short-term air quality impacts.	There may be some short-term direct effects to air quality from fugitive dust from product removal and smoke from slash disposal. Prescribed fire, wildland fire for resource benefit, and wildland fire could result in short-term air quality degradation.
Wildlife Habitat	Wilderness designation would provide greater protection for wildlife and wildlife habitat. Wildlife would not be harassed by motorized uses and habitat fragmentation would be minimized. Repair and replacement of existing wildlife improvements may be allowed, but new improvements and habitat enhancements would be rare and would be authorized only to protect and improve management of the wilderness resource.	Vegetation treatments may result in a greater mosaic of habitat types and associated species diversity. Opportunities to restore and/or manipulate habitat would be available. There could be some wildlife harassment from motorized use. Fragmentation and loss of habitat from road construction may occur with increased activities.
Aquatic Restoration	Natural processes would primarily affect aquatic species and their habitat. Motorized and mechanized travel and many management activities would not be allowed. Natural events and climatic variation would influence sedimentation, riparian vegetation, and nutrient cycles. Opportunities to do riparian area restoration may be precluded.	Natural processes that affect aquatic habitats would be interrupted to a degree commensurate with activities. Motorized uses, road construction, and other land-disturbing activities may increase sedimentation and potentially adversely affect riparian habitat and nutrient cycles. However, the use of BMPs would mitigate most effects.

RECOMMENDATION		
	WILDERNESS	NONWILDERNESS
Vegetation	Natural ecological succession would be allowed to continue and, over time, restore ecological conditions. Levels of insect infestation and disease could reach endemic levels as ecological systems move toward their historic ranges of variability. Dispersal of non-native plants would generally be limited to trail systems and river corridors. Plant diversity would be slow to change, but would move towards a dominance of mature trees and late successional habitats.	Natural ecological succession could be interrupted by activities associated with other resource management objectives. Incidents of insects and disease would still occur, but would be more aggressively prevented or managed through vegetation treatment practices. The ability to detect and treat infestations would be greater than in wilderness and thus infestations could be prevented or contained earlier. Plant diversity would depend on the management objectives for the area.
Insects and Disease	Forest stands would be more likely to be over-mature and provide areas suitable for insect and disease outbreaks. Insect or disease control would not be permitted unless necessary to prevent unacceptable damage to resources on adjacent lands or unnatural loss to the wilderness resource from exotic pests. When necessary, control measures would have the least adverse effect on wilderness.	Response to insect and disease outbreaks would be more direct and rapid. A range of control and treatment options would allow more flexibility in containing outbreaks.
Non-Native Species	Non-native plants may be treated by grubbing or with chemicals when they threaten lands outside wilderness or when they are spreading within the wilderness, provided there are no serious adverse impacts on wilderness values.	All options to address non-native plants would be available, including no treatment, hand pulling, herbicides, and biological control. Motorized and mechanized equipment can be used.

RECOMMENDATION		
	WILDERNESS	NONWILDERNESS
Recreation	Recreation use is managed to minimize the evidence of human use and provide outstanding opportunities for solitude and primitive recreation. Only primitive, non-mechanized access and recreation activities are permitted. Only those facilities required for the safety of users and protection of wilderness resources are provided. The use of mechanized tools for trail construction and maintenance would be restricted. In many cases, wilderness designation has elevated an area's visibility to the public, increasing its popularity and recreation use. Increased use can result in increased damage to trails and other resources, as well as reduced opportunities for solitude and other wilderness values.	Activities can reduce the primitive or semi-primitive recreational character through altered recreation settings, experiences, and access. The sights and sounds of human presence are usually increased by activities. Recreationists seeking a primitive or semi-primitive experience would choose not to visit such an area. Activities may also provide greater recreational access and more motorized and mechanized recreation experiences would be available.
Visual Quality	Visual quality would be protected because ground-disturbing activities would be extremely limited. The Scenic Integrity Objective would be Very High. The long-term scenic characteristics would be representative of how the landscape would appear if relatively unaffected by human activity.	The Scenic Integrity Objective would range from Low to High. There would be a greater potential for landscapes to show obvious signs of human activities. Scenic Integrity Objectives would constrain or modify activities to mitigate adverse effects to scenic resources, especially in areas seen from major recreation facilities and Scenic Byways.
Heritage Resources	Heritage resources are already protected by law. Exclusion of ground-disturbing activities lessens threats to known and unidentified heritage resources. Fewer sites or resources may be identified.	Heritage resources are already protected by law. Project-level inventories associated with ground disturbing and other activities may increase identification of previously unknown sites or resources. Mitigation measures would be applied at the project level.
Special Use Authorizations	Structures and other developments would be limited to those actually needed for management, protection, and use of the wilderness for the purposes for which the wilderness was established.	Special use authorizations would be allowed, subject to suitability.

RECOMMENDATION		
	WILDERNESS	NONWILDERNESS
Range	Grazing allotments and developments would be managed under the Congressional Grazing Guidelines and allotment management plans.	Grazing allotments would continue to be managed under current allotment management plans, laws, policies, and regulations.
Forest Products	Wilderness would be removed from the suitable timber base. No timber sales or firewood cutting would be permitted. Only firewood collection incidental to recreation would be allowed.	Timber production may be allowed, subject to suitability, law, policy, and regulation. Forest products, commercial and non-commercial, could be a byproduct of the restoration treatments.
Minerals	The area would be withdrawn from further mineral entry and leasing. Mineral development is possible in areas with valid existing rights. Consistent with the valid existing rights, operating plans would incorporate reasonable terms and conditions for the protection of the wilderness character, and provide for restoration as near as practicable of the disturbed lands promptly upon abandonment of operations.	These lands would be open to oil, gas, and mineral development except where specifically withdrawn or restricted for other purposes. Although a full range of activities and methods may be allowed and employed, developments and activities would be mitigated to reduce adverse impacts to other resources.
Special Designations	Wilderness designation would increase the number and diversity of areas within the Southwestern Region and the National Wilderness Preservation System. There would be no effects to other special designations - the most restrictive management would apply.	The opportunity to recommend additional wilderness within the Southwestern Region would be foregone at this time. There would be no effects to other special designations. Any restrictions associated with other special designations could affect management activities.
Fire	Wilderness designation does not preclude the use of prescribed fire or wildland fire for resource benefit. Mechanical treatments and timber harvest would not be allowed, which may increase the risk of uncharacteristic wildfires. Suppression actions would be guided by Minimum Impact Suppression Tactics (MIST).	The risk of uncharacteristic wildfires would be reduced because of the opportunities to treat mechanically and harvest timber. The full range of suppression tactics and management approaches would be available for use.
<b>SOCIAL AND ECONOMIC EFFECTS</b>		
	Local population numbers, income, or employment would generally not be affected.	Local population numbers, income, or employment would not be affected unless major mineral activity occurs.

RECOMMENDATION		
	WILDERNESS	NONWILDERNESS
	Costs related to the maintenance of range facilities could increase because of limitations on methods.	There would be no increased costs associated with the construction and maintenance of range facilities.
	Timber production revenues would be foregone, if any commercial stands are suitable and harvestable.	Revenues and jobs from timber production could increase, if any commercial stands are suitable and harvestable.
	Local lifestyles would not be affected unless major mineral activity occurs.	Local lifestyles would not be affected unless major mineral activity occurs.
	Revenues associated with mineral development would be foregone, because the lands would be withdrawn from mineral entry.	Revenues could be generated, if minerals are found and developed.
	Wilderness is recognized as contributing to healthy economies and healthy lifestyles. Direct benefits are derived from primitive recreation and as a "quality-of-life" factor to attract new businesses and residents. The wilderness characteristics/values that attract visitors to the area would be maintained.	Management activities would contribute to local lifestyles and healthy economies. The wilderness characteristics/values that attract visitors to wilderness would be affected.
	Ecosystem services (natural processes such as the air and water purification functions of undisturbed lands) would be protected and maintained.	Ecosystem services could be decreased with increased activities.
	Opportunities for primitive recreation and public awareness of the values associated with wilderness, including spiritual and natural qualities, would be increased.	Opportunities for primitive recreation would decrease. Opportunities for semi-primitive and more developed recreation could increase.

## *Appendix A: Wilderness Evaluation Process*

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The following is summarized from Forest Service Handbook 1909.12, Chapter 70. This process is used by the Forest Service to determine whether there are areas that could be recommended for wilderness designation by Congress. The process includes three steps: an inventory of potential wilderness areas, an evaluation of the potential wilderness areas, and a determination if a recommendation will be pursued for any potential wilderness areas.

### **Inventory of Potential Wilderness Areas**

The first step in the evaluation of potential wilderness is to identify and inventory all areas within National Forest System Lands that satisfy the definition of wilderness found in the 1964 Wilderness Act.

Areas identified through this process are called potential wilderness areas. This inventory of potential wilderness is not a land designation. It is completed with the express purpose of identifying all lands that meet the criteria for being evaluated for wilderness suitability and possible recommendation to Congress for wilderness designation.

The inventory of areas relies on local knowledge and judgment regarding unique, site-specific conditions of each area being considered. The boundaries of areas for the potential wilderness inventory should facilitate easy on-the-ground identification.

### **Inventory Criteria**

Areas qualify for inclusion in the potential wilderness inventory if they meet the statutory definition of wilderness and meet either criteria 1 and 3 or criteria 2 and 3 below.

1. Areas contain 5,000 acres or more.
2. Areas contain less than 5,000 acres, but meet one or more of the following criteria:
  - a. Can be preserved due to physical terrain and natural conditions.
  - b. Self-contained ecosystems, such as an island, that can be effectively managed as a separate unit of the National Wilderness Preservation System.
  - c. Contiguous to existing wilderness, primitive areas, Administration-endorsed wilderness, or potential wilderness in other Federal ownership, regardless of their size.
3. Areas do not contain forest roads (36 CFR 212.1) or other permanently authorized roads, except as permitted in areas east of the 100<sup>th</sup> meridian (sec. 71.12).

Areas may be included in the potential wilderness inventory even though they include the types of areas or features listed in FSH 1909.12, 71.11.

On the ASNFs, GIS was used to identify those areas that met the inventory criteria. Site-specific information was gathered from Ranger District (District) personnel to provide background information, identify features not shown in GIS, and determine where the Region 3 criteria on roaded areas, fingers, and extrusions should be applied.

### **Evaluation of Potential Wilderness Areas**

An area recommended for wilderness must meet the tests of capability, availability, and need. In addition to the inherent wilderness quality it possesses, an area must provide opportunities and experiences that are dependent upon or enhanced by a wilderness environment. The ability of the Forest Service to manage the area as wilderness is also considered.

## **Capability**

The capability of a potential wilderness is the degree to which an area contains the basic characteristics that make it suitable for wilderness recommendation without regard to its availability for or need as wilderness. The following characteristics are considered in evaluating a potential wilderness area:

1. Natural - an area is substantially free from the effects of modern civilization and generally appears to have been affected primarily by the forces of nature.
2. Undeveloped - the degree to which an area is without permanent improvements or human habitation.
3. Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation - the capability of the area to provide solitude or primitive and unconfined types of recreation. This includes a wide range of experiential opportunities. Solitude is the opportunity to experience isolation from sights, sounds, and the presence of others from developments and evidence of humans.
4. Special Features and Values - an area is capable of providing other values such as those with ecologic, geologic, scientific, educational, scenic, historical, or cultural significance.
5. Manageability - the ability to manage an area as wilderness as required by the Wilderness Act and how boundaries affect manageability of an area.

Responses to the capability questions were drafted at the ASNFs Supervisors Office and reviewed by District personnel. Any changes were incorporated into the capability evaluation.

If an area is found to not be capable of being wilderness (a rating of Low), it is not carried forward into the Availability Evaluation.

## **Availability**

Areas determined to meet wilderness capability requirements are considered potentially available for wilderness designation. The determination of availability is conditioned by the value of and need for the wilderness resource compared to the value of and need for other resources. Other resource potential including current use and potential future use is analyzed for the various resources involved.

Constraints and encumbrances on lands may also govern the availability of lands for wilderness. The degree of Forest Service control over the surface and subsurface of the area is also considered. The Forest Service should have sufficient control to prevent development of incompatible uses that would negatively affect wilderness character and potential.

Responses to the availability questions were drafted by at the ASNFs Supervisors Office and reviewed by District personnel. Any changes were incorporated into the availability evaluation.

## **Need**

The need for an area to be designated as wilderness is determined through an analysis on a regional basis by evaluating such factors as the geographic distribution of areas and representation of landforms and ecosystems to which it contributes to the overall National Wilderness Preservation System. This need is demonstrated through a public involvement process, including public input to the evaluation report.

A set of GIS models, information papers, and analyses were provided by the Southwestern Regional Office. This information was synthesized at the ASNFs Supervisors Office and reviewed by District personnel. Any changes were incorporated into the need evaluation.

### **Documentation of Potential Wilderness Areas**

Draft wilderness evaluation reports were developed for each potential wilderness; each report includes summaries of the capability, availability, and need assessments. The draft reports were made available for public comment in June 2009. Public comments were incorporated and information on the potential effects of wilderness and nonwilderness recommendations was added to the final evaluation reports. The effects of nonwilderness recommendation may be split to reflect nonwilderness, lands with roadless character, or primitive area categories.

## Appendix B: Capability Evaluation and Ratings

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### Capability Characteristics

#### Natural

1. Presence of non-native species.

High - Non-native species are not evident.

Medium - Non-native species are evident in isolated spots.

Low - Non-native species are common or scattered throughout the area.

Rating: **High** - No non-native plants have been found adjacent to or within the potential wilderness. Non-native species may be present, but no surveys have specifically been conducted in the area.

2. Rivers within the potential wilderness are in free-flowing condition.

High - Rivers within the area are considered free-flowing.

Medium - Some rivers have impoundments or other issues that affect their free-flowing character.

Low - Rivers within the potential wilderness are seasonal or heavily impacted by impoundments.

Rating: **High** - Perennial streams include Hulsey and Watts Creek. All other drainages are intermittent or ephemeral. There are no known impoundments on the drainages.

3. Quality of night-sky as affected by light pollution.

High - The night sky is clear with little to no interference from light pollution.

Medium - Some stars are visible and there is moderate degradation from light pollution.

Low - Few stars are visible at night and the presence of light pollution is evident.

Rating: **High** - Nutrioso, a small community, is adjacent to the potential wilderness. The lights from this community and outlying residences do not affect the night sky.

4. Presence of pollutants that degrade water.

High - All rivers/streams have been sampled and there are no water quality issues.

Medium - There are no known water quality issues within the area but not all rivers/streams have been sampled.

Low - There are rivers within the area that are listed on the State Impaired Waters List (303d).

Rating: **Medium** - None of the streams have been sampled. There are no known water quality problems.

5. Area provides elements of biological diversity and naturalness, including unique habitats, TES or rare plants and wildlife.

High - Has critical or unique habitats and diverse ecological conditions.

Medium - Has a mix of habitats and ecological conditions.

Low - Has limited ecological conditions and habitats.

**Rating:** **High** - The area is essential natural and has a high degree of biological diversity. The potential wilderness provides habitat for Mexican spotted owl.

6. Area contains a variety of natural resources, including a variety of tree species and structures, intermingled grasslands or meadows, numerous recreation opportunities, diversity of wildlife habitats, and wildlife, etc.

High - Diverse amount of natural resources.

Medium - Mixed amount of natural resources.

Low - Limited amount of natural resource diversity.

**Rating:** **High** - Diversity of natural vegetation and wildlife species are high. Vegetation types include ponderosa pine forest, piñon-juniper woodland, dry mixed conifer forest, wet mixed conifer forest, Great Basin grassland, and montane/subalpine grassland. The potential wilderness also contains several areas of old ponderosa pine and other conifers. Hiking, hunting, and wildlife viewing are the main recreation opportunities. Wildlife species and habitat are diverse because the varied topographic, soil, and vegetative conditions within the area combine with perennial streams to provide habitat for numerous wildlife species.

### **Undeveloped**

7. Area has current or past evidence of human activity.

High - Little or no evidence of human activity.

Medium - Unnoticeable or unobjectionable human activity.

Low - Obvious evidence of human activity.

**Rating:** **High** - There is little evidence of human activity within the potential wilderness.

### **Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation**

8. Area provides physically and mentally challenging recreation opportunities that promote adventure and self-reliance.

High - Most of the area provides challenging recreation opportunities.

Medium - Some parts of the area have the potential for challenging recreation opportunities.

Low - Few parts of the area can provide challenging recreation opportunities.

**Rating:** **High** - The area provides challenging recreation opportunities because of the terrain and the lack of developed trails.

9. Opportunity to experience solitude and isolation from human activities while recreating in the area.  
High - Significant feeling of being alone or remote from civilization.  
Medium - Feeling of being alone is possible but signs of civilization are likely.  
Low - Little opportunity of feeling alone.

Rating: **Medium** - It is possible to find solitude in the potential wilderness because of the rugged terrain. However, the signs of civilization are readily apparent from vantage points on the west and north sides of the area.

10. Opportunity to engage in primitive and unconfined recreation such as backpacking, kayaking, hunting, fishing, etc.  
High - There are many opportunities for engaging in primitive recreation.  
Medium - There are some opportunities for engaging in primitive recreation.  
Low - There are few to no opportunities to engage in primitive recreation.

Rating: **Medium** - There are some primitive recreation opportunities, including cross-country hiking, hunting, and viewing wild life and scenery.

### **Special Features and Values**

11. Area contains outstanding or distinct features like rock formations, panoramic views, etc.  
High - Many distinct features or few but exceptional features.  
Medium - Some distinct features.  
Low - One or no distinct features.

Rating: **Medium** - The potential wilderness includes a steep rock face on the north side. There are also panoramic views of the surrounding countryside including the Nutrioso Valley and Escudilla Mountain.

12. Area has potential for scientific research, environmental education, or historic/cultural opportunities.  
High - Good potential for two or more types of these opportunities.  
Medium - Potential for one type of opportunity.  
Low - Little or no potential for this type of opportunity.

Rating: **High** - The area contains outcrops of the Datil formation, which is prone to landslides. This phenomenon could be subject of scientific research or environmental education.

13. Area contains unique or rare species of plants and/or animals.  
High - Area has several unique or rare plants and/or animals.  
Medium - Area has a few unique or rare plants and/or animals.  
Low - Area has no unique or rare plants and/or animals.

Rating: **Medium** - The potential wilderness provides habitat for Mexican spotted owl.

***Overall Capability: High***

**Manageability**

14. Ability to manage the area for wilderness character, including distance and influence from outside activities; opportunity to access the area; and resource conflicts or encumbrances.

High - Isolated from areas of activity; controlled or limited access; no encumbrances or resource conflicts.

Medium - Somewhat isolated from areas of activity; adequate access opportunities; some resource conflicts and/or encumbrances.

Low - Areas of activity are nearby; many access opportunities; many resource conflicts and/or encumbrances.

Rating: **Medium** - Access to the area could be limited by the large amount of private land along the boundary, but public access to the area is available. Some conflicts could occur because of the proximity of private lands. However, terrain would limit any possible encroachments.

15. Motorized use within the area.

Yes - Has motorized vehicle use.

No - Does not have any motorized vehicle use.

Rating: **No** - Terrain and a motor vehicle closure restrict motorized vehicle use.

***Overall Manageability: High***

## Appendix C: Availability Evaluation and Ratings

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### Availability Characteristics

1. Areas that are of high value for water yield or on-site storage where installation and maintenance of improvements may be required.

High - No impoundment needed.

Medium - Minor improvements will have an effect.

Low - Identified impoundment that will have an effect on wild characteristics.

Rating: **High** - The area is of value for water yield. However, no impoundments are needed.

2. Areas needing management for wildlife or aquatic animals that **MIGHT** conflict with wilderness management.

Low - Intense management (motorized equipment: helicopters, chainsaws, broadcast burning) and frequent entries (= or <5 yrs).

Medium - Management requires helicopters but no motorized equipment on the ground and frequency is generally less than 10 years.

High - Low management requirements with no motorized equipment required to meet objectives and infrequent entries.

Rating: **High** - Because of the area soils, sediments are often washed into Nutrioso Creek, habitat for Little Colorado River spinedace.

3. Area needing active aquatic restoration activities.

Low - The majority of watershed needs attention.

Medium - Site-specific improvements needed.

High - Properly functioning with no or little restoration activities needed.

Rating: **High** - No aquatic restoration activities within the potential wilderness have been identified.

4. Area needing active vegetative restoration activities due to specific species survival (such as White Bark Pine restoration) or identifiable fuel reduction activity to reduce the risk of uncharacteristic wildfire or known areas of severe insect infestation that will lead to heavy tree mortality.

Low - The need for vegetation restoration is a higher priority and requires long-term management and mechanized or motorized equipment.

Medium - Areas needing high intensity management activities for a short time period (< or = 5 years). These areas could be available for wilderness after those activities are completed (like fuel reduction activities). Some intense restoration work over small areas could be accomplished without conflicting with wilderness management (species conservation work not requiring motorized equipment).

High - The area needs little vegetative restoration.

Rating: **Low** - Much of the potential wilderness is within the Nutrioso wildland-urban interface (WUI). WUI treatments to reduce fuels include hand-thinning, mechanical treatment, cutting, and prescribed fire.

5. Areas having such unique characteristics or natural phenomena that general public access should be developed to facilitate public use and enjoyment.

High - Does not exist or minimal development will be provided.

Medium - Requires minor development or improvement that does not qualify as a developed recreation site but is a higher development level than is normally found within wilderness.

Low - Has a developed recreation site or features that warrant construction of a developed recreation site.

Rating: **High** - There are no unique characteristics that would require developed public access.

6. Lands committed through contracts, permits or agreements that would be in conflict with wilderness management (some minor permitted uses may be still be allowed).

High - Current authorizations do not conflict with potential wilderness.

Medium - Current authorization(s) but can be terminated or there is long-term authorization or commitment but does not require motorized equipment for access or maintenance.

Low - Currently exists, must be retained (long-term commitments), and requires motorized equipment for access or maintenance.

Rating: **Low** - In the northwestern-most part of the area, there is a slope that contributes to regular mudflows across U. S. Highways 180/191. The area requires motorized equipment to divert the drainage away from the highway. Other current authorizations, primarily grazing permits, do not conflict with potential wilderness.

7. Forest Service has sufficient control to prevent development of irresolvable, incompatible use that would lessen wilderness character and potential.

High - No inholdings and no non-federal lands adjacent to potential wilderness.

Medium - No inholdings but adjacent lands may be private.

Low - Inholdings exist.

Rating: **Medium** - Most of the west and north boundaries adjoin private lands.

Mineral potential was evaluated using the *R3 Plan Revision Guidance: Minerals Information Related to the Evaluation of Potential Wilderness and Research Natural Areas*. This guidance uses several databases to consider the presence and status of mining claims, mineral leases, and mineral districts. Based on the information contained in the above databases, and as described in the Background section of this evaluation, there is low mineral potential for this potential wilderness.

Rating: **High**

**Overall Availability: Medium**

## Appendix D: Need Evaluation

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*Factor 1 - The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers.*

There are 17 Wilderness areas and 1 primitive area<sup>5</sup> within 100 miles of PW-03-01-063. The total acreage of these areas is 1,326,284 acres. The Forest Service (FS) manages 12 of these areas, the Bureau of Land Management (BLM) manages 5, and the National Park Service (NPS) manages 1.

Potential Wilderness	Wilderness Area within 100 Miles	Wilderness Acreage	Distance from Potential Wilderness	Managing Agency
PW-03-01-063	North Santa Teresa	5,733	90	BLM
PW-03-01-063	Santa Teresa	28,769	94	FS
PW-03-01-063	Needle's Eye	5,166	98	BLM
PW-03-01-063	Fishhooks	11,400	69	BLM
PW-03-01-063	Gila	558,549	66	FS
PW-03-01-063	Aldo Leopold	206,700	90	FS
PW-03-01-063	Blue Range Primitive Area	179,819	28	FS
PW-03-01-063	Blue Range	35,815	30	FS
PW-03-01-063	Bear Wallow	11,113	29	FS
PW-03-01-063	Apache Kid	44,835	100	FS
PW-03-01-063	Salt River Canyon	32,035	95	FS
PW-03-01-063	Sierra Ancha	18,198	99	FS
PW-03-01-063	Withington	18,973	99	FS
PW-03-01-063	Mount Baldy	7,627	21	FS
PW-03-01-063	Escudilla	5,210	3	FS
PW-03-01-063	Cebolla	66,445	89	BLM
PW-03-01-063	West Malpais	37,839	85	BLM
PW-03-01-063	Petrified Forest	52,058	71	NPS
	TOTAL	1,326,284		

There are no population centers within 100 miles of this potential wilderness.

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<sup>5</sup> The Blue Range Primitive Area is the last remaining such area in the United States. It is managed as wilderness in accordance with Forest Service Manual 2320.3(11).

*Factor 2 - Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation.*

#### Item 1

Each Federal agency that manages wilderness collects and reports visitor use information differently. The Forest Service reports wilderness use by each national forest, not each wilderness. The National Park Service collects backcountry visitor use only for overnight stays. The Bureau of Land Management reports use for each wilderness.

According to the 2001 National Visitor Use Monitoring study, approximately two percent of the Apache-Sitgreaves National Forests (ASNFs) users visited the three wilderness areas on the forest. This figure is similar to other non-urban forests in the Southwestern Region. More urban forests (Cibola and Coronado) reported approximately 25 percent of their users visited wilderness areas.

Most of the wilderness use on the ASNFs is concentrated in the two smaller wilderness areas, Mount Baldy and Escudilla. These areas are each less than 10,000 acres, are easily accessible by motor vehicles, and have limited trail systems. Visitor use in Mount Baldy is considered high with use concentrated on two of the three trails. Visitor use in Escudilla is considered moderate to high with use concentrated on one trail. Encounters with other wilderness visitors in both areas are high. Use in Bear Wallow Wilderness is lighter because it is less accessible and is slightly larger. There are no accurate use figures for the Blue Range Primitive Area, which is managed as wilderness.

Approximately 70 percent of the Arizona visitors to the ASNFs are from the Phoenix and Tucson metropolitan areas. Populations in these areas have increased much faster than in the more rural areas. Visitors from the four counties where the ASNFs are located account for another 20 percent. In general, there has been no to moderate population growth in these counties. Recently, there have been major highway improvements between Phoenix and the ASNFs.

It can be assumed that with increasing populations and improved transportation features, wilderness use would continue to increase in those wilderness areas on the ASNFs that are easily accessible to the recreating public.

#### Item 2

The ASNFs include three designated wilderness areas, the nation's sole remaining primitive area, and 322,000 acres of inventoried roadless areas. Users of designated wilderness areas fit a profile similar to other forests' users: 1) they are predominantly male (81 percent), 2) white (91 percent) or Hispanic/Latino (6 percent), 3) between the ages of 31 and 60, and 4) often travel from the Phoenix and Tucson areas. NVUM data suggest that roughly 45,000 wilderness visits were made during fiscal year 2001 although the error rate on this data is very high ( $\pm 56$  percent) because of the relatively low number of visitors interviewed (Kocis et al. 2002). There are no use figures specific to the Blue Range Primitive Area or the inventoried roadless areas.

### **Regional Demand for Wilderness**

1. Increased demand for additional wilderness in both Arizona and New Mexico should be anticipated based on population growth during the period of 1990 to 2000, which exceeded the national growth rate.

2. Assuming Arizona continues to grow at a rate greatly outpacing the national rate (predicted to be about 3 times the national rate), the number of visits to existing wilderness will continue to increase, and Arizona in particular could benefit from additional wilderness.
3. Demographics related to visitor race and ethnicity will affect the rate of increase in wilderness visits in the Southwestern Region. Even though the faster growing racial/ethnic groups have relatively low participation rates, wilderness use is still expected to increase because of the overall population growth rate.
4. Public demand increases with proximity to six population centers: Flagstaff, Phoenix, Tucson, Santa Fe, Taos, and Albuquerque. Consider wilderness recommendations within 100 miles of those cities to provide for that demand.
5. Some additional public demand for wilderness in the Southwestern Region will occur from the influx of people moving to communities in the vicinity of the National Forests.
6. In terms of geographic distribution of wilderness, the Southwestern Region is under-represented with five percent fewer wilderness acres as compared with the representation nationally. Additionally, all quadrants in Arizona and New Mexico are under-represented with the exception of the southwest and southeast quadrants in Arizona. The most under-represented quadrants are southeast and northwest New Mexico and northeast Arizona, which are at 6 percent or less in the number of wilderness acres (compared with total federal wilderness acres).
7. Desirability of the scenic mountainous settings available in the rural communities within and adjacent to national forests in the Southwestern Region will attract new retirees and others, further contributing to a growth in wilderness visitation.

*Factor 3 - The extent to which nonwilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences.*

There are adequate nonwilderness lands on or near the ASNFs that could provide unconfined outdoor recreation experiences. There are no population centers within 100 miles of this potential wilderness.

*Factor 4 - The need to provide a refuge for those species that have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.*

The ASNFs have identified 11 Threatened and Endangered Species, 45 sensitive animal species, and 21 sensitive plant species that occur or are found on the forests. None of these species require a primitive wilderness environment to survive. However, some (Mexican gray wolf, for example) would benefit from reduced disturbance and human encounters.

*Factor 5 - Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.*

There are three Wilderness areas on the ASNFs, all on the Apache side. Two, Mount Baldy and Escudilla, are less than 10,000 acres, are easily accessible by motor vehicles, and have limited trail systems. Visitor use in Mount Baldy is considered high with use concentrated on two of the three trails. Visitor use in Escudilla is considered moderate to high with use concentrated on one trail. Encounters with other wilderness visitors in both areas are high. For these two areas there are limited management opportunities to accommodate additional use. The third wilderness, Bear Wallow, is slightly larger, is more difficult to access, and has five trails. Visitor use is considered low. Here, additional demand could be accommodated without management changes.

*Factor 6 - An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Edwin A. Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, subregional, and regional needs.*

The Southwestern Regional Office used the process outlined in Loomis and Echohawk (1999)<sup>6</sup> to determine the underrepresented landforms and ecosystem types in Wilderness within Region 3.

The following landforms within the White Mountains-San Francisco Peaks-Mogollon Rim ecoregion section (where the ASNFs are located) are underrepresented in Wilderness in the region: Burro Mountains Oak-Juniper Woodland, Coconino Plateau Woodland, and San Francisco Peaks Coniferous Forest. Only Burro Mountain Oak-Juniper Woodland and Coconino Plateau Woodland are found on the ASNFs.

The following ecosystem types are underrepresented in Wilderness in the region: Desert Communities, Great Basin/Colorado Plateau Grassland, Great Plains Grassland, Piñon-Juniper Woodland, Sagebrush Shrubland, and Semi-desert Grassland. Only Great Basin Grassland, Piñon-Juniper Woodland, and Semi-desert Grassland are found on the ASNFs.

This potential wilderness contains two underrepresented ecosystems: 400 acres of Great Basin Grassland and 2,039 acres of Piñon-Juniper Woodland.

**Overall Need: Low**, but contains two underrepresented ecosystems

#### UNDERREPRESENTED LANDFORMS

Potential Wilderness	Name	Acreage	Acres of Burro Mountains Oak-Juniper Woodland	Acres of Coconino Plateau Woodland
PW-03-01-001	Leonard Canyon	22,405		7,171
PW-03-01-003	West Chevelon Canyon	9,493		3,689
PW-03-01-011	Black Canyon	4,913		4,911
PW-03-01-053	Cold Spring Mountain	17,541	1,878	
PW-03-01-054	Hells Hole	15,524	15,439	
PW-03-01-056	Chevelon Canyon North	6,673		6,612
PW-03-01-057	Coal Creek	5,698	370	
PW-03-01-058	Big Lue Mountains	5,222	4,932	

<sup>6</sup> Loomis, John and Echohawk, J. Chris. 1999. Using GIS to identify under-represented ecosystems in the National Wilderness Preservation System in the USA. *Environmental Conservation*. 26 (1): 53-58.

**UNDERREPRESENTED ECOSYSTEMS**

Potential Wilderness	Name	Acreage	Acres of Great Basin Grassland	Acres of Piñon-Juniper Woodland	Acres of Semi-Desert Grassland
PW-03-01-001	Leonard Canyon	22,405		9,245	
PW-03-01-003	West Chevelon Canyon	9,493		5,273	
PW-03-01-006	Wildcat Canyon South	6,972	5	993	
PW-03-01-011	Black Canyon	4,913	819	3,963	
PW-03-01-040	Mother Hubbard	2,656		922	
PW-03-01-042	Nolan	7,841		333	
PW-03-01-049	Hot Air/Salt House	76,127			5,743
PW-03-01-050	Sheep Wash	7,965			1,259
PW-03-01-051	Painted Bluffs	44,106			6,896
PW-03-01-052	West Blue/San Francisco	160,013			33,081
PW-03-01-053	Cold Spring Mountain	17,541			4,790
PW-03-01-054	Hells Hole	15,524			4,856
PW-03-01-056	Chevelon Canyon North	6,673	2,244	4,372	
PW-03-01-057	Coal Creek	5,698			1,027
PW-03-01-058	Big Lue Mountains	5,222			1,172
PW-03-01-060	Centerfire	15,268		503	
PW-03-01-062	Chevelon Lake	6,585		596	
PW-03-01-063	Milk Creek	5,387	400	2,039	
PW-03-01-067	Sunset	30,365			17,755
PW-03-01-068	BRW Recommendation	166,588		1,604	9,471
PW-03-01-069-1	BRWPR Exclusion 1	2,553			90
PW-03-01-069-2B	BRWPR Exclusion 2b	6,958			3,404
PW-03-01-069-3	BRWPR Exclusion 3	4,665			304
PW-03-01-069-4	BRWPR Exclusion 4	10,404			2,032