NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR

Foundation Document

Saguaro National Park

Arizona

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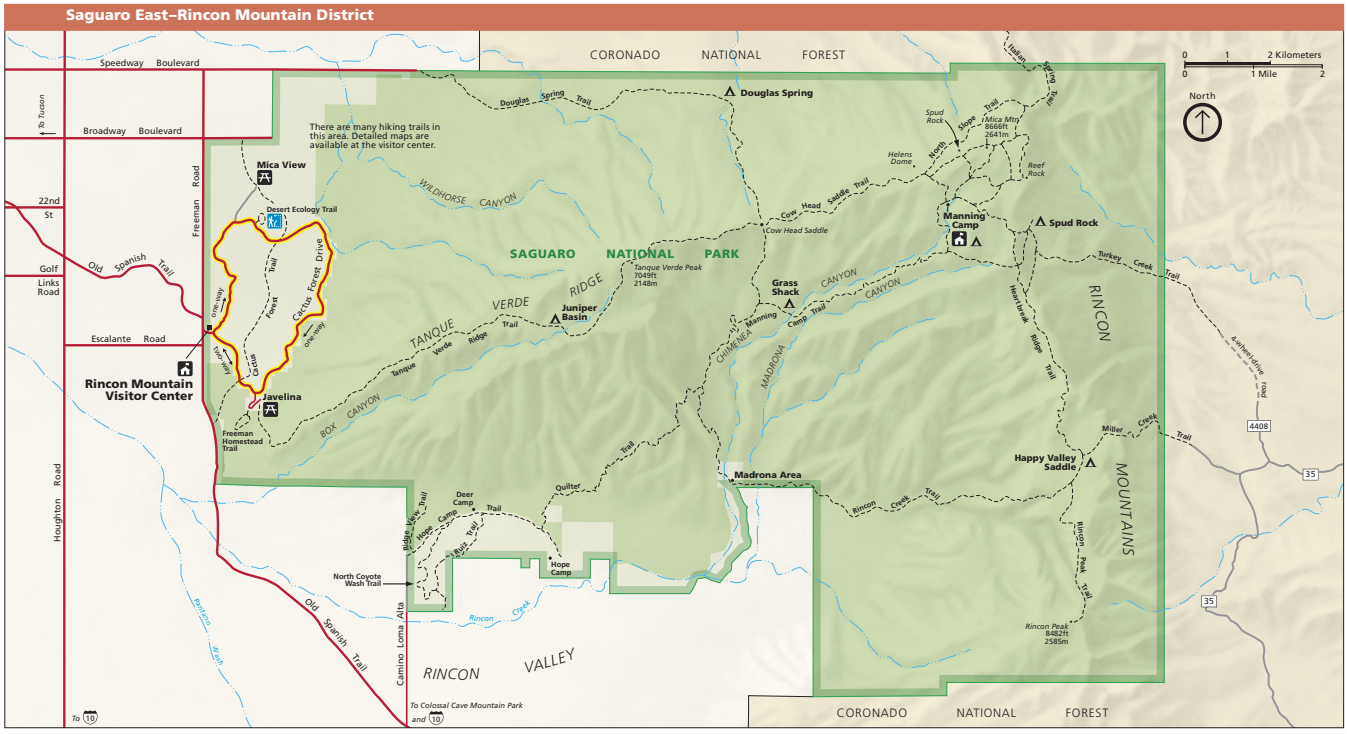
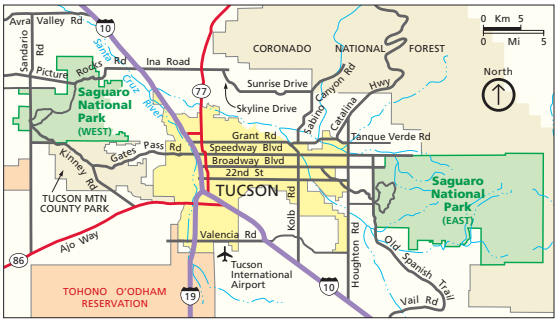
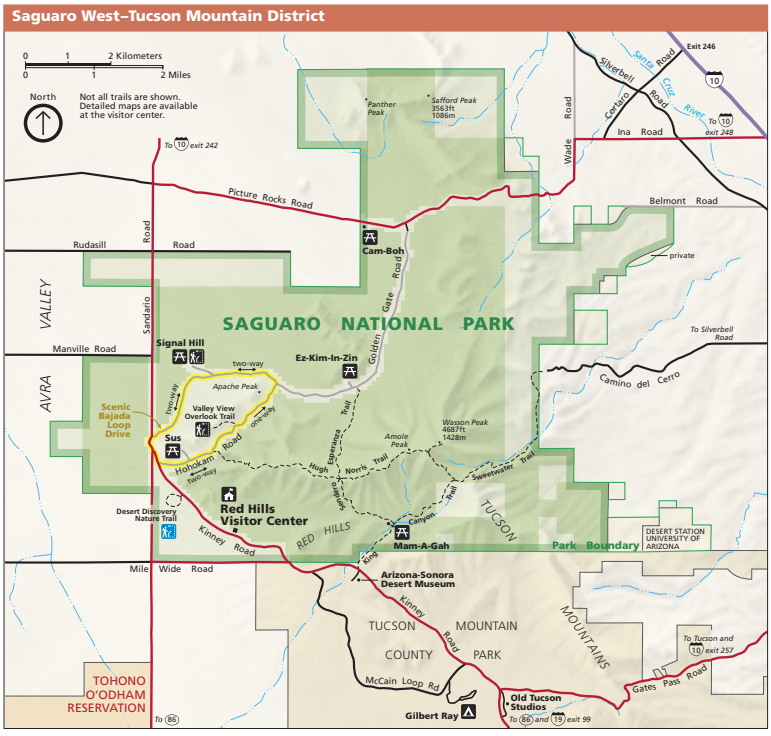
Saguaro National Park







Contents

Mission of the National Park Service

The National Park Service (NPS) preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The National Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

The NPS core values are a framework in which the National Park Service accomplishes its mission. They express the manner in which, both individually and collectively, the National Park Service pursues its mission. The NPS core values are:

- **Shared stewardship:** We share a commitment to resource stewardship with the global preservation community.
- **Excellence:** We strive continually to learn and improve so that we may achieve the highest ideals of public service.
- **Integrity:** We deal honestly and fairly with the public and one another.
- **Tradition:** We are proud of it; we learn from it; we are not bound by it.
- **Respect:** We embrace each other's differences so that we may enrich the well-being of everyone.

The National Park Service is a bureau within the Department of the Interior. While numerous national park system units were created prior to 1916, it was not until August 25, 1916, that President Woodrow Wilson signed the National Park Service Organic Act formally establishing the National Park Service.

The national park system continues to grow and comprises 401 park units covering more than 84 million acres in every state, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These units include, but are not limited to, national parks, monuments, battlefields, military parks, historical parks, historic sites, lakeshores, seashores, recreation areas, scenic rivers and trails, and the White House. The variety and diversity of park units throughout the nation require a strong commitment to resource stewardship and management to ensure both the protection and enjoyment of these resources for future generations.

The arrowhead was authorized as the official National Park Service emblem by the Secretary of the Interior on July 20, 1951. The sequoia tree and bison represent vegetation and wildlife, the mountains and water represent scenic and recreational values, and the arrowhead represents historical and archaeological values.

Introduction

Every unit of the national park system will have a foundational document to provide basic guidance for planning and management decisions—a foundation for planning and management. The core components of a foundation document include a brief description of the park as well as the park's purpose, significance, fundamental resources and values, other important resources and values and interpretive themes. The foundation document also includes special mandates and administrative commitments, an assessment of planning and data needs that identifies planning issues, planning products to be developed, and the associated studies and data required for park planning. Along with the core components, the assessment provides a focus for park planning activities and establishes a baseline from which planning documents are developed.

A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park. The process of developing a foundation document begins with gathering and integrating information about the park. Next, this information is refined and focused to determine what the most important attributes of the park are. The process of preparing a foundation document aids park managers, staff, and the public in identifying and clearly stating in one document the essential information that is necessary for park management to consider when determining future planning efforts, outlining key planning issues, and protecting resources and values that are integral to park purpose and identity.

While not included in this document, a park atlas is also part of a foundation project. The atlas is a series of maps compiled from available geographic information system (GIS) data on natural and cultural resources, visitor use patterns, facilities, and other topics. It serves as a GIS-based support tool for planning and park operations. The atlas is published as a (hard copy) paper product and as geospatial data for use in a web mapping environment. The park atlas for Saguaro National Park can be accessed online at: http://insideparkatlas.nps.gov/.

Part 1: Core Components

The core components of a foundation document include a brief description of the park, park purpose, significance statements, fundamental resources and values, other important resources and values, and interpretive themes. These components are core because they typically do not change over time. Core components are expected to be used in future planning and management efforts.

Brief Description of the Park

Saguaro National Park was established by President Herbert Hoover on March 1, 1933. Originally named Saguaro National Monument, the name was changed to Saguaro National Park by an act of Congress on October 14, 1994 (see appendix A). Wilderness was designated in 1976, and boundary changes have taken place in 1961, 1976, 1991, and 1994. The park has 91,442.42 acres with 3,916.35 acres in nonfederal ownership and 87,526.07 acres in federal ownership. Designated wilderness includes 71,400 acres. Lands have been added to the park since wilderness designation in 1976.

This mountainous park has two districts—the Rincon Mountain District east of Tucson and the Tucson Mountain District west of Tucson. Both districts of the park are in Pima County, Arizona, and are separated by the City of Tucson. The Rincon Mountain District is bordered on the east and portions of the north and south by the Coronado National Forest. Residential developments border sections of the western, southwestern, and northwestern boundaries of this district. The Tucson Mountain District is bordered primarily by Pima County's Tucson Mountain Park on the south and private residential development on the north, east, and west.

In 2010, according to U.S. Census data, Pima County had a population of approximately 980,263, and the City of Tucson's population was 520,116 residents. The city is growing rapidly both in terms of population and land area. Between 1990 and 2000, the area of land within Tucson city limits increased by more than 25% through the annexation of more than 40 square miles of unincorporated Pima County. When the park districts were created, dirt roads connected these distant protected areas to the city. The 30 miles separating the two park districts are now mostly filled in with urban development and the city limits of Tuscon.

The trend has been expanding urbanization outward from the city core, and the city limits have expanded to abut the park boundaries in some locations. The park districts, and adjacent protected areas, have become islands of wildness in a sea of urban development.

Saguaro National Park protects a superb example of the Sonoran Desert ecosystem, featuring exceptional stands of saguaro cacti, important wildlife habitat, critical riparian areas, and associated mountains. The park also protects significant cultural resources, including national register-listed or -eligible archeological resources, places important to American Indian cultural traditions, and historic structures.

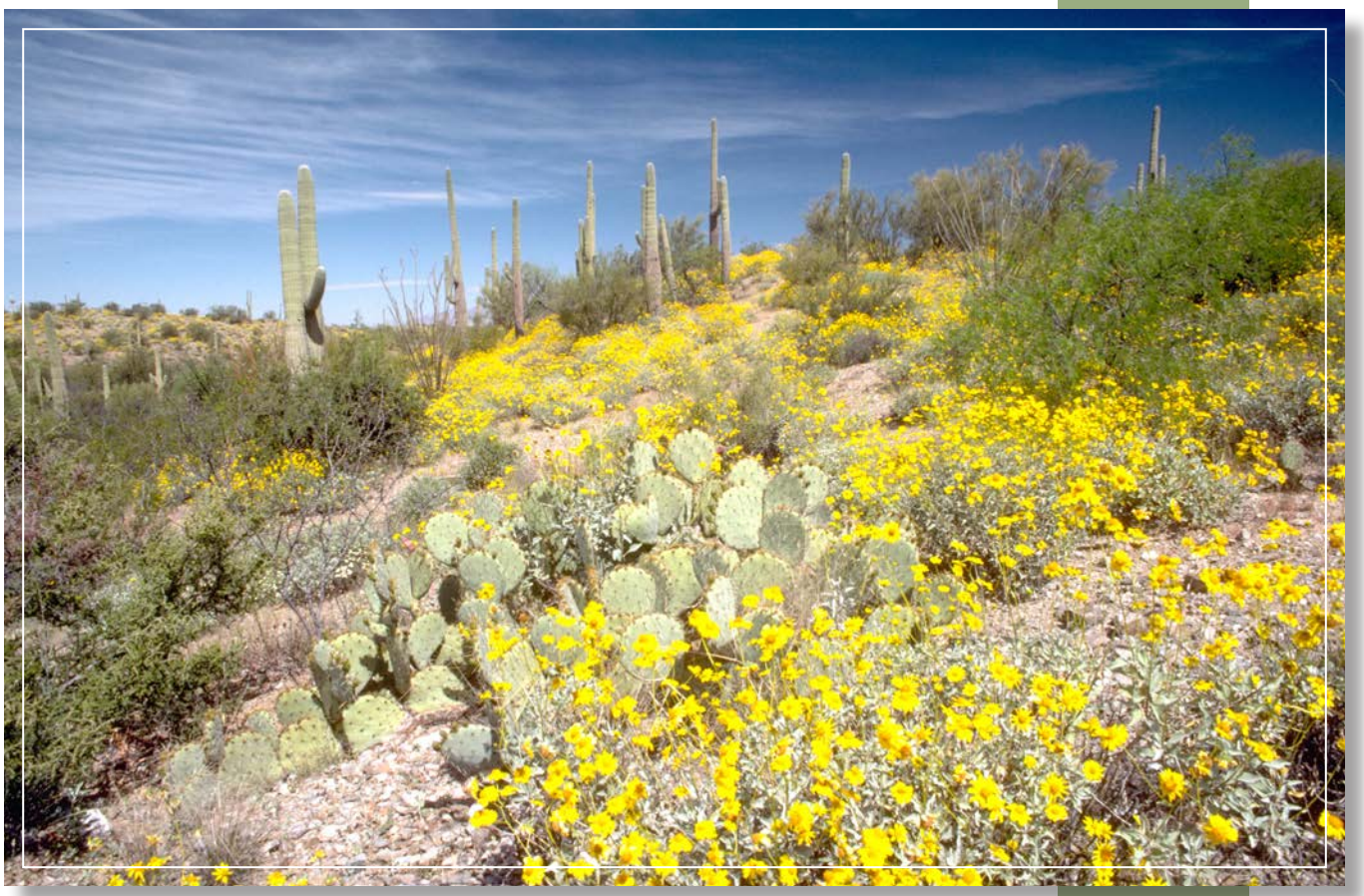
A visit to Saguaro National Park allows visitors to come in close contact with one of the most interesting and unusual collections of desert life in the United States. Visitors of all ages are fascinated and enchanted by the desert giants, saguaro cacti, especially their many interesting and complex interrelationships with other desert life. The park provides exceptional opportunities for visitors to experience solitude and discover nature on their own, to educate people through close interaction with the environment, and to see the outstanding and diverse scenic features of this classic desert landscape.

Annual recreational visitation to the park has averaged around 700,000 in the last decade. The typical peak period of visitation at Saguaro is January through March. The months with the lowest visitation levels are July and August. The heat of the desert makes the summer months less desirable for many of the activities offered at the park. Most of the park's visitors participate in day use activities such as hiking, bicycling, walking, horseback riding, scenic driving, and interpretive and educational events. Due to the proximity of the park to Tucson, a large number of Saguaro's visitors are local to the area and have visited the park many times.

Park Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular park. The purpose statement for Saguaro National Park was drafted through a careful analysis of its enabling legislation and the legislative history that influenced its development. The park was established by Executive Order by President Herbert Hoover on March 1, 1933 (see appendix A). The purpose statement lays the foundation for understanding what is most important about the park.

The purpose of Saguaro National Park is to preserve and protect saguaro cacti; diverse biotic communities (including the Sonoran Desert, associated mountain ecosystems, and Rincon Creek); cultural and archeological features; and scientific, scenic, and wilderness values. The park provides opportunities for research, education, and public enjoyment, and strives to protect its resources from the effects of the encroachment from urbanization and development.



Park Significance

Significance statements express why a park's resources and values are important enough to merit designation as a unit of the national park system. These statements are linked to the purpose of Saguaro National Park, and are supported by data, research, and consensus. Statements of significance describe the distinctive nature of the park and why an area is important within a global, national, regional, and systemwide context. They focus on the most important resources and values that will assist in park planning and management.

The following significance statements have been identified for Saguaro National Park. (Please note that the sequence of the statements do not reflect the level of significance.)

1. The saguaro is the tallest cactus in the United States and is the namesake of Saguaro National Park. Its distinctive form is recognized worldwide as an iconic symbol of the American Southwest. The Sonoran Desert ecosystem, represented within the park, contains superb saguaro stands that are easily accessed by visitors.

2. Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir.

3. Saguaro National Park preserves one of the largest concentrations of rare and distinct aquatic micro-habitats such as *tinajas*, seeps, and springs, in the desert Southwest. These habitats, along with the riparian corridor of Rincon Creek, support rare and special status species such as lowland leopard frog, yellow-billed cuckoo, gray hawk, and southwestern willow flycatcher, as well as plant species uncommon to the desert, including sycamore and ash.

4. Saguaro National Park has a long human history and legacy of scientific interest and research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change.

5. Saguaro National Park's close proximity to a large urban community provides exceptional access to wild places in which visitors can experience wilderness and scenic views.

6. Saguaro National Park contains a rich concentration of cultural resources that tell the history of continuous and diverse human occupation in the Southwest from prehistoric to modern times. The landscape contains evidence of how people adapt, modify, and thrive in an arid environment, and is an important part of the cultural heritage of associated American Indian tribes, Hispanic populations, and other groups.

Fundamental Resources and Values

Fundamental resources and values (FRVs) are those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management processes because they are essential to achieving the purpose of the park and maintaining its significance. Fundamental resources and values are closely related to a park's legislative purpose and are more specific than significance statements.

Fundamental resources and values help focus planning and management efforts on what is truly significant about the park. One of the most important responsibilities of NPS managers is to ensure the conservation and public enjoyment of those qualities that are essential (fundamental) to achieving the purpose of the park and maintaining its significance. If fundamental resources and values are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

The following fundamental resources and values have been identified for Saguaro National Park:

- **Saguaro Cacti:** Saguaro National Park is home to the tallest cactus in the United States. The giant saguaro is an iconic symbol of the American west. These majestic plants, found only in a small portion of the United States, are protected by Saguaro National Park, to the east and west of the modern city of Tucson. Saguaros can grow up to 60 feet and can live for more than 150 years. There is a long history of traditional use of saguaro cacti by American Indians, which continues in the park to this day.
- **Sonoran Desert and Sky Island Ecosystems Integrity:** The 70,000-square-mile Sky Islands region of southeastern Arizona, southwestern New Mexico, and northwestern Mexico is globally important because of its rich diversity of species and habitats. These mountain "islands," forested ranges separated by vast expanses of desert and grassland plains, are among the most diverse ecosystems in the world. The Rincon Mountains in Saguaro National Park rise out of the Sonoran Desert to over 8,000 feet and host vegetative communities ranging from desert cacti, desert grasslands, oak woodlands, to mixed conifer forests. This broad-ranging biodiversity exists in a relatively small geographical area, creating an extremely rich assemblage of plants and animals. The diversity of the Sonoran Desert and Sky Islands region ecosystems are among the most threatened in North America by land development, climate change, livestock grazing practices, fire suppression, off-road vehicles, and resource extraction.
- **Rincon Creek and Aquatic Habitats:** Rincon Creek originates within the Rincon Mountains, with headwaters, major tributaries, and lower elevation riparian hardwood forests all within the park boundary. Riparian areas of the park are essential habitat for many sensitive plants and animals. *Tinajas* ("little jars" in Spanish) are spring-fed bedrock pools in streams that provide rare desert water during dry months for aquatic wildlife such as leopard frogs and mud turtles, as well as mountain lions, bats, and many other mammals and birds.
- **Cultural Resources:** Saguaro National Park's diverse range of cultural resources document thousands of years of human presence and adaptation to the arid Southwestern environment. Among the park's important cultural resources are prehistoric American Indian sites, 19th and early 20th century homesteads and mining sites, and structures built by the Civilian Conservation Corps in the 1930s. The park provides enduring cultural connections for associated American Indian tribes, Hispanic populations, and other groups. The traditional harvest of saguaro cactus fruit by tribal members of the Tohono O'odham Nation is among the cultural activities carried out in the park.

- **Wilderness Stewardship in an Urban Area:** Saguaro National Park is 78% designated wilderness, which is in close proximity to and is a significant contrast to Tucson's urban development. All six biotic zones in the park are represented in wilderness. The Saguaro Wilderness protects exceptional stands of saguaro cacti, some critical riparian areas, and associated high elevation ecosystems.
- **Urban Area Interface and Regional Identity:** There has been a long history of regional community engagement to create the park and protect park resources. Saguaro National Park's location contiguous to a large urban area provides residents access to outdoor and cultural experiences close to home. The close proximity of urban and wilderness areas provides a variety of recreational and educational experiences as well as the challenges and opportunities of balancing urban communities and wilderness. This interface provides an outstanding opportunity for outreach and partnerships with the local community and promotion of the National Park Service.
- **Clean Air:** Saguaro National Park is designated as a Class I area under the Clean Air Act. Unimpaired, clean air allows people to fully enjoy the park. Clean air protects human health, allows for spectacular views, and supports healthy ecosystems.
- **Living Laboratory:** Outstanding scientific interest influenced the establishment of the monument and has continued to this day. Long-term research datasets allow for unique opportunities to monitor condition of resources over time both in the past and into the future. Continued scientific research within the park bolsters our ability to understand, interpret, and protect park resources.

Other Important Resources and Values

Saguaro National Park contains other resources and values that are not fundamental to the purpose of the park and may be unrelated to its significance, but are important to consider in planning processes. These are referred to as "other important resources and values" (OIRV). These resources and values have been selected because they are important in the operation and management of the park and warrant special consideration in park planning.

The following other important resource and value have been identified for Saguaro National Park:

- **Geologic Resources:** Saguaro National Park contains an outstanding display of the structural characteristics of metamorphic core complexes, a geologic process first described in North America at the park. The park's metamorphic core complex provides one of the most accessible views of their structural characteristics.

Interpretive Themes

Interpretive themes are often described as the key stories or concepts that visitors should understand after visiting a park—they define the most important ideas or concepts communicated to visitors about a park unit. Themes are derived from, and should reflect, park purpose, significance, resources, and values. The set of interpretive themes is complete when it provides the structure necessary for park staff to develop opportunities for visitors to explore and relate to all park significance statements and fundamental and other important resources and values.

Interpretive themes are an organizational tool that reveal and clarify meaning, concepts, contexts, and values represented by park resources. Sound themes are accurate and reflect current scholarship and science. They encourage exploration of the context in which events or natural processes occurred and the effects of those events and processes. Interpretive themes go beyond a mere description of the event or process to foster multiple opportunities to experience and consider the park and its resources. These themes help explain why a park story is relevant to people who may otherwise be unaware of connections they have to an event, time, or place associated with the park.

The following interpretive themes have been identified for Saguaro National Park:

- **Saguaro Cacti:** The saguaro cactus, known worldwide as the symbol of the American West, engages our imagination and scientific curiosity with its majestic size, shape, and age while intriguing us with its similarity to the human silhouette.
- **The Land and the People:** Understanding the impacts and changes created by thousands of years of human interaction with the land has enormous potential for multicultural, historical, and scientific understanding that promotes protection and preservation of cultural and natural resources.
- **Wilderness Stewardship in an Urban Area:** The proximity of Saguaro National Park to metropolitan Tucson provides convenient opportunities for people from diverse backgrounds to enjoy natural areas and designated wilderness and to participate in park stewardship, but increasing demands for recreation coupled with urban encroachment create challenges for management and preservation.
- **Ecosystem Diversity:** The diversity of Saguaro National Park provides opportunities to understand the ecology of the Sonoran Desert, Madrean woodlands, sky islands, and riparian areas, and how they influence the distribution, stability, and other characteristics of biological species and communities.
- **Adaptations and Environmental Change:** The plants and animals of Saguaro National Park have developed a variety of fascinating physical features, physiological adaptations, and special behaviors to adapt and survive in the arid environment of the Sonoran Desert. The park serves as a living laboratory and benchmark allowing us to monitor and measure environmental change, the understanding of which may be critical to present and future generations.
- **Geology:** A variety of complex geological processes created the landforms of the park and the surrounding region and provides opportunities to explore how underlying geology influences the living world, including all of us.

Part 2: Dynamic Components

The dynamic components of a foundation document include special mandates and administrative commitments and an assessment of planning and data needs. These components are dynamic because they will change over time. New special mandates can be established and new administrative commitments made. As conditions and trends of fundamental and other important resources and values change over time, the analysis of planning and data needs will need to be revisited and revised, along with key issues. Therefore, this part of the foundation document will be updated accordingly.

Special Mandates and Administrative Commitments

Many management decisions for a park unit are directed or influenced by special mandates and administrative commitments with other federal agencies, state and local governments, utility companies, partnering organizations, and other entities. Special mandates are requirements specific to a park that must be fulfilled. Mandates can be expressed in enabling legislation, in separate legislation following the establishment of the park, or through a judicial process. They may expand on park purpose or introduce elements unrelated to the purpose of the park. Administrative commitments are, in general, agreements that have been reached through formal, documented processes, often through memorandums of agreement. Examples include easements, rights-of-way, and arrangements for emergency service responses. Special mandates and administrative commitments can support, in many cases, a network of partnerships that help fulfill the objectives of the park and facilitate working relationships with other organizations. They are an essential component of managing and planning for Saguaro National Park.

Special Mandates

- Wilderness designation (P.L. 94-567)
- Class I under the Clean Air Act (P.L. 88-206)

Administrative Commitments

- **Life Estates:** The park contains two life estates or reservations of use and occupancy: a 40-acre parcel in the Rincon Mountain District and a 5-acre parcel in the Tucson Mountain District. Both of these life estates are still in effect.
- **Encumbrances:** A Master Deed Listing shows various encumbrances on lands purchased or transferred from the Bureau of Land Management. These encumbrances include minerals, roads, ditches, and power lines. Most of the encumbrance dates are indefinite.

For more information about the existing administrative commitments for Saguaro National Park, please see appendix B.

Assessment of Planning and Data Needs

Once the core components of part 1 of the foundation document have been identified, it is important to gather and evaluate existing information about the park's fundamental and other important resources and values, and develop a full assessment of the park's planning and data needs. The assessment of planning and data needs section presents planning issues, the planning projects that will address these issues, and the associated information requirements for planning, such as resource inventories and data collection, including GIS data.

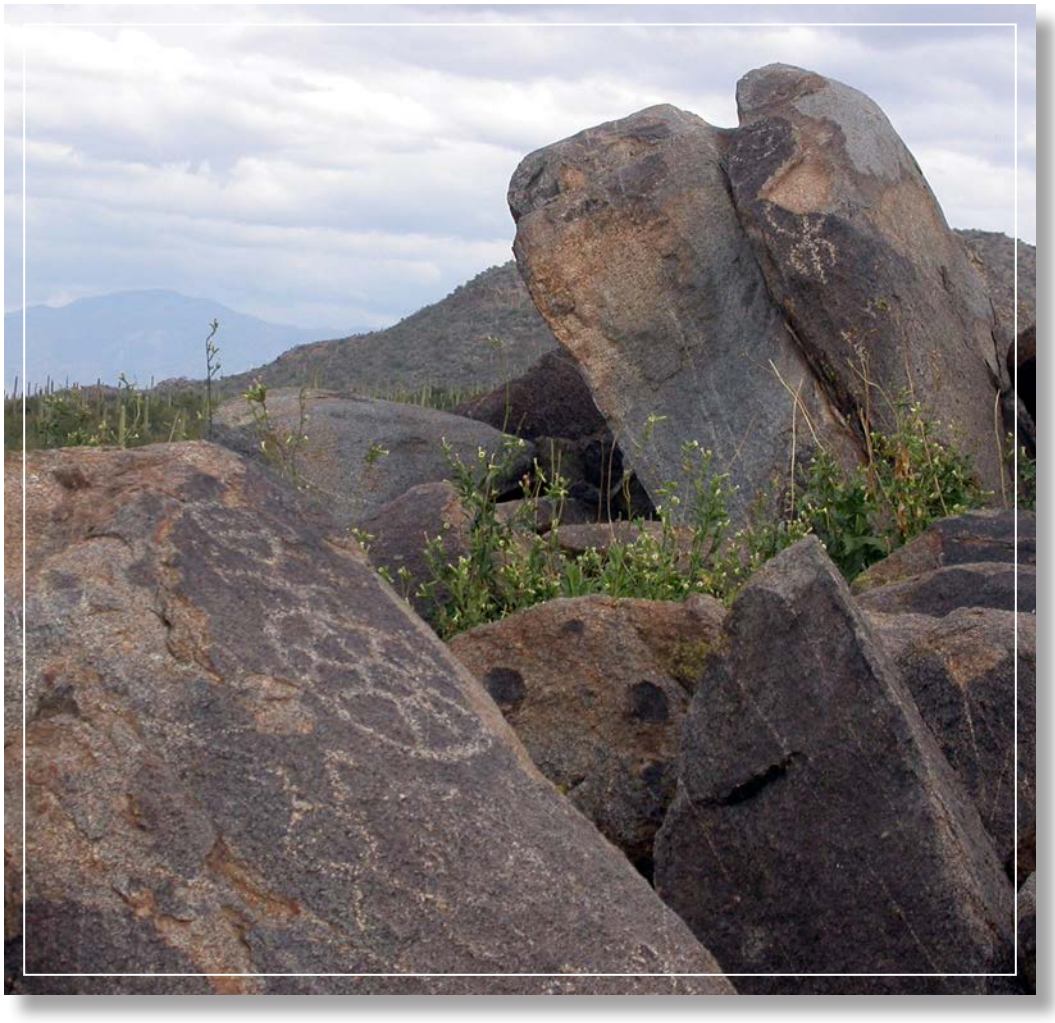
There are three sections in the assessment of planning and data needs:

1. analysis of fundamental and other important resources and values
2. identification of key issues and associated planning and data needs
3. planning and data needs tables

The analysis of fundamental and other important resources and values and identification of key issues leads up to and supports the identification of planning and data collection needs.

Analysis of Fundamental Resources and Values

The fundamental resource or value analysis table includes current conditions, potential threats and opportunities, planning and data needs, and selected laws and NPS policies related to management of the identified resource or value.



Fundamental Resource or Value	Saguaro Cacti
Related Significance Statements	The saguaro is the tallest cactus in the United States and is the namesake of Saguaro National Park. Its distinctive form is recognized worldwide as an iconic symbol of the American Southwest. The Sonoran Desert ecosystem, represented within the park, contains superb saguaro stands that are easily accessed by visitors. Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir.
Current Conditions and Trends	**Conditions** • There are currently an estimated 1.6 million saguaros in the park. • Saguaros are basically healthy with a stable population in both districts of the park. • A microchip program is in place for tracking theft of smaller saguaros. **Trends** • There are fewer older and larger saguaros in the park than in the recent past due to land management practices and extreme freeze events. • "Nurse" plants, needed for recruitment of saguaros, are currently recovering from past land management practices and are on the increase, resulting in more young saguaros. • There is stable recruitment of young saguaros in both districts; past impacts were more extensive in the Rincon Mountain District. • The urban interface is increasing in the surrounding area and therefore causing habitat loss outside of the park. • The impact of climate change on saguaros is unknown. There are diverging models available.

Fundamental Resource or Value	Saguaro Cacti
Threats and Opportunities	**Threats** • The nonnative invasive buffelgrass is currently the biggest threat to saguaro cacti. Buffelgrass outcompetes native vegetation including saguaros. • As a result of the invasion of buffelgrass, the fuel load is increased in continuity and loading. Fires occurring in areas dominated by buffelgrass will kill native vegetation, including saguaros, and allow the further spread of buffelgrass. • Air pollution (nitrogen deposition) promotes the spread of buffelgrass at the expense of native vegetation. • Increased incidents of freezing, associated with climate change, can damage and potentially kill saguaros as they cannot withstand low temperatures for more than a few hours at a time. • In the 21st century, mean annual temperature is projected to increase three to five times the historical 20th century warming, while average annual precipitation is projected to decrease. These changes are predicted to affect various species including saguaros. • Vandalism and poaching of saguaros occurs within the park. • Livestock trespassing damages young saguaro cacti and other plants that support their growth, although this threat may not be as extensive as once thought. **Opportunities** • Maintain fencing to prevent livestock from entering the park. • Collaborate with the Southern Arizona Bufflegrass Coordination Center in conducting research to determine and implement more cost effective and efficient methods to control buffelgrass. • Restore saguaro habitat after invasive species treatment. • Work with adjacent land agencies and partners to control buffelgrass and other invasive species. Education efforts would help neighbors and partners to identify and remove buffelgrass plants outside of the park. • Increase education, conduct proactive patrols, and engage in outreach to reduce poaching of and vandalism to saguaros. • Reduce Saguaro National Park's carbon footprint to help minimize climate change, which could have a long-term impact on saguaro and nursery plants that support recruitment of saguaro. • Work with partners such as the University of Arizona, the National Phenology Network, desert southwest conservation groups, and neighboring land management agencies to share research and enhance efforts to protect saguaros and their habitat. • Engage external agencies, groups, and policy makers to influence external land management practices and pollution control strategies that impact park resources critical to support saguaro cacti. • Share fire management planning and actions for elevations below 4,500 feet with neighboring land management agencies to ensure impacts on saguaro are avoided or minimized.
Data and/or GIS Needs	• Continue research to determine the most efficient and cost- effective methods for the treatment of buffelgrass. • 10 year census of saguaros, funding will be needed for next census (occurring in 2020). • Early detection system for buffelgrass, including spatial data collection. • Ecological interactions of invasive species and nitrogen deposition and their impacts on the saguaros and associated ecosystems. • Fuel model for buffelgrass. • Collect daily weather data.

Fundamental Resource or Value	Saguaro Cacti
Planning Needs	• Complete the post-disturbance restoration environmental assessment (2013). • Proactive monitoring and protection plan for poaching and vandalism. • Prepare a vulnerability assessment that looks at sensitivity and adaptive capacity of saguaro cacti within the context of climate change. • Develop a resource stewardship strategy. • Develop a parkwide education plan.
Laws, Executive Orders, and Regulations that Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • The Wilderness Act of 1964 • Federal Noxious Weed Act of 1974, as amended • Clean Air Act • State protection, including the Arizona Native Plant Law • Lacey Act (prohibits trafficking in plants and animals) • Secretarial Order 3289 "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" **NPS Policy-level Guidance** • NPS *Management Policies 2006* (§4.4, "Biological Resource Management") • NPS *Natural Resource Management Reference Manual 77*

Fundamental Resource or Value	Sonoran Desert and Sky Island Ecosystems Integrity
Related Significance Statements	The saguaro is the tallest cactus in the United States and is the namesake of Saguaro National Park. Its distinctive form is recognized worldwide as an iconic symbol of the American Southwest. The Sonoran Desert ecosystem, represented within the park, contains superb saguaro stands that are easily accessed by visitors. Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir. Saguaro National Park preserves one of the largest concentrations of rare and distinct aquatic micro-habitats such as tinajas, seeps, and springs, in the desert Southwest. These habitats, along with the riparian corridor of Rincon Creek, support rare and special status species such as lowland leopard frog, yellow-billed cuckoo, gray hawk, and southwestern willow flycatcher, as well as plant species uncommon to the desert, including sycamore and ash. Saguaro National Park's close proximity to a large urban community provides exceptional access to wild places in which visitors can experience wilderness and scenic views. Saguaro National Park has a long human history and legacy of scientific interest and research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change.
Current Conditions and Trends	**Conditions** • The park has high landscape diversity with six biotic communities. • Elevation ranges from 2,180 to 8,666 feet within the park. • Some native fauna are no longer found in the park (e.g., Mexican wolf, grizzly bear, desert bighorn, jaguar, and Gila topminnow). These species were present less than 100 years ago, around the time of the establishment of the monument (now national park). • Vegetation at higher elevations is stressed due to climate change (e.g., extended drought, higher temperatures, and forest pests) and other air pollution impacts. • Low elevations of the park currently have lower species integrity due to invasive species, erosion events, sedimentation within water sources, trespassing of livestock such as cattle within Rincon Creek, and historic human uses. • Saguaro National Park contains many wide-ranging or migrating species. Connectivity issues outside of the park make it difficult for these species to thrive. • The park is critical habitat for the Mexican spotted owl and the lesser long-nosed bat. **Trends** • Fire regimes are changing due to policy and the presence of invasive species. This is causing more impact on the Sonoran Desert than in the Sky Island region ecosystem. • Native biodiversity may be decreasing in the park. Biodiversity continues to decrease in the larger ecoregions and the sky islands (especially as it relates to the biodiversity in the park). • Loss of connectivity outside of the park due to habitat fragmentation because of development (e.g., transmission lines, gas lines, highways, and urbanization) is impacting a variety of species native to the park.

Fundamental Resource or Value	Sonoran Desert and Sky Island Ecosystems Integrity
Threats and Opportunities	**Threats** • A lack of fire is altering natural fire regimes. This results in the potential for more intense fires occurring, causing negative consequences for the native ecosystems. Wildfire is a threat to the forest and animals, especially on the north slope of the Rincon Mountains. The mixed conifer forests are areas of particular concern. • Invasive species, erosion events, sedimentation into water sources, and trespassing of livestock threaten ecosystems throughout the park. • A lack of information on ecological roles and niches makes managing and protecting park resources difficult. • Increasing urbanization and development around the park results in a fragmented landscape and less connectivity for species and increased threats such as road kills. • A lack of resources (staffing, funding) to implement management plans, strategies, and actions creates additional challenges for protecting these threatened ecosystems. • Climate change is predicted to affect various species, including saguaros. **Opportunities** • Enhancing partnerships with neighbors, conservation groups, and other agency land managers for collaborative management, information sharing, and further research. • Shared management opportunities with the U.S. Forest Service (Catalina Forest District) and Sky Island Alliance conservation group for research (ecosystem, fire management, and ecology), and conservation efforts. • The park's associated tribes and the traditional ecological knowledge they retain can be of particular importance in expanding the park's understanding of ecosystem processes and integrity. • Finding additional and sufficient funding for research and monitoring efforts. • Taking advantage of the research opportunities that the park lands provide for the scientific community (internal and external research partners). • Providing education to visitors and the local community on the importance of desert and sky island ecosystems and the threats they face. The aim would be to influence positive behavioral changes that support these ecosystems. Education should tie climate change components into these efforts. • Enhance understanding of previous and ongoing human influence on, and response to, the changing ecosystem.
Data and/or GIS Needs	• Understand the implications of surrounding land use on the entire ecosystem (e.g., effects on migration patterns). Need to investigate potential causes and effects on species to appropriately manage for and protect. • Ongoing land use mapping and trends (remote sensing data). Use NPScape and other available datasets. • Understand how connectivity can be achieved regionally for wildlife. • Research to identify ecological thresholds for species. • Ecological interactions of invasive species and nitrogen deposition, and their impacts on native Sonoran Desert vegetation and associated ecosystems. • Expand monitoring and research of species of concern, including impacts of climate change (predictive modeling on a local level). • Examine pollution dose-response relationships in sensitive park ecosystems (e.g., effects of nitrogen deposition). • Collect daily weather data. • Create and populate an interpretive database.

Fundamental Resource or Value	Sonoran Desert and Sky Island Ecosystems Integrity
Planning Needs	• Resource stewardship strategy to understand species of concern in a proactive rather than a reactive manner. • Resource condition assessment. • Prepare a vulnerability assessment that looks at sensitivity and adaptive capacity of selected resources within the context of climate change. • Update fire management plan. • Increased involvement in regional planning efforts. • Parkwide education plan.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Endangered Species Act of 1973, as amended • The Wilderness Act • Clean Air Act • National Invasive Species Act • Federal Noxious Weed Act of 1974, as amended • Executive Order 13112, "Invasive Species" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • Closure of areas as described in the Superintendent's Compendium (section I) **NPS Policy-level Guidance** • NPS *Management Policies 2006* (§1.5, 4) • Director's Order 41: *Wilderness Stewardship* and NPS *Reference Manual 41: Wilderness Stewardship* • Director's Order 18: *Wildland Fire Management* and NPS *Wildland Fire Management Reference Manual 18* • NPS *Natural Resource Management Reference Manual 77* • NPS *Climate Change Response Strategy* (2010) • NPS *Climate Change Action Plan 2012–2014*

Fundamental Resource or Value	Rincon Creek and Aquatic Habitats
Related Significance Statements	Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir. Saguaro National Park preserves one of the largest concentrations of rare and distinct aquatic micro-habitats such as tinajas, seeps, and springs, in the desert Southwest. These habitats, along with the riparian corridor of Rincon Creek, support rare and special status species such as lowland leopard frog, yellow-billed cuckoo, gray hawk, and southwestern willow flycatcher, as well as plant species uncommon to the desert, including sycamore and ash. Saguaro National Park has a long human history and legacy of scientific interest and research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change.
Current Conditions and Trends	**Conditions** • Chytrid fungus (*Batrachochytrium dendrobatidis*) is present in the park and is known to negatively affect amphibians. • Cattle currently trespass within Rincon Creek. • Nonnative invasive plants are present. • Some tinajas have been negatively affected by sediment due to fire and some have been adversely affected by extended drought (water quantity). • The invertebrate communities in the tinajas are in good condition. • Human recreational use of the tinajas (e.g., human waste, sunscreen) is reducing water quality. *E. coli* has been documented to exceed water quality standards. • Highest density of species in the park in this area, many of these species are sensitive. • Human access is restricted in highly sensitive areas (e.g., Madrona). • Portions of the creek have multiple owners, with just one side owned by the National Park Service. **Trends** • Water quantity in Rincon Creek has decreased due to shallow aquifer pumping and drought. • The vigor or condition of the riparian vegetation has diminished in the Rincon Creek area. • Aquatic vertebrate populations are also in decline. Some species that were formally common, such as leopard frogs, have decreased or are absent (Rincon Creek). • Decrease in water quantity, riparian vegetation, and aquatic vertebrate in Rincon Creek since the 1990s. • *Tinajas* and Rincon Creek are being affected by drought. • Departure from natural fire regime.

Fundamental Resource or Value	Rincon Creek and Aquatic Habitats
Threats and Opportunities	**Threats** • Human access to highly sensitive areas. • Drought. • Shallow aquifer pumping; potential to increase with more urbanization. • Cattle trespassing causes trampling and therefore habitat loss. • Nonnative invasive species are present and may increase. • Altered fire regime will have negative effects. Increased sedimentation in Rincon Creek and the *tinajas* from fire upslope. • Projected dryer landscape due to long-term decrease in precipitation (timing of and total amount), and increase in temperatures will impact the shallow aquifer and Rincon Creek. • Human recreational use of the *tinajas* (e.g., human waste, sunscreen). *E. coli* exceedences have been documented. • The park's surface water rights of lower Rincon Creek have not been permitted and flows could continue to lessen due to groundwater pumping, therefore threatening the riparian ecosystem. • Adjacent land use is incompatible with restoring natural conditions. **Opportunities** • Currently working on water rights permitting for lower Rincon Creek. • Boundary expansion legislation is in progress; would include more acreage along Rincon Creek. • Education outreach concerning water processes for Rincon Creek, watershed protection, and how human interaction affects those natural processes/resources. • Restore the long-term natural fire regime; this would protect the creek from sedimentation, increase surface flows, and decrease competition at springs and seeps (plants and animals). • Work with private land owners on invasive plant control. • Fencing and monitoring to prevent cattle trespassing. • Restoration of leopard frog habitat with multiagency group (current effort, but more opportunities available). • Increased park staff (law enforcement, interpretive staff, etc.) to have a presence in the area (Madrona). • Increase service learning and citizen science opportunities. • Visitor education opportunities to connect climate change with changing conditions of aquatic habitats. • Opportunity to work with interested landowners, the Sonoran Institute, and other partners to restore leopard frog habitat in Rincon Creek.
Related Resources and Values	• Leopard frog habitat in Rincon Creek.

Fundamental Resource or Value	Rincon Creek and Aquatic Habitats
Data and/or GIS Needs	• Understanding the ground and surface water withdrawal impacts on the riparian areas. Distinguish groundwater pumping impacts from drought impacts. • Continued monitoring of the *tinajas.* • Meteorological data at the watershed level. • Continued monitoring of natural resources. Compare to the Madrona Pulse study. • Vulnerability assessment that looks at sensitivity and adaptive capacity of select resources (including • Additional cultural and archeological surveys. • Threshold of recreational impacts (i.e., taking water from the *tinajas*, swimming). • Assessment of Rincon Creek for degraded watershed conditions; this funnels into climate change effects.
Planning Needs	• Facilities planning at the Madrona ranger station. • Parkwide education plan. • Resource stewardship strategy. • Resource condition assessments. • Protection operation plan for sensitive riparian areas.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Clean Water Act • Clean Air Act • Executive Order 11988, "Floodplain Management" • Executive Order 11514, "Protection and Enhancement of Environmental Quality" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • Closure of areas in the Superintendent's Compendium (section I) • State water laws – key for lower Rincon Creek • Madrona use policy (internal document) **NPS Policy-level Guidance** • NPS *Management Policies 2006* (§4.6) • Director's Order 77-2: *Floodplain Management* and NPS *Procedural Manual 77-2: Floodplain Management* • NPS *Natural Resource Management Reference Manual 77*

Fundamental Resource or Value	Cultural Resources
Related Significance Statements	Saguaro National Park has a long human history and legacy of scientific interest and research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change. Saguaro National Park contains a rich concentration of cultural resources that tell the history of continuous and diverse human occupation in the Southwest from prehistoric to modern times. The landscape contains evidence of how people adapt, modify, and thrive in an arid environment, and is an important part of the cultural heritage of associated American Indian tribes, Hispanic populations, and other groups. Saguaro National Park's close proximity to a large urban community provides exceptional access to wild places in which visitors can experience wilderness and scenic views.

Fundamental Resource or Value	Cultural Resources
Current Conditions and Trends	**Conditions** • Approximately 26% of Saguaro National Park has been surveyed for cultural resources, including all developed areas, roads, and trails. • 452 archeological sites and approximately 100 other cultural resource features on the park's List of Classified Structures (LCS) have been documented to date. There are 34 archeological locations that are managed and are listed in the FMSS database. • All known archeological sites (452 total sites) are documented in the Archeological Site Management Information System (ASMIS) and in GIS. • Current condition data exists for all sites and LCS features. • 95% of the sites in ASMIS are in good condition. • The park's prehistoric resources include petroglyphs, lithic and ceramic scatters, and other archeological sites that are largely intact. Other sites are likely to exist in portions of the park that have not been archeologically surveyed or investigated. • There are 73 individual Civilian Conservation Corps (CCC) features in the park. All have been determined eligible for listing in the National Register of Historic Places and are in good condition. Among these features are 2 enclosed ramadas and 5 comfort stations. Camp Pima consists of the archeological remains of a CCC camp (although no official national register evaluation has been completed for the camp it is in good condition and is managed by the park as an eligible site). • Cactus Forest Loop Road, including its associated CCC structures, has been documented as a cultural landscape and a cultural landscape inventory has been completed. The road and its contributing features are in good condition and are listed in the National Register of Historic Places as a historic district. • Among the park's historic buildings is the Manning Cabin, listed in the National Register of Historic Places and in fair condition. The Freeman homestead is also listed as a contributing element to the Rincon Foothills Archeological District and is in good condition. • Mines – The Gould, Mile Wide, Jewel, Arizona Copper Mining Company, and Yuma Mines were determined eligible for listing in the National Register of Historic Places (February 23, 2010). These represent the second or third largest density of mines in the NPS system and are in good condition. Abandoned mines are fenced and signed. • The Yuma Mine site has been determined to be in need of environmental cleanup. • There are six lime kilns on the park's List of Classified Structures and all have been determined eligible for listing in the National Register of Historic Places (December 9, 1994). The lime kilns, last used in the 1920s, were associated with development activities (construction of adobe houses) and their operation resulted in the loss of trees/brush and impacts on saguaros. • The Rincon Mountain District Visitor Center is a Mission 66 structure and is listed in the National Register of Historic Places. • Young Adult Conservation Corps structures in the Tucson Mountain District will be eligible for listing in the national register in seven years. • All of the park's cultural resources collections are currently stored at the Western Archeological and Conservation Center in Tucson, Arizona. (Note: most of the natural resource collections are stored at several repositories at the University of Arizona. A small percentage of the natural resource collections are stored at other NPS-approved repositories around the United States.)

Fundamental Resource or Value	Cultural Resources
Current Conditions and Trends	**Trends** • Management activities are addressing safety and resource issues associated with abandoned mines. • There is increasing interest related to traditional uses (e.g., the procurement of saguaro fruit and cholla buds). • The park has completed a tribal affiliation study in fulfillment of Native American Graves Protection and Repatriation Act requirements, but would benefit from an ethnographic resource study and/or traditional use study to provide broader understanding of the cultural connections held by the park's traditionally associated peoples to park lands and resources. • There is a decrease in secure funding for cultural resource management.

Fundamental Resource or Value	Cultural Resources
Threats and Opportunities	**Threats** • It is not well understood what the future demand may be for the continuation of traditional uses and practices (e.g., saguaro fruit gathering) by associated tribes and other traditional users within the park. • Historic structures and archeological sites are impacted by ongoing natural processes of erosion (affecting adobe structures and prehistoric sites) and erosion inadvertently resulting from visitor use such as the development of social trails. • Lack of funding to document, stabilize, and record cultural resources and conduct interviews (with surviving CCC members and others) can limit the park's ability to effectively preserve these resources. • Instances of vandalism, looting, and graffiti deface historic properties and diminish their historical / archeological integrity. • Benign neglect results in the deterioration and eventual loss of historic properties that cannot otherwise be preserved. Resources are documented and recorded in consultation with the state historic preservation officer. • Presently unidentified sites and resources may be disturbed or lost without adequate surveys to identify resources and document their condition. • Threats from fire and post-fire erosion can disturb cultural resources or result in their loss. • Visitor use activities can result in unintentional impacts. • Pests are damaging the integrity of some cultural resources. Archeological and some cultural sites such as lime kilns may be affected by rodents. Wooden structures such as the Manning Cabin may also be affected by carpenter ants, termites, wood-boring beetles, etc. • The future status of the Hispanic cultural fair and American Indian arts demonstrations are unknown and may affect traditional uses and connections to the park for associated peoples. • Environmental remediation at the Yuma Mine could threaten the mine's historic integrity. • A warmer, dryer climate projected for the area in the 21st century may impact cultural resources.

Fundamental Resource or Value	Cultural Resources
Threats and Opportunities	**Opportunities** • Partnerships and outreach with traditionally associated tribes regarding traditional uses, instruction/documentation and other cultural concerns and practices would assist park interpretation and resource management. • Traditionally associated tribes include: Ak Chin Indian Community of the Maricopa (Ak Chin) Indian Reservation, Arizona; Cocopah Tribe of Arizona; Colorado River Indian Tribes of the Colorado River Indian Reservation, Arizona and California; Fort McDowell Yavapai Nation, Arizona; Fort Mojave Indian Tribe of Arizona, California and Nevada; Gila River Indian Community of the Gila River Indian Reservation, Arizona; Hope Tribe of Arizona; Pascua Yaqui Tribe of Arizona; Quechan Tribe of the Fort Yuma Indian Reservation, California and Arizona; Salt River Pima-Maricopa Indian Community of the Salt River Reservation, Arizona; Tohono O'Odham Nation of Arizona; Yavapai-Apache Nation of the Camp Verde Indian Reservation, Arizona; Yavapai-Prescott Tribe of the Yavapai Reservation, Arizona; and Zuni Tribe of the Zuni Reservation, New Mexico. • Partnering with neighboring parks, the NPS Southern Arizona Region Group, the NPS Western Archeological and Conservation Center, and other groups relating to cultural resource management efforts would strengthen park plans and priorities. • There are additional opportunities for oral histories with CCC volunteers, local groups, ranchers/homesteaders, tribes, cooperating universities, and other research partners. • There are opportunities to expand outreach with Hispanic groups and organizations to promote park connections with Hispanic culture. Interpretation of Hispanic heritage and associated regional places/resources (e.g., the Juan Bautista de Anza National Historic Trail) could be enhanced. • There are opportunities to develop and work with site stewards, assisting their transition from state parks programs. • Curatorial agreements could be developed between the park and other museums/ repositories regarding mutually beneficial strategies for collections management.
Related Resources and Values	• Archeological sites, petroglyphs, historic sites, and cultural landscapes may potentially exist on inholdings.
Data and/or GIS Needs	• Archeological and cultural landscape inventories. • National Register of Historic Places nominations. • Ethnographic resources survey and report. • Traditional use study. • Interpretive database.
Planning Needs	• Resource stewardship strategy. • Scope of collections plan. • Interpretive media plan for Civilian Conservation Corps and other cultural sites. • Integrated pest management plan. • Manning Cabin site stabilization and use plan.

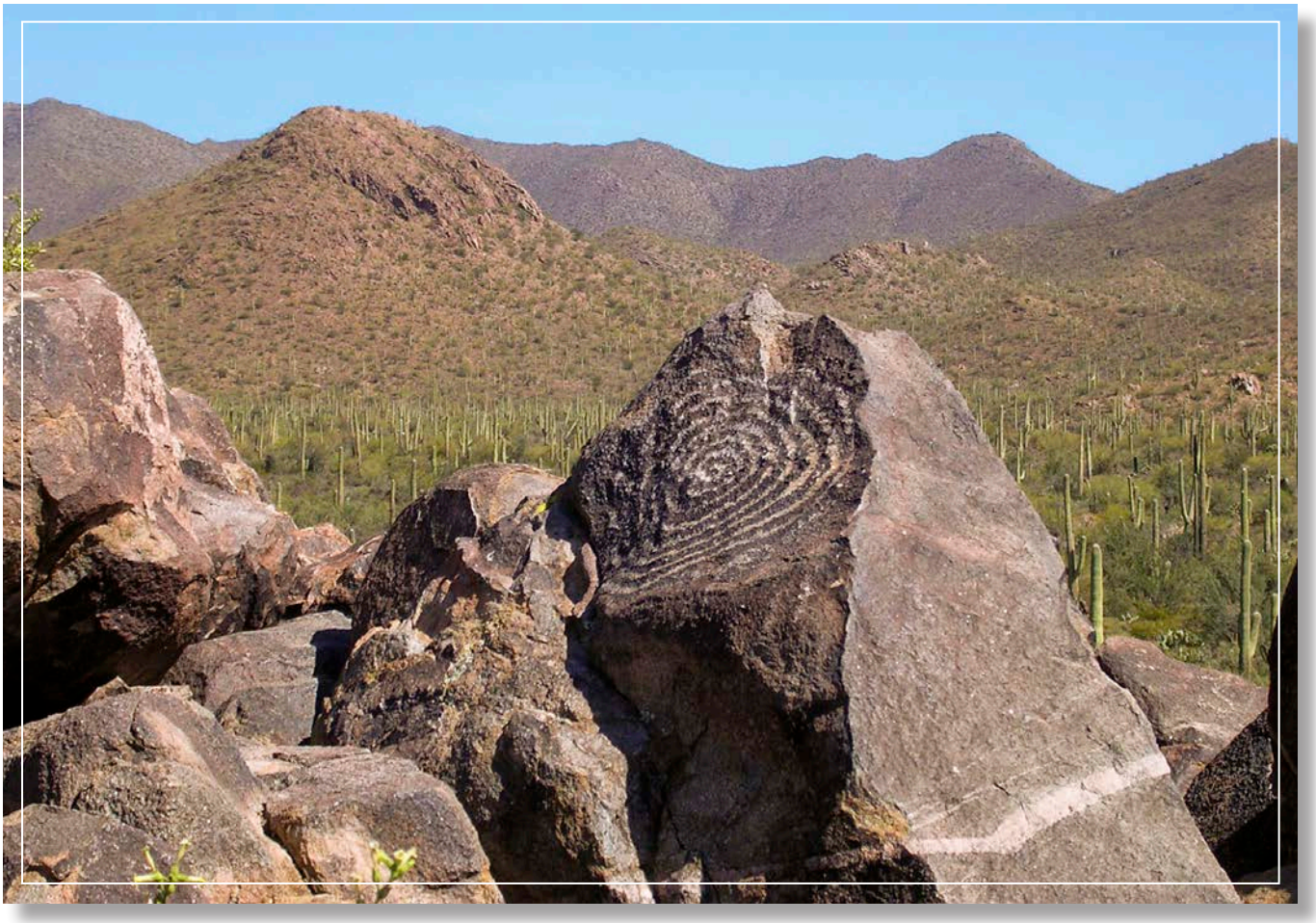
Fundamental Resource or Value	Cultural Resources
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Superintendent's Compendium (closed areas) • Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended (16 USC 470) • Advisory Council on Historic Preservation's implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800) • Archaeological Resources Protection Act of 1979 • American Indian Religious Freedom Act of 1978 • Native American Graves Protection and Repatriation Act of 1990 • Executive Order 13007, "Indian Sacred Sites" (1996) • Antiquities Act of 1906 • Archeological and Historic Preservation Act of 1974 • Museum Act (16 USC 18f through 18f-3) • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • "Curation of Federally-Owned and Administered Archaeological Collections" (36 CFR 79) **NPS Policy-level Guidance** • NPS *Management Policies 2006,* (section 4.7.2, chapter 5) • Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* • Director's Order 28: *Cultural Resource Management* and "NPS-28, Cultural Resources Management Guideline" • Director's Order 28A: *Archeology* (2004) • *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* • *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (1996) • *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (1995) • Director's Order 24: *NPS Museum Collections* • NPS *Museum Handbook*, parts I, II, and III • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources"

Fundamental Resource or Value	Wilderness Stewardship in an Urban Area
Related Significance Statements	Saguaro National Park's close proximity to a large urban community provides exceptional access to wild places in which visitors can experience wilderness and scenic views. Saguaro National Park contains a rich concentration of cultural resources that tell the history of continuous and diverse human occupation in the Southwest from prehistoric to modern times. The landscape contains evidence of how people adapt, modify, and thrive in an arid environment and is an important part of the cultural heritage of associated American Indian tribes, Hispanic populations, and other groups.
Current Conditions and Trends	**Conditions** • Six biotic zones are represented and include threatened and endangered species. • Existing nonhistoric developments within the wilderness are not compliant with wilderness character. • Wilderness character has been degraded by overflights, light and air pollution, and adjacent external developments, affecting undeveloped, naturalness, and solitude qualities. • The park's wilderness character qualities have been beneficially affected by the adjacent U.S. Forest Service wilderness and neighbors' ranching land management practices. **Trends** • Wilderness characteristics are degrading due to internal factors such as invasive species and increasing vandalism. • Natural and undeveloped wilderness character conditions are negatively impacted by urbanization and external development. Natural quiet, the night sky, scenic vistas, and the clean air are increasingly at risk. • Vehicle traffic and commercial/military air traffic are increasing sources of noise within the wilderness area. • Recreational use is increasing due to the new Arizona Trail designation. • Technology is influencing visitor experiences, resulting in changes in opportunities for solitude and self-reliant recreation.

Fundamental Resource or Value	Wilderness Stewardship in an Urban Area
Threats and Opportunities	**Threats** • There are conflicts between maintaining the undeveloped and untrammeled qualities of wilderness character and ongoing scientific research (e.g., wildlife, climate, cultural). • Invasive species are increasing in both quantity and diversity and degrading the natural condition of the wilderness area. • Denser populations and urban encroachment have increased noise pollution (vehicle, air traffic), decreased air quality, and increased light pollution, affecting dark skies, visibility, ecosystem health, and scenic viewsheds. • Residential housing development and associated utilities and roads along the boundary have led to increased social trails, habitat fragmentation, and illegal activity such as dogs off leash. • There is a change of the natural fire regime due to changes of fire policy and invasive species. • Ease of accessibility and close proximity to a large urban area has led to poaching and vandalism of resources. • Climate change poses a threat to Sonoran Desert and Sky Island region ecosystems in the wilderness area. • International border-related traffic has increased social trails and visitor safety concerns. U.S. Border Patrol and military landings in the park are impacting wilderness character. • Changing demographics of the wilderness advocate population is creating concerns of wilderness relevancy and stewardship for future generations. • Hiking and equestrian use cause impacts on trails through accelerated erosion and on wilderness resources by introducing invasive plant species. • Overflights from local military and commercial airplanes are resulting in increased sky (visual) and noise pollution. • Use of digital technology affects wilderness experience, decreasing the sense of solitude and impacting self-reliant recreation opportunities.

Fundamental Resource or Value	Wilderness Stewardship in an Urban Area
Threats and Opportunities	**Opportunities** • The proximity of the wilderness to a large, diverse urban community allows for easy access to experience wilderness. • There are many educational opportunities to connect students to wilderness. • The 50th Anniversary of the Wilderness Act in 2014 provides opportunities to raise wilderness awareness. • The Arizona Trail is an opportunity for wilderness outreach and partnership. • Implementation of an online permitting process for wilderness hiking and camping can greatly enhance the visitor experience. • Park expansion areas may provide opportunities for additional wilderness eligibility determinations. • Collaborative management with adjoining wilderness areas could be established. • Internal and external scientific research can help to enhance and support wilderness character to address issues such as ecological change, climate change, and urban encroachment. • There are great opportunities for the restoration of wilderness character, such as removing nonhistoric structures, signs, and invasive species; conducting prescribed burns and managing naturally occurring fire; and requiring weed-free feed. Opportunities to remove nonhistoric structures will be evaluated as part of the wilderness stewardship plan. • Use technology to connect visitors both virtually and physically to wilderness. • Promote Leave No Trace practices for wilderness backcountry use.
Related Resources and Values	• Interrelationship with the adjacent Rincon Mountain Wilderness area, with the Coronado National Forest.
Data and/or GIS Needs	• Social science information on visitor use. • Mapping of infestations of nonnative invasive species. • Regular monitoring of wilderness character conditions. • Continue monitoring of air quality. • Conduct visual resource inventory to identify important viewsheds. • Soundscape monitoring and modeling. • Night sky monitoring. • Trail hiking data collection for the Arizona Trail. • Understanding user impacts on wilderness character.
Planning Needs	• Wilderness study of expansion areas (only after land is acquired). • Wilderness stewardship plan (including strategies for preserving historic structures within the wilderness and visitor carrying capacity). • Vulnerability assessment that looks at sensitivity and adaptive capacity of select natural and cultural resources in wilderness within the context of climate change.

Fundamental Resource or Value	Wilderness Stewardship in an Urban Area
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Park wilderness designation in 1976 (Public Law 94-567) • The Wilderness Act • National Invasive Species Act • Federal Noxious Weed Act of 1974 • Clean Air Act • Executive Order 13112, "Invasive Species" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • Superintendent's Compendium **NPS Policy-level Guidance** • NPS *Management Policies 2006* (§6.3, "Wilderness Resource Management" and §6.4, "Wilderness Use Management") • Director's Order 41: *Wilderness Stewardship* and NPS *Reference Manual 41: Wilderness Stewardship* • NPS *Wilderness Character User Guide* (2013)



Fundamental Resource or Value	Urban Area Interface and Regional Identity
Related Significance Statements	The saguaro is the tallest cactus in the United States and is the namesake of Saguaro National Park. Its distinctive form is recognized worldwide as an iconic symbol of the American Southwest. The Sonoran Desert ecosystem, represented within the park, contains superb saguaro stands that are easily accessed by visitors. Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir. Saguaro National Park has a long legacy of scientific research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change. Saguaro National Park's close proximity to a large urban community provides exceptional access to wild places in which visitors can experience wilderness. Saguaro National Park contains a rich concentration of cultural resources that tell the history of continuous and diverse human occupation in the Southwest from prehistoric to modern times. The landscape contains evidence of how people adapt, modify, and thrive in an arid environment, and is an important part of the cultural heritage of associated American Indian tribes, Hispanic populations, and other groups.

Photo Credit: A.Z. Andis

Fundamental Resource or Value	Urban Area Interface and Regional Identity
Current Conditions and Trends	**Conditions** • The park is in immediate proximity to an urban area of approximately 1 million people. • There is a large, diverse youth population in the region. • Park visitation is not geographically/demographically representative of Tucson or the nation. Several groups are underrepresented including youth, American Indians, and Hispanic populations. • There is no public transportation / transit to and within the park, limiting access in particular for underrepresented groups. • 180+ miles of trails support hiking, biking, and equestrian uses. • Paved and gravel roads provide access to many park trailheads, picnic areas, and other popular visitor use areas. • Trailheads and parking are undersized and not originally designed for multiple uses. • Due to many dispersed trailheads and trail connections via local neighborhoods, fees are inconsistently collected. • Lack of bus parking for the Rincon Mountain Visitor Center limits educational outreach opportunities. • Commuter roads and high traffic areas through the park create wildlife and resource impacts along roadways. • Staff capacity and funding cannot keep up with the high demand for curriculum-based education programs. • The community has been and continues to be actively involved in park citizen science. • The park has a flourishing friends group that provides critical park support, funding, and visibility of park values. • The park has nearly 500 active volunteers who provide critical services and staffing. • A permanent outreach coordinator position was instituted in response to park and local needs for a greater emphasis on the urban community connection with Saguaro National Park. • Service learning is incorporated with programs such as saguaro monitoring, Gila monster research, and other science programs including reoccurring projects. • There are high levels of local use by a subset of the Tucson population; for example, trail runners and bicyclists. The park is a popular winter training ground. **Trends** • The local population is under-represented in NPS and Saguaro visitation (ethnic and socioeconomic groups). • There is increasing seasonal overcrowding and congestion in high visitor use areas, such as Rincon Mountain District Visitor Center parking and trailheads. • Increasing age of visitors. • Increase in vehicle and bicycle accidents. • Commuter traffic is increasing in frequency, duration, volume, size of vehicles, and noise. • There is an increased awareness of Saguaro National Park both locally and nationally through the media. • The demand for curriculum-based education, outreach, and programming is increasing and far exceeds the park's capacity for programming, especially for service learning. • Increased recognition as a cycling friendly community.

Fundamental Resource or Value	Urban Area Interface and Regional Identity
Threats and Opportunities	**Threats** • Commuter traffic is increasing, causing increased safety and resource management concerns. • There is a loss of park relevance with the younger generation and general Tucson population. • Wildlife and resource impacts along roadways due to wildlife vehicle collisions and vegetation impacts from parking and crashes. • Fewer dollars to maintain infrastructure, educational programs, law enforcement, etc. • Potential for conflict between user groups in multiuse areas, e.g., general visitors and runners, cyclists and equestrians. • Increased urbanization along park boundary (i.e., increased trash, light pollution, noise, and invasive species). • Loss of scenic viewsheds due to development and external influences often beyond the park's control. • Funding issues: The park needs a dedicated public affairs position and volunteer coordinator. • Apathy or disengagement if people are not able to participate in programs due to funding. • Safety concerns: proximity to border, vandalism, and smuggling. • There is unregulated access in many areas. • A warming climate may change visitation patterns and interests and invite the need for innovations to accommodate these changes (e.g., installation of shade structures and alternative potable water supplies). **Opportunities** • The park is in immediate proximity to an urban area of approximately 1 million people, providing exceptional opportunities to connect people to the park. • There is a large youth population and a multitude of primary and secondary education outreach opportunities. • The proximity to a military base offers the opportunity to provide outreach to military personnel and their families through the Posts to Parks program. • There are opportunities to expand outreach with Hispanic groups and organizations to promote park connections with Hispanic culture and heritage. Interpretation of associated regional places/resources (e.g., the Juan Bautista de Anza National Historic Trail) could draw Hispanic visitors to the park and enhance their experiences. • Opportunities exist to collaborate with partners such as the Desert Learning Center, other government agencies, nongovernmental agencies, and citizen science to increase funding and volunteer support. • Consistently collect fees, especially from neighborhood trail connections, to capture unregulated access and increase revenue. • Add traffic counters to popular trailheads to obtain visitor use statistics. • Environmental education with local school districts. • Link to Tucson transit for trailhead access. • Connection with Arizona Trail. • Connections with county lands and trailheads and adjacent Sonoran Desert Museum trails.

Fundamental Resource or Value	Urban Area Interface and Regional Identity
Threats and Opportunities	• Promote "Healthy Parks, Healthy People." • Engaging regional population, especially youth and diverse population. • Increase network with local and regional eco-tourism efforts: desert museum, biosphere, other NPS units and agencies. • Western National Parks Association Headquarters: Provide opportunities for field trips, and joint promotional events. • Many environmental groups housed in Tucson (e.g., the National Parks Conservation Association), have local and national affiliations, and are a good source for enhanced partnership opportunities. • Use of volunteer organizations and groups in maintaining park trails, roadsides, and other infrastructure. • Service first opportunities. • Continuing University of Arizona and Pima College research. • Create administrative camp for all park operations, including research, infrastructure maintenance, outreach, etc. • Implement fee study recommendations (local discount for annual Saguaro National Park pass, remote pass sales). • Recruiting diverse staff for the National Park Service (broader than just Saguaro National Park). • Use local media to promote Saguaro National Park. • Become a "Dark Sky Park" in cooperation with International Dark Sky Association. • Visitor education opportunities to connect climate change with changing conditions of natural and cultural resources. • Centennial efforts (WASO guidance) provide an outreach potential to local community. • Plan to celebrate Wilderness Act 50th anniversary in 2014.
Related Resources and Values	• Natural soundscapes / night skies. • Clean air.
Data and/or GIS Needs	• Visitor use statistics for trails, roads, and programs. • Social science around nonvisitors: Expand on 2007 transportation and visitor use study. • Mapping visitor created social trails (GIS). • Understanding visitation—local vs. nonlocal, local nonvisitors—updated demographics study, activities. • Economic impact of the park beyond what is derived from the Money Generation Model.

Fundamental Resource or Value	Urban Area Interface and Regional Identity
Planning Needs	• Trailhead access, design plan. • Wilderness stewardship plan. • Plan for rehabilitation and safety improvements on Picture Rocks Road and Sandario. • Park asset management plan needs to be updated and completed so the park can plan for rehabilitation of park infrastructure to support current types and levels of visitor use. • Fee collection implementation plan. • Parkwide education plan. • Capital investment strategy/reoptimization. • Community engagement strategy, including new communication methods. • Coordination and planning for community marketing/branding with Western National Parks Association. • Park communication strategy. • Outreach strategy plan, focusing efforts on the park's highest priority initiatives. • Park's asset management plan, completed in alignment with the Capital Investment Strategy.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Enabling legislation, specifically relates to urban interface and associated challenges and opportunities • Park wilderness designation in 1976 (P.L. 94-567) • The Wilderness Act • Clean Air Act (Class I status) • Superintendent's Compendium **NPS Policy-level Guidance** • NPS *Management Policies 2006* (section 6.3, "Wilderness Resource Management" and section 6.4, "Wilderness Use Management") • Director's Order 41: Wilderness Stewardship and NPS Reference Manual 41: Wilderness Stewardship • NPS *Wilderness Character User Guide* (2013).

Fundamental Resource or Value	Clean Air
Related Significance Statements	The saguaro is the tallest cactus in the United States and is the namesake of Saguaro National Park. Its distinctive form is recognized worldwide as an iconic symbol of the American Southwest. The Sonoran Desert ecosystem, represented within the park, contains superb saguaro stands that are easily accessed by visitors. Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir. Saguaro National Park preserves one of the largest concentrations of rare and distinct aquatic micro-habitats such as tinajas, seeps, and springs, in the desert Southwest. These habitats, along with the riparian corridor of Rincon Creek, support rare and special status species such as lowland leopard frog, yellow-billed cuckoo, gray hawk, and southwestern willow flycatcher, as well as plant species uncommon to the desert, including sycamore and ash. Saguaro National Park has a long legacy of scientific research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change. Saguaro National Park's close proximity to a large urban community provides exceptional access to wild places in which visitors can experience wilderness.
Current Conditions and Trends	**Conditions** • Visibility: Currently, visibility conditions at Saguaro National Park are not meeting Air Resource Division (ARD)-recommended benchmark conditions (based on Clean Air Act goals) and are a moderate concern. Trends on the haziest days are improving. • Ozone: Ozone conditions at Saguaro National Park are not meeting ARD-recommended benchmark conditions (based on measured ozone levels and risk assessment information) and are a moderate concern. Trends show that ozone concentrations remain unchanged. • Deposition: Currently, wet nitrogen deposition and sulfur conditions at Saguaro National Park are not meeting the ARD-recommended benchmark conditions (determined via measured deposition in the context of representative nitrogen enrichment and acidification risk assessment information). Wet sulfur deposition is a moderate concern and wet nitrogen deposition is a significant concern. **Trends** • A risk assessment that evaluated the sensitivity of park ecosystems to acidification and nitrogen enrichment effects from deposition found that Saguaro National Park may be very highly sensitive to nitrogen enrichment effects and highly sensitive to acidification relative to other NPS units. There is no evidence that acidification has occurred in park streams or pools and many areas of the park are well-buffered from acidification. Excess nitrogen may harm park ecosystems and contribute to the spread of nonnative invasive buffelgrass.

Fundamental Resource or Value	Clean Air
Threats and Opportunities	**Threats** • Proposed mining operations in the vicinity of Saguaro National Park. • The proposed Rosemont Copper mine, to be located south of Tucson, may cause significant impacts on air resources, including potential visibility degradation and increased nitrogen deposition in Saguaro National Park. The National Park Service is engaged in the U.S. Forest Service NEPA decision-making process in an effort to protect park resources. • Air quality and scenic resources can be impacted by other regional and local sources of air pollution such as power plants, industrial facilities, agriculture, fires, vehicles, urban developments, and oil and gas development. • A warming climate may influence air quality and scenic resources. In the 21st century, mean annual temperature is projected to increase three to five times the historical 20th century warming, while average annual precipitation is projected to decrease. **Opportunities** • There are ongoing opportunities through the regional haze and other air quality programs to work with state and federal air regulatory agencies and other stakeholders to address air quality impacts in Class I parks from sources of air pollution.
Data and/or GIS Needs	• Air quality conditions and trends, which requires continued support for existing air quality monitoring. • Monitoring of additional air quality parameters (e.g., deposition) and air quality resources and values. • Special studies to examine pollution dose-response relationships in sensitive park ecosystems (e.g., effects of nitrogen deposition).
Planning Needs	• Resource stewardship strategy. • Develop a management strategy and action plan that emphasizes cooperative conservation to protect air quality and related resources, including scenic views and resources sensitive to air pollution.
Laws, Executive Orders, and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Clean Air Act • Arizona air regulations • EPA visibility regulations (40 CFR 51.302 – 309) • Executive Order 11514, "Protection and Enhancement of Environmental Quality" • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • Superintendent's Compendium (idling restrictions on buses; section I) **NPS Policy-level Guidance** • NPS *Management Policies 2006* (§4.7, "Air Resource Management") • NPS *Natural Resource Management Reference Manual 77*

Fundamental Resource or Value	Living Laboratory
Related Significance Statements	The saguaro is the tallest cactus in the United States and is the namesake of Saguaro National Park. Its distinctive form is recognized worldwide as an iconic symbol of the American Southwest. The Sonoran Desert ecosystem, represented within the park, contains superb saguaro stands that are easily accessed by visitors. Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir. Saguaro National Park preserves one of the largest concentrations of rare and distinct aquatic micro-habitats such as *tinajas*, seeps, and springs, in the desert Southwest. These habitats, along with the riparian corridor of Rincon Creek, support rare and special status species such as lowland leopard frog, yellow-billed cuckoo, gray hawk, and southwestern willow flycatcher, as well as plant species uncommon to the desert, including sycamore and ash. Saguaro National Park has a long legacy of scientific research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change. Saguaro National Park's close proximity to a large urban community provides exceptional access to wild places in which visitors can experience wilderness. Saguaro National Park contains a rich concentration of cultural resources that tell the history of continuous and diverse human occupation in the Southwest from prehistoric to modern times. The landscape contains evidence of how people adapt, modify, and thrive in an arid environment, and is an important part of the cultural heritage of associated American Indian tribes, Hispanic populations, and other groups.

Fundamental Resource or Value	Living Laboratory
Current Conditions and Trends	**Conditions** • Long legacy of scientific research (particularly on saguaro and other desert vegetation, tree ring research, complete vegetation map from 1937, ungulate surveys, bird surveys, etc.) • Products of research are contained in the park, at the Western Archeological and Conservation Center, and published in scientific literature. • The park has active education programs that focus on the science and citizen science. • Long history of community engagement and support related to research was the reason for designation of the monument, now park. This community engagement continues to today. • There is active research with multiple partners, including the University of Arizona, Sonoran Desert Inventory and Monitoring Network, U.S. Geological Survey, and other universities. • Research is both internally and externally driven. • Rincon Mountain District Visitor Center exhibits are being updated and have research, both historic and current, as one of the foci. • The ability to access areas of the park influences where research is conducted and what research is done. • Limited social science and cultural research have been completed or planned. • Research is being compiled, analyzed, and interpreted (historic research, I&M program monitoring, air quality research and monitoring). • There are conflicts between maintaining the undeveloped and untrammeled qualities of wilderness and ongoing scientific research. **Trends** • Partnering with other education partners is increasing. • External and internal project funding is generally decreasing. • Research funding from the park's friends organizations is increasing but still cannot meet the demand for research needed. • Citizen science is incorporating more youth and continuing to increase. • Demand from partners to be involved in research at the park is increasing. • Demand is increasing for social science research, including visitor use studies and additional information from the community. • Technology is positively impacting how we can conduct research, expanding what is possible. • The unstable nature of staffing and limited staff time is also limiting the ability to oversee ongoing and potential research.

Fundamental Resource or Value	Living Laboratory
Threats and Opportunities	**Threats** • There is a lack of funding for a research and learning center. • Inconsistent support of research activities within the park, on both local and agency levels. • Conflicting management objectives or mandates (i.e., wilderness designation and access restrictions). • Unstable nature of federal funding affects the confidence of private donors to become involved in research efforts. **Opportunities** • Increased focus on social science and cultural research. • Hosting a research and learning center at the park. • Increase partnership opportunities with education partners. • Develop a research catalog, and a list of NPS research needs to help focus research effort to address park management needs. • Hold a regular symposium to synthesize researching, bringing external and internal groups together. • Strengthen the relationship between Interpretation and Resource Management divisions to improve the scholarship of interpretation as well as disseminate important research findings in a timely manner, using all available interpretive tools. • The park provides a laboratory to assess ecological responses to a warming climate. • Continued and expanded air quality monitoring and research on air pollution and its effects on other resources (e.g., visibility and ecosystem health).
Data and/or GIS Needs	• Develop and populate a research catalog and list of research needs. • Research atlas (what's been done and where). • Legacy reports need to be digitized and archived but in an accessible manner so as to be searchable, cross referencing eTIC and IRMA. • Data collection and analysis for fire effects. • Additional surveying and monitoring for cultural resources and social science components.
Planning Needs	• Resource stewardship strategy (along with the research catalog, a resource stewardship strategy will help identify additional needs). • State of the Park report. • Parkwide education plan. • Updated comprehensive interpretive plan, including long-range interpretive plan and annual implementation plans. • Fire management plan (update in face of current economic conditions).

Fundamental Resource or Value	Living Laboratory
Laws, Executive Orders and Regulations That Apply to the FRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Saguaro National Park enabling legislation • The Wilderness Act • Superintendent's Compendium **NPS Policy-level Guidance** • NPS *Management Policies 2006* (§4.2, 7.3.1.1, 8.10) • Director's Order 6: *Interpretation and Education* • Director's Order 41: *Wilderness Stewardship* and NPS *Reference Manual 41: Wilderness Stewardship* • NPS *A Call to Action*, action 16, "Live and Learn" • Closures and permit requirements as described in the Superintendent's Compendium (sections I and II)

Analysis of Other Important Resources and Values

Other Important Resource or Value	Geologic Resources
Related Significance Statements	Saguaro National Park contains the largest roadless sky island in the American Southwest. Encompassing a wide range of elevations, the Rincon Mountains support extraordinary biodiversity within a small geographic area. Within a few miles, the species within the park range from desert dwellers such as Gila monsters, desert tortoise, and saguaro cacti to montane residents such as American black bear, spotted owl, and Douglas fir. Saguaro National Park preserves one of the largest concentrations of rare and distinct aquatic micro-habitats such as *tinajas*, seeps, and springs, in the desert Southwest. These habitats, along with the riparian corridor of Rincon Creek, support rare and special status species such as lowland leopard frog, yellow-billed cuckoo, gray hawk, and southwestern willow flycatcher, as well as plant species uncommon to the desert, including sycamore and ash. Saguaro National Park has a long legacy of scientific research and serves as an exceptional living laboratory for studying ecological and geological processes as well as the environmental consequences of climate change.
Current Conditions and Trends	**Conditions** • Metamorphic core complex is visible from the park; visitors and researchers can drive and then hike off-trail. • This feature is stable. • The site is used by geology students worldwide for study. • There is some social trail damage primarily from the number of students walking to the location, off-trail. • Off-trail travel is restricted below 4,500 feet. **Trends** • The area around the site is increasingly damaged (albeit, at a lesser level relative to other trails).
Threats and Opportunities	**Threats** • Social trail damage around the study site. **Opportunities** • Provide trail access and interpretation of these features. • Have scientists lead discussions and explanations.
Data and/or GIS Needs	• Mapping of features (GIS). • Gather and archive all related research.
Planning Needs	• Trails planning. • Parkwide education plan. • Interpretive plan to incorporate development of geologic resources interpretation materials. • Site plan for visitor use and access.
Laws, Executive Orders and Regulations That Apply to the OIRV, and NPS Policy-level Guidance	**Laws, Executive Orders, and Regulations** • Superintendent's Compendium **NPS Policy-level Guidance** • NPS *Management Policies 2006* (§4.8) • NPS *Natural Resource Management Reference Manual 77*

Identification of Key Issues and Associated Planning and Data Needs

This section considers key issues to be addressed in planning and management and therefore takes a broader view over the primary focus of part 1. A key issue focuses on a question that is important for a park. Key issues often raise questions regarding park purpose and significance and fundamental and other important resources and values. For example, a key issue may pertain to the potential for a fundamental or other important resource or value in a park to be detrimentally affected by discretionary management decisions. A key issue may also address crucial questions not directly related to purpose and significance, but still indirectly affects them. Usually, a key issue is one that a future planning effort or data collection needs to address and requires a decision by NPS managers.

The following are key issues for Saguaro National Park; associated planning and data needs can be found in the "Planning and Data Needs" section of this document: (not in priority order)

- **Urbanization and Major Development:** Impacts associated with urbanization and major development (e.g., housing, mining, facility corridors, Central Arizona Project—both linear and point) are having significant impacts on park resources and visitor experience. These include negative impacts on air quality, viewsheds, night skies, and fragmentation of habitat and wildlife corridors. In addition, roads, heavy commuter traffic, and housing developments immediately contiguous to park boundaries impact park resources in various ways.

- **Invasive Species:** Buffelgrass and other invasive species (e.g., cheat grass, tamarisk) reduce the native biodiversity and alter the fire regime, placing at risk communities adjacent to the park and critical nonfire-adapted elements of the natural environment (i.e., saguaro and other cacti). This represents the largest ecological threat to the resources that the park was established to protect and has the potential to convert the Sonoran Desert ecosystem within the park into nonnative perennial grassland.

- **Climate change:** Climate change has impacts on cultural resources and natural resources, including saguaro and other native species, as well as desert water sources such as springs and tinajas. As climate change continues to affect ecosystem processes the need for adaptive management strategies may become imperative. Predictions indicate a drier and hotter climate in the Southwest with possible changes to the timing of precipitation, which could have far-reaching effects on the park resources.

- **Adjacent Land Use:** Urbanization and development, nonnative invasive plants, ground water pumping, trespass livestock, and insularization of natural resources and systems have the potential to impact park resources. All of these threats require considerable staff effort to track, understand, and mitigate.

- **Fire Effects:** Climate change is causing hotter temperatures for longer periods of time, resulting in earlier snow melt and drier fuel conditions. In addition, the spread of buffelgrass is creating greater fuel loads, resulting in longer, hotter, and more dangerous fire seasons. The response plan needs to be updated, including adjacent land management areas.

- **Visitor Use:** There are two broad topics related to visitor use that the park needs to address. The first relates to visitation demographics: Current park visitation does not reflect local demographics. Although the park is immediately adjacent to a diverse city of nearly one million residents, visitors and park supporters are overwhelmingly not diverse or reflective of the local community or United States population. The park is taking steps to improve connectivity with underserved audiences and youth, but there is a long way to go. Further, the park lacks the capacity to respond to the great demand for environmental education programs. The second relates to visitor-caused resource impacts: Trails are being increasingly degraded due to heavy visitor use and erosion. Visitor-created social trails continue

to contribute to resource damage, including use from hikers, equestrian, bicyclists, and border traffic. Increased urbanization adjacent to the park boundaries is leading to increased incidents of vandalism and theft of natural and cultural resources and facilities.

- **Visitor Experience and Opportunities:** Within this broad topic, there are three main priorities that the park needs to address. First, the park needs to improve parking at key trailheads to safely accommodate visitors. To achieve this, additional consultation is needed with the county to improve manageability of park trailheads that are currently on county property. By doing so, visitors will be afforded more efficient access to park trails and therefore resources.

  Second, the park does not have effective wayfinding to and within the park. Navigation, interpretation, and orientation materials and efforts need to be reviewed and added to where appropriate. Signage may need to be added to both help visitors navigate within the park and to relay educational and interpretive messages.

  Third, the park may not be in compliance with NPS policy and the Architectural Barriers Act. A programmatic approach to issues of accessibility needs to be undertaken. Existing facilities need to be examined and any deficiencies within the Architectural Barriers Act mandates need to be identified. A programmatic strategy for implementing rehabilitation of facilities would aid this endeavor.

- **Park Staff:** Access issues for park staff need to be resolved. Specifically, how staff accesses the southern boundary in the Rincon Mountain Districts needs to be reviewed to ensure that sensitive natural and cultural resources are being protected while park staff continues to have needed access to this area.

  Park funds are not sufficient to meet the number of employees needed to effectively and efficiently manage the park. Park staffing needs to be evaluated to determine the highest park priorities for filling vacant positions that is commensurate with reduced funding levels and future operational needs. This is a critical issue that will help the park fulfill its purpose during a constrained fiscal environment. Please refer to the "Planning and Data Needs" section of this document for a full list of identified planning and data needs.

- **Sustainability:** Park operations do not fully meet NPS sustainability goals; the park needs to increase efforts to improve energy efficiency. Goals related to sustainability can be accomplished through the use of an environmental management system and a parkwide sustainability culture and ethic.

- **Funding:** The park does not have sufficient funding to adequately protect park resources, invest in operations and maintenance of park infrastructure, and provide for visitors. Department and servicewide priorities and initiatives are continually changing. Unfunded mandates and continuous data calls are demanding an inordinate amount of staff time and energy, detracting from true park priorities. Budget shortfalls and lack of incentive/awards programs are resulting in a decline in staff morale. The park has become increasingly reliant on grant resources, new funding sources, and fundraising from the Friends of Saguaro National Park just to accomplish day-to-day operations.

Planning and Data Needs

To maintain connection to the core elements of the foundation and the importance of these core foundation elements, the planning and data needs listed here are directly related to protecting fundamental resources and values, park significance, and park purpose, as well as addressing key issues. To successfully undertake a planning effort, information from sources such as inventories, studies, research activities, and analyses may be required to provide adequate knowledge of park resources and visitor information. Such information sources have been identified as data needs. Geospatial mapping tasks and products are included in data needs.

Items considered of the utmost importance were identified as high priority, and other items identified, but not rising to the level of high priority, were listed as either medium- or low-priority needs. These priorities inform park management efforts to secure funding and support for planning projects.

Planning Needs – Where a Decision-making Process Is Needed

Related to an FRV or OIRV?	Planning Needs	Priority (H, M, L)	Notes
FRV: Urban Area Interface and Regional Identity	Financial sustainability plan, position management/staffing strategy. Address expansion of fee collection locations and rate structure.	H	Need to effectively manage the limited funding and staffing that we do have. Changing fiscal climate necessitates prioritization of staff and funding decisions.
FRVs: Saguaro Cacti; Sonoran Desert and Sky Island Ecosystems Integrity; Rincon Creek and Aquatic Habitats; Wilderness Stewardship in an Urban Area	Prepare vulnerability assessments that look at sensitivity and adaptive capacity of saguaro cacti, aquatic systems and habitats, and other selected resources in the Sonoran desert and sky island ecosystems within the context of climate change.	H	Need to determine what actions to take where and when to protect saguaros, aquatic systems, and the Sonoran desert and sky island ecosystems in light of climate change. This information will feed into the resource stewardship strategy.
FRVs: Saguaro Cacti; Sonoran Desert and Sky Island Ecosystems Integrity; Rincon Creek and Aquatic Habitats; Clean Air; Cultural Resources; Living Laboratory	Resource stewardship strategy.	H	Incorporates FRVs. Identify critical needs to preserve and protect resources in the park and prepare a pathway for addressing data needs.
FRV: Wilderness Character	Wilderness stewardship strategy, including historic structures within the wilderness, climbing bolts, equestrian use, and a wilderness sign plan.	H	Have not had a wilderness management plan since the west unit was incorporated; this will address a variety of issues. Wilderness covers 80% of the park. Additional challenges exist due to the nearby urban environment.
FRV: Urban Area Interface and Regional Identity	Rehab and safety improvements on Picture Rocks Road and Sandario. Include adaptive management strategies (as identified in the general management plan).	H	Issues including safety (i.e., 5 motor vehicle collision fatalities in 2012), and resource protection (i.e., an average of 23 resource damage incidents on the two roads). Picture Rocks Road is a major commuter route through the park.

Planning Needs – Where a Decision-making Process Is Needed

Related to an FRV or OIRV?	Planning Needs	Priority (H, M, L)	Notes
FRVs: Saguaro Cacti; Sonoran Desert and Sky Island Ecosystems Integrity; Urban Area Interface and Regional Identity; Rincon Creek and Aquatic Habitats; Living Laboratory OIRV: Geologic Resources – Teaching Aspect	Parkwide education plan.	H	With diminishing funding, increasing demand, and organization restructuring, we need to determine which education services are most effective to provide to a city of 1 million people.
FRV: Cultural Resources	Cultural management plan. Could include: Cultural cyclic maintenance program, long-term prioritization of cultural resource related projects, funding strategy. Could be in capital investment strategy. Resource stewardship strategy includes cultural resources, but doesn't set funding sources.	H	Cultural resources have not received adequate attention due to staffing constraints. A strategy for managing and protecting cultural resources is needed. This would help mitigate damage due to vandalism, climate change, and other changing conditions.
FRVs: Urban Area Interface and Regional Identity; Living Laboratory	Partnership action plan / volunteer plan.	H	Could be done prior to, or incorporated into financial sustainability plan. Need to decide on mutual goals and approaches with key partners in light of limited NPS funding.
FRVs: Rincon Creek and Aquatic Habitats; Cultural Resources	Resource and visitor protection plan.	H	A proactive protection strategy has not been developed for highest risk and most sensitive areas such as Rincon Creek, Box Canyon, and Madrona Creek.
FRV: Urban Area Interface and Regional Identity	Community engagement and communication strategy, including new communication methods.	H	Builds on previously conducted research on demographics. Tied to FRV, people's connection to the park. Need a parkwide policy for media engagement, messaging, etc.
Parkwide issue	Update emergency action plan.	H	Needed to ensure public and employee health and safety.
FRVs: Saguaro Cacti; Rincon Creek and Aquatic Habitats; Cultural Resources; Wilderness Character	Climate change scenario planning.	H	Provides a way to plan for the uncertainty associated with climate change. To be completed in preparation for a resource stewardship strategy.
FRV: Urban Area Interface and Regional Identity	Park's asset management plan.	H	The completion of the park's asset management plan needs to be done in the context of and alignment with the Capital Investment Strategy.

Planning Needs – Where a Decision-making Process Is Needed

Related to an FRV or OIRV?	Planning Needs	Priority (H, M, L)	Notes
FRV: Urban Area Interface and Regional Identity	Sustainability plan – green team.	H	Conduct an assessment, then a plan. As an effort to serve as a leader in the community, and to reduce our overhead costs of operating the park, we need to improve the sustainability of our operations. Urban park connection provides opportunities to do this. Supports legal requirements.
FRVs: Saguaro Cacti; Sonoran Desert and Sky Island Ecosystems Integrity; Rincon Creek and Aquatic Habitats; Living Laboratory; Wilderness Character	Resource condition assessment.	H	Assessing the health of the diverse natural resources and systems of the park is crucial for identifying threats and developing protective/mitigation actions. To be completed in preparation for a resource stewardship strategy.
FRV: Urban Area Interface and Regional Identity	Accessibility assessment and plan.	M	Holistically looks at the entire park to identify opportunities and efficiencies. This is a legal requirement as well as an opportunity, particularly with demographics of visitors.
FRVs: Urban Area Interface and Regional Identity; Sonoran Desert and Sky Island Ecosystems Integrity	Golden Gate Road closure and restoration plan.	M	The Golden Gate trailhead was developed in 2011 as part of a project in both the 1995 and 2006 trail management plans / environmental assessments to convert Golden Gate Road into a multiuse trail. To complete this project, the four-mile road needs to be rehabilitated and revegetated.
FRVs: Urban Area Interface and Regional Identity; Living Laboratory	Management strategy and action plan that emphasizes cooperative conservation to protect air quality, scenic views, and resources sensitive to air pollution.	M	Could be an air quality management plan or more collaboration with cities, etc. This is needed so the park staff can be proactive in protecting the park's air quality related values.
FRV: Wilderness Character	Wilderness study of proposed and eligible wilderness expansion areas.	M	Identified in general management plan.
FRV: Urban Area Interface and Regional Identity	Outreach strategy plan.	M	Would focus efforts on the park's highest priority initiatives.
FRV: Saguaro Cacti	Proactive monitoring and protection plan for poaching and vandalism.	L	Relates to FRV; may not be an immediate risk but need to protect them and be proactive.
FRV: Wilderness Character	Visitor capacity study/plan, especially equestrian.	L	This is a data need supporting the wilderness stewardship strategy.
FRV: Cultural Resources	Integrated pest management plan.	L	
FRV: Cultural Resources	Manning Cabin site stabilization and use plan.	L	

Planning Needs – Where a Decision-making Process Is Needed

Related to an FRV or OIRV?	Planning Needs	Priority (H, M, L)	Notes
FRVs: Rincon Creek and Aquatic Habitats; Cultural Resources	Facilities planning at the Madrona ranger station.	L	
FRV: Cultural Resources	Interpretive media plan for Civilian Conservation Corps and other sites.	L	
OIRV: Geologic Resources	Trails planning for metamorphic core complex.	L	
OIRV: Geologic Resources	Development of interpretive materials (related to geological resources).	L	

Data and GIS Needs

Related to an FRV or OIRV?	Data and GIS Needs	Priority (H, M, L)	Notes
FRV: Urban Area Interface and Regional Identity	Visitor use experience data and baseline.	H	Understanding visitation: local vs. nonlocal, local nonvisitors; updated demographics study, activities. Social science around nonvisitors, expand on 2007 transportation and visitor use study.
FRVs: Urban Area Interface and Regional Identity; Wilderness Character	Condition and use assessment of trails.	H	Trails are in poor condition in some places, allows prioritization of resources.
FRVs: Rincon Creek and Aquatic Habitats; Sonoran Desert and Sky Island Ecosystems Integrity	Identify ecological thresholds for species. Threshold of recreational impacts (i.e., taking water from the tinajas, swimming).	H	Provides data needed to plan for protection of FRVs.
FRV: Cultural Resources	Additional cultural/archeological surveying, inventories.	H	Need to identify parkwide cultural and archeological resources.
FRVs: Sonoran Desert and Sky Island Ecosystems Integrity; Cultural Resources; Living Laboratory	Interpretive database, create and populate. Research atlas (what's been done and where).	H	Need to create a comprehensive database to organize existing resources and research.
FRVs: Wilderness Character; Saguaro Cacti	Early detection system for buffelgrass and spatial data. Buffelgrass infestation (regular updates).	H	Buffelgrass is currently the number 1 ecological threat to the park; need to know where it is in order to set treatment priorities.
FRV: Sonoran Desert and Sky Island Ecosystems Integrity	Identify regional opportunities to protect connectivity for wildlife corridors. Including impacts of road corridors.	H	Habitat fragmentation threatens wildlife populations at a regional level; significant impact from transportation corridors and high traffic volume.
FRV: Sonoran Desert and Sky Island Ecosystems Integrity	Expand monitoring and research of species of concern, including impacts of climate change (predictive modeling on a local level).	H	We do not know enough about these relationships in order to adequately protect resources.
FRV: Sonoran Desert and Sky Island Ecosystems Integrity	Examine pollution dose-response relationships in sensitive park ecosystems (e.g., effects of nitrogen deposition)	H	Nearby land management actions such as the proposed Rosemont Mine and other actions are serving as major pollution sources that are expected to have impacts on park resources.
FRV: Rincon Creek and Aquatic Habitats	Understanding the ground and surface water withdrawal. Distinguish ground water pumping from drought.	H	Data support open water rights permitting, expected state action.
FRV: Wilderness Character	Regular monitoring of wilderness character qualities, including soundscapes and night skies, scenic viewsheds.	H	Completed wilderness character assessment, baseline data need regular monitoring.

Data and GIS Needs

Related to an FRV or OIRV?	Data and GIS Needs	Priority (H, M, L)	Notes
FRVs: Saguaro Cacti; Sonoran Desert and Sky Island Ecosystems Integrity	Collect daily weather data at different elevations.	H	Data needed to determine which climate future is becoming a reality in the park, and the effect of climate change on saguaros and the two ecosystems.
FRVs: Saguaro Cacti; Sonoran Desert and Sky Island Ecosystems Integrity	Ecological interactions of invasive species and nitrogen deposition and their impacts on the saguaros, native Sonoran Desert vegetation, and associated ecosystems.	H	Existing threat in park, need data to understand the processes to effectively mitigate impacts and protect FRVs.
FRV: Living Laboratory	Research catalog, list of research needs, develop and populate.	H	To help prioritize and solicit external research efforts in support of park purpose and management needs.
FRV: Cultural Resources	Condition assessment for cultural resources.	H	To be completed in preparation for a resource stewardship strategy.
FRV: Saguaro Cacti; Rincon Creek and Aquatic Habitats; Cultural Resources; Wilderness Character	Vulnerability assessment.	H	To be completed in preparation for a resource stewardship strategy. Assessment would focus on key resources that look at sensitivity and adaptive capacity within the context of climate change at Saguaro National Park.
None	Improve and add data within the Facility Management Software System.	H	Need to identify and add all high priority location asset specifications including lifecycle data to the FMSS database. Need to consistently improve and better develop quality asset data.
FRV: Rincon Creek and Aquatic Habitats	Continued monitoring of natural resources. Compare to the Madrona Pulse study.	M	
FRV: Living Laboratory	Fire effects: data collection and analysis.	M	
FRV: Urban Area Interface and Regional Identity	Economic impact data beyond money generation model.	M	
FRV: Wilderness Character	Continue monitoring of air quality.	M	
FRV: Wilderness Character	Conduct visual resource inventory to identify important viewsheds.	M	To identify viewsheds and values important to visitors in order to maintain wilderness setting and opportunities for solitude.
FRV: Wilderness Character	Conduct acoustic sound inventories.	M	To identify natural sounds and quiet that are important to visitors in order to maintain wilderness setting and opportunities for solitude.
FRV: Wilderness Character	Trail hiking data collection for Arizona Trail.	M	

Data and GIS Needs

Related to an FRV or OIRV?	Data and GIS Needs	Priority (H, M, L)	Notes
FRVs: Wilderness Character; Sonoran Desert and Sky Island Ecosystems Integrity; Saguaro Cacti	Understanding equestrian impacts on wilderness character.	M	
FRV: Saguaro Cacti	Fuel model for buffelgrass.	L	
FRV: Sonoran Desert and Sky Island Ecosystems Integrity	Understand the implications of surrounding land use on the entire ecosystem (loss of bees…). Need to investigate potential causes and effects on species	L	
FRV: Rincon Creek and Aquatic Habitats	Meteorological data at the watershed level.	L	This would support water flow modeling for the Rincon Creek watershed.
FRV: Rincon Creek and Aquatic Habitats	Assessment of Rincon Creek for degraded watershed conditions.	L	This funnels into climate changes effects. Could be combined with a resource stewardship strategy.
FRV: Cultural Resources	National register nominations.	L	
FRV: Cultural Resources	Ethnographic survey.	L	
FRV: Urban Area Interface and Regional Identity	Mapping visitor created social trails (GIS).	L	
FRVs: Urban Area Interface and Regional Identity; Sonoran Desert and Sky Island Ecosystems Integrity; Wilderness Character	Air quality monitoring, continued support. Monitoring of additional air quality parameters (i.e., deposition) and air quality related values.	L	
FRVs: Urban Area Interface and Regional Identity; Sonoran Desert and Sky Island Ecosystems Integrity; Wilderness Character; Rincon Creek and Aquatic Habitats	Special studies to examine pollution dose-response relationships in sensitive park ecosystems (i.e., effects of nitrogen deposition).	L	

Part 3: Contributors

Saguaro National Park

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Appendix A: Proclamations, Enabling Legislation, and Legislative Acts for Saguaro National Park

Proclamation 2031

SAGUARO NATIONAL MONUMENT—ARIZONA

March 1, 1933.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Saguaro National Monument, Ariz. Preamble.

WHEREAS a certain area within the Catalina Division of the Coronado National Forest in the State of Arizona and certain adjacent lands are of outstanding scientific interest because of the exceptional growth thereon of various species of cacti, including the so-called giant cactus, it appears that the public interest will be promoted by reserving as much land as may be necessary for the proper protection thereof as a national monument.

Establishment of, within Coronado National Forest, Ariz. Vol. 34, p. 225. U. S. C., p. 416.

NOW, THEREFORE, I, HERBERT HOOVER, President of the United States of America, by virtue of the power in me vested by section 2 of the act of Congress approved June 8, 1906 (34 Stat. 225), entitled "AN ACT For the preservation of American antiquities," do proclaim that there are hereby reserved from all forms of appropriation under the public land laws, subject to all valid existing rights, and the right of the State of Arizona to select for the use of the University of Arizona all or any portions of secs. 11, 14, 22, 28, and E. ½ 21, T. 14 S., R. 16 E. of the Gila and Salt River meridian, and set apart as a national monument, the following-described tracts of lands in the State of Arizona:

Selections by State, for University.

Description.

GILA AND SALT RIVER MERIDIAN

T. 14 S., R. 16 E., secs. 8 to 17 inclusive, secs. 20 to 29 inclusive, and secs. 32 to 36 inclusive.
T. 14 S., R. 17 E., secs. 7 to 36 inclusive.
T. 14 S., R. 18 E., secs. 7, 8, 9, secs. 16 to 21 inclusive, and secs. 28 to 33 inclusive.
T. 15 S., R. 16 E., secs. 1 to 5 inclusive.
T. 15 S., R. 17 E., secs. 1 to 6 inclusive and secs. 11, 12, 13, 14, 23, and 24.
T. 15 S., R. 18 E., secs. 4 to 9 inclusive and secs. 16 to 21 inclusive.

Use of Coronado National Forest not affected.

The reservation made by this proclamation is not intended to prevent the use of the lands now within the Coronado National Forest for national-forest purposes under the proclamation establishing the Coronado National Forest, and the two reservations shall both be effective on the land withdrawn; but the national monument hereby established shall be the dominant reservation, and any use of the land which interferes with the preservation or protection as a national monument is hereby forbidden.

Reserved from settlement, etc.

Warning is hereby given to all unauthorized persons not to appropriate, injure, deface, remove, or destroy any feature of this national monument, or to locate or settle on any of the lands reserved by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this 1 day of March, in the year of our Lord nineteen hundred and thirty-three, and of the [SEAL] Independence of the United States of America the one hundred and fifty-seventh.

HERBERT HOOVER

By the President:
HENRY L STIMSON
Secretary of State.

Proclamation 3439 [pp. 9-10]

Proclamation 3439

ENLARGING THE SAGUARO NATIONAL MONUMENT, ARIZONA

WHEREAS an area in Arizona possessing outstanding scientific interest because of its exceptional growth of various species of cacti has been established as the Saguaro National Monument by Proclamation No. 2032 of March 1, 1933; and

WHEREAS it appears that it would be in the public interest to add to the Saguaro National Monument certain lands lying within what is known as the Tucson Mountain Park which contain a remarkable display of relatively undisturbed lower Sonoran desert vegetation, including a saguaro stand which equals or surpasses saguaro stands elsewhere in the Nation; and

WHEREAS the addition of these lands to the monument appears essential for their effective preservation and interpretation and for the implementation of the purposes of the Saguaro National Monument; and

WHEREAS the Advisory Board on National Parks, Historic Sites, Buildings and Monuments, established pursuant to the act of August 21, 1935, 49 Stat. 666 (16 U.S.C. 463), impressed by the remarkable diversity of desert vegetation of this area and its significant wildlife qualities, has recommended its preservation by adding it to the Saguaro National Monument:

NOW, THEREFORE, I, JOHN F. KENNEDY, President of the United States of America, by virtue of the authority vested in me by section 2 of the act of June 8, 1906, 34 Stat. 225 (16 U.S.C. 431), do proclaim as follows:

Subject to valid existing rights, the lands now owned by the United States within the exterior boundaries of the following-described tracts of land are hereby added to and reserved as a part of the Saguaro National Monument; and lands owned by the State of Arizona within such boundaries shall become and be reserved as a part of that monument upon acquisition of title thereto by the United States:

GILA AND SALT RIVER MERIDIAN, ARIZONA

T. 13 S., R. 11 E.,
Sections 13, 14, 15, 21, 22, 23, 24, 25, 26, 27, 28, 34, 35 and 36
T. 13 S., R. 12 E.,
Sections 6, 7, 8, 17, 18, 19, 20, 29, 30 and 31;

comprising 15,360 acres, more or less.

The boundaries of the Saguaro National Monument are modified accordingly.

The lands reserved as a part of the Saguaro National Monument by or pursuant to this proclamation shall be administered pursuant to the act of August 25, 1916, 39 Stat. 535 (16 U.S.C. 1–3), and acts supplementary thereto and amendatory thereof and shall be subject to all the laws and regulations applicable to that monument.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature or object of this monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this fifteenth day of November in the year of our Lord nineteen hundred [SEAL] and sixty-one, and of the Independence of the United States of America the one hundred and eighty-sixth.

JOHN F. KENNEDY

By the President:

DEAN RUSK,
Secretary of State.

Wilderness designation (P.L. 94-567)

Saguaro National Monument, Ariz.

(j) Saguaro National Monument, Arizona, wilderness comprising seventy-one thousand four hundred acres, depicted on a map entitled "Wilderness Plan, Saguaro National Mounment, Arizona", numbered 151–20,003–D and dated May 1976, to be known as the Saguaro Wilderness.

Act expanding the monument (P.L. 102-61)

Public Law 102–61
102d Congress

An Act

To expand the boundaries of the Saguaro National Monument.

June 19, 1991
[S. 292]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Saguaro National Monument Expansion Act of 1991.
Arizona.
Natural resources.
16 USC 431 note.

SECTION 1. SHORT TITLE.

This Act may be cited as the "Saguaro National Monument Expansion Act of 1991".

SEC. 2. FINDINGS AND PURPOSE.

16 USC 431 note.

(a) FINDINGS.—The Congress finds that the area generally to the south of the Rincon unit of the Saguaro National Monument contains—

(1) prime Sonoran desert habitat including an exceptionally rich area of Saguaro cactus and palo verde uplands;

(2) an outstanding riparian corridor of large Arizona sycamores and cottonwoods;

(3) important archaeological and cultural sites; and

(4) important habitat for the desert tortoise, gila monster, javelina, and other species of reptiles, mammals, and birds.

(b) PURPOSE.—The purpose of this Act is to authorize the addition of approximately 3,540 acres to the Rincon unit of the Saguaro National Monument in order to protect, preserve, and interpret the monument's resources, and to provide for the education and benefit of the public.

SEC. 3. DEFINITIONS.

16 USC 431 note.

As used in this Act, the term—

(1) "expansion area" means the approximately 3,540 acres to be added to the monument pursuant to this Act;

(2) "monument" means the Saguaro National Monument; and

(3) "Secretary" means the Secretary of the Interior.

SEC. 4. EXPANSION OF MONUMENT BOUNDARIES.

16 USC 431 note.

(a)(1) IN GENERAL.—The monument boundaries are hereby revised to include the approximately 3,540 acres of lands and interests in land as generally depicted on the map entitled "Saguaro National Monument Enhanced Boundary", numbered 151/91,001-D, and dated September 1990.

(2) The map referred to in paragraph (1) shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior.

(b) ACQUISITION OF LANDS.—The Secretary is authorized to acquire lands and interests in lands within the monument boundary by donation, purchase with donated or appropriated funds, exchange, or transfer from another Federal agency, except that lands or interests therein owned by the State of Arizona or any political subdivision thereof may be acquired only by donation or exchange.

(c) ADMINISTRATION.—Lands and interests in lands acquired pursuant to this Act shall be administered as part of the monument and shall be subject to all laws applicable to the monument.

(d) AMENDMENT TO GENERAL MANAGEMENT PLAN.—Within one year after the date of enactment of this Act, the Secretary is directed to amend the monument's general management plan with respect to the use and management of the expansion area.

16 USC 431 note.

SEC. 5. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated such sums as may be necessary to carry out this Act.

Approved June 19, 1991.

Act establishing the park (P.L. 103-364)

Public Law 103-364
103d Congress

An Act

To establish the Saguaro National Park in the State of Arizona, and for other purposes.

Oct. 14, 1994
[S. 316]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Saguaro National Park Establishment Act of 1994.
16 USC 410zz note.

SECTION 1. SHORT TITLE.

This Act may be cited as the "Saguaro National Park Establishment Act of 1994".

16 USC 410zz.

SEC. 2. FINDINGS AND PURPOSE.

The Congress finds that—

(1) the Saguaro National Monument was established by Presidential Proclamation in 1933;

(2) the Tucson Mountain unit was established by Presidential Proclamation in 1961;

(3) in recognition of the need to provide increased protection for the monument, the boundaries of Tucson Mountain unit were expanded in 1976, and the boundaries of Rincon unit were expanded in 1991;

(4) the Tucson Mountain unit continues to face threats to the integrity of its natural resources, scenic beauty, and habitat protection for which the unit was established;

(5) these threats impede opportunities for public enjoyment, education, and safety within the monument, as well as opportunities for solitude within the wilderness areas of the monument designated by Congress in 1976;

(6) the residential and commercial growth of the greater Tucson, Arizona metropolitan area is causing increasing threats to the monument's resources; and

(7) the Tucson Mountain unit should be enlarged by the addition of adjacent lands of National Park caliber and Saguaro National Monument should be afforded full recognition and statutory protection as a National Park.

16 USC 410zz-1.

SEC. 3. ESTABLISHMENT OF SAGUARO NATIONAL PARK.

16 USC 431 note.

There is hereby established the Saguaro National Park (hereinafter in this Act referred to as the "park") in the State of Arizona. The Saguaro National Monument is abolished as such, and all lands and interests therein are hereby incorporated within and made part of Saguaro National Park. Any reference to Saguaro National Monument shall be deemed a reference to Saguaro National Park, and any funds available for the purposes of the monument shall be available for purposes of the park.

16 USC 410zz–2. **SEC. 4. EXPANSION OF PARK BOUNDARIES.**

(a) IN GENERAL.—The boundaries of the park are hereby modified to reflect the addition of approximately 3,460 acres of land and interests therein as generally depicted on the map entitled "Saguaro National Monument Additions" and dated April, 1994.

(b) LAND ACQUISITION.—(1) Within the lands added to the park pursuant to subsection (a), the Secretary is authorized to acquire lands and interests therein by donation, purchase with donated or appropriated funds, transfer, or exchange: *Provided*, That no such lands or interests therein may be acquired without the consent of the owner thereof unless the Secretary determines that the land is being developed, or is proposed to be developed in a manner which is determental to the integrity of the park.

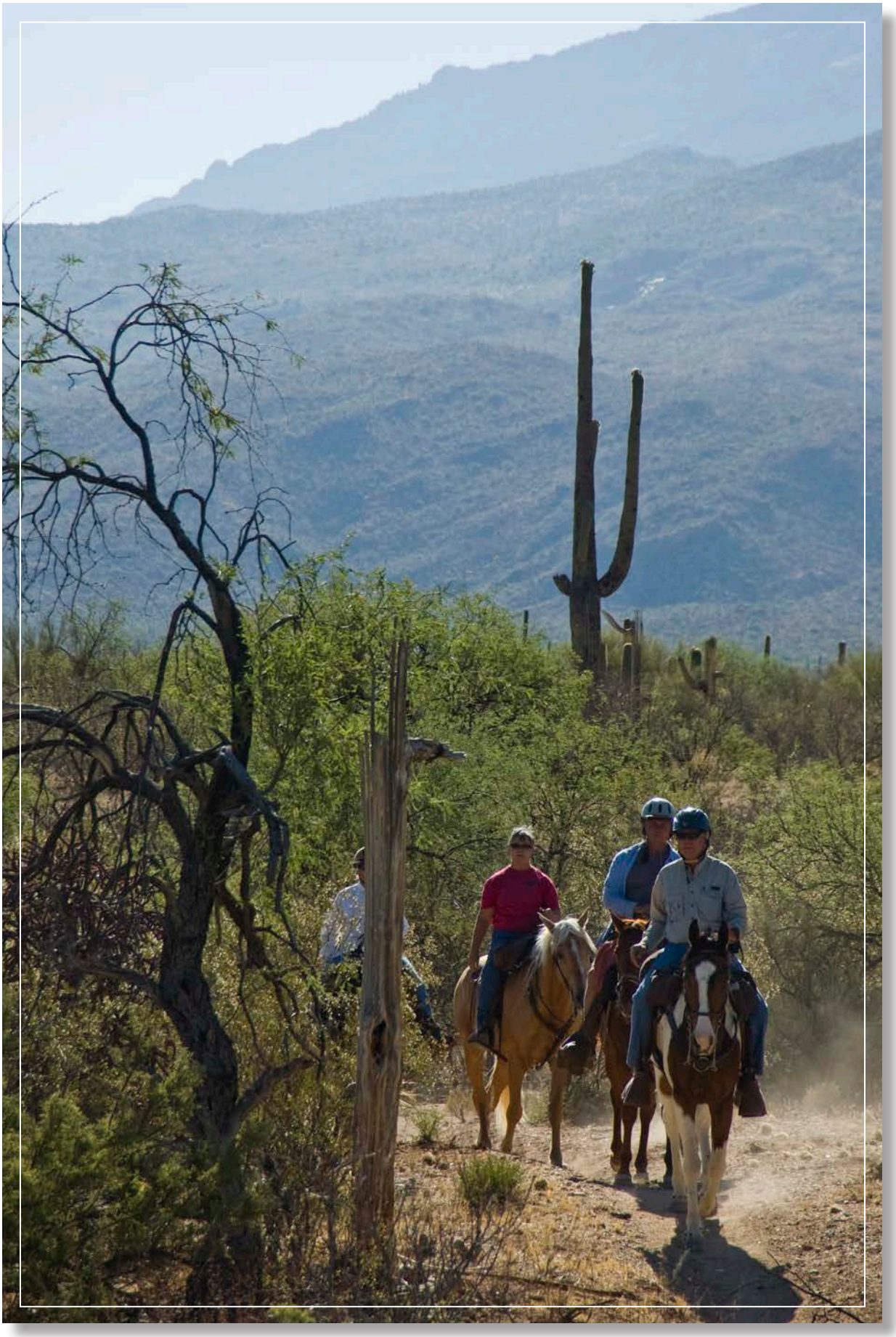
(2) Lands or interests therein owned by the State of Arizona or a political subdivision thereof may only be acquired by donation or exchange.

(c) WITHDRAWAL.—Subject to valid existing rights, all Federal lands within the park are hereby withdrawn from all forms of entry, appropriation, or disposal under the public land laws, from location, entry, or patent under the United States mining laws, and from disposition under all laws relating to mineral and geothermal leasing, and mineral materials, and all amendments thereto.

16 USC 410zz–3. **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

There is authorized to be appropriated such sums as may be necessary to carry out this Act.

Approved October 14, 1994.



Appendix B:
Inventory of Special Mandates and Administrative Commitments

Inventory of Special Mandates

Special Mandates

- Wilderness designation (P.L. 94-567)
- Class I under the Clean Air Act (P.L. 88-206)

Administrative Commitments

Parkwide Agreements/Partnerships

Title / Agency / Organization	Purpose / Description	Expiration Date	Responsible Party
Memorandums of Understanding			
Pima County Sheriff's Department	Cooperative law enforcement services	12/31/2014	Chief Ranger
Pima County Flood Control District	Flood control	10/12/2020	Chief Ranger
Department of Homeland Security	U.S. Border Patrol procedures for routine operations on NPS lands	Indefinite	Chief Ranger
Pima County	Picture Rocks Road maintenance	Being renewed	Chief of Maintenance
Chiricahua National Forest / Chiricahua National Monument	Shared fire program	2/19/2018	Fire Management Officer
U.S. Forest Service / Bureau of Land Management / U.S. Fish and Wildlife Service / National Park Service memorandum of understanding	Law enforcement authority cross-designation (southwest region)		Chief Ranger
General Agreements			
Friends of Saguaro National Park	Friends group / fund raising	9/8/2016	Superintendent
Picture Rocks Fire Department	Rural fire assistance	Recurring annually	Fire Management Officer
North East Fire Department	Rural fire assistance	Recurring annually	Fire Management Officer
U.S. Geological Survey / Arizona Science Center	Rincon Creek stream gauge	08/6/2012	Chief of Science and Resource Management
Dr. Randy Bennett	Medical adviser	02/08/2018	Chief Ranger
Rural/Metro Fire Department	Rural fire assistance	Recurring annually	Fire Management Officer
U.S. Geological Survey	Magnetic observatory	Being renewed	Chief of Science and Resource Management
Arizona Trail Association	Arizona Trail	3/17/2014	Superintendent
Special Use Permits			
Tohono O'Odham Tribal Council	Saguaro fruit harvest	Annual permit	Chief Ranger
Interagency Agreements			
Tuscon Mountain District Utility Corridor	Telecommunication facility for visitor information	05/14/2017	Chief Ranger
Sonoran Desert Network Inventory and Monitoring	Shared facilities / services / land	Indefinite	Superintendent
Cooperative Agreements			
Pima County	Air quality monitoring		Chief of Science and Resource Management
Arizona Department of Health Services-Tucson Medical Center	Base hospital emergency services	Indefinite	Chief Ranger

Title / Agency / Organization	Purpose / Description	Expiration Date	Responsible Party
Rincon Valley Fire Department	Rural fire assistance	Recurring annually	Fire Management Officer
Sonoran Institute	Collaborative resources management projects	Recurring annually	Superintendent
University of Arizona, Desert Southwest Cooperative Ecosystem Studies Unit	Host university (UAZ-105), numerous task agreements for specific projects	Indefinite	Chief of Science and Resource Management
Intergovernmental Agreements			
Pima County	Picture Rocks Road right-of-way to the National Park Service boundary	Being renewed	Chief of Maintenance
Rights-of-Way			
Trico Electric	Electric service at Tucson Mountain District	Indefinite	Chief of Maintenance
El Paso Gas	Right-of-way easement to construct, maintain, and operate a buried pipeline, and telegraph or telephone lines	Indefinite	Chief of Maintenance
Interagency Acquisition Agreements			
Perper Life Estate	Premises used only for single-family noncommercial residential purposes, conforming to all NPS regulations, maintaining the premises in good repair; not altering or adding to the property without permission in writing from NPS	180 or more days after abandoned by the Reserver (Lloyd J. Perper)	Superintendent
Greene Life Estate	Property to be used for residential purposes only, kept in good repair, commit no waste, pay taxes, maintain insurance	Title to vest upon death of the surviving Vendor (George Clayton Greene)	Superintendent
Limited Concession Permit			
Western National Parks Association	Book sales at Rincon Mountain District / Tucson Mountain District visitor centers	Ongoing	Chief of Interpretation

Appendix C:
Basics for Wilderness Stewardship

Wilderness Background Information

In 1976, Congress designated the Saguaro Wilderness (P.L. 94-567). The wilderness area encompasses 70,905 acres (78% of the park) in the Tucson Mountain and Rincon Mountain districts. The wilderness in the Rincon Mountain District is bounded on three sides by the 38,590-acre Rincon Mountain Wilderness Area, which lies within the Coronado National Forest.

In 2006 a wilderness eligibility assessment was completed for lands added to the park after the 1976 wilderness designation. The assessment, which was included in the 2008 general management plan, found 4,716 acres of the expansion lands in both park units possessed wilderness characteristics and values, and were eligible for wilderness study—three units in the Tucson Mountain District and one unit in the Rincon Mountain District were found eligible. (A wilderness study has not been completed for these areas.)

The Saguaro Wilderness protects a superb example of the Sonoran Desert ecosystem, featuring exceptional stands of saguaro cacti, important wildlife habitat, critical riparian areas, and associated high elevation ecosystems. It also protects significant cultural resources sites important to the Tohono O'odham people and historic structures erected by the Civilian Conservation Corps.

The Tucson Mountain District wilderness receives day use, while the Rincon Mountain District wilderness receives both overnight and day use. Overnight camping is limited to 6 campgrounds with 21 campsites in wilderness. Manning Camp, located in the heart of the Saguaro Wilderness, is the primary staging area for a variety of wilderness management functions. During the summer, both fire and trail crews use Manning Camp as their base of operation. Throughout the year, a variety of researchers also stay at Manning Camp.

Wilderness Character Narrative

A wilderness character narrative is intended to be a qualitative description and positive affirmation of the unique attributes of a wilderness area. Representatives from each of the four wilderness managing agencies developed a national framework to monitor wilderness character using five qualities: natural, untrammeled, undeveloped, opportunities for solitude or primitive and unconfined recreation, and other features. These qualities are defined in brief as follows[1]:

Natural: Wilderness maintains ecological systems that are substantially free from the effects of modern civilization.

Undeveloped: Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation.

Untrammeled: Wilderness is essentially unhindered and free from modern human control or manipulation.

Solitude or Unconfined Recreation: Wilderness provides outstanding opportunities for a primitive and unconfined type of recreation.

1. For more details on wilderness character see *Keeping it Wild in the National Park Service: A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring* (in press) and *Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System* (available online at: http://leopold.wilderness.net/pubs/654.pdf).

Other Features of Value: Features that are not covered by the other four qualities, including cultural resources, paleontological resources, and other scientific, educational, scenic, or historical value to wilderness character.

Natural Quality of Wilderness Character

The Tucson Mountain District wilderness ranges from an elevation of 2,180 feet to 4,687 feet and contains two biotic communities: desert scrub and desert grassland. Common wildlife includes iconic desert species such as the sidewinder, roadrunner, coyote, Gambel's quail, Gila monster, and desert tortoise. The Rincon Mountain District wilderness ranges from an elevation of 2,670 feet to 8,666 feet and contains six biotic communities. The biotic communities (starting from the lowest elevation) include desert scrub, desert grassland, oak woodland, pine-oak woodland, pine forest, and mixed conifer forest. Because of the greater range in elevation there are a greater number of biotic communities and increased plant and wildlife diversity. Animals such as the black bear, Mexican spotted owl, Arizona black rattlesnake, and white-tailed deer live in this district.

The wilderness area natural quality faces a number of threats. As of 2012 there were 42 nonnative plant species present in the wilderness, of which 20 are considered invasive, threatening the natural ecosystems. In the last decade, buffelgrass (*Pennisetum ciliare)* has rapidly spread across southern Arizona and threatens the Sonoran Desert ecosystem and the plants and wildlife that inhabit the desert, including the saguaro cacti. Buffelgrass is the greatest nonnative species threat to the park because it competes with native plants for resources, creates dense stands that inhibit native plant growth, and promotes high intensity fires in a community dominated by plants and animals, such as saguaros and desert tortoises, that are not adapted to fire.

Several wildlife species that are native to this wilderness area have been extirpated since the last century. Desert bighorn, Mexican gray wolves, jaguars, grizzly bears, and Gila topminnows have been extirpated from the Rincon Mountain District, while the Tucson Mountain District has lost desert bighorn and white-tailed deer.

Due to fluctuations in fire management policy over time, the wilderness has deviated from its natural fire return interval substantially. Desert areas historically had little or no fire. Invasive nonnative grasses have been introduced and filled in the gaps, allowing fires to spread into the Sonoran Desert

Over time, the metropolitan area near the park has become more developed and urbanized. In the future private lands are likely to become more developed, affecting wildlife corridors such as for black bear, night sky quality, air quality, and myriad other processes related to ecological health and wilderness character.

Finally, climate change poses a threat to the Sonoran Desert and Sky Island region ecosystems, and their fauna and flora, in the wilderness area.

Undeveloped Quality of Wilderness Character

The vast majority of the Saguaro Wilderness remains free from permanent improvements or human habitation. The contrast between Tucson's urban development with the jagged granite peaks, rolling grasslands, and saguaro-studded lowlands of the wilderness, exemplify the undeveloped quality of wilderness character.

Although there was historical ranching and mining in the Saguaro Wilderness, many of the signs of these uses have been removed and the landscape restored. There are, however, a few exceptions. The Manning Cabin, a national register property in the Rincon Mountain District, continues to be used by National Park Service staff, primarily the backcountry ranger and fire crews. Although there are no active mines or existing mining claims in the Saguaro Wilderness, the history of mining in the area is seen in the landscape. A vast majority of the mines are in the Tucson Mountain District wilderness. Many of these mines are surrounded by fencing or are gated off in order to protect the public. Seventy-seven NPS administrative structures, including chain link fencing, solar panels, dams, and radio towers and repeaters, are present. There are also 17 contemporary data collection structures and installed equipment, including weather stations, stream gauges, and other monitoring equipment. Although all of these installations serve important functions, they also remind visitors of the presence of humans and degrade this quality. Finally, there is some limited administrative use of motor vehicles, motorized equipment, and mechanical transport (which is permitted to administer the wilderness area) and some rare unauthorized use of motor vehicles and mechanical transport (i.e., bicycles) in the wilderness area.

Untrammeled Quality of Wilderness Character

Although much of the Saguaro Wilderness is affected primarily by the forces of nature and not actively manipulated, the wilderness area in places is managed and trammeled. As noted previously, buffelgrass threatens the continued existence of the saguaro in the wilderness. Given this, the park staff plans to more aggressively manage invasive species through the use of helicopters to apply herbicide to large and inaccessible areas. The park staff is evaluating the possible use of helicopters to apply herbicide to control buffelgrass in a small part of the wilderness area (less than 1,500 acres) that is not accessible by ground methods.

In addition to buffelgrass, park staff work to control and reduce the other invasive plant species in the wilderness area. Herbicides and pulling efforts are used but have not been effective enough to control the problem.

The fire history of the park has been affected significantly by historical trammeling. Fire suppression, in particular, has increased fuel loads by significantly departing from the natural fire return interval in the higher elevations of the Rincon Mountain District. The build-up of fuel loads may lead to unnaturally catastrophic fires. This would negatively impact other aspects of wilderness character, such as increasing restrictions on the wilderness user in the case of a fire or the degradation of natural processes in the wilderness. Prescribed fires are a tool used to return the wilderness to a more natural fire return interval. Although it constitutes a manipulation of the natural environment, and thus is considered trammeling, it may be essential in the management of ecosystems.

Finally, there are some ongoing authorized research projects that intentionally manipulate the biophysical environment, including capture and release of wildlife.

Solitude or a Primitive and Unconfined Type of Recreation Quality of Wilderness Character

Although the Saguaro Wilderness sits next to a large urban area, there are many opportunities for visitors to experience solitude, self-discovery, freedom from the constraints of society, or personal challenge and self-reliance within the wilderness area. The night sky is exceptional in the Rincon Mountain District wilderness, which contributes to the sense of solitude. In scoping for the general management plan, many respondents indicated they valued opportunities for self-discovery, quiet, scenic vistas, and solitude in the wilderness area; these qualities are becoming rare in the region.

Because the Saguaro Wilderness is close to the urban interface, many threats exist for this quality of wilderness character. The sights and sounds of the city in particular are a threat to this wilderness quality. Depending on the subjective experience of the wilderness user, seeing Tucson from the high country may elicit feelings of separation from the modern world and appreciation of the space that temporarily separates them from civilization. Others, however, may feel sights of modern development encroach on their views and degrade their wilderness experience.

The volume and speed of vehicles on South Old Spanish Trail by the Rincon Mountain District affect the natural ambient soundscape for up to two miles away from the road, much of which is in wilderness.

The Saguaro Wilderness lies under the flight path of both Tucson International Airport and Davis-Monthan Air Force Base. Consequently, many military, commercial, and commuter over-flights occur over the wilderness. The sound emitted from these over flights diminishes opportunities to experience solitude.

The availability of cell phone service and the ability to communicate with the outside world in wilderness can impact the user's opportunity for solitude and to have a primitive experience. In 2011, Verizon boosted its signal strength into the park. As a result, cell phone reception is high in many parts of the wilderness area for Verizon customers, which affects the wilderness experience for those who turn on their cell phones in the wilderness and for those who share campgrounds with them.

It appears there has been an increase in backcountry use since the completion of the Quilter Trail and rerouting of the Arizona Trail in 2011. As the Arizona Trail becomes more popular, this will increase the amount of both day and night users in the park's wilderness. In addition, the Tucson Mountain District wilderness has seen a dramatic increase in "border activity" (i.e., undocumented migrants and drug smugglers) in the past few years.

With regard to the primitive and unconfined type of recreation quality, the wilderness area has relatively few facilities that decrease opportunities for self-reliant recreation, including signs, bear boxes, improved trails, comfort stations, and campgrounds. The existing six campgrounds are well-dispersed and in good condition.

The National Park Service has several restrictions and permit requirements that degrade this quality, although they are meant to also protect people and resources. Restrictions, such as no off-trail travel below 4,500 feet in the Rincon Mountain District wilderness, a requirement for a camping permit, prohibitions on campfires in two campgrounds, restrictions on maximum group size, and prohibitions on where horses can go, all affect users' opportunity to have a primitive and unconfined experience.

Other Features of Value

The fifth quality is unique to the park and is based on the special features in the Saguaro Wilderness and its environs. For Saguaro, the other features of value quality relates to urban community engagement with the wilderness, scientific research, and cultural resources.

Community Engagement. Considering Saguaro's close proximity to the City of Tucson, engagement of an urban community with the wilderness is an integral component to its wilderness character and to the current and future protection of the wilderness resource. The future of wilderness preservation is dependent upon maintaining an interest in wilderness among the American public. The park staff is making great efforts to reach out to all spectra of the Tucson community to connect with the wilderness. From school visits to field trips, the park is consciously attempting to increase the number of students experiencing and learning about wilderness and wilderness ethics.

Scientific Research. Scientific research by both cooperating scientists (particularly from the nearby University of Arizona) and park staff have been an integral aspect of wilderness activities. Much of this research has centered on the saguaro because of the great interest in this unusual, long-lived plant. In addition, scientific research has been conducted in the wilderness area on a variety of other topics, including geology, fire history, and the Sonoran desert tortoise. The Saguaro Wilderness provides a unique opportunity to encourage science that enhances and supports wilderness character, addressing such issues as ecological change due to climate change and urban encroachment. The interest in science has spurred many opportunities to serve as a living science classroom to educate visitors and local students about the desert.

Cultural Resources. The Saguaro Wilderness holds extensive evidence of human history including archeological sites associated with the activities and settlement of Paleo-Indians, the Hohokam peoples, European explorers, settlers, and more recent peoples. Additionally, 33 structures or installations of historical importance, such as the Manning Cabin, are in the wilderness area. These historic structures are preserved in accordance with NPS policies and guidelines and in a fashion that protects wilderness character and values. The park also provides for members of the Tohono O'odham Nation to harvest saguaro and cholla fruit in the traditional manner. Thus, the Tohono O'odham are continuing a cultural tradition and preserving their traditional ecological knowledge.

There are several threats to the cultural resources in the wilderness area. Vandalism, theft, and the passage of time have degraded some resources and there are threats or damage to archeological resources from natural erosion as well as inadvertent visitor-use erosional disturbance from social trails. Continuing use of the Manning Camp for fire crew activities is continuing to result in general wear and tear on the historic fabric of the national register-listed cabin. There also is an increased threat of high intensity fires due to the invasion and continued spread of buffelgrass in the park. If fires occur, they could lead to direct and indirect impacts on cultural resources, such as sites being burned and increased erosion after the fires.

Issues for Wilderness Planning

All of the issues for wilderness planning are included in the identification of key issues facing the park earlier in this document.

Intermountain Region Foundation Document Recommendation
Saguaro National Park

April 2014

This Foundation Document has been prepared as a collaborative effort between park and regional staff and is recommended for approval by the Intermountain Regional Director.

Darla Sidles — 25 April 2014

RECOMMENDED
Darla Sidles, Superintendent, Saguaro National Park — **Date**

for Laura E. Joss — 5/14/2014

APPROVED
Sue E. Masica, Regional Director, Intermountain Region — **Date**

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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