# Chapter 1 Introduction

## 1.1 The Decision to Prepare an Environmental Impact Statement

The decision to prepare this Draft Environmental Impact Statement/Assessment of Effect (DEIS/AEF) on the proposed Grand Canyon National Park Fire Management Plan (FMP) was made by the Superintendent of Grand Canyon National Park (GRCA) after specific issues were raised by the public during scoping. This Grand Canyon FMP DEIS/AEF was prepared to comply with requirements of the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and Endangered Species Act (ESA). The legal authority for preparing and implementing the Fire Management Plan is 16 U.S. Code (USC) 1 through 4, the National Park Service 1916 Organic Act. In accordance with NHPA Section 106 and it's implementing legislation (36 CFR Part 800), the NPS conducted an assessment of effects for GRCA FMP implementation.

Advisory Council on Historic Preservation regulations (36 CFR Part 800.8(c)) allow agencies to use the NEPA process to comply with Section 106 "in lieu of the procedures set forth in §800.3 through 800.6." When the proposed FMP was initiated, the park indicated the NEPA process would serve as adequate substitute for the Section 106 process. See section 4.3.7 for more information. NPS Director's Order 18, Wildland Fire Management and Reference Manual 18, Wildland Fire Management direct and guide NPS units to develop compliance Fire Management Plans (See Appendix A).

Following analysis of public comment received on this Grand Canyon FMP DEIS/AEF, and consultations on any actions that effect cultural resources or special-status species, a Grand Canyon Fire Management Plan/Final Environmental Impact Statement (FMP FEIS/AEF) will be prepared. At the conclusion of a 30-day waiting period, the National Park Service (NPS) will issue a Record of Decision (ROD), signed by the Intermountain Regional Director. An implementation document, the Grand Canyon Fire Management Plan, will be prepared and become the working document for guiding GRCA fire management actions.

## 1.2 Purpose and Need for Action

The National Park Service is preparing this NEPA document to update the Fire Management Plan EA dated 1992 (NPS 1992). The Secretary of the Interior, through NPS wildland fire policy directives and NPS Director's Order 18 (DO-18) Wildland Fire Management, requires parks with burnable vegetation to have a Fire Management Plan. These plans are intended to be both strategic and operational, guiding the full range of fire program activities that support land and resource management objectives.

The proposed project is considered an appropriate use as defined in NPS Management Policies (NPS 2006) because it is suited to the park's exceptional natural and cultural resources and fosters understanding of, and appreciation for, park resources and values. The proposal and developed alternatives are further evaluated in this document for consistency with applicable regulatory measures, Grand Canyon's 1995 General Management Plan (NPS 1995), actual and potential effects to park resources and values, and whether public interest will be served. If unanticipated and unacceptable impacts transpire, the Superintendent will reevaluate purpose and need to further manage, limit, or discontinue the use.

### 1.2.1 Purpose of Action

By revising the 1992 FMP EA, the National Park Service seeks to adjust management direction from the existing plan to 1) accommodate new national and NPS policy and new scientific information, and 2) accomplish revised program goals and objectives.

Specific purposes of the proposed FMP will be to provide a plan consistent with NPS fire management policies and all associated regulations and laws (including DO-12, Conservation Planning, Environmental Impact Analysis and Decision-making; DO-18, Wildland Fire Management; DO-28, Cultural Resource

Management; DO-41, Wilderness Preservation and Management; DO-60, Aviation Management; DO-77, Natural Resource Protection; and NPS Management Policies 2006; the Endangered Species Act; National Historic Preservation Act; Clean Air Act; and Wilderness Act; (for a complete list, see Appendix A, Relevant Laws, Policies and Regulations); and which recognizes goals and objectives listed in Chapter 1.

### 1.2.2 Need for Action

GRCA fire management planning has evolved over the past three decades. As explained in the park's 1997 Resource Management Plan (RMP) (NPS 1997), "Fire research initiated in the 1970s identified more clearly the adverse effects caused by suppression, and in 1978 a [fire] management plan was developed and approved allowing for the first time fires to burn under an established set of conditions…" The existing GRCA FMP was approved in 1992 and revised annually through 2008. The revised plan shifted focus to a more proactive program, where prescribed natural fire (now called Wildland Fire Use for Resources Benefits, [WFURB]) and management-ignited prescribed fire strategies were initiated to meet resource objectives.

The 1992 FMP as amended through 2008 (NPS 1992a) addresses national policy changes promulgated in the 1995 Federal Wildland Fire Management Policy and Program Review. That Federal policy was subsequently updated in 2001 by the U.S. Department of the Interior (DOI) and the U.S. Department of Agriculture (USDA).

Since the 1992 FMP has been revised and amended annually, the park's Fire Management Program has be refined as knowledge of fire behavior and effects has grown. The program undergoes annual review, and has adjusted to reflect experience gained from management actions that achieved desired objectives and those that did not. Most notably, fire managers accelerated wildland fire use (WFU) for resource benefits, introduced aerial ignition for prescribed fires, and implemented prescribed fires under a wider range of environmental conditions to more fully meet fuel reduction objectives.

In 2004, the State of Arizona revised regulations for wildland fire management based on U.S. Environmental Protection Agency (EPA) requirements to manage smoke and haze. As a result of these developments, the existing 1992 FMP Environmental Assessment is outdated, and the NPS is engaging this EIS process to re-evaluate and update the EA to accurately reflect the current program. A GRCA FMP dated 2005 exists (NPS 2005), but is only the 1992 FMP, as amended, reformatted to adhere to interagency content guidelines; 1995 program direction and decisions were retained unchanged. When this FMP DEIS/AEF refers to the existing or current plan, it refers to the 2005 FMP.

### 1.2.3 Mission Statement

The following mission statement was developed to capture the purpose of GRCA's Fire Management Program succinctly

*Grand Canyon National Park is recognized as a place of significance and universal value because of its cultural and natural resources and ecosystem processes, scenic qualities and values, natural quiet and solitude, spiritual and inspirational qualities and recreational opportunities. It is the mission of the Fire Management Program to manage fire in such a way as to preserve, enhance and (where necessary) restore these values.*

## 1.3 Background

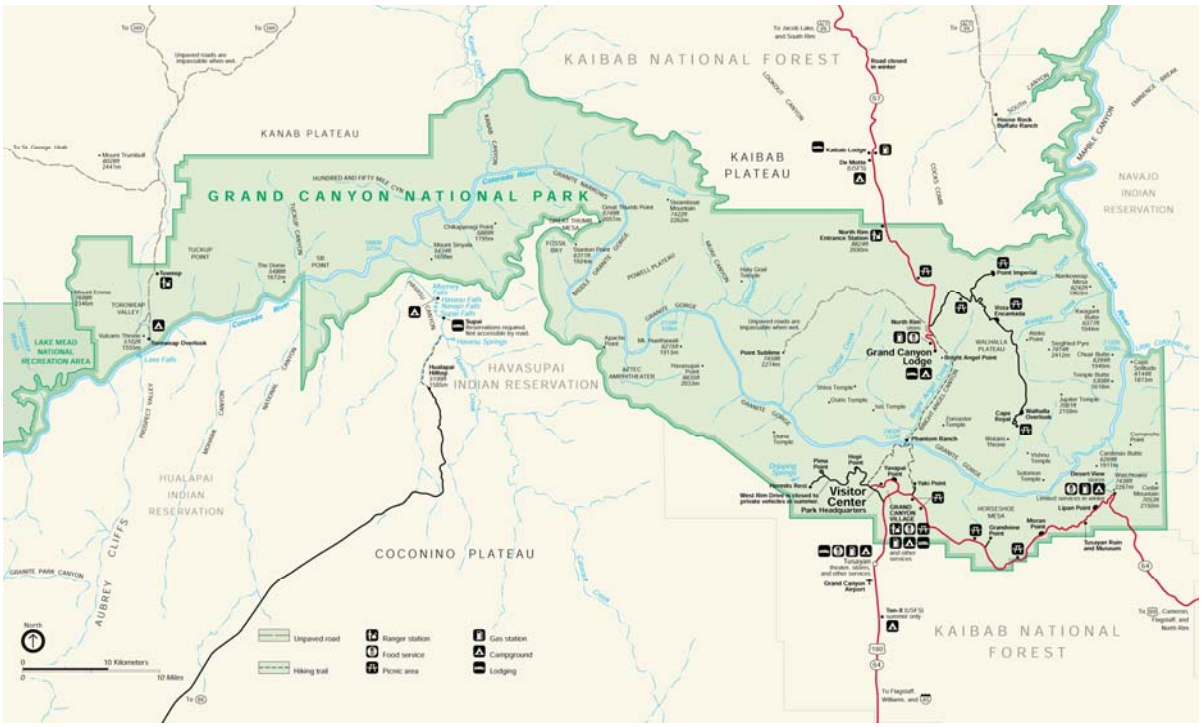
Grand Canyon National Park is located in northern Arizona on the Colorado Plateau's southwestern edge. The park consists of over 1.2 million acres situated in Mohave and Coconino Counties, a region characterized by raised plains and basins. Grand Canyon is a major feature cut up to one-mile deep by the Colorado River. Park elevations range from just over 1,000 feet along the river at the park's western end (Lake Mead National Recreation Area boundary) to over 9,160 feet near the North Rim Entrance. The

rims' relatively flat terrain is broken by some of the world's most changeable and severe topography. A complete boundary description is in Title 16, Sections 221-228. The park and general vicinity are shown in Map 1-1.

### 1.3.1 Purpose and Significance of Grand Canyon National Park

Congress establishes national park system units to fulfill specific purposes based on the unit's unique and significant resources. A park's purpose is the foundation on which later management decisions are based to conserve resources while providing for the enjoyment of future generations.

**Map 1-1 Grand Canyon National Park and Vicinity**




On January 11, 1908, President Theodore Roosevelt signed Presidential Proclamation 794, reserving land in the Grand Canyon of Arizona as Grand Canyon National Monument, which stated the Grand Canyon "is an object of unusual scientific interest, being the greatest eroded canyon in the United States, and it appears that the public interest would be promoted by reserving it as a National Monument."

On February 26, 1919, Congress set apart Grand Canyon National Park "as a public park for the benefit and enjoyment of the people" (Grand Canyon National Park Establishment Act, 40 Stat. 1175). Over the years the park has been enlarged and its boundaries revised, most recently on January 3, 1975, when Congress recognized "that the entire Grand Canyon, from the mouth of the Paria River to the Grand Wash Cliffs, including tributary side canyons and surrounding plateaus, is a natural feature of national and international significance" (Grand Canyon National Park Enlargement Act, Public Law 93-620). Congress also recognized the need for "further protection and interpretation of the Grand Canyon in accordance with its true significance."

The National Park Service Organic Act (16 U.S.C. 1 et seq.) sets the fundamental mission of the NPS, which can be stated as

> The National Park Service 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 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 park's enabling legislation states

> *The secretary shall administer, protect, and develop the Grand Canyon National Park in accordance with the provision of the [Organic Act] . . . and with any other statutory authority available to him for the conservation and management of natural resources* (16 U.S.C. 1 et seq.).

The *purpose* of GRCA is based on the park's enabling legislation and legislation governing the NPS, and is restated in the General Management Plan (NPS 1995). As a place of national and global importance, Grand Canyon National Park is to be managed to

- preserve and protect its natural and cultural resources and ecological processes, as well as its scenic, aesthetic, and scientific values
- provide opportunities for visitors to experience and understand the environmental interrelationships, resources, and values of the Grand Canyon without impairing the resources

The significance of Grand Canyon National Park and its broad mission goals are derived from its enabling legislation and stated in the 1995 General Management Plan.

- As a world heritage site, Grand Canyon is recognized as a place of universal value, containing superlative natural and cultural features that should be preserved as part of all peoples heritage
- The park serves as an ecological refuge, with relatively undisturbed remnants of dwindling ecosystems (such as boreal forest and desert riparian communities), and numerous rare, endemic, or specially protected (threatened/endangered) plant and animal species
- Grand Canyon's geologic record is particularly well-exposed and includes a rich and diverse fossil record. The canyon also contains a great diversity of geological features and rock types
- Numerous caves in the park contain extensive and significant geological, paleontological, archeological, and biological resources
- The park serves as a natural gene pool because of its biological diversity and unique conditions
- Twelve American Indian groups, represented by eight tribal governments, have close and sacred cultural ties to the Grand Canyon, with some considering the canyon their original homeland and place of origin
- Over 10,000 years of human occupation have resulted in an extensive archeological record, hundreds of miles of established prehistoric and historic routes and trails, and nationally significant examples of rustic architecture
- The Grand Canyon has internationally recognized scenic vistas, qualities, and values.
- The Grand Canyon is recognized as a place with unusual and noticeable natural quiet and direct access to numerous opportunities for solitude
- All of the natural, cultural, and scenic qualities of the Grand Canyon, coupled with the canyon's vast size, give rise to inspirational/spiritual values and a sense of timelessness
- The vast majority of the park provides opportunities for wilderness experiences
- The Colorado River, as it flows through the park, provides opportunities for one of the world's premier river experiences, including one of the longest stretches of navigable white water on earth

### 1.3.2 Wildland Fire Conditions at Grand Canyon National Park

Fire has been a part of the arid Southwest ecosystem for thousands of years. Convectional thunderstorms occur frequently during summer monsoons when warm temperatures and influxes of maritime moisture trigger cloud buildup over higher elevations. An important aspect of lightning activity is its occurrence during warm, dry periods April through June. Sporadic storms or convective clouds that generate virga (rain that evaporates before reaching the ground) often generate dry lightning strikes. These strikes, in combination with dry, combustible fuels, are the main source of ignitions and fire spread. Interactions between climate (including drought episodes) and vegetative fuel conditions, over time, determine fire patterns observed throughout the region (Swetnam and Betancourt 1990, Swetnam and Baisan 1996).

GRCA's fire season generally begins in early April on South Rim; over a month later on North Rim's higher forested areas. Solar radiation following snowmelt results in rapid drying of down-and-dead fuels. Spring winds normally accelerate drying, and by mid-to-late May, South Rim fuels and Inner Canyon shrubs and associated grasses have reached near minimum dead fuel moisture. North Rim dead woody fuel moistures also lag by several weeks or more, depending on winter and early spring snows, so that by June North Rim dead-fuel moistures are reaching seasonal minimums.

In normal years, live fuels are at full turgor (leaf cells are rigid with moisture) by early June, grasses have generally greened up, shrubs and trees are transpiring, and live fuel moistures are generally high. During drought years, however, spring and early summer seasonal growth can be retarded depending on severity and length of previous years' local precipitation patterns. As the season progresses, live vegetation is stressed and becomes more highly flammable. Dead fuel moistures are at minimum and can become totally available for combustion.

Late summer and fall, following a normal pattern of summer rainstorms, are often characterized by a secondary fire season. Human-caused fire ignitions may become problematic depending on summer moisture's amount and distribution. Dead woody fuels lose moisture gained during summer rains, but at slower rates than in late spring due to decreasing day lengths, cooling temperatures, and increased humidity recovery at night. By late summer, warm-season grasses are normally curing or cured while cool-season grasses remain green or are greening. Fire severity is normally lower during fall.

Fires occurring at GRCA in the last few thousand years altered vegetation structure, composition, function, and distribution, and left detectable landscape patterns as evidence. These fire patterns are collectively called the fire regime. A fire regime describes fire frequency, intensity, timing, and distribution for a particular vegetation type. Historic fire regimes refer to past fire patterns. Historic fire frequency and timing can be inferred from observable fire scars in the wood of old trees, especially ponderosa pine.

It is standard practice to describe historic fire regimes in terms of an average fire return interval and a single type of fire severity. For example, the ponderosa pine type in the Southwest is often described as having a historic fire regime of frequent (mean fire return interval of five years), and low-severity fire. This approach does not recognize variation in the interval between fires, severity, or spatial complexity. Even in ponderosa pine, where fires are widely thought to have been frequent historically, there was likely interval variation between fires in any given landscape location. Fire return may have varied from one to 15 years. Understanding the full pattern is important in characterizing fire-vegetation interactions because even these small interval variations can have substantial effects on vegetation.

The National Fire Plan (see below) identifies five broad fire regime categories based on fire frequency and severity. These categories are shown in Table 1-1 and 1-2 for GRCA vegetation types. These values are based on local fire history studies more fully described in Chapter 3, Affected Environment, Vegetation.

A new way of describing fire regimes focuses on distribution of fire regime characteristics instead of dominant categories or averages (Sugihara et al. 2006). This approach has the benefit of allowing useful descriptions of historic fire regimes when the exact fire return intervals or severity patterns are unknown or uncertain. This distribution approach for describing fire regimes has been applied to spatial mapping and analysis of departure of historic fire regimes for GRCA and is described in Chapter 4.

### 1.3.3 Long-term Suppression Effects

Measuring the difference between natural frequency of wildland fires and number of years fire has been suppressed or excluded provides an indication of how far plant communities in a particular vegetation type have deviated from natural conditions. In other words, number of fire return intervals missed can estimate how much plant community composition and structure have shifted from what would have been observed had fires been allowed to burn naturally.

Fires have largely been excluded (suppressed) in GRCA since the late 1870s. In areas of decades-long fire exclusion, vegetation types with short fire intervals have missed several fires and show large deviation or departure from natural conditions. Vegetation types most affected are ponderosa and mixed-conifer forests. When fires are regularly suppressed, natural fire regime is disrupted. This has resulted in changes not only to ecosystem structure (e.g. plant density, species composition, and biomass distribution) but also to ecosystem function (e.g. nutrient cycling, forest floor shading, and soil moisture retention).

**Table 1-1 National Fire Plan Fire Regime Classes**

| National Fire Plan Fire Regime Class | Frequency | Severity |
|---|---|---|
| I | 0-35 years | low |
| II | 0-35 years | high |
| III | 35-100+ years | mixed |
| IV | 35-100+ years | high |
| V | >100 years | high |

Vegetation changes caused by past fire suppression activity have increased dead and live fuel loading, causing higher fire intensities. Tree and shrub density in many areas has created a potentially hazardous arrangement of close standing, burnable vegetation, or ladder fuel. Ladder fuel helps fires ascend taller forest trees, increasing risk of higher intensity crown fires. Under these fuel conditions, if subjected to crown fire, large forest landscapes can be impacted, forested vegetation may be converted to shrub communities, watershed and soil processes can be impacted, and other ecosystem values altered.

**Table 1-2 Historic Fire Regime Descriptions for Major Vegetation Types Above the Rim**

| Vegetation Type | Mean Fire Return Interval | Historic Fire Regime Characteristics | Fire Regime Class | Fire Frequency and Severity Class |
|---|---|---|---|---|
| Spruce-Fir Forest | 8 -31 years | Highly diverse forest structure with fire-initiated groups of trees and scattered fire relicts | III | 35-100+ years<br>Less frequent<br>Mixed severity |
| Mixed-Conifer Forest | 5-19 years | Highly diverse forest structure from widespread surface fires and patchy crown fires; topographic influences | III | 35-100 years<br>Less frequent<br>Mixed severity |
| Ponderosa Pine Forest | 6-9 years | Open pine forests or woodlands maintained by frequent fire | I | 0-35 years<br>Frequent<br>Low severity |
| Piñon-Juniper Woodlands | Unknown | Few to no fire history studies available | III or V | 35-100+ years<br>Less frequent and Mixed severity<br>Or > 100 years<br>Infrequent and High severity |
| (from this FMP DEIS/AEF, Chapter 3, Effected Environment, Vegetation) | | | (from USDA and USDOI 2000) | |

### 1.3.4 Existing Situation

Between 1993 and 2006, more than 115,800 park acres burned. The majority (78%) was prescribed (46,459 acres) and naturally-ignited fires (46,433 acres) with desirable outcomes. Unwanted fires accounted for only 22% of the total (22,942 acres). Figure 1-1 displays annual acres burned by fire type

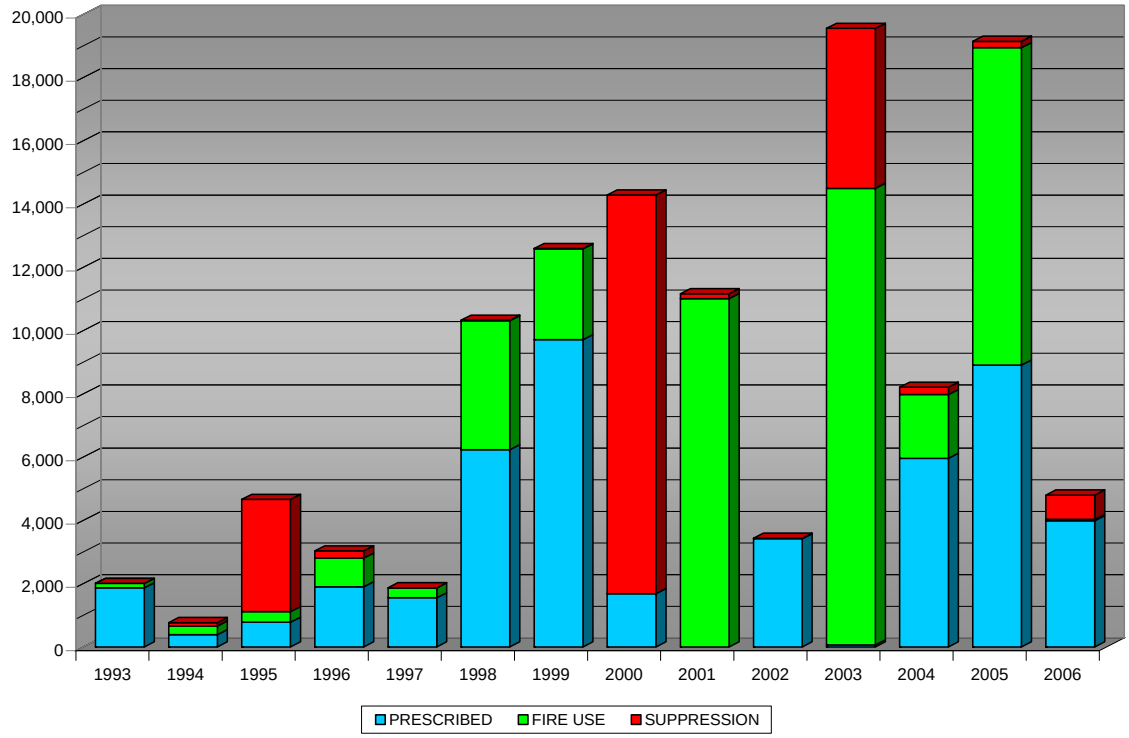
since 1993. The fire effects monitoring program allows fire managers to evaluate effectiveness of prescribed and wildland fire-use activities, and adapt future practices as needed to better meet resource management objectives.

After more than 15 years of proactive fire management, progress toward restoring natural fire regimes to the park is measurable, but far from fully achieved. This amount of managed fire has been insufficient to remedy decades of landscape-scale fire exclusion. In many areas, multiple fire treatments will be needed to restore desired ecological conditions.

### 1.3.5 Wildland-Urban Interface

The Wildland-Urban Interface (WUI) occurs where homes and other structures intermingle with wildland vegetation, and has been noted as a topic of special concern under Federal fire policy. Communities at risk from wildland fire have been identified by local, state, and Federal fire management agencies. Much of the management funding appropriated by Congress is intended to reduce wildland fire threats to these communities.

**Figure 1-1 Acres burned by Fire Type 1993-2006, Grand Canyon National Park**




Risk and damage caused by wildland fire are not limited to buildings. Wildland fires can create a public safety risk. Public health can be impacted by long-lasting and/or dense smoke. Natural resources, including wildlife, soil, water quality, and vegetation can be degraded for decades or require millions of dollars to rehabilitate. Local economies, especially those tourism-dependent, can experience financial loss when wildland fire causes road and area closures, as well as post-fire recreational opportunity loss.

Public and firefighter safety are the first priority in Federal fire policy. Implementation of a fuels management program on a sustained landscape level has been consistently identified as needed to reduce wildland fire intensity in unnaturally dense fuels, and decrease as fully as possible, the number of firefighters who die every year fighting fires.

GRCA fire managers recognize the need to treat hazardous fuels immediately adjacent to homes and other structures, and forests and woodlands adjacent to WUI areas. For this plan revision, two WUI categories (See Map 2-3) are identified and mapped as separate fire management units,

**1) Primary WUI** treatments reduce fuels around values at risk including roads and utilities to allow firefighters defensible space to manage fires in the WUI. The Primary WUI includes areas surrounding Grand Canyon Village and Desert View on South Rim, and Bright Angel Developed Area on North Rim.

**2) Secondary WUI** treatments reduce fuels in areas surrounding Primary WUI to slow or stop approaching wildland fires

## 1.4 Fire Management Program Goals and Objectives

To evaluate proposed actions, a team of interdisciplinary park staff have identified success measures for the future Fire Management Program. These measures consist of program-specific goals and objectives listed below.

**Goal 1 Protect human health and safety and private and public property**

*Objectives*

- Conduct wildland fire management activities with the most current risk assessment and mitigation techniques available to ensure firefighter and public safety is the highest priority
- Use non-fire fuel treatments in areas where wildland fire use is not practical due to safety or smoke concerns. Even in these areas, however, fire will be used in the future as fully as possible to maintain desired conditions once restored through non-fire fuel treatments
- Minimize smoke impacts on human health
- Provide fire management workforce with training, equipment, operating procedures, safety measures and information needed to manage risks and perform activities safely

**Goal 2 Restore and maintain park ecosystems in a natural, resilient condition**

*Objectives*

- Maintain ecosystems that are within the range of desired conditions (see Chapter 2) through natural processes within policy constraints
- Restore ecosystems that are not within the range of natural variability to desired conditions (see Chapter 2) and maintain them through natural processes within policy constraints
- Set priorities for treatment activities based on site-specific information including: departure from natural fire return intervals, desired conditions (see Chapter 2), and other relevant factors

**Goal 3 Protect the park's natural, cultural, and social values**

*Objectives*

- Managing the ecosystem and natural processes are the primary objectives that will lead to healthy critical habitat for listed threatened, endangered and sensitive species
- Use fire management tools and techniques to maintain, restore, and protect cultural resources while minimizing adverse impacts from fire and fire management activities
  - Conduct fire management activities in proposed wilderness in a manner that will not diminish suitability for designation or result in changes to the current wilderness proposal (See Appendix A)
- Use minimum-impact management techniques to reduce impacts to wilderness values, cultural and soil resources, and to limit spread of invasive plant species
- Minimize smoke impacts on air quality values including visibility

**Goal 4 Promote a science-based program that relies on current and best-available information**

*Objectives*

- Conduct research that will help understand natural fire regimes, refine prescriptions, provide data for fire behavior models, and effectively implement the Fire Management Program
- Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, fuel reduction treatments) to assess effects on natural and cultural resources and social values
- Update fire return interval departures, desired conditions (see Chapter 2), fire treatment priorities and prescriptions as relevant data become available

**Goal 5 Educate, inform, consult, and collaborate with tribes, stakeholders, and the public**

*Objectives*

- Maintain government-to-government and informal relationships with Native American tribes to exchange knowledge about fire management and traditional cultural practices
- Develop and implement a proactive process that disseminates current and accurate information to the public, park employees, media representatives, and cooperators that encourages support of the Fire Management Program
- Conduct wildland fire prevention, education, and other activities in communities within and adjoining the park. Work in collaboration with local communities, county, state, and Federal fire agencies with fire-management interests
- Develop interpretive displays and educational programs, working with the Division of Interpretation, to foster understanding and acceptance of the Fire Management Program

## 1.5 Compliance with Laws, Regulations, Policies, and Other Guidance

Many laws, regulations, policies, and directives direct a Fire Management Plan's elements. These are summarized in Figure 1-2, and detailed in the rest of this chapter. A summary of the laws, policies, and regulations affecting management of Grand Canyon National Park and its resources are listed in Appendix A. A few are listed below.

### 1.5.1 Laws

Laws are acts passed by the U.S. Congress and approved by the President. All laws must be consistent with the U.S. Constitution. Federal laws have supremacy over state and local laws.

- Act of August 25, 1916 (NPS Organic Act), P.L. 64-235, 16 U.S.C. Section 1 et seq. as amended
- National Environmental Policy Act of 1969 as amended , P.L. 91-90, 42 U.S.C. 4321-4347, January 1, 1970, as amended by P.L. 94-52, July 3, 1975, and P.L. 94-83, August 9, 1975
- Wilderness Act 1964

### 1.5.2 Executive Orders and Presidential Proclamations

Executive Orders are directives from the President to Executive Branch departments and agencies. President Proclamations are decrees made by the President under the Constitution and other authorities.

- Antiquities Act
- Executive Order (EO) 11990 Protection of Wetlands

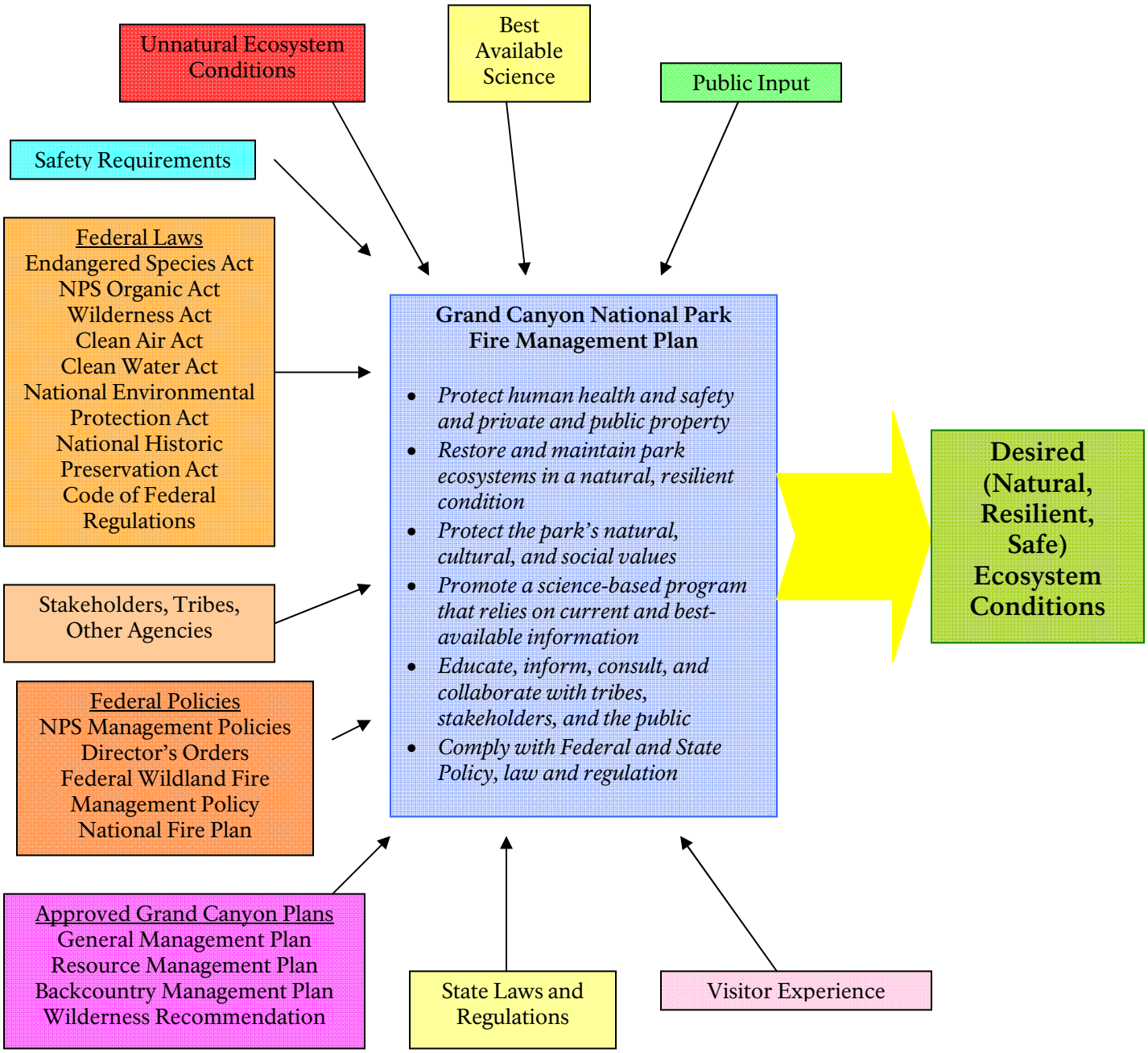
### 1.5.3 Regulations

Regulations are rules for complying with a Federal law developed by the authorized department or agency. Regulations also include codification of agency policy.

- 36 Code of Federal Regulations (CFR) Part 1-199 contains general and specific regulations for national park management and use

- 40 CFR Parts 1500 – 1508 Council on Environmental Quality Regulations for Implementing NEPA Procedural Provisions, Article 15 Forest and Range Management Burns
- State of Arizona Department of Environmental Quality (ADEQ) Regulations for Wildland Fire Management (Arizona Administrative Code: Title 18, Environmental Quality; Chapter 2, Department of Environmental Quality, Air Pollution Control, Appendix D (see this document's Appendix A)

**Figure 1-2 Relationship of GRCA Fire Management Plan to Other Directives, Programs, and Desired Outcomes**



### 1.5.4 Policy

Policies are guiding principles or procedures that set the framework and provide direction for management decisions. Policies may prescribe the process by which decisions are made, how an action is accomplished, or results achieved. The NPS has a three-leveled Directives System to express policy and provide instructions for implementation, which is

- **Level 1** **NPS Management Policies** provide a framework for making management decisions, and are approved by the Director after review by the WASO Office of Policy and the National Leadership Council (NCL). Adherence is mandatory. Other management policies relevant to fire are
  - *Federal Wildland Fire Management Policy* The Interagency Federal Wildland Fire Policy Review Working Group revised the Federal Wildland Fire Management Policy in 2001
  - *Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems—A Cohesive Strategy* (2001; DOI/USDA) available online at www.fs.fed.us/publications/2000/ cohesive_strategy10132000.pdf

- **Level 2** **NPS Director's Orders** are instructions for implementing management policy, and may articulate new or revised policy; provide specific instructions; outline requirements or standards for NPS functions, programs, and activities; are approved by the Director after review by the WASO Office of Policy and the NLC. Adherence is mandatory. FMP DEIS/AEF-related Director's Orders include
  - *DO-12 Conservation Planning and Environmental Impact Analysis*
  - *DO-18 Wildland Fire Management and Reference Manual 18*
  - *DO-41 Wilderness Preservation and Management*

Directors Orders are available online at http://home.nps.gov/applications/npspolicy/DOrders.cfm

- **Level 3** **Handbooks, reference manuals, and other professional materials** FMP DEIS/AEF-related materials include
  - *DO-12 Handbook, Conservation Planning, Environmental Impact Analysis, and Decision Making*
  - *National Wilderness Steering Committee Guidance White Paper Number 3: Minimum Requirements Decision Process, November 2006.* (See Appendix A, Attachment A)
  - *Minimum Impact Suppression Tactics (MIST), Incident Response Pocket Guide, National Wildfire Coordinating Group* (See Appendix A, Attachment B)

### 1.5.5 National Fire Plan

Though wildland fires play an integral role in many forest and rangeland ecosystems, decades of extinguishing fires on public lands disrupted natural fire regimes. Moreover, as communities adjacent to fire-prone lands in the Wildland-Urban Interface increase, wildland fires pose greater threats to people and property.

The National Fire Plan (NFP) was developed in August 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts on communities while ensuring sufficient firefighting capacity. The NFP addresses five key points: firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability.

The National Fire Plan provides technical, financial, and resource guidance and support for wildland fire management across the U.S. Together, the USDA Forest Service and the Department of the Interior are working to successfully implement key points outlined in the NFP by taking the following steps

1. Assuring necessary firefighting resources and personnel are available to respond to wildland fires that threaten lives and property
2. Conducting emergency stabilization and rehabilitation activities on landscapes and communities affected by wildland fire

3. Reducing hazardous fuels (dry brush and trees that have accumulated and increase the likelihood of unusually large fires) in the country's forest and rangelands
4. Providing assistance to communities that have been or may be threatened by wildland fire
5. Committing to the Wildland Fire Leadership Council, an interagency team created to set and maintain high standards for wildland fire management on public lands

The National Fire Plan is not a single, cohesive document. Rather, it is composed of various documents, including 1) a September 8, 2000[1], report from the Secretaries of Interior and Agriculture to the President in response to wildland fires in 2000; 2) congressional direction accompanying appropriations for wildland fire management for fiscal year 2001; and 3) several approved and draft strategies to implement all or parts of the plan[2]. For more information, visit www.forestsandrangelands.gov/NFP.

## 1.6 Relationship of GRCA Fire Management Plan to other GRCA Plans

The Fire Management Plan is a resource, risk, and fire strategies implementation document intended to facilitate accomplishment of park management goals and objectives identified in GRCA's General Management Plan (NPS 1995) and Resource Management Plan (NPS 1997).

### 1.6.1 General Management Plan

The 1995 GRCA GMP outlines a vision for managing park resources and visitor experiences; the Resource Management Plan and subsequent Fire Management Plan are tiered off the GRCA GMP.

Objectives define what must be achieved to a large degree for the action to be considered a success. All action alternatives selected for detailed analysis must substantially meet all objectives, as well as address the purpose of and need for action. Objectives for fire management in GRCA are presented below by resource. These objectives are grounded in the park's enabling legislation, mandates, purpose, and significance, as well as the GMP and other management documents. However, GMP management objectives were developed with the presumption that specific objectives would be developed for the Fire Management Plan; they are compared in Table 1-3.

### 1.6.2 Resource Management Plan

In the GRCA Resource Management Plan (NPS 1997), "restoration of a natural fire regime" was listed as one of 11 Overarching Issues facing GRCA. Overarching issues were defined as, "…broad-spectrum issues that effect more than one resource." GRCA's Resource Management Plan and proposed Fire Management Plan objectives are compared in Table 1-4.

### 1.6.3 Backcountry Management Plan

The GRCA Backcountry Management Plan (NPS 1988) defines backcountry as most of the inner canyon, plus a large portion of North Rim and remote South Rim areas. The 1988 Backcountry Management Plan (BMP) (NPS 1988) does not address fire management practices. Since the BMP is out-of-date, backcountry and wilderness management will be addressed within the next five years through a separate planning and NEPA process. Information from this FMP planning and NEPA process will be incorporated into the future backcountry/wilderness management planning effort.

[1] *Managing the Impact of Wildfires on Communities and the Environment*, A Report to the President In Response to the Wildfires of 2000, Secretaries of the Interior and of Agriculture (Sept. 8, 2000).
[2] *The National Fire Plan*, Testimony Before the Subcommittee on Forests and Forest Health, Committee on Resources, House of Representatives, General Accounting Office, GAO-01-1022T, 2001.

**Table 1-3 Management Objectives in GRCA General Management and Proposed Fire Management Plans**

| Resource | General Management Plan Management Objectives | Proposed Fire Management Plan Management Objectives |
|---|---|---|
| **Natural and Cultural Resources** | | |
| **Water Quality and Soils** | • Preserve natural spring and stream flows and water quality | • Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, and fuel reduction treatments) to assess effects on natural and cultural resources and social values |
| **Air Quality** | • Preserve, protect, and improve air quality and related values such as visibility | • Minimize smoke impacts on air quality values including visibility<br>• Use non-fire fuel treatments in areas where use of fire is not practical due to safety or smoke concerns. Even in these areas, however, fire will be used as fully as possible to maintain desired conditions once restored<br>• Minimize smoke impacts on human health |
| **Natural Soundscape** | • Protect natural quiet and solitude, and mitigate or eliminate effects of activities causing excessive or unnecessary noise in, over, or adjacent to the park | • Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, and fuel reduction treatments) to assess effects on natural and cultural resources and social values |
| **Caves and Paleonto-logical Resources** | • Preserve, protect, and interpret natural and scenic resources and values, and ecological processes<br>• Preserve, manage, and interpret cultural resources for the benefit of present and future generations | • Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, and fuel reduction treatments) to assess effects on natural and cultural resources and social values |
| **Vegetation** | • Preserve and protect the park's genetic integrity and species composition, consistent with natural ecosystem processes<br>• To the maximum extent possible, restore altered ecosystems to natural conditions and ensure preservation of native components through active management of nonnative components and processes | • Ecosystems within the range of desired conditions (see Chapter 2) will be maintained through natural processes within policy constraints<br>• Ecosystems not within the range of natural variability will be restored to desired conditions (see Chapter 2) and subsequently maintained through natural processes within policy constraints<br>• Set priorities for treatment activities based on site-specific information including: departure from natural fire return intervals, desired conditions, and other relevant factors |
| **Terrestrial Wildlife** | • Preserve and protect park genetic integrity and species composition, consistent with natural ecosystem processes | • Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, and fuel reduction treatments) to assess effects on natural and cultural resources and social values |
| **Aquatic Resources** | • Preserve and protect park genetic integrity and species composition, consistent with natural ecosystem processes<br>• To the maximum extent possible, restore altered ecosystems to their natural conditions and ensure preservation of native components through active management of nonnative components and processes | • Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, and fuel reduction treatments) to assess effects on natural and cultural resources and social values |
| **Threatened or Endangered Species** | • Manage ecosystems to preserve critical processes and linkages that ensure preservation of rare, endemic, and specially protected (threatened/ endangered) plant and animal species | • Managing the ecosystem and natural processes are the primary objectives that will lead to healthy critical habitat for listed threatened, endangered and sensitive species.<br>• Use minimum-impact management techniques to reduce impacts to |

| Resource | General Management Plan Management Objectives | Proposed Fire Management Plan Management Objectives |
|---|---|---|
| | | wilderness values, cultural and soil resources, and to limit spread of invasive plant species<br>• Minimize smoke impacts on air quality values including visibility |
| **Cultural Resources** | • Preserve, manage, and interpret park cultural resources (archeological, ethnographic, architectural, and historic resources, trails, and cultural landscapes) for the benefit of present and future generations<br>• Manage visitor use, development, and support services to protect park resources<br>• Collect ethnographic data and develop ethno-histories for the Havasupai, Hopi, Hualapai, Navajo, Southern Paiute, and Zuni peoples concerning their associations with Grand Canyon, as appropriate, in order to preserve, protect, and interpret park resources and values important to diverse American Indian cultures, including significant, sacred, and traditional use areas | • Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, and fuel reduction treatments) to assess effects on natural and cultural resources and social values<br>• Use fire management tools and techniques to maintain, restore, and protect cultural resources while minimizing adverse impacts from fire and fire management activities |
| **Information and Science** | • Inventory, monitor, and maintain data on park natural and cultural resources and values, and use information in most effective ways to facilitate park management decisions to better preserve the park | • Conduct research that will help understand natural fire regimes, refine prescriptions, provide data for fire behavior models, and effectively implement the Fire Management Program<br>• Update fire return interval departures, desired conditions, fire treatment priorities and prescriptions as data become available |
| **Wilderness** | • Manage areas meeting the criteria for wilderness designation as wilderness. Actively pursue the designation of these lands as part of the national wilderness preservation system | • Conduct fire management activities in proposed wilderness in a manner that will not diminish suitability for designation or result in changes to the current wilderness proposal<br>• Use minimum-impact management techniques to reduce impacts to wilderness values, cultural and soil resources, and to limit spread of invasive plant species |
| **Visitor Use and Experience** | • Provide visitors opportunities to experience and understand environmental interrelationships, resources, and values of Grand Canyon without impairing resources<br>• Provide a diverse range of quality visitor experiences, as appropriate, based on Grand Canyon's resources and values, compatible<br>• with protection of those resources and values<br>• Consistent with park purposes and the characteristics of each landscape unit, preserve and protect the maximum opportunities in every landscape unit of the park for visitors to experience Grand Canyon's solitude, natural conditions, | • Conduct wildland fire prevention, education, and other activities in communities within and adjoining the park. Collaborate with local communities, county, state, and Federal fire agencies with fire-management interests<br>• Develop interpretive displays and educational programs, working with the Division of Interpretation, to foster understanding and acceptance of the Fire Management Program<br>• Develop and implement a proactive process that disseminates current and accurate information to the public, park employees, media representatives, and cooperators that encourages support of the Fire Management Program |

| Resource | General Management Plan Management Objectives | Proposed Fire Management Plan Management Objectives |
|---|---|---|
| | primitiveness, remoteness, and inspirational value | |
| **Socio-economic Environment Regional Issues** | • Understand, assess, and consider effects of park decisions inside and outside the park<br>• Work cooperatively with appropriate entities to encourage compatible, aesthetic, and planned development and recreational opportunities outside park boundaries, and to provide information, orientation, and services to visitors | • Maintain government-to-government and informal relationships with Native American tribes to exchange knowledge about fire management and traditional cultural practices<br>• Develop and implement a proactive process that disseminates current and accurate information to the public, park employees, media representatives, and cooperators that encourages support of the Fire Management Program<br>• Conduct wildland fire prevention, education, and other activities in communities within and adjoining the park. Work in collaboration with local communities, county, state, and Federal fire agencies with fire-management interests<br>• Develop interpretive displays and educational programs, working with the Division of Interpretation, to foster understanding and acceptance of the Fire Management Program |
| **Park Operations** | • Manage and monitor visitor use and park resources in undeveloped areas to preserve and protect natural and cultural resources and ecosystem processes, and to preserve and maintain a wilderness experience or, where an area is not proposed for wilderness, a primitive experience<br>• Manage visitor use, development, and support services to protect park resources and values<br>• Establish indicators and standards for desired visitor experiences and resource conditions, monitor indicator condition on a regular basis, and take action to meet standards if not met<br>• Provide a variety of primitive recreational opportunities consistent with wilderness and NPS policies on accessibility. In deciding which opportunities to provide in undeveloped areas, consider recreational opportunities available outside the park, as well as those available in park developed areas<br>• Conduct administrative activities, including research, search-and-rescue, emergencies, and fire management consistent with NPS policies regarding wilderness management and use of minimum tool in wilderness areas | • Conduct fire management activities in proposed wilderness in a manner that will not diminish suitability for designation or result in changes to the current wilderness proposal<br>• Use minimum-impact management techniques to reduce impacts to wilderness values, cultural and soil resources, and to limit spread of invasive plant species<br>• Conduct wildland fire management activities with the most current risk assessment and mitigation techniques available to ensure firefighter and public safety is the highest priority<br>• Provide fire management workforce with training, equipment, operating procedures, safety measures and information needed to manage risks and perform activities safely |
| **Adjacent Lands** | • Understand, assess, and consider effects of park decisions inside and outside the park<br>• Upon request, work cooperatively to assist local American Indians in planning, developing, and managing adjoining lands in a mutually compatible manner | • Maintain government-to-government and informal relationships with Native American tribes to exchange knowledge about fire management and traditional cultural practices<br>• Identify opportunities for fuel wood collection and use by local tribes<br>• Maintain government-to-government and informal relationships with Native |

| Resource | General Management Plan Management Objectives | Proposed Fire Management Plan Management Objectives |
|---|---|---|
| | • Work cooperatively with appropriate entities to encourage compatible, aesthetic, and planned development and recreational opportunities outside park boundaries, and to provide information, orientation, and services to visitors | American tribes to exchange knowledge about fire management and traditional cultural practices<br>• Develop and implement a proactive process that disseminates current and accurate information to the public, park employees, media representatives, and cooperators that encourages support of the Fire Management Program<br>• Conduct wildland fire prevention, education, and other activities in communities within and adjoining the park. Work in collaboration with local communities, county, state, and Federal fire agencies with fire-management interests<br>• Develop interpretive displays and educational programs, working with the Division of Interpretation, to foster understanding and acceptance of the Fire Management Program |

**Table 1-4 Management Objectives in GRCA Resource and Fire Management Plans**

| RMP Management Objectives | Proposed Fire Management Plan Management Objectives |
|---|---|
| • Protect of human life and property | Goal 1 Protect human health and safety and private and public property<br>*Objectives*<br>• Conduct wildland fire management activities with the most current risk assessment and mitigation techniques available to ensure firefighter and public safety is the highest priority<br>• Use non-fire fuel treatments in areas where use of fire is not practical due to safety or smoke concerns. Even in these areas, however, fire will be used as fully as possible to maintain desired conditions once restored<br>• Minimize smoke impacts on human health<br>• Provide fire management workforce with training, equipment, operating procedures, safety measures and information needed to manage risks and perform activities safely |

| RMP Management Objectives | Proposed Fire Management Plan Management Objectives |
|---|---|
| • Restore fuel loads and ecosystem structure within the natural range of variability in vegetative communities<br>• Restore fire as a natural process through pre-scribed burning for fuel reduction to levels that allow additional acre-age to be designated as prescribed natural fire (the term "prescribed natural fire" has been updated to the term "Wildland Fire Use for Resource Benefits)<br>• Restore forest habitat<br>• Reintroduce and maintain fire's natural role in park ecosystems to maximum extent possible | Goal 2 Restore and maintain park ecosystems in natural, resilient condition<br>*Objectives*<br>• Ecosystems within the range of desired conditions (see Chapter 2) will be maintained through natural processes within policy constraints<br>• Ecosystems not within the range of natural variability will be restored to desired conditions (see Chapter 2) and subsequently maintained through natural processes within policy constraints<br>• Set priorities for treatment activities based on site-specific information including: departure from natural fire return intervals, desired conditions, and other relevant factors |
| • Interpret and educate about the natural fire regime's importance | Goal 5 Educate, inform, consult, and collaborate with tribes, stakeholders, and the public<br>*Objectives*<br>• Maintain government-to-government and informal relationships with Native American tribes to exchange knowledge about fire management and traditional cultural practices<br>• Develop and implement a proactive process that disseminates current and accurate information to the public, park employees, media representatives, and cooperators that encourages support of the Fire Management Program<br>• Conduct wildland fire prevention, education, and other activities in communities within and adjoining the park. Work in collaboration with local communities, county, state, and Federal fire agencies with fire-management interests<br>• Develop interpretive displays and educational programs, working with the Division of Interpretation, to foster understanding and acceptance of the Fire Management Program |
| • Monitor for pre- and post-burn evaluations; compare results with burning conditions, fire behavior, and whether burn objectives were achieved<br>• Mitigate and protect, inventory, document<br>• Foster research | Goal 4 Promote a science-based program that relies on current and best-available information<br>*Objectives*<br>• Conduct research that will help understand natural fire regimes, refine prescriptions, provide data for fire behavior models, and effectively implement the Fire Management Program<br>• Monitor and evaluate fire management activities (managed wildland fires, prescribed burns, and fuel reduction treatments) to assess effects on natural and cultural resources and social values<br>• Update fire return interval departures, desired conditions, fire treatment priorities and prescriptions as relevant data become available |
| • Update Fire Management Plan | • In Progress |

FMP goals that address backcountry and wilderness management are

- Use minimum-impact management techniques to reduce impacts to wilderness values, cultural and soil resources, and limit spread of invasive plant species (See objectives Goal 3)
- The FMP revision will address restoration of natural fire regimes in wilderness areas (See Goal 2)
- Conduct fire management activities in proposed wilderness in a manner that will not diminish suitability for designation or result in changes to the current wilderness proposal (See objectives Goal 3)

Use of mechanized or motorized fire management equipment, administrative use of roads, and other fire management activities will meet minimum requirements to ensure impacts to wilderness values and resources are short term and will not compromise future wilderness designation. This document does not reexamine the park's Wilderness Recommendation.

## 1.7 Parties to the FMP DEIS/AEF

Many parties participate to create a management plan that satisfies park goals and objectives, NPS policies, and local concerns (See objectives, Goal 3). This DEIS/AEF is the result of work by the five broad groups listed below. The proposed FMP will reflect this cooperative effort.

- Interdisciplinary Team (IDT): NPS staff responsible for DEIS/AEF development
- Internal Review (includes expertise from NPS Intermountain Region Office Staff)
- Consulting Agencies *(i*ncludes expertise from the U.S. Forest Service, Arizona Department of Environmental Quality, the U.S. Fish and Wildlife Service, and the Arizona State Historic Preservation Officer)
- Associated tribes
- Interested Public

## 1.8 Scoping and Public Involvement

Scoping is required for NEPA compliance documents, including EISs, to determine the document's scope, i.e., what will be covered and in what detail. The scoping process must be open to the public, state, local, and tribal governments, and affected Federal agencies. Scoping objectives are

- Involve as many interested parties as possible in the environmental review process
- Provide clear, easily understood, factual information to potentially affected parties
- Provide meaningful and timely opportunities for public input
  - Identify, consider, and evaluate significant issues raised by interested parties to assist in GRCA FMP DEIS/AEF preparation
- Identify and eliminate from detailed study, issues not important or relevant
- Consider public comments throughout the decision-making and review process

In May 2001, the NPS sent a general scoping letter (Appendix B, Attachment A) to interested public, affected agencies, and known groups on the fire management program and projects to be undertaken at GRCA for the purpose of preparing a NEPA document. The letter informed recipients about the proposed updated Fire Management Plan and projects including prescribed fires, wildland fire use, and mechanical fuel reduction. The letter also described several existing park conditions that have led to increased fire potential such as decadent forests and activities undertaken before Grand Canyon became a national park. Eleven written responses to this letter were received by GRCA through email, U.S. mail, and hand delivery. Based on comments and issues raised during internal scoping, the NPS elevated the level of environmental analysis to an Environmental Impact Statement.

On September 16, 2003, the NPS issued a Notice of Intent (NOI) in the *Federal Register* for the preparation of an EIS for the proposed GRCA Fire Management Plan (Appendix B, Attachment B). The NOI stated, "This effort will result in a new wildland fire management plan that meets current policies, provides a framework for making fire-related decisions, and serves as an operational manual." Wildland

Fire Associates (WFA) and SWCA Environmental Consultants (SWCA) were retained by GRCA to help develop the EIS and organize and manage a second round of public scoping which included a scoping letter and comment form sent to interested public and affected agencies; press releases; and a series of open house meetings (Appendix B, Attachment C).

The 2003 scoping letter informed the public that the NPS intended to prepare an EIS to analyze proposed GRCA fire management activities. The more in-depth 2003 scoping letter informed recipients of the purpose and need for intended actions, intent of management plan to be used for long- and short-term planning, and the proposed plan's goals and objectives. The 2003 letter also explained how to be involved in scoping and stay involved through the planning process.

WFA and SWCA organized and managed a series of five scheduled public meetings, which were held on the dates and in the communities listed.

| | | | |
|---|---|---|---|
| October 15, 2003 | Kanab, Utah | October 22, 2003 | Phoenix, Arizona |
| October 20, 2003 | Page, Arizona | October 23, 2003 | Flagstaff, Arizona |
| October 21, 2003 | Grand Canyon, Arizona | | |

The meetings were structured as open houses. Information about the FMP/EIS process was presented through posters and handouts (Appendix B, Attachment D). NPS personnel were present to answer questions. Attendees were invited to submit written comments on a comment form provided (Appendix B, Attachment C), and an audio recorder was available to collect verbal comments. GRCA received a total of 20 written responses in 2003 via email, U.S. mail, and hand delivery, including those collected during the open house meetings.

A total of 96 comments were identified within the 31 submissions received in response to the 2001 and 2003 scopings. Primary issues identified through public comment evaluation were concerns related to GRCA ecological restoration through natural fire, local impacts related to air and visual resource quality, cultural resource protection, Wildland-Urban Interface/community protection, appropriate conditions for prescribed fire use, and overall management and coordination procedures. These issues are similar issues and impact topics brought forward by the NPS internal scoping process.

Many of the topics were directly related to management plan goals and objectives and have been incorporated, including reducing the risk of wildland fire in the WUI, using natural fire as a natural process to maintain park ecosystems, coordination with other Federal, state, county, local and American Indian tribal governments through fire management collaboration, and maintaining wilderness areas as wilderness during fire management. Substantive comments received during public scoping are evaluated in this DEIS. Comments are detailed in Appendix B, Public Scoping Issue Analysis.

### 1.8.1 Issues and Concerns Used to Develop Alternatives

Based on analysis of issues and concerns raised during internal and public scoping and on knowledge of park resources and professional expertise, the FMP Interdisciplinary Team determined that activities connected with fire management strategies identified in the alternatives would or could potentially effect the resources and functions listed below. These resources and functions are therefore analyzed in this FMP DEIS/AEF regarding any beneficial or adverse impacts .

### 1.8.2 Impact Topics Selected for Detailed Analysis

Chapters 3 and 4 will discuss in detail the following impact topics selected for detailed analysis.

#### 1.8.2.1 Air Quality

GRCA is a Class I air quality area under the Clean Air Act, and is afforded the most stringent protection against increases in air pollution and further degradation of air quality-related values. Levels of air

pollutants, effects on human health, and decreased visibility are all concerns related to smoke from prescribed and wildland fire. Visibility is analyzed under Visitor Experience.

#### 1.8.2.2 Soundscape

The NPS is mandated by DO-47, Soundscape Preservation and Noise Management, to protect, maintain, or restore the natural-soundscape resource in a condition unimpaired by inappropriate or excessive noise. Natural sounds are intrinsic environmental elements associated with parks and park purposes. Natural sounds are inherent components of "the scenery and the natural and historic objects and the wild life" protected by the NPS Organic Act. Such sounds are vital to the park's natural functioning, and may provide valuable indicators of various ecosystems' health. Intrusive, inappropriate, or excessive sound from fire management tactics is a concern.

#### 1.8.2.3 Soils and Watersheds

NPS Management Policies (NPS 2006) and the GRCA RMP (NPS 1997) direct park soils protection. Soil erosion, oxidation, sterilization, and compaction are concerns related to fire management strategies. As a result of some fires, soils are enriched due to nutrients released from burned vegetation. The Federal Water Pollution Control Act (the Clean Water Act) of 1972 requires consideration of impacts on U.S. jurisdictional waters and potential for polluting surface waters, thus soils and watersheds are concerns.

#### 1.8.2.4 Vegetation

NPS Management Policies 2006, the 1995 GRCA GMP, and other NPS and GRCA policies direct protection of GRCA's naturally occurring biotic communities, including vegetation. GRCA's 1997 RMP directs restoration of plant communities and forest ecosystems. Executive Order 13112 directs Federal agencies to control invasive species. The Fire Management Plan will accomplish restoration and protection efforts through a variety of fire management tools. Beneficial and adverse effects of fire management strategies on vegetative communities, and potential for introducing and spreading invasive plant species, are concerns.

#### 1.8.2.5 Wildlife

NPS Management Policies (NPS 2006), the GRCA GMP (NPS 1995), and other NPS and GRCA policies direct protection of the park's naturally occurring biotic communities, including wildlife. Impacts of fire management strategies on individuals or habitats of park native fauna are concerns; often, plant communities and habitat are improved as a result of fire management projects and events.

#### 1.8.2.6 Special Status Species

The Endangered Species Act of 1973, as amended, requires examination of impacts to all Federally listed, threatened, or endangered species for any major action authorized, funded, or carried out by a Federal agency. NPS policy requires examination of impacts to state-listed and Federal candidate species.

#### 1.8.2.7 Cultural Resources (including archeological resources, historic structures, cultural landscapes, ethnographic resources, and museum objects)

Consideration of impacts on cultural resources is required by the National Historic Preservation Act of 1966, as amended; NPS Management Policies 2006; and other Federal statutes, policies, and guidelines. In addition, NEPA regulations at 40 CFR 1508.27 require the intensity of potential impacts be evaluated in terms of potential adverse effects on archaeological and other cultural resources, including historic properties listed on or eligible for inclusion in the National Register of Historic Places. Executive Order 13007 requires Federal agencies to avoid adversely affecting the physical integrity of sacred sites. Cultural resources of concern identified though scoping and government-to-government consultation include

archeological sites, ethnographic resources (including Traditional Cultural Properties [TCP] and sacred sites), historic structures, and cultural landscapes.

#### 1.8.2.8 Visitor Experience

The NPS Organic Act of 1916 (16 USC) directs national parks to provide for public enjoyment; NPS Management Policies 2006 state the NPS will promote and regulate appropriate park use, provide services necessary to meet basic needs of park visitors, and to achieve each park's mission goals. Fire management strategies may effect visitor experience primarily through health and safety issues, noise, impact on scenic values, and temporary closures that limit access. Management objectives in the GRCA GMP (NPS 1995) include preservation and protection of park scenic resources. Concerns include visibility impacts of long- and short-distance views from smoke, and the beneficial or negative visual impact of fire-treated areas.

#### 1.8.2.9 Public and Firefighter Safety

NEPA regulations at 40 CFR 1508.27 require potential impact intensity be evaluated for public health and safety. To avoid redundancy, this topic is not accorded separate sections in Chapters 3 and 4; however, potential impacts of fire management-related emissions on public health are addressed under Air Quality, and potential impacts to visitor safety are addressed under Visitor Experience.

Firefighter safety is always of primary concern and its procedures are dictated by laws, regulations, policies, and guidelines. National Fire Policy states that firefighter safety is the first priority in fire management activities. Director's Order 18 makes similar commitments. The Chapter 4 analysis does not evaluate firefighter safety separately because its elements are common to all alternatives and will not differ in any alternative. In addition, firefighter safety procedures are updated frequently and will be followed regardless of the alternative implemented.

#### 1.8.2.10 Socioeconomics

Socioeconomic values consist of local and regional businesses and residents, the local and regional economy, and park concessions. The local economy and most businesses in communities surrounding the park are based on construction, recreation, transportation, tourist sales, services and educational research; the regional economy is strongly influenced by tourist activity. Activities connected with fire management strategies may have an effect on the socioeconomic environment in the park and neighboring communities that rely in varying degrees on GRCA-related tourism.

#### 1.8.2.11 Park Operations

Fire management actions could potentially effect several aspects of park operations including budget, personnel assignment, facility maintenance, and infrastructure. Impacts of fire management strategies on overall park operations or portions thereof are a concern.

#### 1.8.2.12 Wilderness Character

Over 90% of GRCA is proposed for wilderness designation (NPS, 1993). NPS Management Policies 2006 requires the NPS manage all areas proposed for wilderness designation in a manner that does not jeopardize suitability for future designation. The Wilderness Act also requires agencies "preserve the wilderness character and resources." Fire management activities may both beneficially and adversely effect wilderness character.

### 1.8.3 Issue Topics Dismissed from Detailed Analysis

Federal regulations (40 CFR 1500 et seq.) and NPS policy (DO-12) require that certain topics be addressed as part of NEPA analysis. The NPS reviewed the mandatory topics listed below and determined

the proposed action has no potential to effect them for the reasons stated. These topics have been dismissed from detailed analysis in this document.

#### 1.8.3.1 Possible Conflicts between the Proposal and Land Use Plans, Policies, or Controls for the Area Concerned

NEPA regulations at 40 CFR 1502.16 require potential land-use conflicts be addressed if they occur. For the most part, fire management strategies would be implemented in GRCA boundaries and jurisdiction managed according to the GRCA GMP (NPS 1995). The proposed actions are fully consistent with management objectives set forth in that plan. Managing boundary areas where wildland fires could burn out of the park may require consultation with neighboring agencies where existing agreements do not allow fire management across mutual boundaries. Consultation and coordination between agencies would preclude conflicts with other land use plans, policies, or controls.

Under each alternative, GRCA would continue to coordinate and collaborate with neighboring land management agencies and tribes to provide efficiencies for fire management activities across boundaries. These efforts will continue through use of the following programs and agreements.

- Interagency Fire Management Organization on North Rim and North Kaibab
- USFS and NPS Interagency Dispatch Center located in Williams, Arizona, staffed with both U.S. Forest Service and NPS employees
- GRCA support of an Interagency Aviation Program Manager to coordinate all fire-related aviation programs for GRCA and the Kaibab National Forest
- GRCA fire management program interagency prescribed fire burn plans that allow fire managers to implement cross-boundary prescribed fire projects
- Interagency Agreements with the U.S. Forest Service through the Kaibab National Forest for use of resources on GRCA prescribed fire projects
- Interagency Agreements with four local fire departments for use of firefighter resources on GRCA prescribed fire projects
- Membership in the Northern Arizona Area Interagency Board that includes the U.S. Forest Service, Bureau of Indian Affairs, NPS, and State of Arizona and which provides guidance and policy oversight for the GRCA and Flagstaff Zones (groups of northern Arizona fire programs)
- Fire staff membership in interagency, regional, and national incident management teams
- Fire staff representation on a variety of interagency faculties and committees
- Active communication between USFS and NPS during pre-season prescribed fire planning, prescribed fire implementation, pre-season preparedness planning, and resource allocation during peak fire season

Adjacent land issues would be similar for all alternatives with little or no differences. Coordination provides continued communication with adjacent land owners to foster enhanced relationships and partnerships. All tribal government-to-government consultations will be covered under appropriate regulations and policies. Further discussion on tribal interests is included in the cultural environment section of Chapter 4. Fire program effects on the community of Tusayan are covered in Chapter 4, Air Quality and Socioeconomic topics.

Because the FMP would be implemented within GRCA boundaries, proposed actions are fully consistent with approved management objectives, and consultation and coordination between neighboring agencies would preclude conflicts with other land use plans, policies, or controls, this impact topic is dismissed from further analysis.

#### 1.8.3.2 Research Natural Areas

Research Natural Areas (RNAs) are administratively designated areas identified for their unique natural features that have essentially no past human influence. They are part of a national network of sites

designed to facilitate research and preserve natural features, and are usually established as a typical example of an ecological community type, preferably one little disturbed in the past and where natural processes are not unduly impeded. The RNA is set aside permanently and is managed exclusively for approved non-manipulative research, i.e., research that measures but does not alter existing conditions.

NPS Management Policies 2006 (4.3.1; 2006) states

> *Research Natural Areas contain prime examples of natural resources and processes, including significant genetic resources, that have value for long-term observational studies or as control areas for manipulative research taking place outside the parks. Superintendents recommend areas of parks to their regional director, who is authorized to designate them as Research Natural Areas. Superintendents cooperate with other federal land managers in identifying park sites for designation, and in planning research and educational activities for this interagency program. Activities in Research Natural Areas generally will be restricted to non- manipulative research, education, and other activities that will not detract from an area's research values.*

The NPS Organic Act of 1916 and the NPS Omnibus Management Act of 1998 provides authority to establish RNAs. Grand Canyon's RNA are listed in Table 1-5.

The 1995 GMP states that six research natural areas totaling 8,845 acres were officially designated in GRCA in the 1970s, this program has not been active in recent years, and no special management of these areas is occurring. RNAs will be treated as proposed wilderness; possible impacts are analyzed under Vegetation, Soils and Watersheds, and Wilderness Character. Thus RNAs are dismissed as an impact topic. A planning process for a new Backcountry Management Plan will begin shortly in which RNAs will be studied and their use analyzed.

**Table 1-5 Grand Canyon Research Natural Areas**

| Name | Acres | Primary Type | Other Important Types | Elevation | Topography |
|---|---|---|---|---|---|
| **Great Thumb** | 960 | Piñon-Juniper | Sedimentary (Paleozoic) | 6, 100-6, 185 | Level |
| **Neal Spring** | 15 | Aspen | Caves and caverns (limestone sink-karst) topography<br>Sedimentary (Paleozoic) | 7,400-7,650 | Mountainous steep |
| **Powell Plateau** | 5,120 | Interior Ponderosa Pine | Sedimentary (Paleozoic) | 6, 750-7, 650 | Level Plateau |
| **Swamp Point** | 1,120 | Interior Ponderosa Pine | Sedimentary (Paleozoic) | 7,750-7,847 | Rolling |
| **Wayside-Tusayan** | 480 | Piñon-Juniper | Sedimentary (Paleozoic) | 6,800-7, 250 | Rolling |
| **Mt Emma** | 1,150 | Interior Ponderosa Pine | Volcanoes and Associated Works (Quaternary)<br>Sedimentary (Paleozoic) | 6,750-7,500 | Mountainous steep |
| **Fishtail Mesa*** | 1,098 | Old growth piñon and juniper, sagebrush and muttongrass steppe, and a small grassland | | 5,837-6,161 | Rolling |
| *Never formally designated (Categorical Exclusion completed Nov 2000) | | | | | |

### 1.8.3.3 Energy Requirements and Conservation Potential

NPS Guiding Principles of Sustainable Design (available online at www.nps.gov/dsc/dsgncnstr/gpsd/toc.html) provide a basis for achieving sustainability in facility planning and design, emphasizes biodiversity importance, and encourages responsible decisions. The guidebook articulates guiding

principles such as resource conservation and recycling. None of the proposed alternatives would minimize or add to GRCA resource conservation or pollution prevention.

NPS Management Policies 2006 address energy management in section 9.1.7 GRCA Fire Management Program will adhere to all Federal Policies governing energy and water efficiency, renewable resources, use of alternative rules, and Federal fleet goals as established in the Energy Policy Act of 1992. GRCA will comply with guidelines and policy, including EO's and NPS Director's Orders. The park's Fire Management Program will have less that minor, adverse or beneficial impacts which would effect energy requirements and conservation potential; therefore, this impact topic is dismissed from further analysis.

#### 1.8.3.4 Urban Quality and Design of the Built Environment

NEPA regulations at 40 CFR 1502.16 require urban quality and design of the built environment be considered if potentially affected. Park developed areas that exhibit municipal design values would be managed under all alternatives as part of the Wildland-Urban Interface Fire Management Unit, and be protected from wildland fire's adverse effects; therefore, this impact topic is dismissed from further analysis.

#### 1.8.3.5 Environmental Justice

Executive Order 12898 requires Federal agencies to avoid disproportionately high adverse effects on minorities and low-income populations. While such populations do reside in areas that could receive smoke from park fires, it is not anticipated that these populations would be affected disproportionately by proposed fire management strategies; therefore, this impact topic is dismissed from further analysis. Potential public health effects are addressed under Air Quality.

#### 1.8.3.6 Wetlands

Executive Order 11990 directs the NPS to 1) provide leadership and take action to minimize wetlands destruction, loss, or degradation 2) preserve and enhance natural and beneficial values of wetlands and 3) to avoid direct or indirect support of new construction in wetlands unless there are no practicable alternatives to such construction and the proposed action includes all practicable measures to minimize harm to wetlands.

NPS Director's Order 77-1, Wetland Protection (issued October 22, 1998), and the accompanying Procedural Manual 77-1 directs NPS proposed actions that may adversely impact wetlands be addressed in an Environmental Assessment (EA) or an EIS. If the preferred alternative in an EA or EIS will result in adverse impacts, a Statement of Findings documenting compliance with the Director's Order and Procedural Manual will be completed. Actions that may be exempted from the Statement of Findings requirement are identified in the Procedural Manual. Given that wetland protection, as defined in these documents, deals primarily with proposed construction and dredging in wetlands, there is currently minimal cause to formally consider a separate wetlands analysis based on landscape-level activities such as wildland fire management.

Although small springs, seeps, and intermittent riparian areas occur in GRCA, primarily on North Rim, there are no jurisdictional wetlands in proposed treatment areas. Mitigation measures have been developed to minimize direct and indirect effects from fire activities on water resources and riparian areas (see Soils and Watersheds, Chapter 4). With these mitigation measures, potential impacts on resources such as small springs, seeps, and intermittent riparian areas are expected to be negligible; therefore, this impact topic is dismissed from further analysis.

#### 1.8.3.7 Floodplains

Executive Order 11988 requires all Federal agencies to avoid construction in the 100-year floodplain unless no other practical alternative exists. Certain construction in a 100-year floodplain requires a Statement of Findings. All park base-flood elevations are well away from any locations subject to proposed prescribed fire or fuels treatment projects and would not be affected; therefore, this impact topic is dismissed from further analysis.

#### 1.8.3.8 Prime and Unique Farmland

In August 1980, the Council on Environmental Quality (CEQ) directed Federal agencies to assess their action's impacts on farmland soils classified by the U.S. Natural Resources Conservation Service (NRCS) as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to the NRCS, no GRCA soils are classified as prime or unique; therefore, this impact topic is dismissed from further analysis.

#### 1.8.3.9 Wild and Scenic Rivers, World Heritage Site Designation

NEPA regulations (40 CFR 1508.27) require intensity of potential impacts be evaluated on unique natural resources including Wild and Scenic Rivers. No GRCA waterways are designated Wild and Scenic Rivers.

GRCA was designated a World Heritage Site in 1979 for its evolutionary history, ongoing geological processes, exceptional natural beauty, and rare and endangered species. The GRCA GMP (NPS 1995) reiterates the importance of preserving those values as part of the heritage of all people. The intent of proposed fire management plan is to enhance the park's natural resource values. Because the proposed FMP will not adversely affect the World Heritage Site status, this topic is dismissed from further analysis.

#### 1.8.3.10 Indian Trust Resources

Under Department of the Interior Secretarial Order 3175 and Environmental Compliance Memorandum 95-2, department agencies are required to consider effects of their actions on Indian trust assets, defined as legal interests in property held in trust by the Federal government for the benefit of Indian tribes or individuals. Examples of such assets include lands and mineral, hunting, fishing, and water rights. No such assets occur in GRCA or would likely be affected by fire management strategies; therefore, this impact topic is dismissed from further analysis.

#### 1.8.3.11 Depletable Resource Requirements and Conservation Potential

None of the alternatives involves the use of depletable (consumptive) resources. Therefore this topic has been dismissed from further analysis

## 1.9 Decisions to be Made

The GRCA Superintendent will recommend a final decision on selected fire management strategies to the Regional Director. The Regional Director will sign a Record of Decision for the compliance document. The Superintendent is a deciding official on the resulting Fire Management Plan.