

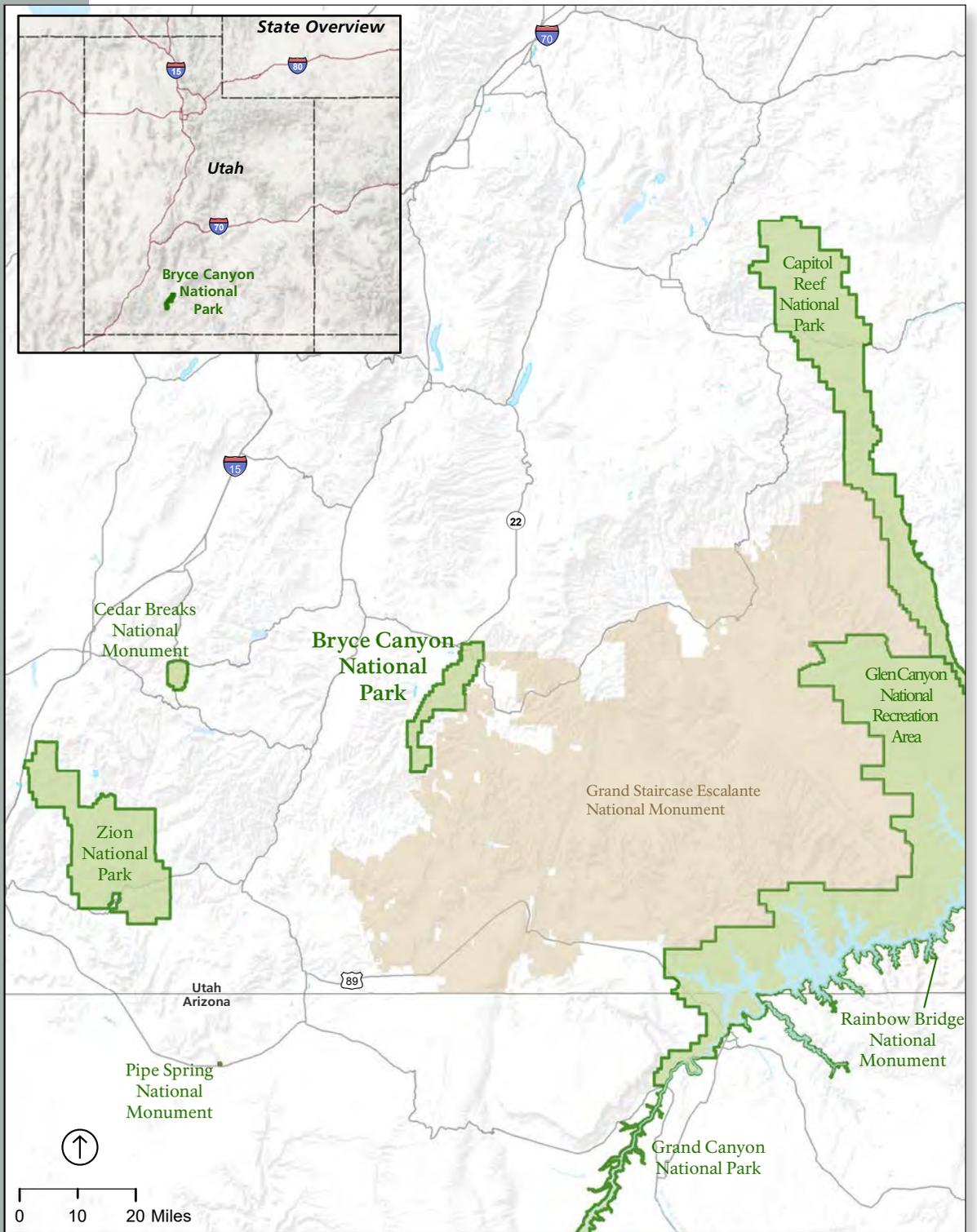


Foundation Document Bryce Canyon National Park

Utah

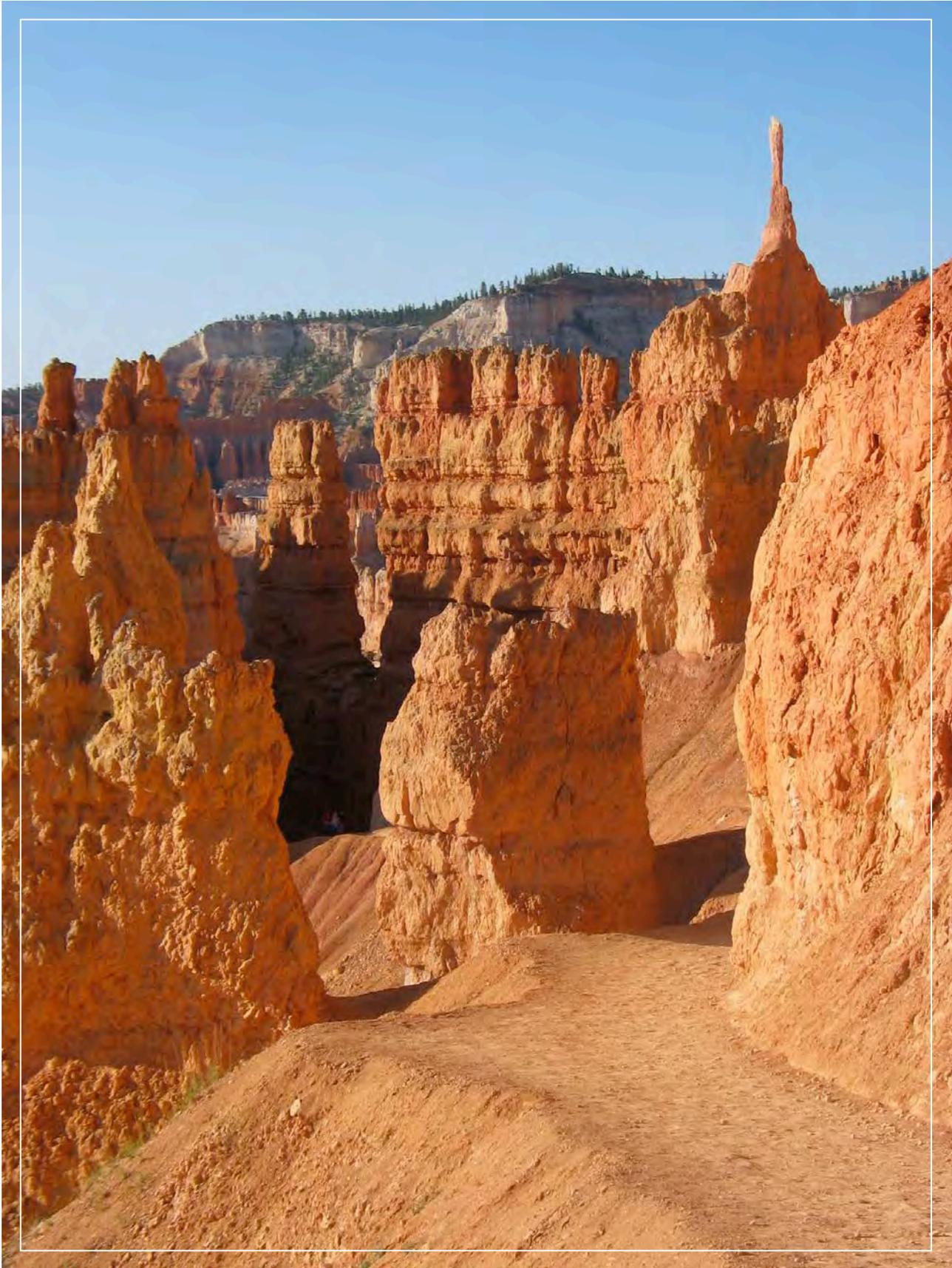
May 2014





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Introduction

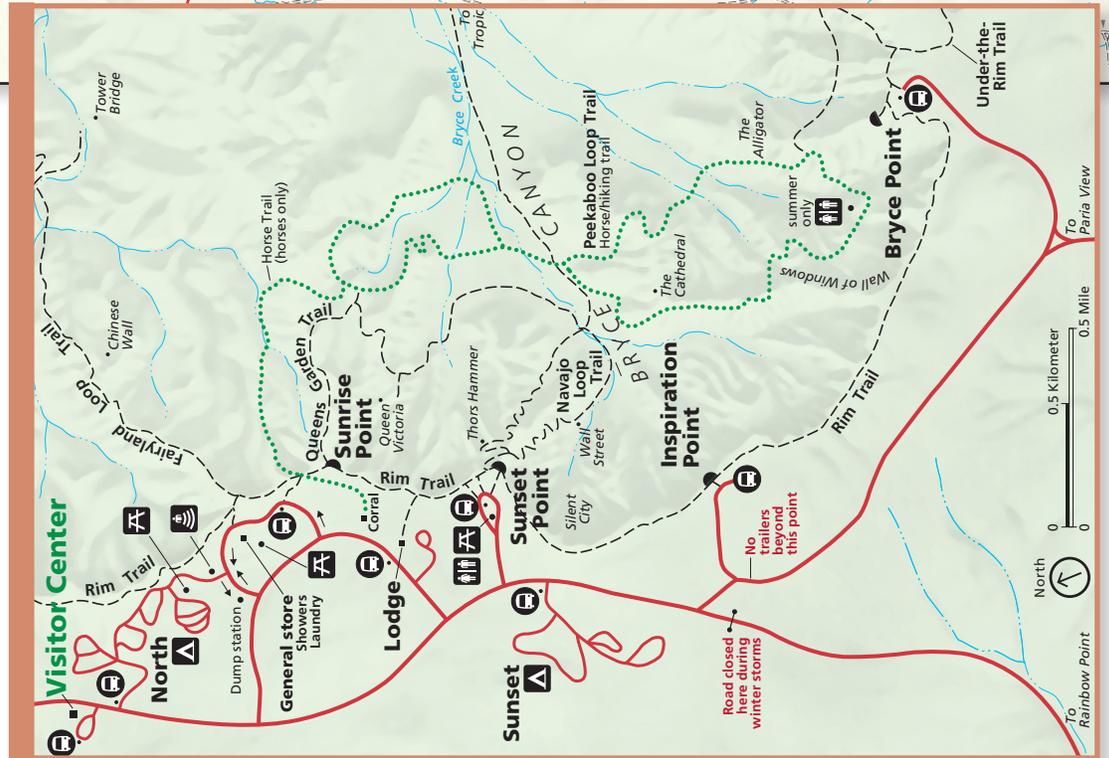
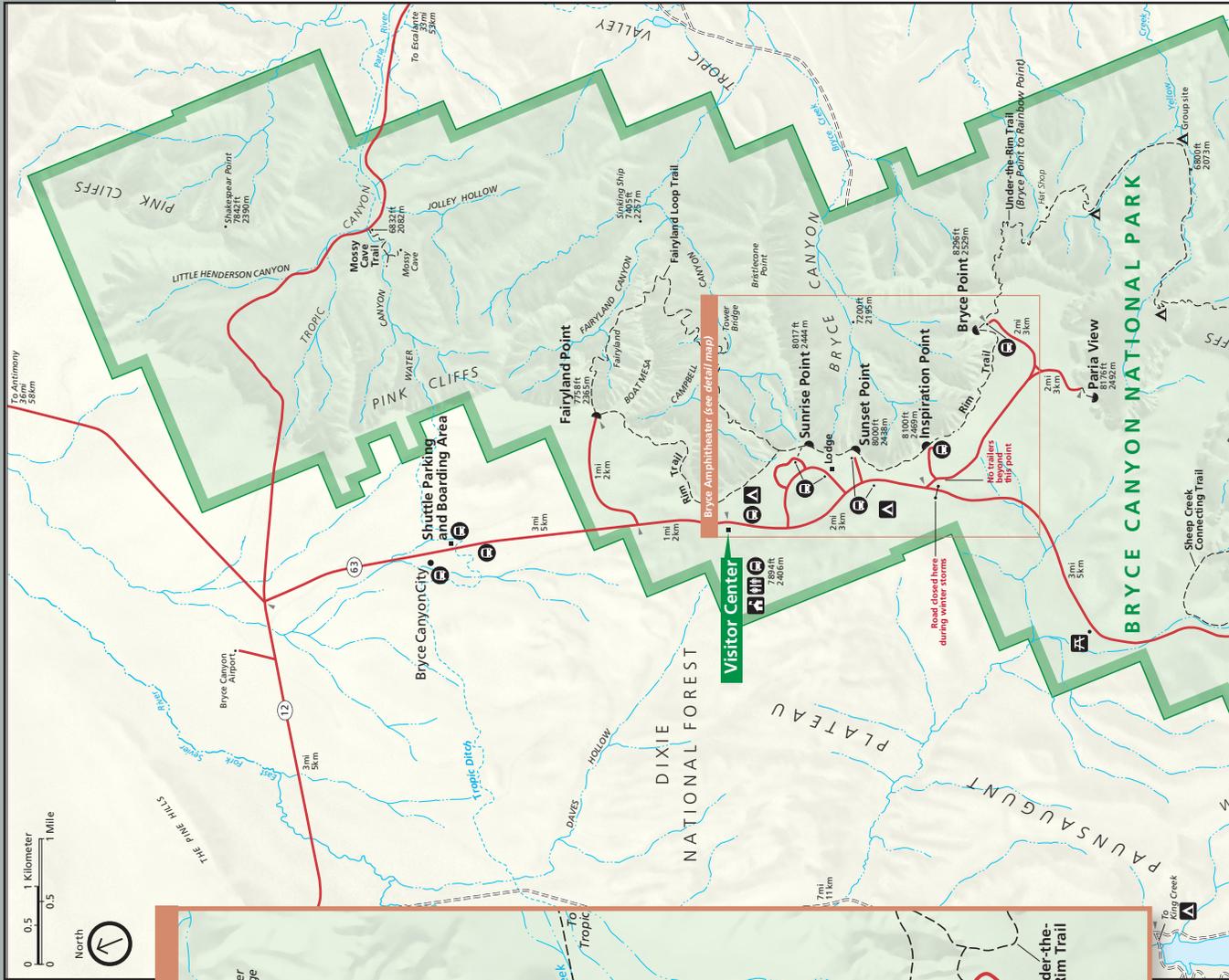
Every unit of the national park system is required to have a formal statement of its core mission. The core mission is derived from the park's enabling legislation and/or proclamation establishing the park unit and subsequent legislation specific to that unit. As such, it provides basic guidance—a foundation for planning and management. Increasing emphasis on government accountability and restrained federal spending demand that all stakeholders are aware of the purpose, significance, interpretive themes, fundamental resources and values, and special mandates and administrative commitments of a park unit, as well as the legal and policy requirements for administration and resource protection that factor into management decisions.

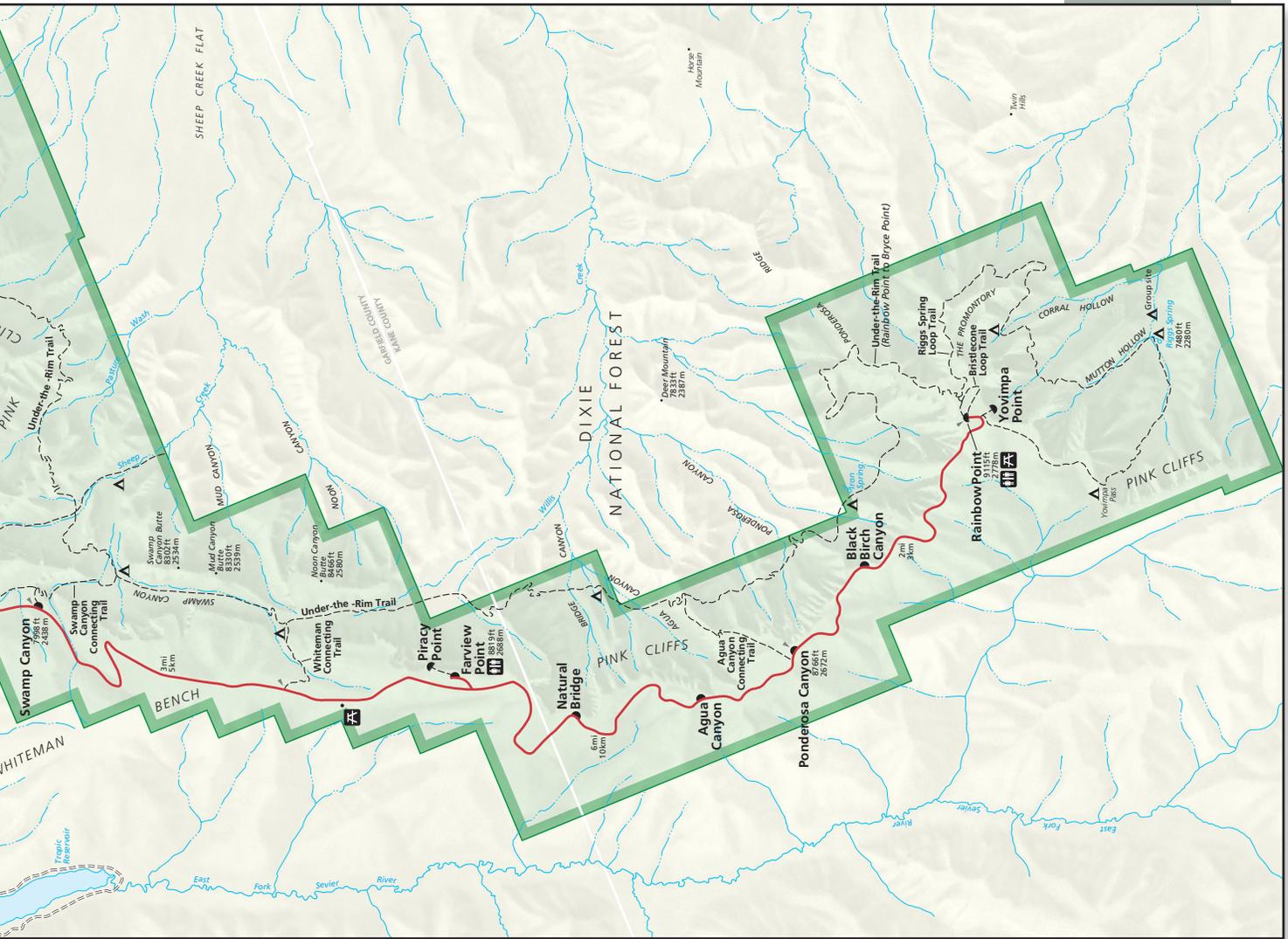
A primary benefit of developing a foundation document is the opportunity to integrate and coordinate all kinds and levels of planning from a single, shared understanding of what is most important about the park. The process of developing a foundation document begins with gathering and integrating information 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.

A foundation document serves as the underlying guidance for management and planning decisions for a national park unit. It describes the core mission of the park unit by identifying the purpose, significance, fundamental and important resources and values, interpretive themes, assessment of planning and data needs, special mandates and administrative commitments, and the unit's setting in the regional context. The development of a foundation document for Bryce Canyon National Park is an important part of effectively managing the park over the long term and protecting park resources and values that are integral to the purpose and identity of the park unit.

The park atlas is also a part of the foundation project. It is a geographic information system (GIS) product that can be published as a hard copy paper atlas and as electronic geospatial data in a Web-mapping environment. The purpose of the park atlas is to act as a reference for park projects and to facilitate planning decisions as a GIS-based planning support tool. The atlas covers various geographic elements that are important for park management such as natural and cultural resources, visitor use patterns, and facilities. It can be developed as part of a planning project (e.g., general management plan or foundation document), although it can also be designed as an independent product.

Engagement with state and local governments, American Indian tribes and interested organizations is an essential aspect of park management. Decisions of local government and national park managers have reciprocal effects. Bryce Canyon National Park is an important part of the local and regional community. The park will strive to develop beneficial relationships and work cooperatively with local governments, Indian tribes, and civic organizations to find solutions to problems, and identify opportunities to sustain and enhance cooperative conservation, education, visitor services, local commerce, emergency response plans, and other activities of joint interest within established authorities and NPS policies.





Part 1: Core Components

All foundation documents include the following core elements:

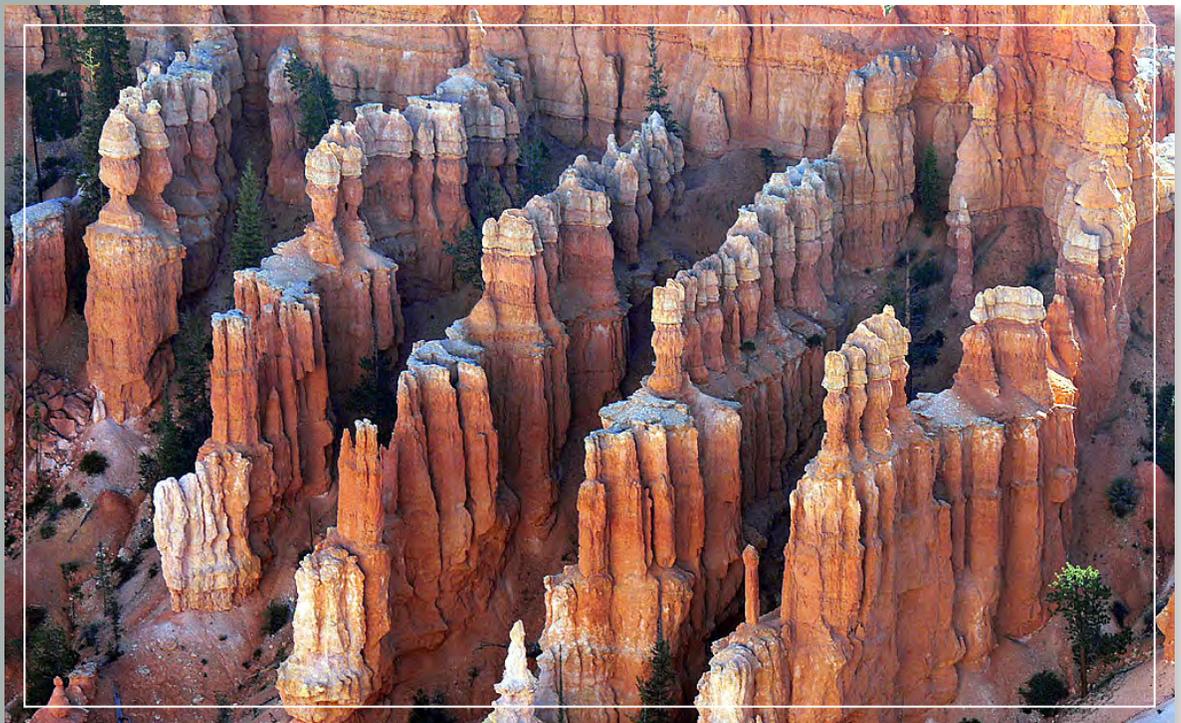
The park purpose is the specific reason(s) for establishing a particular park. A park purpose statement is grounded in a thorough analysis of the legislation (or executive order) and legislative history of the park, and may include information from studies generated prior to the park's establishment. The purpose statement goes beyond a restatement of the law to clarify assumptions about what the law means in terms specific to the park.

The significance statements express why the resources and values of the park are important enough to justify national park designation. Statements of park significance describe why an area is important within a global, national, regional, and systemwide context. Significance statements are directly linked to the purpose of the park and are verified by data or consensus that reflect the most current scientific or scholarly inquiry and cultural perceptions because the resources and values may have changed since the park was established.

Interpretive themes connect park resources to relevant ideas, meanings, concepts, contexts, beliefs, and values. They support the desired interpretive objective of increasing visitor understanding and appreciation of the significance of park resources. In other words, interpretive themes are the most important messages to be conveyed to the public about the park. Interpretive themes are based on park purpose and significance.

Fundamental resources and values are features, systems, organisms, processes, visitor experiences, stories, scenes, sounds, smells, or other attributes of the park that merit primary consideration during planning and management because they are essential to achieving park purpose and maintaining park significance and fundamental resources and values.

Other important resources and values are those that are determined to be important and integral to park planning and management, although they are not directly related to park purpose and significance.

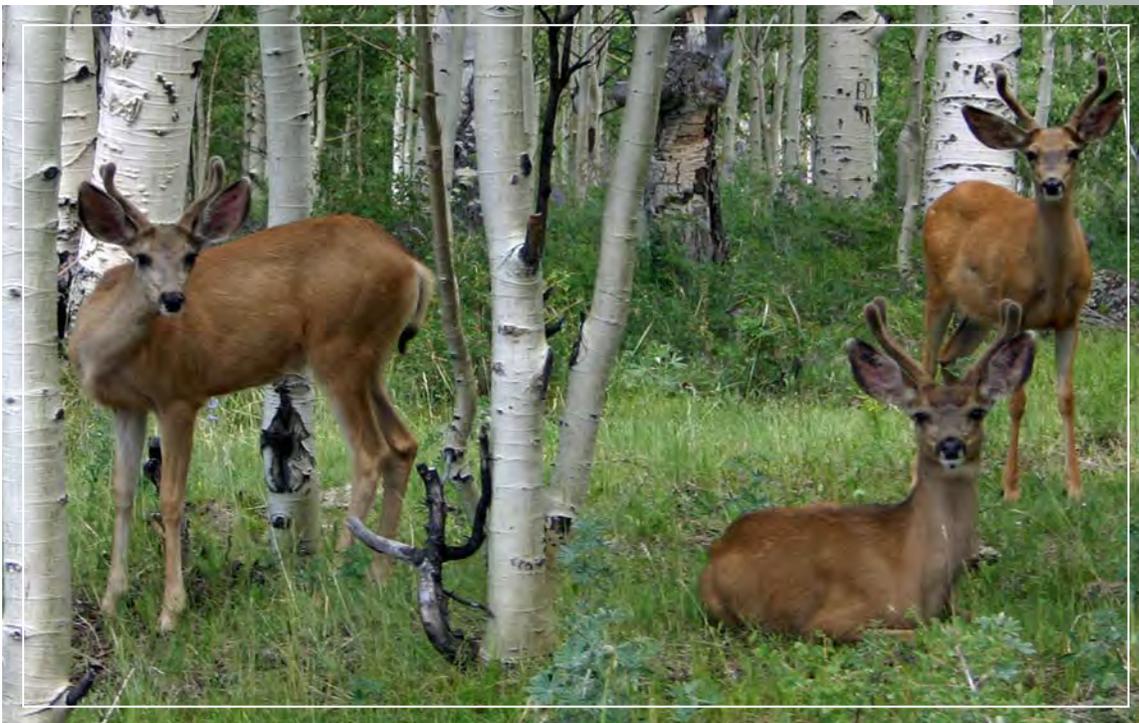


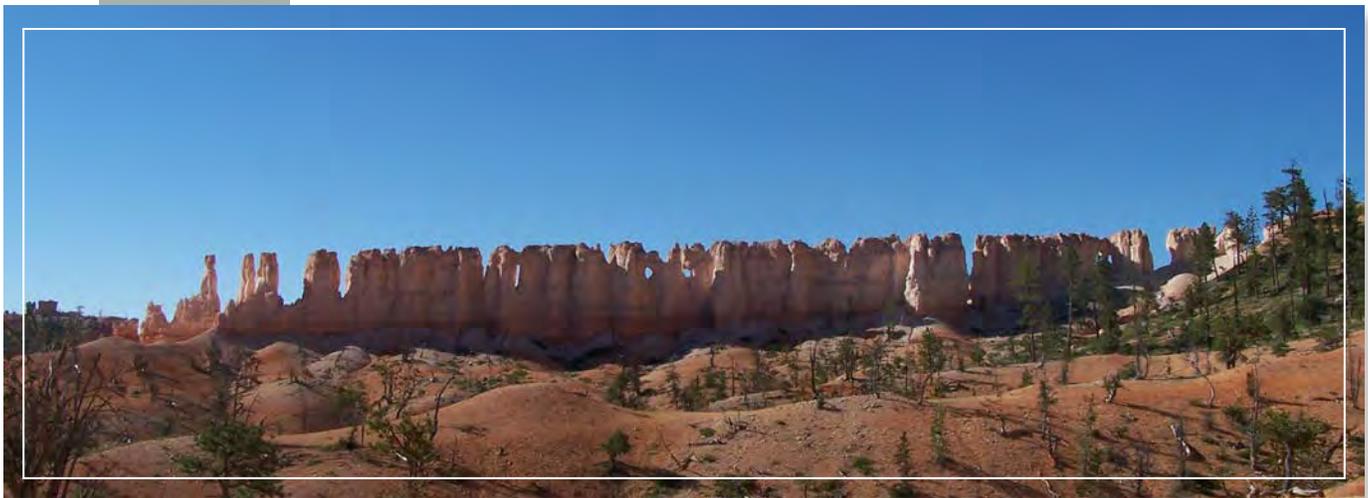
Brief Description of Bryce Canyon National Park

Bryce Canyon National Park is in south-central Utah. The northern part of the park is in Garfield County, and the southernmost portion in Kane County. The park encompasses approximately 35,835 acres, and the park ranges between 6,600 and 9,100 feet in elevation. Named after pioneer Ebenezer Bryce, Bryce Canyon National Park was originally established as a national monument by presidential proclamation in 1923. The park was renamed Utah National Park in 1924, and eventually the name was changed to Bryce Canyon National Park in 1928. In 1975, nearly 46% of the park (16,303 acres) was recommended to be included as a unit of the national wilderness preservation system. Much of the park is surrounded by the Dixie National Forest or Bureau of Land Management (BLM) lands, including portions of the Grand Staircase–Escalante National Monument.

The park's most noted feature is the eroded landscape below the east rim of the Paunsaugunt Plateau. Technically it is not a canyon, but rather a spectacular series of more than a dozen horseshoe-shaped amphitheaters. The erosional force of frost-wedging and the dissolving power of rainwater have worn away the colorful and weak limestone rock of the Claron Formation into bizarre shapes, including slot canyons, windows, fins, and spires called "hoodoos." The formations, which range from shades of red to white, are a brilliant contrast to the colorful lowlands east of the park and the timbered hillsides and plateaus to the west. The geologic story of the park is linked to the rest of the Grand Staircase region and the Cedar and Black mountains volcanic complex.

Because Bryce Canyon National Park transcends 2,500 feet of elevation, the park exists in three distinct climatic zones characterized by spruce/fir forest, ponderosa pine forest, and pinyon pine/juniper woodlands. The diversity of forest and meadow habitats provides a high degree of plant and animal diversity. Surrounded by lower elevation dry shrublands, Bryce Canyon's highland plateau gets much more rain than the lowlands and is cooler during summer. The relatively lush ecosystem that results is in marked contrast to the surrounding arid landscape. At Bryce Canyon, more than 100 species of birds, dozens of mammals, and more than 1,000 plant species exist.





Bryce Canyon National Park is not an island; important park resources and values transcend park boundaries and are dependent on environmental conditions both inside and outside the park. The vast, panoramic views from within the park to the outlying valleys and canyons add an outstanding quality to the aesthetic values of the park. Bryce Canyon is also one of the best places to experience a truly dark night sky. These resources depend on regional air quality, soundscapes, and lighting conditions. Park boundaries are irrelevant to the migratory hummingbirds or nesting peregrine falcons; Rocky Mountain elk, mule deer, and pronghorn cross through the plateau forests and meadows within and beyond the park; other animals have adapted to occupy the distinctive erosional features of the amphitheater and adjacent habitats.

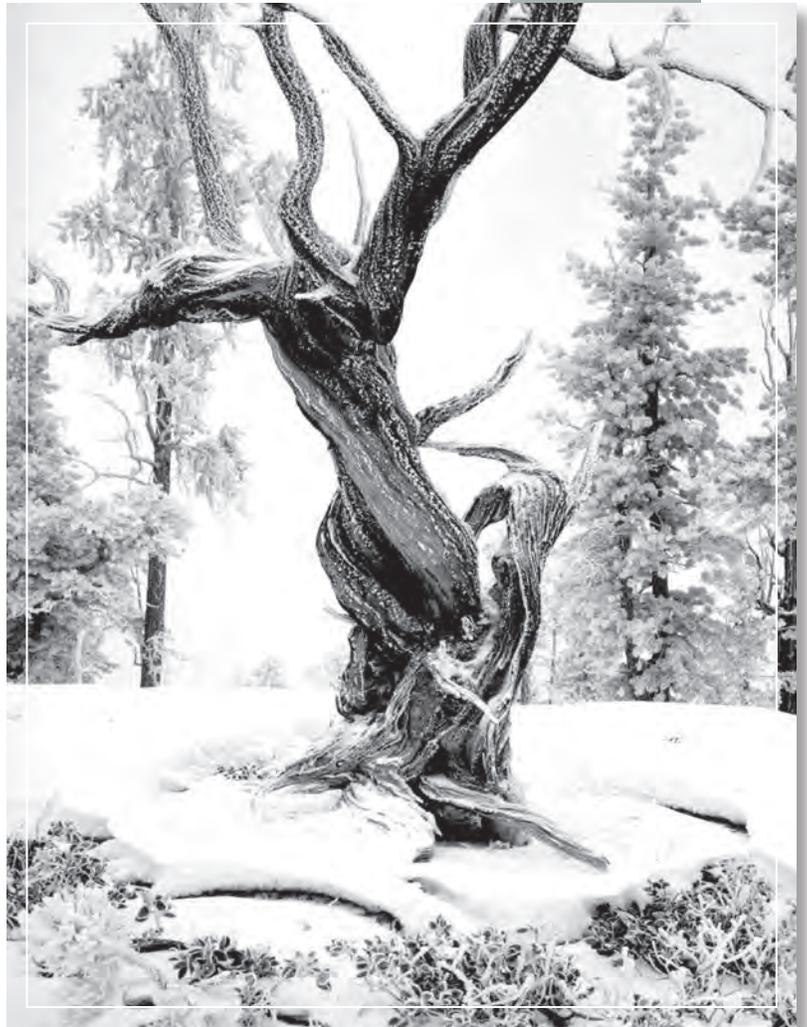
The park's cultural resources and values are also expressions of the region's diverse human history. For thousands of years, native peoples passed through the Bryce Canyon area, leaving subtle evidence of their presence in the archeological record. More recent tribal groups such as the Southern Paiute, as well as the European American pioneers who settled nearby, drew sustenance from the area's resources. In the early 20th century, the scenic splendor of Bryce Canyon inspired park developers to integrate the built environment with the natural setting. In perpetuation of this enduring legacy, modern visitors and the descendants of those who came before continue to draw inspiration and make personal and cultural connections to the landscape.



Park Purpose

Purpose statements identify the specific reason for the creation of a particular park unit. Purpose statements are crafted through a careful analysis of the enabling legislation and the legislative history that molded the creation and development of the park. Originally established as a national monument in 1923, Bryce Canyon National Park was created in 1928 when the park's enabling legislation was passed and signed into law (see appendix A for enabling legislation and subsequent amendments). The purpose statement reinforces the foundation for future park management, administration, and use decisions. The following purpose statement is based on the review of park legislation, previous management documents, and analysis by park staff:

BRYCE CANYON NATIONAL PARK protects and conserves resources integral to a landscape of unusual scenic beauty exemplified by highly colored and fantastically eroded geological features, including rock fins and spires, for the benefit and enjoyment of the people.



Park Significance

Significance statements express why the park resources and values are important enough to merit national park unit designation. Statements of significance describe why an area is important within a global, national, regional, and systemwide context. These statements are linked to the purpose of the park unit, and are supported by data, research, and consensus. Significance statements describe the distinctive nature of the park and inform management decisions, focusing efforts on preserving and protecting the most important resources and values of the park unit.

The following significance statements have been identified for Bryce Canyon National Park. (Please note that the statements are in no particular order.)

1. Bryce Canyon National Park showcases one of the largest and most colorful concentrations of erosional geologic features in the world, including hoodoos, fins, windows, fluted cliffs, bridges, arches, and grottoes. This unusual landscape within the Claron Formation is created by a unique combination of natural processes, location, rock properties, and climate.
2. The location of the park at the summit of the Grand Staircase, surrounded by a system of nationally protected lands, and combined with the exceptional clarity of the air and natural quiet, provides a multisensory experience. The outstanding views often extend more than 100 miles and begin with the colorful and intricately carved Claron Formation and include panoramic vistas of cliffs, canyons, and forested landscapes.
3. With a nearly pristine night sky, thousands of stars shine brightly at Bryce Canyon National Park. As one of the darkest publicly accessible places in North America, the Milky Way Galaxy can be viewed from horizon to horizon. The clear, clean air and a lack of artificial light in the park and the region are essential to this unparalleled nighttime experience. The darkness is also an important resource for nocturnal wildlife.
4. Cultural resources encompassing thousands of years of human use and experience are found throughout Bryce Canyon National Park. These resources are important to the identity of indigenous people of the Colorado Plateau and the living descendants of 19th-century pioneers. In addition, many of the historical resources of the park are associated with the emergence of tourism in the early 20th century, and are linked to the regional development of other “Grand Circle” national parks.
5. Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.



Interpretive Themes

Interpretive themes, which are based on park purpose, significance, and fundamental resources and values, provide the basis for interpretive and education programs at Bryce Canyon National Park. The themes do not include all park elements that can be interpreted, but they do address the ideas that are essential to visitor enjoyment and appreciation of park significance. Effective interpretation is achieved when visitors are able to connect concepts (intangibles) with resources (tangibles) and derive a personal connection or meaning from the experience.

Interpretive themes link the tangible values identified by the significance statements and fundamental resources and values to intangible concepts that convey the importance of the park unit. Interpretive themes serve as building blocks upon which interpretive services (e.g., exhibits, audiovisual displays, websites, publications, interpretive programs, social media, etc.) and education programs are based. The long-range interpretive plan for the park unit is a strategic plan that details interpretive themes, establishes visitor experience objectives, and recommends ways to achieve these objectives through interpretive services and education programs.

The following interpretive themes have been identified for Bryce Canyon National Park:

Earth History

The brilliant red limestone formations at Bryce Canyon National Park form the top step of the Grand Staircase within the Colorado Plateau. This unique geologic feature descends from Bryce Canyon to the Grand Canyon, and spans more than 200 million years of geologic history, giving us the ability to view and contemplate geologic processes over eons of time.

Power of Erosion

Water and the power of erosion through freeze-thaw cycles create the wondrous geologic formations found in the park, a testament to the power of nature to mold and alter the physical environment.

Vistas

Bryce Canyon National Park is on the western edge of the Colorado Plateau and offers one of the world's most expansive vistas of untrammeled wild lands. Sparsely populated, this remote, undeveloped landscape provides an outstanding opportunity for visitors from around the world to experience wilderness values such as solitude, clean air, healthy ecosystems, unobscured night sky viewing, natural sounds and smells, and self-reflection.

Life Zones

Bryce Canyon National Park provides important protected lands and habitats, ranging through several life zones, where scientific methods and research are being used to restore natural processes after decades of human influence.

Changing Relationships with the Land

The area's rich cultural history documents changing connections with the land, illustrating an ongoing struggle to balance resource use and the ecological and societal consequences.

National Park Service Subtheme

The first generation of NPS leaders and pioneer conservationists worked tirelessly to connect Americans with their national parks, both physically, through transportation and accommodations, and mentally, through emotional and intellectual connections to the resources. Bryce Canyon's historic districts and cultural resources open a physical window into this foundational era.



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.

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. These qualities are called fundamental resources and values. Fundamental resources and values are closely related to a park’s legislative purpose, and are more specific than significance statements. FRVs help focus planning and management efforts on what is truly significant about the park. If FRVs are allowed to deteriorate, the park purpose and/or significance could be jeopardized.

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

Geologic Features

- Importance: These features are one of the defining resources of the park. The geologic features of the park comprise tertiary-aged limestone of the Claron Formation, which originated from a freshwater lake system 50 million years ago. These features include hoodoos, fins, windows, fluted cliffs, bridges, arches, and grottoes. Chemical composition and weathering define the colors of the rocks, which range from white to yellow to pink to red to purple.
- Contributing geologic processes include physical/chemical weathering and erosion.
 - Physical/chemical weathering: These processes break down the easily weathered rock through freeze/thaw events, dissolution, oxidation, root penetration, swelling clays, and resulting soil creep.
 - Erosion: The transport of the weathered rock material by gravity, water, and to a lesser extent wind, aids in the sculpting of the unusual shapes in Bryce Canyon National Park. In an average winter, Bryce Canyon receives about 8 feet of snow, and thunderstorms are a common occurrence in July and August; these events carry significant material downslope away from the formations.





Dynamic Landscapes

- Importance:
 - The varied and richly textured landscapes of Bryce Canyon are formed by dynamic physical processes and contain diverse biological communities within the intricately carved geologic features of the Claron Formation. Continuity of natural processes including erosion and fire, coupled with diurnal and seasonal changes, result in diverse habitats for native plants and animals and are essential to park character and visitor experience.
 - The unusual “breaks” habitats within the park, are where several rare plants are found within the Claron Formation including Red Canyon penstemon (*Penstemon bracteatus*), Reveal’s paintbrush (*Castilleja parvula* var. *revealii*), and yellowish cryptanth (*Cryptantha ochroleuca*); the ancient Great Basin bristlecone pines (*Pinus longaeva*) found in the high elevations of Utah are prominent in the otherwise nearly barren breaks region of the Bryce Canyon amphitheater. The breaks formation also supports unique nesting habitat for several species of birds such as swifts, swallows, and a variety of raptors including the recently delisted peregrine falcon.

Natural Soundscapes

- Importance: The predominance and maintenance of natural quiet is integral to fully appreciating and experiencing the panoramic vistas of Bryce Canyon National Park. Natural soundscapes are an essential resource critical to visitor experience and the functioning of biological systems.

Clean Air

- Importance:
 - Clean, clear air in Bryce Canyon National Park is essential to the exceptional views of the colorful Claron Formation and panoramic vistas of the surrounding region. Clean air enhances the color and contrast of landscape features; allows visitors to see great distances; and safeguards ecosystem, visitor, and staff health.
 - Bryce Canyon National Park is designated as a Class I area under the Clean Air Act, providing an additional measure of protection from the adverse effects of air pollution. This designation bestows an “affirmative responsibility” on the National Park Service to actively protect the air quality and resources sensitive to air pollution within the park.

Near Pristine Night Sky

- Importance: The abundance of celestial bodies visible from Bryce Canyon is very rare. The unparalleled visibility is a result of location and other important factors including:
 - Sky clarity: At 8,000 feet above sea level there is less atmospheric water vapor to distort incoming starlight.
 - Transparency: In very dry environments high altitude dust interferes with visibility. In humid environments water vapor interferes with visibility. On average, the humidity at Bryce Canyon National Park is 20%, which produces optimal visibility.
 - Because Bryce Canyon is on the fringe of the southwest monsoon storm track there are, on average, only 60 cloudy nights per year.
 - Bryce Canyon National Park is designated a class I airshed under the Clean Air Act. Clean Air Act regulations minimize human-caused pollution, which detracts from sky clarity.
 - Bryce Canyon National Park sits near the center of a vast, relatively undeveloped region with limited artificial light pollution. Urban light domes can impact the night sky hundreds of miles away. Bryce Canyon's rural location is the most deterministic factor in the park's near pristine night sky.



Image courtesy of Brian D. Ottum, Ph.D.

Cultural Resources

- Importance: Collectively, park cultural resources reflect the continuum of human history and ongoing experience in the Bryce Canyon area. The earliest native people, pioneer European American settlers, early park developers, contemporary tribal members, and others with ties to the area have all contributed to an enduring cultural legacy. Archeological resources, ethnographic resources, museum and archival collections, cultural landscapes, and historic buildings and structures provide tangible evidence of this shared heritage and serve to express the lasting values and relationships that humans forged with this spectacular landscape over millennia.
- Contributing Resources:
 - Archeological Resources: The archeological resources of the park contribute to the knowledge about the ancient peoples who inhabited the area from the Paleo-Indian, Archaic, Late Prehistoric, and Puebloan periods. Archeological evidence associated with more recent American Indian and European American activities is also present. These resources (many eligible for the National Register of Historic Places) provide insight into patterns of human adaptation and settlement across three ecological life zones, from the high plateau forests to the lower elevation pinyon pine and juniper woodlands of the park.
 - Cultural Landscapes: A national park architectural style and the related development principles that emerged in the 1920s focused on integrating the built environment with the natural setting. Cultural landscapes containing Bryce Canyon’s historic lodge, cabins, roads, trails, and other features exceptionally demonstrate the relationships among park architecture, the natural setting, and the historic and contemporary patterns of visitor use and enjoyment. Both the Bryce Canyon Lodge Historic District and the Old NPS Housing Historic District are listed in the National Register of Historic Places.
 - Ethnographic Resources: The ethnographic resources include sites, objects, landscapes, and natural resources important to culturally associated tribes and pioneer descendants. For these contemporary people, particular places and resources in the park retain symbolic, spiritual, subsistence, and other values that reinforce cultural connections and sustain ancestral traditions and stories. The park supports the perpetuation of cultural values and identities.
 - Historic Buildings and Structures: The historic structures and districts in the park typify a distinctly rustic style, which reflects the techniques, skills, and craftsmanship employed during the early period of national park development. During the 1920s, in partnership with the National Park Service, the Union Pacific Railroad commissioned noted architect Gilbert Stanley Underwood to design four “Grand Circle” national park lodges. Bryce Canyon Lodge is the last remaining original lodge of the four that were envisioned by NPS Director Stephen T. Mather and the Union Pacific as visitor destinations along the Grand Circle tour. The lodge, together with its associated deluxe cabins, has been designated a national historic landmark.
 - Museum and Archival Collections: The park museum and archival collections include cultural and natural materials and documents relating to the ancient, historic, and traditional practices of people living in or near Bryce Canyon. Through primary physical evidence and first-person accounts, these collections illuminate the story of indigenous people, pioneers, and the later historic development and management of Bryce Canyon National Park. More than a static assemblage of materials and documents, the collections serve a dynamic role in support of park management, operations, and decision making. They are valued by contemporary tribal and local community members, providing an enduring connection with their heritage.

Other Important Resources and Values

Bryce Canyon National Park contains other resources and values that are not considered fundamental to the purpose and significance of the park but are important to consider for overall park management and planning decisions. These are referred to as other important resources and values.

Following are other important resources and values for Bryce Canyon National Park:

Recommended Wilderness

- Importance: The recommended wilderness is far more than hauntingly beautiful hoodoos and unique geology; it encompasses unparalleled night skies, highly variable terrain and diverse biota, clean air, and an unusually quiet, untrammled natural landscape. Bryce Canyon backcountry is a haven for inhabitants of the natural world, and though remote, is accessible for visitors seeking solitude and unconfined, primitive outdoor pursuits including backpacking, hiking, and camping.

Meadow Landscapes

- Importance:
 - In a regional context, park dry and wet meadows are in exceptional ecological condition having been protected from livestock grazing and other uses. These habitats distinctively support the full diversity of plant and animal species. Although meadow grassland and wetland areas make up only a small portion of the vegetation present in the park, these landscapes represent especially important habitat and forage sources for large and small animals, including some rare species.
 - High-quality meadow habitat supports an abundance of native fauna, including the federally threatened Utah prairie dog. As a keystone species, the Utah prairie dog creates habitat for and supports other animal and plant species at a variety of levels through soil aeration, vegetation modification, and burrow engineering.

Paleontology

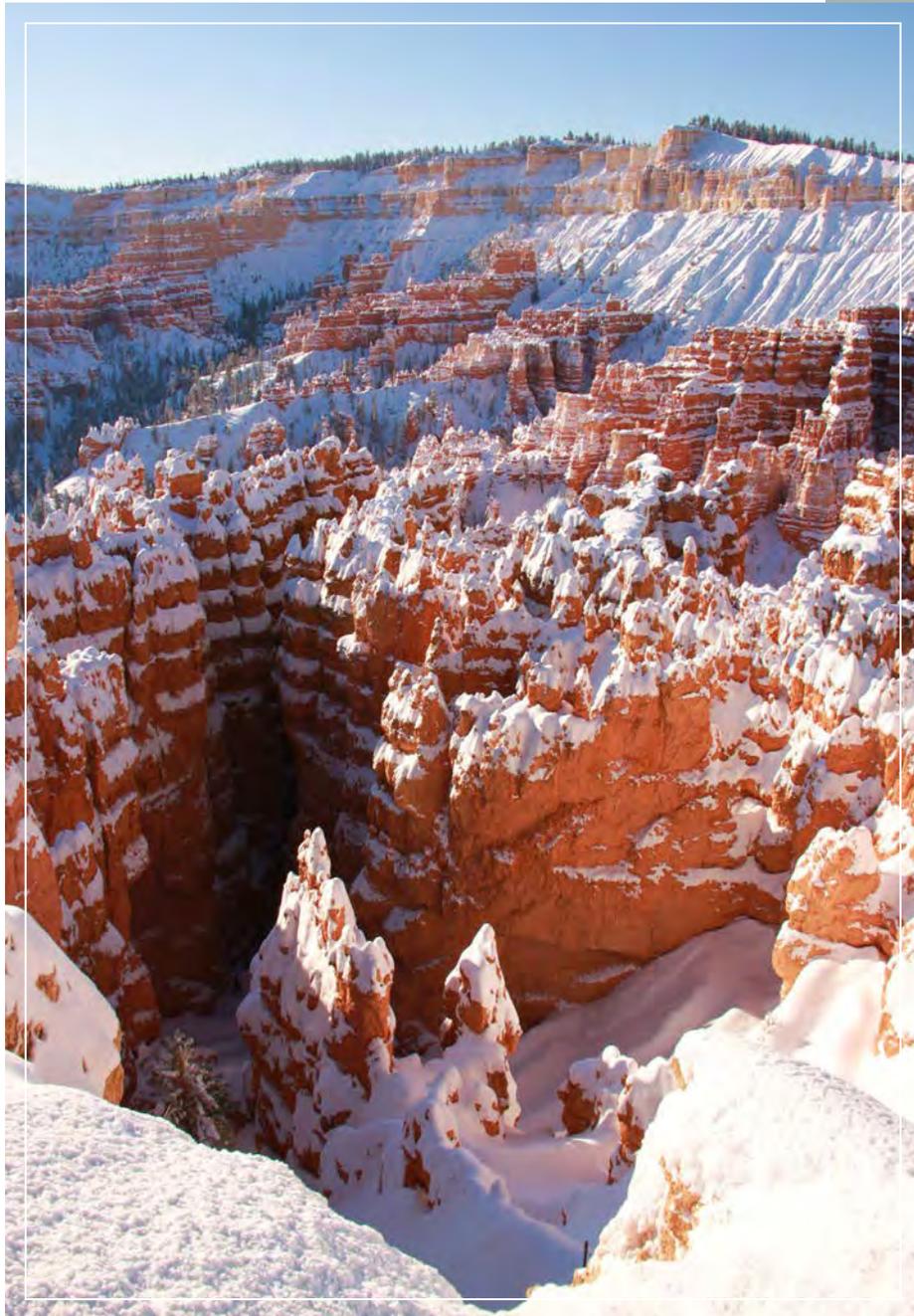
- Importance: Bryce Canyon National Park preserves a scientifically important and somewhat rare fossil record within late Cretaceous rocks of the Paunsaugunt Plateau. The Tropic Shale, Wahweap, and Straight Cliffs formations contain fossil plants, invertebrates, and a diverse assemblage of vertebrate fossils and microfossils including bony fish, amphibians, turtles, lizards, crocodylians, dinosaurs, and mammals, which reveals the plant and animal life in the region 97 to 35 million years ago.

Scientific Study

- Importance: The study of landscape changes due to natural processes and human influences is critical to conservation of Bryce Canyon National Park resources. Research provides the basic understanding of cultural, physical and biological resources of the park and is key in developing credible monitoring protocols. Periodic monitoring provides feedback on the status and stability of cultural and natural systems, especially in light of environmental change and ecological response. Together, research and monitoring provide important and useful information to implement best management practices for park resources.

Summary

Bryce Canyon National Park is a dynamic unit of the national park system where the multiple goals of natural and cultural resource protection and recreational use and enjoyment must be carefully balanced. By stating the park purpose, articulating significance statements, understanding interpretive themes, and identifying the fundamental resources and values that require protection, clear management decisions that fulfill the park's purpose can be made. This foundation document serves as the cornerstone for the future management direction of Bryce Canyon National Park.



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 of the 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, and other partnering organizations. Special mandates are Congressional or judicial requirements that apply to a specific unit of the national park system, which expand on or contradict the legislated purpose of the park unit. Special mandates are not an inventory of all the laws applicable to the national park system, but rather park-specific legislative or judicial requirements that must be fulfilled, along with the park purpose, even if the requirements do not relate to that purpose. Administrative commitments in general are agreements that have been reached through formal, documented processes, such as memoranda of agreement. These agreements can form a network of partnerships designed to fulfill the objectives of the park and facilitate working relationships with other organizations. All of these mandates and commitments either direct some form of management action or will allow particular uses on park lands (e.g., permissible traditional uses, easements or rights-of-way, maintenance needs, use of park facilities or lands, or emergency service responses). Thus, these mandates and commitments are an essential component in the foundation document and in managing and planning for Bryce Canyon National Park.

For more information on existing park commitments, please see the inventory of special mandates and commitments matrix in appendix C.

Assessment of Planning and Data Needs

Once the park purpose, significance statements, and fundamental resources and values have been identified, it is important to consider what additional information and planning projects may be necessary to aid the National Park Service in its mission. The assessment of planning and data needs identifies additional planning projects, data collection, GIS efforts, and management actions that may be necessary to maintain or protect the existing fundamental and other important resources and values.

There are three parts that constitute the planning and data needs assessment:

1. analysis of fundamental resources and values and other important resources and values
2. identification of key parkwide or major issues that need to be addressed by future planning, data collection, or GIS efforts
3. identification and prioritization of data and planning needs

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

Analysis of Fundamental Resources and Values

The fundamental resources and values analysis table includes the current condition, trends, potential challenges and opportunities, planning and data needs, and relevant laws and NPS policies related to management of the identified resource or value.

Fundamental Resource or Value	Geologic Features
<p>Relationship to Significance Statements</p>	<ul style="list-style-type: none"> • Bryce Canyon National Park showcases one of the largest and most colorful concentrations of erosional geologic features, including hoodoos, fins, windows, fluted cliffs, bridges, arches, and grottoes in the world. This unusual landscape within the Claron Formation is created by a unique combination of natural processes, location, rock properties, and climate. • The location of the park at the summit of the Grand Staircase, surrounded by a system of nationally protected lands, and combined with the exceptional clarity of the air and natural quiet, provides a multisensory experience. The outstanding views often extend more than 100 miles and begin with the colorful and intricately carved Claron Formation and include panoramic vistas of cliffs, canyons, and forested landscapes. • Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
<p>Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> • Geologic features are constantly changing, but often require the broad span of geologic time to observe. The geologic cycle at Bryce Canyon highlights features that are being naturally eroded and weathered, while others are forming. The park’s geologic formations and specific features are in good condition. • Degradation of geologic formations and features by visitor use, including vandalizing or removing rocks from the park, has been minimal. • Overall soil condition is good. In localized areas of high visitor use, the impacts on soil from visitor use and social trailing are appreciable, leading to erosion and compaction, which affects water infiltration and plant growth. <p>Trends</p> <ul style="list-style-type: none"> • Geologic formations and features: stable. • Soil resources: stable overall with areas of moderate impacts.
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • The park is in a seismically active region, with the Paunsaugunt fault zone forming the eastern boundary of the park. Geologic features may be subject to rapid change through minor, prolonged, or major seismic events. • Infrastructural improvements, such as expansion of parking lots, may alter hydrologic and erosional patterns and possibly harm geologic features. • Concentrated, large numbers of visitors (hikers and horseback riding) compact soil, reducing water infiltration, resulting in accelerated soil erosion that without trail maintenance, may impact trail integrity, plant community structure, and—potentially—geologic feature stability in some locations. • Lack of funding for trail maintenance prevents timely repairs of trails and leads to higher rates of erosion. Trails require regular, routine, as well as intensive maintenance after seasonal weather events such as monsoonal storms. Lack of maintenance at times has resulted in trail closures and loss of visitor access to geologic features of the park. • Social trails result in higher erosion rates and changes in hydrology, creating the potential to negatively impact the geologic features and soil resources. <p>Opportunities</p> <ul style="list-style-type: none"> • Study initiated to create a 3-D digital map monitoring baseline conditions of geologic features, cliff edge retreat, and how fast weathering and erosion are occurring within the park (LIDAR surveys). • Engage volunteers in active revegetation/restoration of social trails to control erosion and discourage inappropriate use. • Apply new technologies such as LIDAR and GPS to more accurately map erosion potential associated with trails that could destabilize sensitive geologic features.

Fundamental Resource or Value	Geologic Features
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Trail management plan needs to be updated and finalized. • Complete erosion LIDAR study, including cliff edge retreat. • Geohazard inventory and analysis—mass wasting hazard potential and rock fall susceptibility maps. • Determine the effect, if any, of vibration from proximate, low-altitude aircraft overflights on stability of geologic features.
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • 36 CFR § 2.1- prohibits possessing, destroying, or disturbing mineral resources in park units. • <i>NPS Management Policies 2006</i> <ul style="list-style-type: none"> • § 4.1 manage natural resources to maintain all components and processes of naturally evolving park resources • § 4.8 requires the National Park Service to preserve and protect geologic resources as integral components of park natural systems • § 4.8.2 requires the National Park Service to protect geologic features from the unacceptable impacts of human activity while allowing natural processes to continue • § 4.8.2.4 requires the National Park Service to actively seek to preserve the soil resources of parks, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of soil or its contamination of other resources <p>Park-specific Laws or Policies</p> <ul style="list-style-type: none"> • Superintendent’s Compendium provides guidance on area closures, giving park management the authority to close sections of the park dependent on park-specific criteria. <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Bryce Canyon National Park geologic resources are conserved and protected as integral components of its natural systems. • The National Park Service actively seeks to conserve the stratigraphic and soil resources of Bryce Canyon National Park, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the stratigraphy and/or soil, or the soil’s contamination of other resources. • Natural soil resources and processes function in as natural a condition as possible, except where special considerations are allowable under policy. • Surficial geology is mapped to identify priority areas and critical habitats.



Fundamental Resource or Value	Geologic Features (Geologic Processes)
Relationship to Significance Statements	<ul style="list-style-type: none"> • Bryce Canyon National Park showcases one of the largest and most colorful concentrations of erosional geologic features, including hoodoos, fins, windows, fluted cliffs, bridges, arches, and grottoes in the world. This unusual landscape within the Claron Formation is created by a unique combination of natural processes, location, rock properties, and climate. • Bryce Canyon National Park is a scientist's laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
Conditions and Trends	<p>Conditions</p> <p>Water is the principle element involved in the geologic erosional processes. Hoodoos and similar rock features require a climatic balance that favors the daily melting and refreezing of snow and ice (frost wedging) over the dissolution (chemical weathering) by acidic rainwater. Changes in precipitation type and quantity, as well as convergence of high and low temperatures extremes, can impact current hoodoos and their future development.</p> <ul style="list-style-type: none"> • <u>Freeze/Thaw Cycles</u>: Multiple annual frost-wedging events both sustain the vertical quality of hoodoos as well as perpetuate the formation of new ones, replacing those that collapse. • <u>Precipitation</u>: While the total amount of annual precipitation has remained relatively constant, precipitation patterns are shifting from winter snow to summer rain. Snow, and the associated lower temperature, maintains the freeze/thaw cycle, but rain accelerates the erosional process, reducing statuesque hoodoos into more typical conical limestone outcrops. • <u>Acid Deposition</u>: Acid deposition from air pollutants can accelerate chemical weathering and acidify seasonal wetlands and water sources. Indicator pollutants are nitrogen and sulfur (measured at the park), as well as carbon dioxide. Data indicate that nitrogen levels are above levels where research shows ecosystem impacts are unlikely. Sulfur levels meet desired conditions at present. Carbonic acid, measured regionally (but not at the park), has benign impacts on biotic systems, but generally has the greatest impact on limestone. <p>Trends</p> <ul style="list-style-type: none"> • <u>Freeze/Thaw Cycles</u>: Data collected over the past six decades in the park indicate a trend toward fewer freeze/thaw cycles, from an average of 210 days in 1945 to about 180 days in 2010. This trend could negatively impact processes critical to the development of the park's geologic features, a trend in which hoodoos, world famous for their unique and extraordinary appearance, would become more conical, more ordinary. • <u>Precipitation</u>: The park is experiencing less snow and more rain, based on data collected between 1945 and 2010, impacting processes critical to development of park geologic features. Specifically the trend suggests a reduction in the rate of hoodoo formation/ replacement and an increase in the rate of hoodoo erosion and collapse. • <u>Acid Deposition</u>: Trends for acid deposition, as measured by associated pollutants between 2000 and 2009 are: Ammonium (NH₄) significantly increased; nitrate (NO₃) decreased significantly; and sulfate (SO₄) was relatively unchanged (NPS 2012b). While not measured at the park, trends in carbon dioxide (CO₂) emissions have increased (U.S. Energy Information Agency data) in southwestern states. Increased carbon acidity has potential for impacting geologic processes.

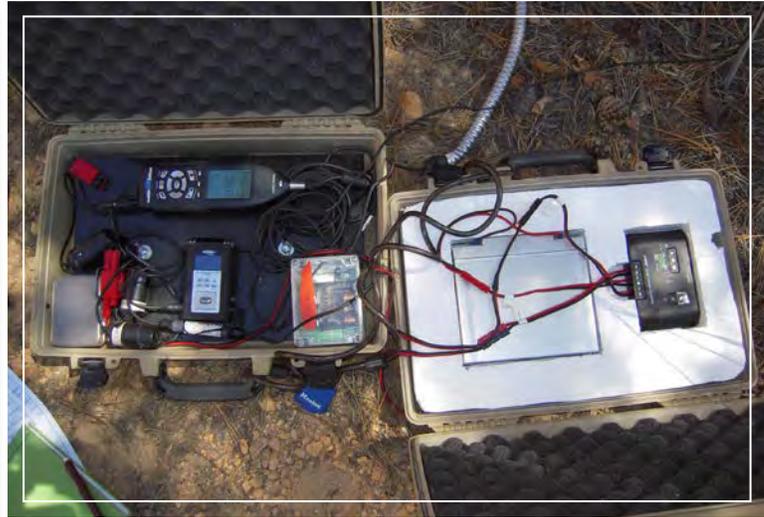
<p>Fundamental Resource or Value</p>	<p>Geologic Features (Geologic Processes)</p>
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Changes in frequency of freeze-thaw cycles, as well as seasonality of precipitation may impact the manner and rate at which geologic formations and features will be sculpted. • Shifts in long-term weather patterns (warmer/drier; cooler/wetter) could drastically change geologic processes and the resultant suite of characteristic natural resources found in the park. • Increased acid deposition may increase chemical weathering of geologic features. CO₂ production, resulting in carbon acidity, has the greatest potential for impacting geologic processes and is unlikely to be mitigated in the near future. <p>Opportunities</p> <ul style="list-style-type: none"> • Continue technical review of air pollution permits exercising the authority of the federal land manager under the Clean Air Act to prevent significant deterioration of park air quality-related values. • The park works with local governments and other land management agencies through formal and informal environmental analyses and similar processes to ensure federal and state air quality standards are met and/or conditions improved. • Advance interpretation of geologic processes and how they are potentially affected by changes in precipitation and weather patterns, and effects of air pollution. • Implement sustainability practices in park operations and visitor services that demonstrate how personal responsibility can reduce greenhouse gasses, save energy/reduce fossil fuel use, reduce air pollution, and reduce water consumption.
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Need to consolidate and analyze acid deposition and particulate pollution data to establish baseline and measure trends. • Determine needs for additional air resource monitoring for additional pollutant types and/or instrument locations. • Continue to monitor freeze/thaw cycling, water quality and quantity and precipitation patterns as they relate to erosional and other geologic processes to measure changes over time. • Continue climate and weather data collection for the park and continue temperature and precipitation trends analysis.
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • Clean Air Act • <i>NPS Management Policies 2006</i> <ul style="list-style-type: none"> • § 4.1 manage natural resources to maintain all components and processes of naturally evolving park resources • § 4.1.5 reestablish natural processes and human disturbed components of natural systems in parks unless otherwise directed by Congress • § 4.4.2.4 directs the National Park Service to allow natural recovery of landscapes disturbed by natural phenomena • § 4.8.1 requires the National Park Service to allow natural geologic processes to proceed unimpeded <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • The National Park Service actively seeks to conserve the stratigraphic and soil resources of Bryce Canyon National Park, and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the park stratigraphy and soil, or the soil's contamination of other resources. • Natural soil resources and processes function in as natural a condition as possible, except where special considerations are allowable under policy. • Surficial geology is mapped to identify priority areas and critical habitats.



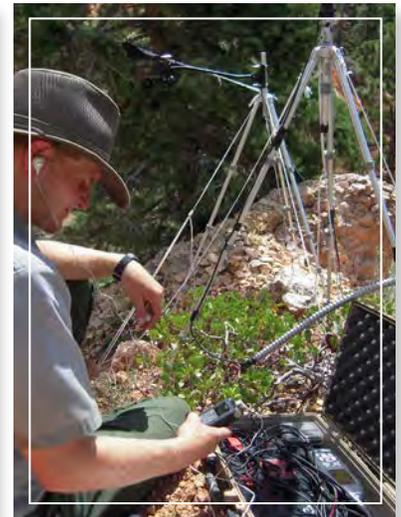
Fundamental Resource or Value	Dynamic Landscapes
<p>Relationship to Significance Statements</p>	<ul style="list-style-type: none"> • Bryce Canyon National Park showcases one of the largest and most colorful concentrations of erosional geologic features, including hoodoos, fins, windows, fluted cliffs, bridges, arches, and grottoes in the world. This unusual landscape within the Claron Formation is created by a unique combination of natural processes, location, rock properties, and climate. • The location of the park at the summit of the Grand Staircase, surrounded by a system of nationally protected lands, and combined with the exceptional clarity of the air, provides a multisensory experience. The outstanding views often extend more than 100 miles and begin with the colorful and intricately carved Claron Formation and include panoramic vistas of cliffs, canyons, and forested landscapes. • With a nearly pristine night sky, thousands of stars shine brightly at Bryce Canyon National Park. As one of the darkest publicly accessible places in North America, the Milky Way Galaxy can be viewed from horizon to horizon. The clear, clean air and a lack of artificial light in the park and the region are essential to this unparalleled nighttime experience. The darkness is also an important resource for nocturnal wildlife. • Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
<p>Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> • The varied and richly textured landscapes of Bryce Canyon are formed by dynamic physical processes, and contain diverse biological communities as documented by the park’s vegetation mapping and reflected in complex topographic features. Natural processes including erosion and fire, coupled with diurnal and seasonal changes, have resulted in diverse habitats. • Beyond the geologic features of the park, other landscape features, including intact vegetation communities and lack of human developments, are essential to park character and visitor experience. • Current condition is fair to good, depending on specific resource or natural process examined, and is intricately linked to landscape alterations outside of the park boundary. <p>Trends</p> <ul style="list-style-type: none"> • Condition of plant communities is declining due to natural process disruptions, invasive species, inadequate restoration, and trampling and soil compaction in areas of concentrated visitor use. • Quality and integrity of natural landscapes and viewsheds are mostly stable, but declining in specific areas due to internal and external development.

<p>Fundamental Resource or Value</p>	<p>Dynamic Landscapes</p>
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Development adjacent to the park that could impact the viewshed and natural landscape integrity. • Expanding visitor use may require in-park facility development that detracts from landscape integrity and vistas. • In fire-adapted plant communities, the suppression of fire during the last 100 years has led to altered fire regimes and excessive fuel accumulation. • Loss of large stands of trees due to insect infestations such as the pine bark beetle. • Changes in vegetation composition due to fire suppression, invasive species, air pollutant deposition, and climate change. • Natural processes (earthquakes, erosion/slides, etc.) could potentially alter visitor access to or experience of vistas and natural features of high interest. • Disruption of natural disturbance processes has limited vegetation succession such that an ecologically appropriate diversity of seral stages is not present in park forest communities. • Without natural disturbance or specific restoration treatments to simulate natural disturbance, ecologically important aspen woodlands are not regenerating. • Anticipated long-term environmental changes, shifts in fire regime class, and invasive species threaten plant communities. Maintenance of native species depends on assuring community resilience, implementing restoration, and perpetuating ecological processes. <p>Opportunities</p> <ul style="list-style-type: none"> • Restoration of a natural fire regime via controlled burning and mechanical treatments. Cooperative transboundary management of resources and processes with other agencies and private interests. • Participation in Dixie National Forest and BLM national monument and field office visual resource inventories incorporating county and municipal visual resource inventory and planning information. • Restore a diversity of forest seral stages through restoration treatments and allowances for natural disturbances. • Restore and protect aspen stands to benefit dependent flora and wildlife and to provide benefits to visitors such as wildlife viewing and fall foliage displays. • Control of invasive plant species. • Restore areas impacted by concentrated visitor use, incorporating site-adapted native species, and using methods to manage pedestrian impacts. • Adaptively reuse existing facilities and design any new park facilities to complement landscapes in which they are located. • Finalize and settle all existing or outstanding claims to water resources within the park with the State of Utah.
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Consolidation of air quality and visibility monitoring data (routine and special purpose). • Continued monitoring and analysis of fire effects data. • Update of the park’s fire management plan (including smoke management). • Enhanced fuels treatment plan. • Monitoring for plant species on the edge of their range or confined to specialized habitats (i.e., breaks habitat; bristlecone pine) that may be vulnerable to climate change effects. • Visitor use monitoring. • Visitor use management / park carrying capacity study. • Viewshed analysis guidelines incorporating federal agency, county, and municipal visual resource inventory and planning information. • Vulnerable habitat monitoring. • Climate change scenario planning as it affects natural, cultural, and recreational resources.

Fundamental Resource or Value	Dynamic Landscapes
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • Clean Air Act • Clean Water Act • Wilderness Act • Executive Order 13112, "Invasive Species" • Federal Noxious Weed Act of 1974, as amended • National Invasive Species Act • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 4.4.1 requires the National Park Service to maintain as parts of the natural ecosystems of parks all native plants and animals • § 4.4.2 states that whenever possible, natural processes will be relied upon to maintain native plant and animal species and influence natural fluctuations in populations of these species; the National Park Service may intervene to manage individuals or populations of native species only when such intervention will not cause unacceptable impacts to the populations of the species or to other components and processes of the ecosystems that support them • § 4.4.4.2 states that all nonnative plant and animal species that are not maintained to meet an identified park purpose will be managed, up to and including eradication if control is prudent and feasible and if the nonnative species disrupts natural processes, genetic integrity of native species, the accurate presentation of a cultural landscape, cultural resources, park management, or poses a safety or hazard threat • § 4.5 requires parks with vegetation capable of burning to prepare a fire management plan to provide a program that responds to the natural and cultural resources objectives of the park; provides for safety considerations for park visitors, employees, and developed facilities; addresses potential impacts on public and private neighbors and their property adjacent to the park; and protects public health and safety <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • The National Park Service maintains all native plants and animals as parts of the park's natural ecosystems. • Natural abundance, diversity, dynamics, distribution, habitat, and behavior of native plant and animal populations are conserved and restored. • Potential threats to native plants and wildlife of the park, as well as natural processes, are identified early and proactively addressed through inventory and monitoring. • Visitors and staff recognize and understand the value of the native plants and wildlife, and the role of natural forces in sustaining the ecological health of the park. • NPS staff uses the best available scientific information and technology to manage park resources. • Naturally ignited fire, including the smoke it produces, is managed under specific conditions as part of the natural systems being sustained at the park. • Prescribed fire is used under specific conditions to restore vegetation communities to more natural fuel conditions and fire regimes, and to restore particular habitats. • Mechanical fuel reduction techniques are used under specific conditions to restore vegetation communities to more natural fuel conditions and fire regimes, and to restore particular habitats.



Fundamental Resource or Value	Natural Soundscapes
<p>Relationship to Significance Statements</p>	<ul style="list-style-type: none"> • The location of the park at the summit of the Grand Staircase, surrounded by a system of nationally protected lands, and combined with the exceptional clarity of the air and natural quiet, provides a multisensory experience. The outstanding views often extend more than 100 miles and begin with the colorful and intricately carved Claron Formation and include panoramic vistas of cliffs, canyons, and forested landscapes. • Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
<p>Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> • From national surveys more than 90% of visitors indicate that natural sounds are important reasons to visit a national park. Results from a 2009 study at Bryce Canyon showed that 68% of visitors felt that natural quiet / the sounds of nature were either “extremely important” or “very important” park resources (Holmes and Hollenhorst 2010). During sound monitoring efforts in the park, at some locations natural ambient decibel levels often were lower than data collection systems could measure, making Bryce Canyon an exceptionally quiet place. Visitors are consistently exposed to this remarkable quiet, providing an undisturbed opportunity to experience the grand vistas of the park. However, this also means the quiet nature of the park—and by extension the visitor experience—are exceptionally susceptible to disturbance from extrinsic noise. • The natural soundscape condition varies between frontcountry and backcountry, with greater extrinsic sounds occurring in the developed sections (roads, facilities, viewpoints, etc.) of the park. • Research conducted on the park’s soundscape indicates that aircraft are the most common external sounds in the park and can be heard up to 20% of the day in some locations. Vehicle noise is also prevalent in many locations, most notably in frontcountry areas (NPS 2011). <p>Trends</p> <ul style="list-style-type: none"> • Measured ambient sound pressure levels and percent time audible statistics have been used to report existing ambient levels and to estimate natural ambient levels. Differences between existing and natural ambient sound levels indicate degradation to the natural soundscape of the park is occurring as a result of overflight activity (air tours and high-altitude jet patterns) and increased visitation and associated sounds from large tour groups and vehicles (buses, shuttles, recreational vehicles, motorcycles, and passenger cars) (NPS 2011).



Fundamental Resource or Value	Natural Soundscapes
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Transportation noise from overflights (both high altitude and air tours of the park) disturbs the natural quiet and can mask other natural sounds. This can be detrimental to visitor experience as well as biological systems such as predator-prey interactions. • Development within and outside the park increases noise from transportation and other sources and may raise ambient noise levels due to increases in the use of new infrastructure. • Increased annual visitation adds to the amount of time and volume at which voices, transportation noise, and personal electronic devices (cell phones, cameras, MP3 players, etc.) can be heard. <p>Opportunities</p> <ul style="list-style-type: none"> • Interpretive programs and other outreach opportunities, such as junior ranger programs concerning the fragility of the acoustical environment, can inform visitors as to how they can help protect this resource. • Manage backcountry operations to foster natural soundscape conservation and related visitor experience. • Transportation planning to limit impacts to the soundscape. Potential alternatives could include selecting quiet technology vehicles and managing the amount of vehicle traffic to some popular viewpoints or other noise-sensitive locations. • Coordination and communication with air tour operators, the Federal Aviation Administration, and the Bryce Canyon Airport to inform and educate aviators about the value of natural sounds and encourage compliance with flight altitude recommendations over the park. • Adoption and use of best available technology and best management practices for park operations to protect the natural soundscapes.
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Continued soundscape monitoring. • Development of acoustical zones within the park with indicators and standards for protection of acoustic environments. • Soundscape management and air tour management planning. • Continued coordination with local and regional air tour operators. • Continued coordination with land managers surrounding the park to reduce impacts on the park's natural quiet from external sources. • Updated and comprehensive documentation of air tour operating authority. • Multimodal transportation plan.

Fundamental Resource or Value	Natural Soundscapes
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • Director’s Order 47: <i>Soundscape Preservation and Noise Management</i> • Final Rule: 14 CFR Part 136 – Regulations Implementing the National Parks Air Tour Management Act • National Parks Air Tour Management Act of 2000 • National Parks Overflight Act of 1987 (Public Law 100-91) • NPS regulations (36 CFR 2.12) further identify audio disturbances that are prohibited in park units • <i>NPS Management Policies 2006</i> <ul style="list-style-type: none"> • § 1.4, 1.6, 3.1 requires the National Park Service to conserve and protect scenery and scenic vistas • § 4.9 requires the National Park Service to preserve, to the greatest extent possible, the natural soundscapes of parks, and restore to the natural condition wherever possible those park soundscapes that have become degraded by unnatural sounds (noise), and protect natural soundscapes from unacceptable impacts • § 5.3.1.7 requires the National Park Service to preserve soundscape resources and values of the parks to the greatest extent possible to protect opportunities for appropriate transmission of cultural and historic sounds that are fundamental components of the purposes and values for which the parks were established • § 8.2.3 requires the National Park Service to strive to preserve or restore the natural quiet and natural sounds associated with the physical and biological resources of parks by carefully evaluating and managing how, when, and where motorized equipment is used by all who operate equipment in the parks, including park staff <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • The National Park Service conserves the natural ambient soundscape, restores degraded soundscapes to the natural ambient condition wherever possible, and protects natural soundscapes from unacceptable impacts. • Noise from management or recreational uses is minimized to provide a high-quality visitor experience and protect biological resources and processes that involve natural sounds (for example, species that use sound to attract mates, protect territories, locate prey, navigate, or avoid predators). • Park and concession facilities use best available technology and methods to minimize or mitigate artificial noises produced by equipment and management activities. • Visitors have opportunities to experience and understand natural soundscapes. • The park maintains an inventory of natural sounds and, as feasible, monitors key locations to assess impacts to the natural quiet. • Ecological interactions that depend upon or are affected by sound are protected to the maximum extent practicable.



Fundamental Resource or Value	Clean Air
Relationship to Significance Statements	<ul style="list-style-type: none"> The location of the park at the summit of the Grand Staircase, surrounded by a system of nationally protected lands, and combined with the exceptional clarity of the air and natural quiet, provides a multisensory experience. The outstanding views often extend more than 100 miles and begin with the colorful and intricately carved Claron Formation and include panoramic vistas of cliffs, canyons, and forested landscapes. With a nearly pristine night sky, thousands of stars shine brightly at Bryce Canyon National Park. As one of the darkest publicly accessible places in North America, the Milky Way Galaxy can be viewed from horizon to horizon. The clear, clean air and a lack of artificial light in the park and the region are essential to this unparalleled nighttime experience. The darkness is also an important resource for nocturnal wildlife.
Conditions and Trends	<p>Conditions</p> <p>Air quality is essential to meeting a key park purpose identified in Bryce Canyon National Park enabling legislation: “preserving in their natural state the outstanding scenic features.” Air pollution can significantly impact resources and values important for maintaining a park’s purpose and significance. These resources and values include visibility and spectacular park vistas; healthy vegetation, streams, soils and wildlife; and a clean environment for visitor enjoyment. Air pollution principally comes from beyond the park’s boundaries and local surroundings, its sources being regional in nature. In addition to resource protection mandates in the NPS Organic Act, the National Park Service has the responsibility to protect air quality and resources sensitive to air pollution (called air quality related values, or AQRVs) under the Clean Air Act. Bryce Canyon National Park is a designated Class I area under the Clean Air Act, assigning the National Park Service an “affirmative responsibility to protect the air quality related values (including visibility) of any such lands” (42 U.S.C. §7475(d)(2)(B)).</p> <ul style="list-style-type: none"> Visibility: At times during the year, visibility in Bryce Canyon National Park is degraded when compared to estimated natural conditions (the national goal under the Clean Air Act); on “clear” visibility days, the air is still exceptionally “clean” when compared to other regions of the country, and visitors can experience views that often extend more than 100 miles (Visibility Information Exchange Web System¹). Prescribed and wildland fire have temporary impacts on visibility conditions. The park contains approximately 15 established viewpoints along the roadways, with additional viewing opportunities along the trail system. Ozone: Although ozone is not monitored at the park, interpolating data from nearby monitors including Zion National Park, Grand Staircase-Escalante National Monument, and other regional sites provides a good estimate of ozone conditions at Bryce Canyon. Average estimated ozone levels from 2005–2009 suggest that ozone-sensitive plant species, such as ponderosa pine, quaking aspen, and skunkbush, could be at risk. Atmospheric Deposition: Current estimates of total (wet plus dry) nitrogen (N) deposition at the park suggest that plant communities could be at risk if regional N emissions increase. Potential effects of increased N deposition include disruption of nutrient cycling, changes in species composition, and loss of biodiversity. Current sulfur (S) deposition levels and trends suggest that ecosystem effects from sulfur acidification are not a significant concern. Greenhouse Gas Emissions: As carbon dioxide (CO₂) and other emissions accumulate in the atmosphere, scientific modeling suggests that ecological effects would result from changes in regional temperature and precipitation patterns. Models suggest that precipitation in the Bryce Canyon area would decline and temperature would increase (NPS 2012a).

1. Data available at: <http://views.cira.colostate.edu/web/>

Fundamental Resource or Value	Clean Air
<p>Conditions and Trends</p>	<p>Trends</p> <ul style="list-style-type: none"> • <u>Visibility</u>: During 2000–2009, visibility on the 20% clearest days at Bryce Canyon did improve significantly, but remained unchanged on the 20% haziest days. At the park, from 2005–2009, the average visibility was 3.7 deciviews (dv) above natural conditions and therefore did not meet the desired condition of less than 2 dv above natural conditions on average visibility days (NPS 2012b). • <u>Ozone</u>: Low ozone levels were monitored with passive samplers from 1995–2004. However, estimated ozone from 2005–2009 was 73.3 parts per billion (ppb), which did not meet the desired condition of less than 60 ppb (NPS 2012b). • <u>Atmospheric Deposition</u>: The National Park Service has defined desired condition for N or S deposition as < 1 kg/ha/yr of wet deposition, as evidence is not currently available that indicates that wet deposition amounts less than this cause ecosystem harm. For 2005–2009, estimated wet N deposition was 1.7 kg/ha/yr; estimated wet S deposition was 0.7 kg/ha/yr. The desired condition was met for S deposition, but not for N deposition (NPS 2012b). Trends for 2000–2009 indicate that wet inorganic nitrogen in precipitation may be increasing. • <u>Greenhouse Gas Emissions</u>: While not measured at the park, trends in CO₂ emissions have increased (U.S. Energy Information Agency data) in southwestern states from 1980 through 2010. From 1901–2002, temperature has shown a statistically significant increase in the immediate area surrounding Bryce Canyon National Park. Precipitation has decreased across the southwestern United States, including the area surrounding the park, but the trend is not statistically significant (NPS 2012a).



Fundamental Resource or Value	Clean Air
Challenges and Opportunities	<p>Challenges</p> <ul style="list-style-type: none"> • Regional and local sources of chronic particulate matter pollution (natural and human caused) can impact visibility. • Fire events, both wildfires and prescribed fires, result in particulate emissions that can temporarily impact visibility. Typically, visibility is affected fewer than 10 days per year by managed fires within the park. • Ozone concentrations, if increased, could cause damage to ozone-sensitive plant species. • Current total N deposition (wet plus dry) at the park is estimated at 2.5 kg/ha/yr, suggesting that increases in N emissions in the region could cause the critical load (3 kg/ha/yr) to be exceeded, with subsequent high risk to plant communities (NPS 2012b). • Accumulated emissions of human-caused greenhouse gasses have the potential to cause changes in regional weather patterns such as increased stagnation periods, which could lead to increased ozone formation, increased pollutant exposures, and decreased ecosystem resilience to the effects of air pollution. Increased temperature and decreased precipitation could dry out soils and increase the potential for windblown dust and regional dust storms, decreasing visual range and visibility. • Shifts in long-term weather patterns (warmer/drier) could substantially change ecologic processes and the resultant suite of characteristic natural resources found in the park. • Potential increased industrial or commercial development around Bryce Canyon and associated increases in emissions, if any, could affect air quality and/or change scenic vistas. • Increasing visitation and associated increases in emissions due to transporting and supporting visitor services could affect park air resources. <p>Opportunities</p> <ul style="list-style-type: none"> • Engage in local, regional, and national planning and partnerships to improve air quality by reducing air pollution. • Continue technical review of air pollution permits exercising the authority of the federal land manager under the Clean Air Act to prevent significant deterioration of park air quality-related values. • Continue to work with other local, state, and federal agencies through formal and informal environmental analysis and similar processes to ensure federal and state air quality standards are met and/or conditions improved. • Participate in Dixie National Forest and BLM national monument and field office visual resource inventories that incorporate county and municipal visual resource planning information. • Use a suite of techniques, including prescribed fire, to reduce wildfire risk, achieve ecological management objectives, and manage smoke under conditions more controlled than wildfire situations. • Systematically replace park fleet with low-emission vehicles. • Institute shuttle service improvements and increased use of alternative transportation (e.g., biking, hiking) within and surrounding the park. • Continue involvement in the regional haze planning process to track progress toward visibility improvement at Bryce Canyon National Park, and identify potential emission reductions that would achieve visibility goals.

Fundamental Resource or Value	Clean Air
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Existing routine air quality and visibility monitoring should be maintained. Special purpose monitoring should be addressed as the need arises. • Complete a visual resource inventory. • Develop visual resource management objectives for use in all park planning. • Analyze fire-generated particulate data to model and better predict smoke production and dispersion, and identify necessary management techniques and a monitoring program to assess and minimize impacts. • Determine needs for additional air resource monitoring; additional pollutant types and/or instrument locations. • Multimodal transportation plan. • Climate change scenario planning as it affects natural, cultural, and recreational resources. • Viewshed analysis guidelines incorporating federal agency, county, and municipal visual resource inventory and planning information.
<p>Laws and Policies That Apply to FRV</p>	<ul style="list-style-type: none"> • State emissions controls • Clean Air Act of 1963, as amended (42 USC 7401 et seq.), including regional haze regulations • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" • NPS <i>Natural Resource Management Reference Manual 77</i> • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 1.6 requires the National Park Service to work cooperatively beyond park boundaries in order to fulfill its mandate to preserve the natural and cultural resources of parks • § 3.1 addresses strategies and actions beyond park boundaries that may be employed by the National Park Service to address external threats such as air pollution • § 4.1.4 states that the National Park Service will pursue opportunities to improve natural resource management within parks and across administrative boundaries by pursuing cooperative conservation • § 4.7.1 requires the National Park Service to protect air quality under both the 1916 Organic Act and the Clean Air Act • § 4.7.2 requires the National Park Service to gather and maintain baseline climatological data for reference <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Air quality in Bryce Canyon National Park meets national ambient air quality standards for specified pollutants, protects ecosystems, and improves visibility on the haziest days; air quality is maintained or improved. • Visibility and scenic views, including integral vistas and views of landscapes within and outside Bryce Canyon National Park, are clear and demonstrate progress towards national visibility goals. • Bryce Canyon National Park management and visitor service activities promote conservation of excellent air quality, including healthful indoor air quality in NPS and concession facilities. • Views from Bryce Canyon National Park overlooks, integral vistas, and scenic stops are not obstructed or degraded by air pollution. • Air quality monitoring is maintained to continue tracking air quality trends. • Bryce Canyon National Park works cooperatively with others to anticipate, avoid, and resolve potential conflicts; protect park resources and values; provide for visitor enjoyment; and address mutual interests in the quality of life of community residents, including matters such as compatible economic development and resource and environmental protection. • External stresses to Bryce Canyon National Park, including air pollution, may be addressed by involvement in gateway community planning and partnership arrangements; NPS educational programs; and participation in the planning processes of federal agencies and tribal, state, and local governments. • Bryce Canyon National Park develops agreements with federal, tribal, state, and local governments and organizations; and private landowners, when appropriate, to coordinate plant, animal, air, water, and other natural resource management activities in ways that maintain and protect park resources and values.

Fundamental Resource or Value	Near Pristine Night Sky
Relationship to Significance Statements	<ul style="list-style-type: none"> • With a nearly pristine night sky, thousands of stars shine brightly at Bryce Canyon National Park. As one of the darkest publicly accessible places in North America, the Milky Way Galaxy can be viewed from horizon to horizon. The clear, clean air and a lack of artificial light in the park and the region are essential to this unparalleled nighttime experience. The darkness is also an important resource for nocturnal wildlife.
Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • <u>Night Sky Index</u>: Bryce Canyon's night sky is near pristine. On the Bortle Sky Index², which rates skies during new moon phases, Bryce Canyon's night sky quality rating is Class 2: "Truly Dark." The Bortle Class 2 rating is supported by the following measured Current Conditions at Bryce Canyon National Park: <ul style="list-style-type: none"> • Excellent, limiting magnitude; 7.0 to 7.4 (which means that you can see 7,000-7,500 stars). • Venus and Jupiter are bright enough to create shadows. • Summer / Sagittarius Arm of Milky Way Galaxy is visible from horizon to horizon. • The more faint, smaller Winter / Orion Arm of Milky Way Galaxy extends to eastern horizon but is lost near the western horizon due to light pollution from Cedar City, St. George, and Las Vegas. • The brighter deep space objects including galaxies, globular clusters, and stellar nurseries are visible to the naked eye (for example: M31, M13, M42, M8, M20, Caldwell 14). • Zodiacal Light, a bluish glow along the ecliptic, created by the illumination of interplanetary dust by our sun, extends 45 degrees above the western and eastern horizons. • Great Rift in Sagittarius Arm of Milky Way Galaxy shows texture known to astronomers as "lumpy darkness," which is not empty space but the dark carbon cloud cocoons that stars are "born" inside of. • <u>Visibility</u>: Night sky conditions can be affected by air pollutants, which affect visibility. At times during the year, visibility in Bryce Canyon National Park is degraded when compared to estimated natural conditions (the national goal under the Clean Air Act); on "clear" visibility nights, the air is still exceptionally "clean" when compared to other regions of the country (see Clean Air FRV table). <p>Trends</p> <ul style="list-style-type: none"> • Quality of the night skies appear to be declining slightly as measured by repeat surveys by the NPS Night Sky Team though data are not yet adjusted for "airglow."³ • Overall increase in outdoor lighting in local communities and regional cities is indicated from NASA's high resolution satellite Worldview Data Sets 2. • <u>Visibility</u>: During 2000–2009, visibility on the 20% clearest days at Bryce Canyon did improve significantly, but remained unchanged on the 20% haziest days. At the park, from 2005–2009, the average visibility was 3.7 deciviews (dv) above natural conditions and therefore did not meet the desired condition of < 2 dv above natural conditions on average visibility days (NPS 2012b).

2. The Bortle Sky Index is a nine-level numeric scale that measures the night sky's brightness of a particular location. It quantifies the astronomical observability of celestial objects and the interference caused by light pollution. Reference: Bortle, John E. (February 2001). "The Bortle Dark-Sky Scale." Sky & Telescope. Sky Publishing Corporation.

3. Airglow = the light emitted from molecules and atoms reforming during the evening in the Earth's upper atmosphere following daytime breakdown by ultraviolet light from the sun (first noticed in 1868 by Anders Ångström)

<p>Fundamental Resource or Value</p>	<p>Near Pristine Night Sky</p>
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Light pollution from neighboring communities and distant urban centers (e.g., Bryce Canyon City, Cedar City and the I-15 corridor, St. George, Tropic, Las Vegas). • Lights from Bryce Canyon National Park itself; i.e., visitor center, housing, public restrooms, and concessions operations. • Transport of pollutants from sources outside the region (e.g., air from Los Angeles, Las Vegas, Phoenix, San Diego, San Francisco, Seattle, Dallas-Fort Worth, etc.) can have a significant effect on air quality, and therefore night sky conditions, in the park and regionally. • Intersection of flight corridors and an increase in nighttime air traffic from commercial jet aircraft are a particular impact to winter skies because the colder temperatures cause the normal condensation trails to become crystallized and remain in the sky for longer periods. • Increase in visitation may bring an increase in artificial light in the park without careful management. • Without appropriate management and mitigation expansion of or new development in surrounding public lands can result in light pollution (both electric and open flame) as well as chemical and particulate pollution that affect air quality and visibility. <p>Opportunities</p> <ul style="list-style-type: none"> • Develop partnerships with neighboring and nearby communities to establish, facilitate, and implement energy conservation / low light / targeted lighting programs. • NPS <i>A Call to Action</i>, item 27, “Starry, Starry Night”: work with Colorado Plateau Night Sky Cooperative. • Increase public awareness through education and outreach related to developing a night sky-friendly ethic and energy conservation. • Work to designate Bryce Canyon National Park as a Dark Sky Park by the International Dark Sky Association. • Potential for United Nations Educational, Scientific, and Cultural Organization designation as an International Dark Sky Preserve. • Coordinate with local and regional jurisdictions in planning and compliance processes to include lighting recommendations, best management practices, and appropriate mitigation for proposed development with potential for night sky impacts. • Participation in Dixie National Forest and BLM national monument and field office visual resource inventories incorporating county and municipal visual resource inventory and planning information. • Collaborate with Garfield County in future initiatives to develop a natural and cultural history museum in the area. • Lighting mitigation/retrofit and adoption of best available technology and best management practices to provide for visitor safety and protect night skies. • Cooperate with the Bryce Canyon Natural History Association and local school district to provide educational opportunities to local school children regarding night skies and astronomy. • Partnering with universities to support a night sky education center, which would be used by park visitors and research astronomers. • Expand educational programs on the benefits of natural darkness to wildlife.

Fundamental Resource or Value	Near Pristine Night Sky
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Repeat night sky surveys—completed by NPS Night Sky Team (ideal frequency every five years). Existing and future night sky limiting magnitude surveys done by the NPS Night Sky Team need to be stratified against our sun’s ~11-year solar cycle so that light pollution trend can be isolated from cyclical fluctuations created by “airglow.” • Further analysis of sources of light pollution in the region using satellite imagery and subsequent data to pinpoint and rank mitigation opportunities for point-sources of light pollution. • Complete a survey of all lights within Bryce Canyon to make recommendations for retrofits of light facilities. • Cost benefit analysis with regard to energy savings associated with retrofit to night sky-friendly lights. • Obtain analysis of health, safety, and crime statistics from communities with information pre- and post-implementation of night sky-friendly ordinances. • Viewshed analysis guidelines incorporating federal, county, and municipal agencies visual resource inventory and planning information. • Scotobiology studies, or nocturnal biology studies to establish a baseline for impacts of light pollution on wildlife. • Data collection and impact analysis of high altitude contrails on night sky clarity. • Continued air quality monitoring—chemical pollutants, particulate counts, and atmospheric haze comparative photography.
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • Clean Air Act • <i>NPS Management Policies 2006</i> <ul style="list-style-type: none"> • § 4.10 recognizes that the night sky of parks plays a role in natural resource processes and the evolution of species, as well as being a feature that contributes to visitor experience. The policy further states that NPS staff will seek to minimize the intrusion of artificial light into the night scene. In natural areas, artificial outdoor lighting will be limited to meeting basic safety requirements and will be shielded when possible. <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Natural darkness and other components of the natural lightscape in Bryce Canyon National Park are protected. • The National Park Service will seek the cooperation of park visitors, neighbors, and local government agencies to prevent or minimize the intrusion of artificial light into the night scene within Bryce Canyon National Park. • Bryce Canyon National Park’s inventory of natural resources identifies ecological processes or components that uniquely depend on or are affected by nighttime light conditions. • Artificial light sources in developed areas are designed to prevent light pollution. • Throughout most of Bryce Canyon National Park, visitors have opportunities to experience dark night skies free of light pollution.



Fundamental Resource or Value	Cultural Resources (Archeological Resources)
Relationship to Significance Statements	<ul style="list-style-type: none"> • Cultural resources encompassing thousands of years of human use and experience are found throughout Bryce Canyon National Park. These resources are important to the identity of indigenous people of the Colorado Plateau and the living descendants of 19th-century pioneers. In addition, many of the historical resources of the park are associated with the emergence of tourism in the early 20th century, and are linked to the regional development of other “Grand Circle” national parks.
Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • Most of the known archeological resources of the park are in good to fair condition. No permanent American Indian habitation sites have been identified, and sites typically consist of scatters of flaked stone artifacts with some ceramic potsherds indicating seasonal or temporary use. Historic European American sites include aspen dendroglyphs (tree carvings), campsites, and refuse scatters (NPS 2002). • By 2002, about one-third of the park, corresponding to the heavily forested Paunsaugut Plateau, had been archeologically inventoried (NPS 2002). A systematic inventory of areas below the Pink Cliffs in the pinyon/juniper woodland of the lower canyon and foothills began in 2011 and will provide more comprehensive survey information for the entire park. By the end of the first season’s fieldwork, approximately 5,000 of about 12,000 acres had been surveyed, with a number of new sites identified. • As of 2002, 223 archeological sites were recorded in the park, with most (192) recorded in the upper plateau area (NPS 2002). As part of an extensive under-the-rim archeological survey started in 2011, 22 new sites above the rim of the plateau, 25 sites below the rim, and 289 isolated occurrences of artifacts not characterized as sites have been identified. • The proposed Bryce Canyon National Park archeological district (containing 144 discontinuous American Indian and European American archeological sites) was determined eligible for the national register in 2002. <p>Trends</p> <ul style="list-style-type: none"> • Sites are generally in stable condition with little appreciable loss of archeological information.
Challenges and Opportunities	<p>Challenges</p> <ul style="list-style-type: none"> • Archeological resources are at potential risk from ground-disturbing activities (e.g., construction, routine maintenance, natural erosion, trespass livestock, inadvertent human-caused erosion resulting from social trails, and more deliberate acts such as site looting). • Wildland and prescribed fires pose threats to wooden structural elements associated primarily with European American sites. Aspen dendroglyph groves have sustained loss and damage from natural deterioration and previous prescribed fires. <p>Opportunities</p> <ul style="list-style-type: none"> • Expanded visitor and employee educational outreach could help deter illegal artifact collection and inadvertent disturbance of sites from park maintenance and development activities. • Archeological resources could be incorporated into interpretive programs as appropriate. • Partnership with adjacent land management agencies and other landowners would facilitate identification and management of sites that overlap park boundaries. • Regularly scheduled site monitoring would provide updated information on site conditions to support protection objectives. • Selected sites may merit additional testing to expand data that address particular research questions or contribute to determinations of site eligibility for the National Register of Historic Places. • Archeological investigations could be coordinated with other studies (e.g., ethnographic reports). Archeological resources often retain ethnographic importance for culturally associated tribes and other groups, and ethnographic information may contribute to archeological discernment of potential site locations, site distribution, cultural affiliations, etc. • Completion of additional archeological surveys will aid the park in meeting provisions of section 110 of the National Historic Preservation Act with regard to identification of sites and historic properties. • Collaborate with Garfield County in future initiatives to develop a natural and cultural history museum in the area.

Fundamental Resource or Value	Cultural Resources (Archeological Resources)
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Archeological Sites Management and Information System database. • Archeological overview and assessment. • Archeological evaluation study. • Ethnographic overview and assessment. • Resource stewardship strategy. • Updated collections management plan.
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • National Historic Preservation Act of 1966, as amended (16 USC 470), sections 106 and 110 • Advisory Council on Historic Preservation implementing regulations regarding "Protection of Historic Properties" (36 CFR 800) • American Antiquities Act of 1906 • "Curation of Federally-Owned and Administered Archaeological Collections" (36 CFR 79) • Archeological and Historic Preservation Act of 1974 • Archaeological Resources Protection Act of 1979 • American Indian Religious Freedom Act of 1978 • Director's Order 28: <i>Cultural Resource Management</i> • Director's Order 28A: <i>Archeology (2004)</i> • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" (1971) • Programmatic Agreement among the National Park Service, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (2008) • <i>The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation</i> • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 5.3.5.1 archeological resources will be managed in situ, unless the removal of artifacts or physical disturbance is justified by research, consultation, preservation, protection, or interpretive requirements <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Archeological sites are identified and inventoried, and their significance is determined and documented. Archeological sites are protected in an undisturbed condition unless it is determined through formal processes that disturbance or natural deterioration is unavoidable. • When disturbance or deterioration is unavoidable, the site is professionally documented and excavated, and the resulting artifacts, materials, and records are curated and conserved in consultation with the Utah state historic preservation office and appropriate American Indian tribes. • Some archeological sites that can be adequately protected may be interpreted to the visitor.



Fundamental Resource or Value	Cultural Resources (Cultural Landscapes)
Relationship to Significance Statements	<ul style="list-style-type: none"> • Cultural resources encompassing thousands of years of human use and experience are found throughout Bryce Canyon National Park. These resources are important to the identity of indigenous people of the Colorado Plateau and the living descendants of 19th-century pioneers. In addition, many of the historical resources of the park are associated with the emergence of tourism in the early 20th century, and are linked to the regional development of other “Grand Circle” national parks.
Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • A cultural landscape report (2006) was prepared for the Bryce Canyon Lodge Historic District and the Old NPS Housing Historic District. Both districts are listed in the National Register of Historic Places, significant for their historical associations and representation of rustic building design principles. The park has adopted the overall treatment approach recommended by the report: preservation of existing character-defining features of the developed area cultural landscape, and selective rehabilitation of structures to be adapted for future park needs and uses. <p>Trends</p> <ul style="list-style-type: none"> • Without adequate resources and the ability to measure changes in condition, loss of integrity of identified cultural landscapes for Bryce Canyon Lodge Historic District and the Old NPS Housing Historic District is probably occurring. Other cultural landscapes that have not been documented are probably declining in integrity for the same reasons.
Challenges and Opportunities	<p>Challenges</p> <ul style="list-style-type: none"> • Visitors have developed social trails in the vicinity of the lodge / developed area that have adversely affected vegetation and altered designed patterns of pedestrian circulation. • Wildfires and structural fires potentially threaten historic structures, vegetation, and other features contributing to the cultural landscape. • Incompatible modern development (e.g., Sunrise Motel, concessioner dormitories) intrudes on the viewshed and alters the visual connection between the historic built environment and the natural setting. • Lack of detailed information regarding types and patterns of vegetation in the developed area during the historic period hampered cultural landscape report investigations. • The national register nominations (completed prior to the cultural landscape report) focused solely on historic structures, and consequently, the overall district has lost some integrity as newer development did not fully consider the importance of vegetation, landforms, and the broader natural context of the area. <p>Opportunities</p> <ul style="list-style-type: none"> • Additional investigations (e.g., vegetation studies) would assist management decisions to rehabilitate the cultural landscape in the developed area. • Expansion of the national register boundaries of the developed area districts was recommended in the cultural landscape report to more fully incorporate contributing features as part of efforts to improve the overall integrity of the cultural landscape. • Additional cultural landscape inventories and investigations should be undertaken to identify other potential cultural landscapes (e.g., historic vernacular landscapes associated with pioneer homesteads, Civilian Conservation Corps activities, etc.). Identified landscapes would be listed in the cultural landscapes inventory database. • Cultural landscape undertakings should be coordinated with other resource management initiatives (e.g., the control of invasive plant species, fire management, etc.). • Partnerships with counties and municipalities, adjacent land management agencies, and landowners could assist efforts to protect cultural landscape features along common boundaries. • Participation in Dixie National Forest and BLM national monument and field office visual resource inventories incorporating county and municipal visual resource inventory and planning information. • Cultural landscape information could be incorporated in interpretive programs, perhaps highlighting the design considerations of early park developers and architects, and the adaptations to the natural environment displayed in the vernacular landscapes associated with early pioneer settlers.

Fundamental Resource or Value	Cultural Resources (Cultural Landscapes)
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Cultural landscape inventory. • Cultural landscape report. • Resource stewardship strategy. • National register nominations. • Transportation management plan. • Trails management plan.
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • 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) • Conference of State Historic Preservation Officers (2008) • Director's Order 28: <i>Cultural Resource Management</i> • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 5.3.5.2 calls for the preservation of the physical attributes, biotic systems, and uses of cultural landscapes that contribute to historical significance • § 5.3.5.2.6 states that all uses of cultural landscapes are subject to legal requirements, policy, guidelines, and standards for natural and cultural resource preservation, public safety, and special park uses • Programmatic Agreement among the National Park Service, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (2008) • <i>The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (1996)</i> <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Cultural landscape inventories are conducted to identify landscapes potentially eligible for listing in the national register and to assist in future management decisions for landscapes and associated resources, both cultural and natural. • The management of cultural landscapes focuses on conserving the physical attributes, biotic systems, viewshed, soundscape, and use of the landscape when that use contributes to its historical significance. • The preservation, rehabilitation, or restoration of cultural landscapes is undertaken in accordance with <i>The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes</i>. • Laws pertaining to historic preservation remain applicable within wilderness, but must be generally administered to conserve wilderness character. • The cultural landscapes of Bryce Canyon National Park retain a high degree of integrity. • Identified and evaluated cultural landscapes are monitored, inspected, and managed to enable the long-term conservation of historic features, qualities, and materials of a resource. • Actions identified in cultural landscape reports are implemented, and a record of treatment is added to the reports.



Fundamental Resource or Value	Cultural Resources (Ethnographic Resources)
<p>Relationship to Significance Statements</p>	<ul style="list-style-type: none"> • Cultural resources encompassing thousands of years of human use and experience are found throughout Bryce Canyon National Park. These resources are important to the identity of indigenous people of the Colorado Plateau and the living descendants of 19th-century pioneers. In addition, many of the historical resources of the park are associated with the emergence of tourism in the early 20th century, and are linked to the regional development of other “Grand Circle” national parks.
<p>Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> • Little documentation is currently available regarding the ethnographic resources and the cultural connections of the park that associated tribes and pioneer descendants retain to park lands. <p>Trends</p> <ul style="list-style-type: none"> • Park managers recognize the need to strengthen consultation efforts with tribes and pioneer descendants, and to carry out appropriate ethnographic resource studies to better document resources and inform decision making in a manner that fully considers the protection of ethnographic resources and values along with other cultural resources.
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Information retained by aging traditional users and others with knowledge of the area’s history and cultural connections may be at risk of being lost if not passed along to younger generations or recorded and documented in a timely manner by researchers and others. • Lack of information regarding particular places or resources having traditional cultural importance may inadvertently place them at risk of disturbance by NPS actions and development. • The activities of the general visiting public may inadvertently intrude on particular places and infringe on activities of traditional users. <p>Opportunities</p> <ul style="list-style-type: none"> • The park would continue to foster ongoing communications with associated tribes and others with traditional associations to the park to gain greater insight into ethnographic resources and to better inform decision making. • The incorporation of tribal and other traditional perspectives into interpretive activities and cultural demonstrations could be strengthened. • The park could partner with associated tribes and the descendants of early pioneers to conduct community outreach and other activities that mutually support educational and interpretive objectives. • Collaborate with Garfield County on future initiatives to develop a natural and cultural history museum in the area.

<p>Fundamental Resource or Value</p>	<p>Cultural Resources (Ethnographic Resources)</p>
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Ethnographic overview and assessment. • Traditional use study. • Ethnographic landscape study. • Ethnographic oral and life histories. • Ethnographic program strategy. • Resource stewardship strategy. • Updated collections management plan.
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • National Historic Preservation Act of 1966, as amended (16 USC 470), § 106 and 110 • Advisory Council on Historic Preservation’s implementing regulations regarding the “Protection of Historic Properties” (36 CFR 800) • Archeological and Historic Preservation Act of 1974 • Archaeological Resources Protection Act of 1979 • American Indian Religious Freedom Act of 1978 • Director’s Order 28: <i>Cultural Resource Management</i> • Executive Order 13007, “Indian Sacred Sites” (1996) • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 5.3.5.3 requires the National Park Service to be respectful of ethnographic resources and carefully consider the effects the NPS actions may have on them; when religious issues are evident, the National Park Service must consider constraints imposed on federal agency actions by the First and Fourteenth Amendments to the U.S. Constitution • Native American Graves Protection and Repatriation Act of 1990 • Presidential memorandum on government-to-government relations with Native American tribal governments <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Appropriate cultural anthropological research is conducted in consultation with groups traditionally associated with Bryce Canyon National Park. • To the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, the National Park Service accommodates access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoids adversely affecting the physical integrity of these sacred sites. • All executive agencies are required to consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments before taking actions that potentially affect the federally recognized tribal governments. American Indians and other individuals and groups linked by ties of kinship or culture to ethnically identifiable human remains, sacred objects, objects of cultural patrimony, and associated funerary objects are consulted when such items may be disturbed or are encountered on park lands. • All ethnographic resources determined eligible for listing or listed in the national register are protected. If disturbance of such resources is unavoidable, formal consultation with the Utah state historic preservation officer and the Advisory Council on Historic Preservation, and with American Indian tribes traditionally associated with the park, is conducted. • The identities of community consultants and information about sacred and other culturally sensitive places and practices are kept confidential according to protocols established in consultation with the affected tribal governments. • Potentially sensitive natural and cultural resources and traditional cultural properties (ethnographic resources eligible for the National Register of Historic Places) are identified, recorded, and evaluated through consultation with affected tribes. The integrity of traditional cultural properties is preserved and protected. • Government-to-government consultation is conducted and maintained with each of the tribes traditionally associated with Bryce Canyon National Park.

Fundamental Resource or Value	Cultural Resources (Historic Buildings and Structures)
Relationship to Significance Statements	<ul style="list-style-type: none"> • Cultural resources encompassing thousands of years of human use and experience are found throughout Bryce Canyon National Park. These resources are important to the identity of indigenous people of the Colorado Plateau and the living descendants of 19th-century pioneers. In addition, many of the historical resources of the park are associated with the emergence of tourism in the early 20th century, and are linked to the regional development of other “Grand Circle” national parks.
Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • The historic buildings and structures of the park are primarily in the developed lodge and housing area and include two nearby historic districts listed in the National Register of Historic Places: the Bryce Canyon Lodge Historic District and the Old National Park Service Housing Historic District. National register multiple property documentation that encompassed both districts was approved in 1995. • The Bryce Canyon Lodge Historic District includes historic buildings and structures built by the Utah Parks Company (Union Pacific subsidiary and park concessioner) between 1924 and 1944. Other concessioner development includes Bryce Inn (general store), service station, several buildings now in the Mixing Circle, and the park’s water catchment and distribution system. Underwood’s designs are reflected in several of these properties. • The Old NPS Housing Historic District includes properties associated with NPS administrative development during the period from 1932 to 1944. Other historic NPS properties include the old administration building, the comfort station and overlook shelter at Rainbow Point, several buildings currently in the Mixing Circle, the old dump road, several stock driveways, buildings and structures in North Campground, and park travel paths and overlooks. • The overall condition of the historic buildings and structures is fair to poor. Some deterioration can be attributed to improperly installed or replaced materials and/or features. • Other historic structures (notably Tropic Ditch, which continues to deliver water to area residents) exhibit constructed features and historical associations that expand the pre-national park history of the area. <p>Trends</p> <ul style="list-style-type: none"> • Declining. Condition assessments of historic structures document a declining state and an ever-mounting problem. The park employs a professional historical architect and a preservation crew of trained craftsmen. Working together, these specialists address emergency stabilization, developing rehabilitation needs, and identify critical projects. The backlog of deferred repairs and maintenance, the limited season for many kinds of construction activities, and limited financial resources contribute to an ever-increasing inventory of buildings and structures that are deteriorating.

Fundamental Resource or Value	Cultural Resources (Historic Buildings and Structures)
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Structural fire and wildfires present threats to the predominantly wooden historic buildings. • Structures are exposed to severe weather and climatic conditions that can damage historic fabric and contribute to intensive and ongoing maintenance requirements. • Park budgetary restrictions have resulted in deferred maintenance for most structures. • Visitor and park staff use can result in wear and tear on historic fabric. • Wildlife can damage historic materials and fabric by burrowing under structures and roosting in attics and crawl spaces. • The loss of trained staff with expertise in historic preservation can lead to inappropriate repairs, alterations, and additions by untrained staff. <p>Opportunities</p> <ul style="list-style-type: none"> • Continue partnerships with the park concessioner for shared maintenance, monitoring, and management of lodge historic buildings and structures. • Specialized training must be continued and could be provided to additional park staff and partners to foster necessary skills for adequately maintaining the historic buildings and structures to retain historic integrity, and conduct such maintenance in accordance with <i>The Secretary of the Interior's Standards for the Treatment of Historic Properties</i>. • The history and architectural importance of the historic buildings and structures can be incorporated into park interpretive programs. • Baseline documentation, assessment, and monitoring of other types of historic structures outside the developed area would assist preservation management (e.g., rock retaining walls associated with historic trails, Tropic Ditch remnants, etc.).
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Historic structure reports. • Historic American building survey. • Trails management plan.



<p>Fundamental Resource or Value</p>	<p>Cultural Resources (Historic Buildings and Structures)</p>
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • National Historic Preservation Act of 1966, as amended (16 USC 470) • Advisory Council on Historic Preservation implementing regulations regarding the Protection of Historic Properties (36 CFR 800) • Archeological Historic Preservation Act of 1974 • Director’s Order 28: <i>Cultural Resource Management</i> • Americans With Disabilities Act of 1991 • Americans with Disabilities Act Accessibility Guidelines of 1996 • Programmatic Agreement among the National Park Service, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (2008) • <i>The Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation</i> • <i>The Secretary of the Interior’s Standards for the Treatment of Historic Properties</i> • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 5.3.5.4 requires the treatment of historic and prehistoric structures to be based on sound preservation practice to enable the long-term preservation of a structure’s historic features, materials, and qualities; there are three types of treatment for extant structures—preservation, rehabilitation, and restoration <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Historic structures are inventoried and their significance and integrity are evaluated under National Register of Historic Places criteria. • The qualities that contribute to the listing or eligibility for listing of historic structures in the national register are protected in accordance with <i>The Secretary of the Interior’s Standards and Guidelines for Archeology and Historic Preservation</i>, unless it is determined through a formal process that disturbance or natural deterioration is unavoidable. • Laws pertaining to historic preservation remain applicable within recommended wilderness but must be generally administered to conserve the area’s wilderness character. • The historic character of historic structures is managed in accordance with section 5.3.5.4 of <i>NPS Management Policies 2006</i>. • Historic structure inventories and reports are prepared, and existing reports are amended as needed. Actions identified in historic structure reports are implemented, and a record of treatment is added to the reports. • Identified and evaluated historic structures are monitored, inspected, and managed to enable the long-term conservation of a resource’s historic features, qualities, and materials.



Fundamental Resource or Value	Cultural Resources (Museum and Archival Collections)
Relationship to Significance Statements	<ul style="list-style-type: none"> • Cultural resources encompassing thousands of years of human use and experience are found throughout Bryce Canyon National Park. These resources are important to the identity of indigenous people of the Colorado Plateau and the living descendants of 19th-century pioneers. In addition, many of the historical resources of the park are associated with the emergence of tourism in the early 20th century, and are linked to the regional development of other “Grand Circle” national parks.
Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> • Museum collections are currently in good condition. More than a static assemblage of materials and documents, the collections serve a dynamic role in support of park management, operations, and decision making. They are valued by contemporary tribal and local community members, providing an enduring connection with their heritage. • The natural history collection of the park contains mammal and bird collections, a herbarium, numerous paleontological collections, geological specimens from the Claron Formation, and associated project documents and reports. Some natural resource specimens are housed at the University of New Mexico (Albuquerque) and Weber State University (Ogden, Utah). • The cultural collection includes archeological materials, artifacts, and associated field records; an ethnology collection including Paiute basketry; historic objects associated with pioneer homesteaders and later tourism, concession and Civilian Conservation Corps operations; and archival and manuscript collections—oral histories, photographs, and scientific and park management records. Many archeological materials collected during park investigations are housed at the NPS Western Archeological and Conservation Center in Tucson, Arizona, and the NPS Intermountain Region office in Santa Fe, New Mexico. • The scope of collection statement (NPS 2006) noted that the park museum collection facility was inadequate, lacked curatorial staff, and that there was a backlog of collection items requiring accessioning and cataloging. The park contracted with Arizona State University to address the backlog and update records. It was also noted that the park was to transfer most of its collection to a new state-of-the-art museum storage facility at Zion National Park, but exhibit objects and archival collections would remain at Bryce Canyon. Subsequently, many of the park’s document collections have been catalogued and archived and most of the museum collections have been moved to appropriate storage facilities at Zion National Park or Pipe Springs National Monument. Documents are catalogued and archived in a continuing effort. <p>Trends</p> <ul style="list-style-type: none"> • Museum collections are anticipated to be properly stored and managed in facilities meeting all NPS standards and guidelines. The collections will continue to support park interpretive themes and objectives, and will be accessible to researchers.
Challenges and Opportunities	<p>Challenges</p> <ul style="list-style-type: none"> • Since establishment of the collections in the 1950s, some items have been lost due to formerly inadequate security. Poor recordkeeping in the early years of the collection has resulted in missing or inadequate provenience and other management data for several collection items. • Collection items may be subject to loss and deterioration without adequate storage under environmentally controlled conditions and as a result of improper handling and security. The park strives to ensure that proper museum storage and handling criteria are addressed to provide long-term curatorial protection of the collections. <p>Opportunities</p> <ul style="list-style-type: none"> • The park would continue to partner with Zion National Park, Pipe Springs National Monument, the Western Archeological and Conservation Center, and other repositories to mutually ensure that the collections are managed in a fashion that best provides conservation and accessibility (as appropriate) to researchers and others. • The park will continue to acquire outstanding museum objects and archival materials, particularly those that are currently not represented in the collection and/or address an interpretive or research deficiency noted in the general management plan, comprehensive interpretive plan, exhibit plans, or other planning documents (NPS 2006). • Collaborate with Garfield County on future initiatives to develop a natural and cultural history museum in the area.

Fundamental Resource or Value	Cultural Resources (Museum and Archival Collections)
<p>Planning and Data Needs to Protect and Maintain FRV</p>	<ul style="list-style-type: none"> • Updated collections management plan. • Collection storage plan. • Collection condition survey. • Collections management report. • Exhibit plan and design.
<p>Laws and Policies That Apply to the FRV</p>	<ul style="list-style-type: none"> • National Historic Preservation Act of 1966, as amended (16 USC 470) • American Antiquities Act of 1906 • Archeological Historic Preservation Act of 1974 • Archaeological Resources Protection Act of 1979 • “Curation of Federally-Owned and Administered Archaeological Collections” (36 CFR 79) • Director’s Order 24: <i>NPS Museum Collections Management</i> • Director’s Order 28: <i>Cultural Resource Management</i> • Historic Sites Act of 1935 • <i>ICMS User Manual</i> • Museum Properties Management Act of 1955, as amended • Native American Graves Protection and Repatriation Act of 1990 • <i>NPS Museum Handbook</i> (Parts I, II, and III) • Programmatic Agreement among the NPS, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (2008) • <i>NPS Management Policies 2006</i> <ul style="list-style-type: none"> • § 5.3.5.5 requires the National Park Service to collect, protect, preserve, provide access to, and use objects, specimens, and archival and manuscript collections in the disciplines of archeology, ethnography, history, biology, geology, and paleontology to aid understanding among park visitors, and to advance knowledge in the humanities and sciences • § 5.3.5.5.6 requires archival and manuscript collections to be preserved, arranged, cataloged, and described in finding aids <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • All museum collections (objects, specimens, and manuscript collections) are identified and inventoried, catalogued, documented, preserved, and protected. • Provision is made for access to and use of park museum collections for exhibits, research, and interpretation. • The qualities that contribute to the significance of collections are protected in accordance with established standards.



Analysis of Other Important Resources and Values

The other important resources and values analysis table includes the current condition, trends, potential challenges and opportunities, planning and data needs, and relevant laws and NPS policies related to management of the identified resource or value.

Other Important Resource or Value	Recommended Wilderness
<p>Relationship to Significance Statements</p>	<ul style="list-style-type: none"> • Bryce Canyon National Park showcases one of the largest and most colorful concentrations of erosional geologic features, including hoodoos, fins, windows, fluted cliffs, bridges, arches, and grottoes in the world. This unusual landscape within the Claron Formation is created by a unique combination of natural processes, location, rock properties, and climate. • The location of the park at the summit of the Grand Staircase, surrounded by a system of nationally protected lands, and combined with the exceptional clarity of the air and natural quiet, provides a multisensory experience. The outstanding views often extend more than 100 miles and begin with the colorful and intricately carved Claron Formation and include panoramic vistas of cliffs, canyons, and forested landscapes. • With a nearly pristine night sky, thousands of stars shine brightly at Bryce Canyon National Park. As one of the darkest publicly accessible places in North America, the Milky Way Galaxy can be viewed from horizon to horizon. The clear, clean air and a lack of artificial light in the park and the region are essential to this unparalleled nighttime experience. The darkness is also an important resource for nocturnal wildlife. • Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
<p>Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> • Recommended wilderness condition in the park is generally excellent and is supported by extensive public lands (BLM, U.S. Forest Service) surrounding the park, which contributes to an intact wildland character. • The park recommended wilderness (1974) has not been designated by Congress as an addition to the national wilderness preservation system. • Not all, but a significant amount of recommended wilderness in Bryce Canyon National Park, has been identified as Recreation 1B in the Garfield County Resource Management Plan (1B = primitive/semi primitive non-motorized/near-wilderness). <p>Trends</p> <ul style="list-style-type: none"> • Stable in regard to no net loss of acreage over the past four decades. • Changes in wilderness use and resource condition have not been systematically monitored and/or studied in the park. • Related indicators and standards for monitoring select wilderness resources are currently in development through baseline studies.

Other Important Resource or Value	Recommended Wilderness
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Unnatural fire regimes with associated extreme fuel loadings threaten recommended wilderness values through catastrophic fire. Suppressed natural fires lead to and contribute to these conditions. • By law, domestic livestock grazing is not authorized in the park. Limited access on prescribed routes for cattle drives (allowing for pass-through to summer range) is permitted. Most years grazing violations occur outside the stock driveways impacting a variety of natural resources (Fleischner 1994, Jeffries and Klopatek 1987, Jones 2000) and wilderness values including naturalness, primitive recreation experience, and untrammelled character as evidenced by visitor complaints and resource impact/enforcement documentation. Human health concerns for backpackers are raised when backcountry water sources are degraded from illegal cattle use. • Invasive nonnative plant species negatively change native plant communities and the wildlife dependent on them by displacing or eliminating native plants. Illegal grazing, social trailing and other uses (Belsky and Gelbard 2000, Potito and Beatty 2005) have introduced and/or provided opportunities for invasive weeds to infest degraded areas, impacting naturalness and ecologic values of the recommended wilderness. • Social trail creation affects the natural quality of the recommended wilderness leaving scars and denuded slopes (Potito and Beatty 2005, Marion, Leung, and Nepal 2006). • Wilderness air quality, particularly visibility, is threatened by regional pollution sources (NPS 2012b) and could be affected further by increasing numbers of vehicles in the park or insufficiently mitigated resource extraction activity in areas surrounding the park (see the Clean Air FRV table). • Commercial aircraft traffic impacts the soundscape, degrading the natural quality and primitive recreational experience of the recommended wilderness (Stack 2008, NPS 2011, Mace 2011, Barber et al. 2010). • The use of motorized and mechanized equipment for trail maintenance affects the untrammelled and natural character of the recommended wilderness (Barber, Crooks, and Fristrup 2010). • Increased visitation could impact opportunities for solitude without systematic impact monitoring and backcountry management.



Other Important Resource or Value	Recommended Wilderness
<p>Challenges and Opportunities</p>	<p>Opportunities</p> <ul style="list-style-type: none"> • Develop and implement a public information and educational program to promote Leave No Trace skills and wilderness ethics in order to reduce behaviors that are harmful to natural and cultural resources and experiences. • Coordinate with regional wilderness and wildland conservation and planning efforts with federal, state, and local agencies, offering or accepting cooperating agency status as such planning activities may occur. • Development of multimodal transportation systems in the park and at adjacent hub locations, reducing traffic volume, congestion, and idling that would reduce air emissions loads throughout the park including within recommended wilderness. • Seek cooperating agency or consulting organization standing on nearby federal land management decision processes, providing special expertise, as defined by the National Environmental Policy Act and the National Historic Preservation Act to protect park resources and wilderness values. • Cooperative transboundary management of wildland resources and values with other federal and local agencies and private interests. • Continue vegetation management to restore natural fire regimes and control invasive nonnative plants using appropriate minimum tool techniques to protect recommended wilderness values. • Apply the minimum requirement concept to management actions and practices. Partnerships with conservation corps to enhance trail management and maintenance in backcountry areas using traditional methods. • Develop standards, indicators, and systematic monitoring of key recommended wilderness resources and characteristics for the benefit of wildland visitor experience and protection of wilderness resources.
<p>Planning and Data Needs to Protect and Maintain OIRV</p>	<ul style="list-style-type: none"> • Air quality and visibility monitoring (ongoing and special purpose). • Soundscape monitoring (ongoing and special purpose). • Soundscape and air tour management planning. • Backcountry plan. • Backcountry campsite monitoring protocol. • Trail management plan (to address trail maintenance/management, development). • Trail monitoring. • Viewshed analysis guidelines incorporating federal, county, and municipal agency visual resource inventory and planning information. • Wilderness character monitoring.



Other Important Resource or Value	Recommended Wilderness
<p>Laws and Policies that Apply to the OIRV</p>	<ul style="list-style-type: none"> • Director’s Order 41: <i>Wilderness Preservation and Management</i> • Wilderness Act of 1964 • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 6.3 requires the National Park Service to manage wilderness areas for the preservation of physical wilderness resources and ensure that wilderness character is likewise preserved • § 6.4 requires the National Park Service to encourage and facilitate those uses of wilderness that are in keeping with the definitions and purposes of wilderness and do not degrade wilderness resources and character <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • The National Park Service will manage wilderness areas including those proposed for wilderness designation (as is the case for Bryce Canyon National Park) “for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness” (16 USC 1131 section 2[a]). • The National Park Service ensures that the land’s “primeval character and influence” is retained and protected, that visitors continue to find “outstanding opportunities for solitude or a primitive and unconfined type of recreation,” and that the landscape “generally appears to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable” (16 USC 1131 section 2[c]). • The Wilderness Act specifies that “each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character” (16 USC 1131 section 4[b]). • The Wilderness Act specifies that designation of any area of the national park system as wilderness “shall in no manner lower the standards evolved for the use and preservation of such park, monument, or other unit of the national park system” under the various laws applicable to that unit (16 USC 1133 section 4[a][3]). • Cultural resources in backcountry areas will be protected and maintained according to the pertinent laws and policies governing cultural resources using management methods that are consistent with the preservation of wilderness character and values. • Natural processes, native components, and the interrelationships among them are protected, maintained, and/or restored to the extent possible, while providing opportunities for their enjoyment. • Present and future visitors enjoy the unique qualities offered in the backcountry. These include the experiences of solitude, remoteness, challenge, self-sufficiency, discovery, and observation of an untrammelled ecosystem. • Wilderness management is based on the minimum requirement concept, allowing only those actions necessary and appropriate for administration of the area as wilderness and that do not cause a significant impact to wilderness resources and character. Implementation of such actions is accomplished using techniques and types of equipment necessary to ensure that impacts on wilderness resources and character are minimized. • The values of the backcountry in Bryce Canyon National Park are understood by the public and staff through education in wilderness ethics, responsible use, and using management skills and techniques to promote and preserve these values. • Operations and backcountry functions are coordinated in Bryce Canyon National Park to manage and protect natural and cultural resources and preserve wilderness character. • Ongoing coordination of backcountry management and projects is maintained with the U.S. Forest Service; work will continue with other local and regional groups, communities, agencies, and tribal governments to preserve wilderness values. • The primary elements that define wilderness character (untrammelled, undeveloped, naturalness, and solitude or primitive and unconfined recreation) are protected and preserved, and managed through a monitoring program.



Other Important Resource or Value	Meadow Landscapes
<p>Relationship to Significance Statements</p>	<ul style="list-style-type: none"> • The location of the park at the summit of the Grand Staircase, surrounded by a system of nationally protected lands, and combined with the exceptional clarity of the air, provides a multisensory experience. The outstanding views often extend more than 100 miles and begin with the colorful and intricately carved Claron Formation and include panoramic vistas of cliffs, canyons, and forested landscapes. • Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
<p>Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> • Current condition is fair to good depending on specific resource or natural process examined. • In a regional context, park dry and wet meadows are in exceptional ecological condition having been protected from livestock grazing and other uses for several decades. These habitats outstandingly support the full diversity of characteristic native plant and animal species expected and the meadows provide distinctive visual features within an otherwise forested environment. • High-quality meadow habitat supports an abundance of native fauna, including the federally threatened Utah prairie dog. As a keystone species, the Utah prairie dog creates habitat for, and supports other animal and plant species at a variety of trophic levels through soil aeration, vegetation modification, and burrow engineering. • Maintenance of native species depends on assuring community resilience, implementing restoration, and perpetuating ecological processes. <p>Trends</p> <ul style="list-style-type: none"> • Condition of meadow plant communities is stable to slightly declining due to natural process disruptions, invasive plant species, and inadequate restoration. • Most animal communities are stable but dependent on vegetation condition, trend, and avoidance of habitat fragmentation. • Utah prairie dog population stability is variable given the limited number of colonies, susceptibility to nonindigenous disease, and overall small number of animals. These factors, coupled with habitat fragmentation, yield a declining trend.

Other Important Resource or Value	Meadow Landscapes
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> • Actual and potential adjacent development in meadow habitats without proper planning and management could accelerate habitat fragmentation. • Concentrated and expanding visitor use impacts vegetation and fragments wildlife habitat. • In fire-adapted meadow plant communities, the suppression of fire leads to encroachment of conifers, unnatural changes in herbaceous and shrub species composition, and altered fire regimes. • Changes in vegetation composition due to invasive species and environmental changes. • Loss of habitat for keystone species, such as the Utah prairie dog, due to climatic shifts and drought events, nonnative diseases, and habitat fragmentation. • Livestock trespass can damage plant and soil resources due to concentrated, intensive grazing and introduction of nonnative vegetation. <p>Opportunities</p> <ul style="list-style-type: none"> • Restoration of a natural fire regime via controlled burning and mechanical treatments. • Cooperative transboundary management of resources and processes with other agencies and private interests. • Accelerated and sustained management and treatment of invasive species. • Cooperative management of Utah prairie dogs and their habitat across jurisdictions through planning with U.S. Forest Service, Garfield County, Bryce Canyon City, Utah Division of Wildlife Resources, and U.S. Fish and Wildlife Service. • Enhanced inventory and management of keystone and rare species habitat. • Identify and designate Utah prairie dog habitat in the park. • Annual, comprehensive boundary/livestock fence maintenance.
<p>Planning and Data Needs to Protect and Maintain OIRV</p>	<ul style="list-style-type: none"> • Rare plant and wildlife monitoring. • Utah prairie dog population and disease monitoring. • Utah prairie dog stewardship plan. • Fire effects data and analysis. • Fire management plan. • Enhanced fuels treatment plan. • Backcountry plan. • Trail management plan (need to update plan and address trail maintenance / management for every trail and update trail classifications). • Trail condition monitoring. • Visitor use monitoring. • Visitor use management and carrying capacity study. • Climate change scenario planning as it affects natural, cultural, and recreational resources. • Hydrology and soils analysis in meadow habitats.

Other Important Resource or Value	Meadow Landscapes
<p>Laws and Policies That Apply to the OIRV</p>	<ul style="list-style-type: none"> • Clean Air Act • Clean Water Act • Wilderness Act • Endangered Species Act • Executive Order 13112, "Invasive Species" • Federal Noxious Weed Act of 1974, as amended • National Invasive Species Act • NPS <i>Management Policies 2006</i> <ul style="list-style-type: none"> • § 4.4.1 requires the National Park Service to maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems • § 4.4.2 states that whenever possible, natural processes will be relied on to maintain native plant and animal species and influence natural fluctuations in populations of these species; the National Park Service may intervene to manage individuals or populations of native species only when such intervention will not cause unacceptable impacts to the populations of the species or to other components and processes of the ecosystems that support them • § 4.4.4.2 states that all nonnative plant and animal species that are not maintained to meet an identified park purpose will be managed—up to and including eradication—if control is prudent and feasible and if the nonnative species disrupts natural processes, genetic integrity of native species, the accurate presentation of a cultural landscape, cultural resources, park management, or poses a safety or hazard threat • § 4.5 requires parks with vegetation capable of burning to prepare a fire management plan to guide a program, which responds to the natural and cultural resources objectives of the park; provides safety considerations for park visitors, employees, and developed facilities; addresses potential impacts on public and private neighbors and their property adjacent to the park; and protects public health and safety <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • The National Park Service maintains all native plants and animals as parts of the park's natural ecosystems. • Natural abundance, diversity, dynamics, distribution, habitats, and behavior of native plant and animal populations are conserved and restored. • Populations of native plant and animal species function in as natural condition as possible, except where special considerations are warranted. • Native species populations that have been severely reduced in or extirpated from the park are restored where feasible and sustainable. • Potential threats to the native plants and wildlife of the park, as well as natural processes, are identified early and proactively addressed through inventory and monitoring. • Sources of air, water, and noise pollution and visitor uses adversely affecting plants and animals are limited to the greatest degree possible. • Visitors and staff recognize and understand the value of the native plants and wildlife of the park, and the role of natural forces in sustaining ecological health. • NPS staff uses the best available scientific information and technology to manage park resources. • Federal- and state-listed threatened and endangered species and their habitats are protected, restored, and sustained. NPS staff prevents the introduction of nonnative species and provides control to minimize the economic, ecological, and human health impacts that these species may cause. • Naturally ignited fire, including the smoke it produces, is managed under specific conditions as part of the natural systems being sustained in the park. • Prescribed fire is used under specific conditions to restore vegetation communities to more natural fuel conditions and fire regimes and to restore particular habitats. • Mechanical fuel reduction techniques are used under specific conditions to restore vegetation communities to more natural fuel conditions and fire regimes and to restore particular habitats.

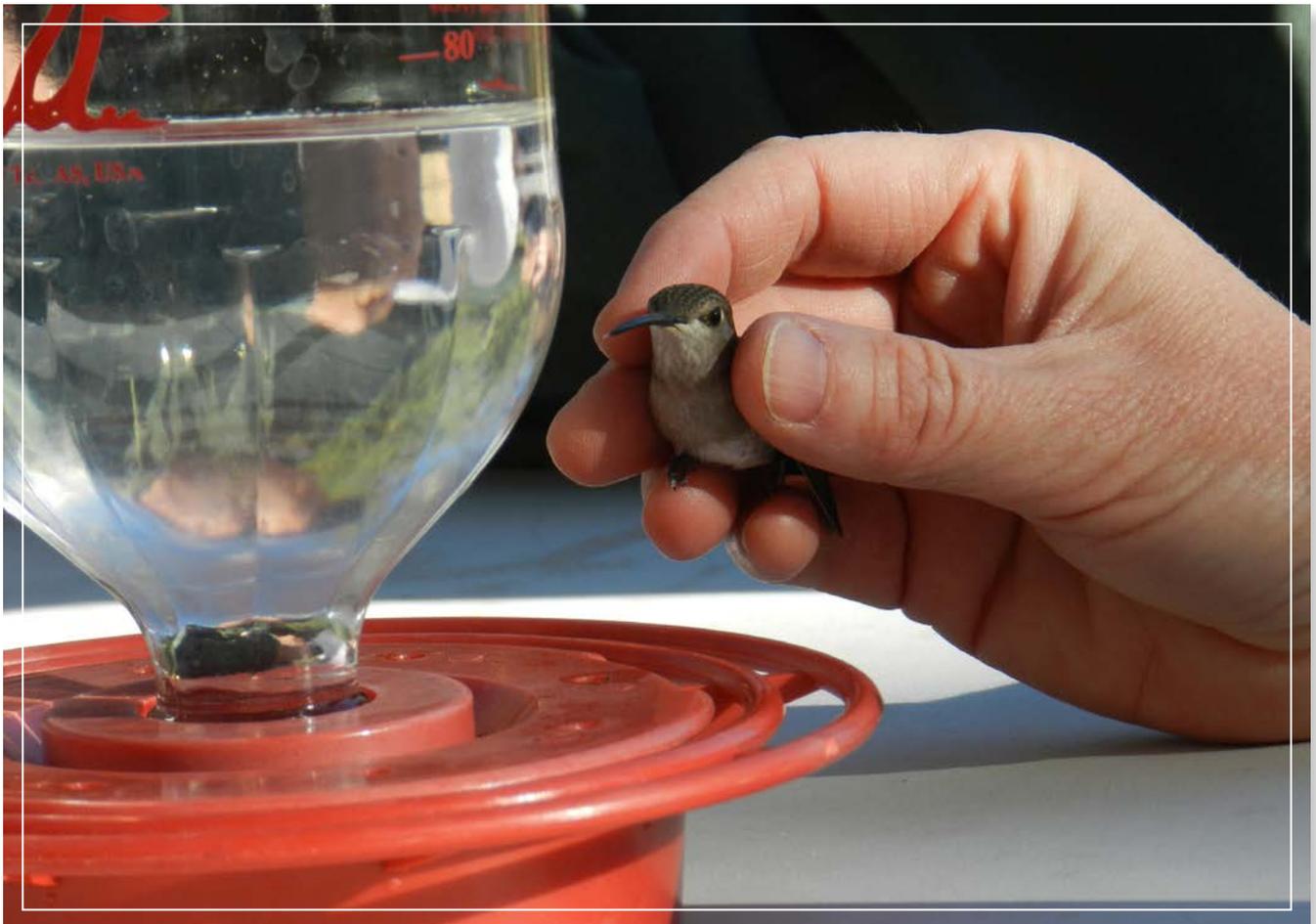
Other Important Resource or Value	Paleontology
Relationship to Significance Statements	<ul style="list-style-type: none"> Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
Conditions and Trends	<p>Conditions</p> <ul style="list-style-type: none"> More than 175 known paleontological localities have been recorded in the park. All localities are in various stages of degradation through dynamic weathering and erosional processes. Fossil exploration to date has generated the best record of Coniacian and Santonian vertebrates in the northern hemisphere. It has also contributed to the recovery of the most complete sequence of Late Cretaceous ostracods (Arthropoda) in the world. <p>Trends</p> <ul style="list-style-type: none"> Stable. Condition assessments of many of the paleontological localities were completed in 2008–2009, and both natural and human-caused disturbance to localities was found to be minimal.
Challenges and Opportunities	<p>Challenges</p> <ul style="list-style-type: none"> Natural and human-caused degradation due to social trailing, livestock trespass, and erosion processes that can cover or destroy undiscovered resources. Undocumented collection of fossils outside of the scientific research and collecting permit process results in loss of both scientific information and potentially significant discoveries. <p>Opportunities</p> <ul style="list-style-type: none"> A paleontological inventory was conducted between 2006 and 2010 in conjunction with Weber State University. Many of the localities discovered are rich in fossils and could be further studied to improve awareness of taxonomic diversity in the park. Currently there is a completed literature inventory, produced through the Natural Resource Challenge inventory. A Paleontological Resource Inventory and Monitoring Report was completed by the Northern Colorado Plateau Network in 2012. Symposia, presentations, and displays at the annual Bryce Canyon Geology Festival provide opportunities for visitor enjoyment, visitor education, and exchange of relevant regional paleontological research to enhance their protection and management. Paleontological research on the invertebrate and vertebrate taxonomic diversity of late Cretaceous formations, with a detailed focus on the upper/late Santonian, has been conducted for several years in the park lead by Weber State University. A variety of trace fossils have been recently found within the Claron Formation and provide a potential opportunity for additional research. Orient visitors to the rich paleontological diversity and ongoing research and protection efforts through educational and interpretive programming. Use the new exhibit plan as a delivery method. Collaborate with Garfield County on future initiatives to develop a natural and cultural history museum in the area.
Planning and Data Needs to Protect and Maintain OIRV	<ul style="list-style-type: none"> Monitoring plan for paleontological resources. Large potential for expansion of paleontological research on the vertebrate and micro-fossil localities within the park to enhance their understanding and protection.

Other Important Resource or Value	Paleontology
<p>Laws and Policies That Apply to the OIRV</p>	<ul style="list-style-type: none"> • National Parks Omnibus Management Act of 1998 (16 USC 5937) protects the confidentiality of the nature and specific location of paleontological resources and objects • Archaeological Resources Protection Act of 1979 • 36 CFR 2.1 (a)(1)(iii) prohibits destroying, injuring, defacing, removing, digging, or disturbing paleontological specimens or parts thereof • Paleontological Resources Preservation Act of 2009 (16 USC 470aaa et seq.) provides for management and protection of paleontological resources on federal lands • <i>NPS Management Policies 2006</i> <ul style="list-style-type: none"> • §4.8.2 requires the National Park Service to protect geologic features from adverse effects of human activity • §4.8.2.1 emphasizes inventory and monitoring, encourages scientific research, directs parks to maintain confidentiality of paleontological information, and allows parks to buy fossils, only in accordance with certain criteria <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Paleontological resources, including both organic and mineralized remains in body, cast, or trace form, are protected and conserved for public education, interpretation, and scientific research.



Other Important Resource or Value	Scientific Study
<p>Relationship to Significance Statements</p>	<ul style="list-style-type: none"> Bryce Canyon National Park is a scientist’s laboratory. Its geophysical setting, range in elevation through three climatic zones, and dynamic terrain provide for study of diverse biological and physical processes and resources important to the understanding and management of Colorado Plateau environments of the past, present, and future.
<p>Conditions and Trends</p>	<p>Conditions</p> <ul style="list-style-type: none"> Science-based decision-making essential to park management and prescribed in the NPS Omnibus Act of 1998 is supported by research, inventory and monitoring, and data management activities. NPS staff from the park, regional office, Northern Colorado Plateau Network-Inventory and Monitoring program, and Natural Resource Program Center conduct assessments of a variety of resources throughout the park. Scientists from area universities study particular resource-related issues. The park strives to use the best available information in decision making. <p>Trends</p> <ul style="list-style-type: none"> Staffing, equipment, and funds to support research projects, inventory and monitoring, and data analysis have declined at the park level. At the same time, the complexity of resource management, visitor use, and economic issues affecting Bryce Canyon National Park have increased. The operation of the NPS Northern Colorado Plateau Network-Inventory and Monitoring program implementing long-term monitoring in the park, including vegetation mapping and monitoring of several key resources (water quality, land bird surveys, and land surface phenology) has improved the overall quality of data collected within the park.
<p>Challenges and Opportunities</p>	<p>Challenges</p> <ul style="list-style-type: none"> Lack of cultural, ecological, and socioeconomic data available to support complex management and decision processes. Funding, laboratory, classroom, and quarters limitations for the park and outside researchers. Limited and declining base funding to support key science staff including a park geologist/ physical scientist. Impacts on cultural and natural resources due to climatic shifts and absence of scenario planning to address critical conservation challenges. <p>Opportunities</p> <ul style="list-style-type: none"> Alliance for Education with Southern Utah University and partnerships with other universities. Cooperative Ecosystem Studies Units provides a mechanism to develop partnerships with local universities for research within the park. Collaborative work with regional biologists and physical scientists from universities and other federal and state agencies including studies, monitoring, and data analysis to better understand natural resources and support conservation and protection, both within the park and in a regional context. Collaborative work with cultural resource specialists from universities and other federal and state agencies including studies, monitoring, and data analysis to better understand cultural resources and their preservation and protection, both within the park and in a regional context. Cooperative efforts with university and other federal and state agencies to address climate change scenarios and model impacts to natural and cultural resources and processes.
<p>Planning and Data Needs to Protect and Maintain OIRV</p>	<ul style="list-style-type: none"> Monitoring schedule and identification of resources that require baseline or expanded studies. Assemble existing economic and social science information and analyze additional needs to support management decisions. Priority list of ecological and cultural research needs.

Other Important Resource or Value	Scientific Study
<p>Laws and Policies That Apply to the OIRV</p>	<ul style="list-style-type: none"> • NPS <i>Management Policies 2006</i> • § 2.3.1.4 requires decisions documented in general management plans and other planning projects to be based on current scientific and scholarly knowledge of park ecosystems and cultural contexts and the socioeconomic environment, both internal and external to the park. The collection and analysis of information about park resources will be a continuous process that will help ensure that decisions are consistent with park purposes. • §4.2 encourages natural resource studies that are consistent with applicable laws and policies to further our knowledge of park resources. • § 5.1 directs the park to conduct research into cultural resources to collect an information base to ensure appropriate protection and to support planning and management. • § 6.3.6 states that the statutory purposes of wilderness include scientific activities, and these activities are encouraged and permitted when consistent with NPS responsibilities to preserve and manage wilderness. • NPS Omnibus Act of 1998 <p>NPS Policy-level Conditions</p> <ul style="list-style-type: none"> • Current scientific research and scholarly understanding of park ecosystems and cultural contexts, as well as the socioeconomic environment, both internal and external to the park, should be used to support management decision making. The collection and analysis of information about park resources will be a continuous process that will help ensure that decisions are consistent with park purposes.



Identification of Key Parkwide or Major Issues

All parks face a variety of issues that need to be addressed currently or through future planning. An issue is a point or matter that requires a decision be made. A key parkwide or major issue may raise questions regarding park purpose and significance. Or there may be other questions that rise to a level of importance that in the judgment of the NPS staff require them to be addressed in future planning. The following key parkwide or major issues have been identified for Bryce Canyon National Park.

- Air quality and visibility protection
- Cooperative vista/viewshed protection
- Soundscape protection and management
- Air tour management
- Night skies protection and cooperative management
- Backcountry and wilderness values protection
- Regional energy development
- Visitor capacity and maintenance of visitor experience
- Meeting demand for education and outreach needs
- Transportation/transit system financing
- Aging/deterioration of park infrastructure and utilities
- Historic resources integrity, protection, and restoration
- Maintenance of American Indian and pioneer cultural values and resources
- Sustainable facility and environmental practices
- Climate change impacts to resources and facilities
- Animal and plant habitat deterioration and fragmentation
- Utah prairie dog management
- Water resources and wetlands conservation
- Wildland and structural fire protection
- Compatibility and currency of IT/communications infrastructure



Prioritization of Planning and Data Needs

This section ranks the need for future plans, studies, or research for Bryce Canyon National Park. This is a comprehensive review and synthesis of plans and data needed to protect and maintain the fundamental and other important resources and values, as well as address key parkwide and other major issues. The prioritization of planning and data needs for Bryce Canyon National Park was considered from 2012 through the next six or more years. The planning and data needs were prioritized according to several criteria, which are described below. Based on these criteria, plans and studies were grouped into broad bands of high-, medium-, and low-priority projects. This information will be used by the park, regional office, and the NPS Washington office in determining park priorities and considering future funding needs.

Definitions:

- An “X” in the first column means that the need is directly related to an FRV or OIRV.
- Prioritization Criteria (as defined and agreed upon by park staff).
 - **High Priority** planning and data needs:
 - Are needed within one to two years
 - Have a far-reaching scope or impact
 - Are mandated by law or NPS policy
 - Are important to a life, health, or safety concern
 - Are a critical/imminent threat to a resource or involve nonrenewable resources
 - **Medium Priority** planning and data needs:
 - Are applicable within a three- to five-year time frame
 - May otherwise be high priority, but have a prerequisite that must be completed first
 - Would mitigate a less imminent threat(s) to a resource
 - **Low Priority** planning and data needs:
 - Are needed beyond the next five years
 - Would detail or characterize a threat to a resource
 - * = Currently occurring planning process, study or project

[Note: Not all “plans” necessarily require NEPA compliance.]

Related to an FRV or OIRV?	Planning and/or Data Need	Priority (H, M, L)	Notes
X	Multimodal transportation plan	H*	Critical to address traffic congestion, safety issues, visitor experience, resource protection (soundscapes, clean air, vistas), long-term financial sustainability. Transportation management plan would also inform decisions regarding the park roads network and infrastructure, ensuring design compatibility and protection of historic constructed elements.
X	Soundscapes monitoring	H*	Ongoing and necessary to complete before initiating air tour management plan.
X	Air quality and visibility monitoring (routine and special purpose)	H*	Air pollution threatens several fundamental resources and values mandated in the Clean Air Act.
X	Viewshed analysis	H	Park atlas can aid in documenting results; need region or Natural Resource Stewardship and Science program assistance to adapt process and guidelines available from other agencies.
	Philanthropic strategic plan	H	Strategies sought to obtain, develop, and maintain philanthropic partners.
X	Visitor use monitoring – park and regional use patterns	H*	Important management tool—share with concessions and other partners.
X	Trail management plan	H	Public safety and resource threats are posed from increased rate of erosion from social trails and difficult maintenance; trail maintenance standards needed. Management of the park trail system would benefit from consideration of character-defining cultural landscape features to ensure alignments, views/vistas, and other important trail elements are protected.
X	Ethnographic overview and assessment	H	Need to complete before the traditional use study, ethnographic landscape study, ethnographic oral and life histories, and ethnographic program strategy; complete the history/story of the park; immediate threat because of loss of resources and opportunity as people age. Identifies data needs and provides a comprehensive background study of types, traditional uses, and users of ethnographic resources. Would support the objectives of archeological investigations in instances that archeological resources retain cultural values for traditionally associated peoples.

Related to an FRV or OIRV?	Planning and/or Data Need	Priority (H, M, L)	Notes
X	Traditional use study	H	Concurrent with the ethnographic overview and assessment above. This study may be valuable if traditional resource users of the park can be found. It would establish baseline information needed to inform interpretive programs, and would include provisions for monitoring use on renewable and nonrenewable resources.
X	Ethnographic oral and life histories	H*	This study would address an immediate threat concerning the loss of resources and opportunity as people age. These histories would be compiled using anthropological methods including interviews with traditionally associated people to document cultural connections to the park.
X	Geohazard inventory and analysis—mass wasting hazard potential and rock fall susceptibility maps	H	Data collection for risk assessment—needed for trail management planning.
X	Historic structures management plan and architectural standards	H	Resolves imminent threats to the resource and safety concerns; standards needed to retain resource integrity.
	Commercial visitor services plan and environmental assessment	H	Required for concessions by policy; evaluates extent, suitability, and need for commercial services within the park.
	Structural fire plan	H*	Completed in 2012. Periodic review and updates will be required.
X	Museum exhibits plan	H*	Bryce Canyon National Park plan anticipated to be completed by 2014. Serves as a guide for the development of exhibits that support the park's interpretive themes. Identifies the museum objects and graphics to be exhibited and provides label text.
X	Conduct a survey of all lights within Bryce Canyon	H*	Part of the Dark Sky Cooperative on the Colorado Plateau as well as park dark sky and sustainability initiatives. This effort would additionally help make recommendations regarding possible retrofits of park light facilities.

Related to an FRV or OIRV?	Planning and/or Data Need	Priority (H, M, L)	Notes
X	Utah prairie dog management plan	H*	Critical to management of threatened Utah prairie dog populations and numerous facilities.
	Wilderness characteristics statement	H*	Ongoing need to complete before the wilderness stewardship plan. Will identify key characteristics for recommended wilderness at Bryce Canyon National Park.
	Wilderness stewardship plan	H	Need to complete the above characteristics statement first. Provides short- and long-term guidance to park staff on protection and monitoring of wildland resources and conditions.
	Water/wastewater management plan	H*	Health, safety, and environmental protection need; assure state and federal requirements met; provide for automated monitoring and data consistency.
	Radio propagation study	H	Must be completed before the telecommunications plan can be completed.
	Species community monitoring	H*	Establish monitoring to understand species and community relationship to manage appropriately.
X	Wetland inventory	H*	Regulatory requirement in assessing impacts from development and management activities; complete parkwide before other plans can be completed; cyclical in nature.
X	Vulnerable habitat monitoring	H*	Imminent threat to some of these resources (aspen, meadows, wetlands, etc.); establish baseline conditions; develop monitoring protocols.
	Solid waste management plan	H*	Executive order compliance—divert 50% of solid waste stream.
X	General management plan	H	Current general management plan (1987) is outdated and does not meet standards or provide adequate guidance for management.
	Development concept plan for headquarters (HQ) zone	H	Sequence after transportation plan to provide holistic infrastructure concept in headquarters (HQ) area.
	Education and outreach plan	H	Critical need given current demand for services from schools and organizations; part of <i>A Call to Action</i> , need to engage more partners to assist.

Related to an FRV or OIRV?	Planning and/or Data Need	Priority (H, M, L)	Notes
X	Soundscape management plan	H	Protection of park soundscapes needs to be based on appropriate acoustical zones for the park with indicators and standards for management actions.
X	Development of acoustical zones within the park with indicators and standards for protection of acoustic environments	H	Required component of a soundscape management plan to guide planning and mitigation strategies for the protection of the park's soundscape.
X	Cultural landscape inventory	H*	Provides an evaluated inventory of all park cultural landscapes with information on location, historical development, character-defining features, and management. Would be useful for other types of cultural landscapes in addition to the designed landscape of the developed area. Needs to be completed prior to updating the cultural landscape report.
X	Priority list of research needs	H	A research catalog is a useful tool to attract scientists to work in the park. Periodically updated to reflect changes in park priorities and needs.
X	Complete a visual resource inventory	H	Development of visual resource priority areas will assist the park in working with outside agencies on development projects outside the park's boundary.
X	Visitor use management plan	M	Need data collected through visitor use monitoring before this plan can be completed.
X	Trail monitoring	M*	Newly initiated, needs to be part of trail management plan, cyclical monitoring needed over long term.
X	Backcountry plan	M*	Needed to protect and manage backcountry resources and values.
X	Climate change scenario planning as it affects natural, cultural, and recreational resources	M	NPS Climate Change Response Program to prepare the initial documentation, then apply models to park and analyze results.
X	Paleontological monitoring plan	M*	Resource condition assessment, monitoring schedule, also some collection for research purposes.

Related to an FRV or OIRV?	Planning and/or Data Need	Priority (H, M, L)	Notes
X	Water quality monitoring by Water Resources Division / I&M network	M*	Critical to protecting surface waters, groundwater, and drinking water sources.
X	Ethnographic landscape study	M	This field survey would identify and describe the names, locations, distributions, and meanings of ethnographic landscape features.
X	Ethnographic program strategy	M	Consists of a data file and strategies for identifying traditionally associated peoples and ethnographic resources. It monitors traditional use activities and park development to ensure that incompatible activities do not adversely affect park resources or traditional activities.
X	Historic American Landscape Survey	M	Historic landscape features photo-documented, precision-measured, and scale drawings and other data completed.
X	Historic structures reports (documentation)	M	Records history, importance, condition, and rehabilitation needs.
X	Archeological resources management plan	M	Archeological Inventory must be completed first.
X	Archeological inventory	M*	Ongoing inventory for below-the-rim areas of the park to be completed in 2014; plateau area inventory has been completed.
X	Monitor night skies condition	M	Repeat night sky surveys completed by NPS Night Sky Team (ideal frequency every five years).
X	Cost benefit analysis for night sky-friendly lighting	M	Outside the park in neighboring communities; initiative related to money savings associated with retrofit to night sky friendly lights.
	Analysis of health, safety, and crime statistics pre- and post-night sky friendly ordinances	M	Combine with above cost benefit analysis for night sky-friendly lighting.
X	Scotobiology studies (nocturnal biology studies)	M	To establish a baseline for impacts of light pollution on wildlife; requires researcher familiar with Colorado Plateau biological resources.

Related to an FRV or OIRV?	Planning and/or Data Need	Priority (H, M, L)	Notes
X	Rare plant and wildlife monitoring	M*	Need to expand current monitoring efforts; develop protocols and monitor trends.
X	Erosion monitoring	M*	Cyclical, monitoring of geologic features and geologic processes FRVs; continue erosion LIDAR study, including cliff edge retreat.
	Telecommunications plan	M	Visitor/employee safety and emergency operations support; land-based radio, cellular, and VoIP needs assessment and operational plan.
	Integrated pest management plan	M	Establish standards, protocols, and reporting for assessment and treatment of pest problems.
	All-taxa biodiversity inventory	M	Collect basic inventory data to establish presence, habitat, and location for taxa under-represented in existing inventories.
	Facility management plan	M	Complete after development concept plan for HQ area, including maintenance, HQ, and housing areas. Assess storage needs for equipment, supplies, materials, emergency vehicles.
	Risk management framework	M	Visitor and employee health and safety; coordinated response and contingencies for emergency situations or infrastructure/administrative systems failures; cyclic/updated periodically.
X	Air tour management plan	M	Required under provisions of National Park Air Tour Management Act of 2000. Need completion of the soundscape management plan first.
X	Resource stewardship strategy	M	Provides an interdisciplinary resource condition assessment including desired cultural and natural resource conditions as part of a comprehensive strategic plan for achieving and maintaining resource protection.
X	Cultural landscape report	M	Serves as the primary guide for treatment and use of cultural landscapes. More comprehensive evaluation of landscape features and qualities is provided than the cultural landscape inventory, and management recommendations are included for treatment consistent with landscape significance, condition, and planned use. May need updating once the cultural landscape inventory is complete.

Related to an FRV or OIRV?	Planning and/or Data Need	Priority (H, M, L)	Notes
X	Backcountry campsite monitoring protocol	M*	Monitoring to protect the resource values and assess condition of resources potentially impacted at campsites.
X	Paleontological research in the park	L*	Inventory and potential collection for research purposes.
X	National register nominations	L	Most nominations for the park have already been submitted. Cultural landscape information could be amended for the developed area national register nominations to more completely document and protect contributing cultural landscape features and expand district significance.
X	Historic American Buildings Survey	L	Historically significant structures would be photo-documented, precision-measured, and scale drawings and other data completed.
X	Collections management plan	L	Provides short- and long-term guidance to park staff regarding the care and proper accessioning of cultural and natural materials in park collections/museums, as well as requirements for any new field collections associated with permitted research investigations (coordinated with zone curator at Zion).
X	Monitor regional light pollution	L	Driven by the National Aeronautics and Space Administration, U.S. Department of Energy, and Environment Canada; repeat regional analysis of light pollution from space using U.S. Department of Defense satellites (requires a presidential proclamation).
X	Impact of high altitude contrails on night sky	L	Data collection and impact analysis of high altitude contrails on night sky clarity.
X	Archeological overview and assessment	L	Provides a thorough examination of existing records, documents, and reports to describe and evaluate the known and potential archeological resources and identifies the need for additional field surveys.

Part 3: Meeting Attendees, Preparers, and Consultants

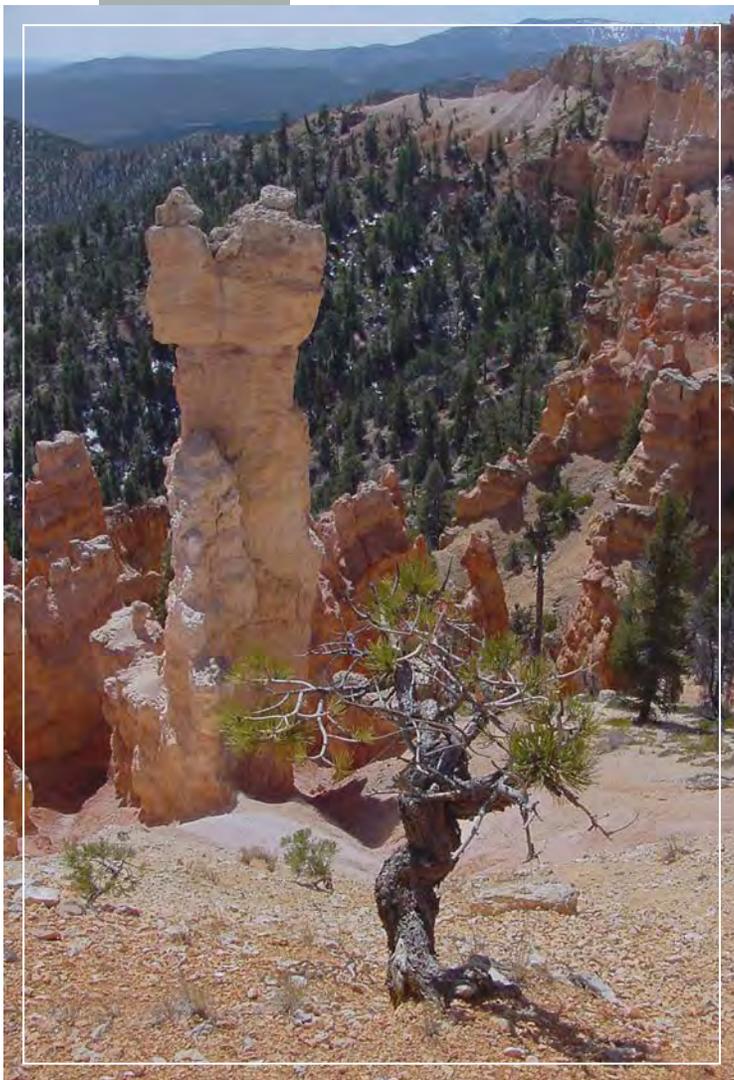
Meeting Attendees

Kim Barton, Lead Visitor Use Assistant, BRCA
 Jeff Bradybaugh, Superintendent, BRCA
 Daniel Cloud, Chief of Facility Management, BRCA
 Rhea Dearden, Budget Analyst, BRCA
 Thomas Dearden, R & T Supervisor, BRCA
 Daniel Fagergren, Deputy Chief Ranger, BRCA
 David Fireman, Chief Ranger, BRCA
 Kathleen Gonder, Acting Chief of Interpretation, Chief of Administration and Concessions, BRCA
 Sarah Haas, Biologist, BRCA
 Kim Hyatt, Historic Architect, BRCA
 Kevin Poe, Park Ranger; Interpretive Supervisor, BRCA
 Dale Pollock, B & U Supervisor, BRCA
 Nile “Rick” Sawyer, Information Technology (IT) Management Specialist, BRCA
 Laura Schrage, Natural Resource Specialist, BRCA
 Kelly Shakespear, Preservation Specialist, BRCA
 Jan Stock, Park Ranger; Interpretation, BRCA
 Jeff Stock, Program Analyst, BRCA
 Dr. Briget Eastep, Director of Outdoor Engagement, Southern Utah University (SUU)
 Gretel Enck, Planning and Outreach, NPS Water Resources Division (WRD)
 Dr. Robert Eves, Dean, College of Science and Engineering, Southern Utah University and Board Member, Bryce Canyon Natural History Association (BCNHA)
 Jim Harte, Hydrologist, NPS Water Resources Division (WRD)
 Lori Hunsaker, Deputy State Historic Preservation Officer (DSHPO) for Archeology, State Historic Preservation Office (SHPO) Utah
 Cory MacNulty, Program Manager, National Parks Conservation Association (NPCA)
 Wilson Martin, Director and State Historic Preservation Officer, State Historic Preservation Office (SHPO) Utah
 Lisa Norby, Energy and Minerals Branch Chief, NPS Geologic Resources Division (GRD)
 Gayle Pollock, Director, Bryce Canyon Natural History Association (BCNHA)
 Ellen Porter, Biologist, NPS Air Resources Division (ARD)
 Karen Schroyer, Dixie National Forest District Ranger, Powell Ranger District, U.S. Forest Service (USFS)

Preparers

- Erin Flanagan, Project Manager, NPS Denver Service Center – Planning Division
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- Christina Miller, Natural Resource Specialist, NPS Denver Service Center – Planning Division
- Steve Whissen, Cultural Resource Specialist, NPS Denver Service Center – Planning Division
- Sarah Conlin, Natural Resource Specialist, NPS Denver Service Center – Planning Division
- Nancy Shock, Foundation Coordinator, WASO Park Planning and Special Studies Division
- Pam Holtman, Quality Assurance and Quality Control, WASO Park Planning and Special Studies Division
- Melody Bentfield, Contract Librarian, NPS Denver Service Center – Planning Division
- Sarah Hass, Biologist, Bryce Canyon National Park
- John Paul Jones, Visual Information Specialist, NPS Denver Service Center – Planning Division
- Jeff Bradybaugh, Superintendent, Bryce Canyon National Park

Bryce Canyon National Park would like to acknowledge the assistance of the following in the preparation of this document: Garfield County Commission and staff, Kane County Commission, Tropic Town, and Bryce Canyon City.



Appendixes

Appendix A: Enabling Legislation and Legislative Acts for Bryce Canyon National Park

1923 Bryce Canyon National Monument is established by Presidential Proclamation

June 8, 1923.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Bryce Canyon
National Monument,
Utah.
Preamble.

WHEREAS, certain lands within the Powell National Forest, in the State of Utah, known as Bryce Canyon, are of unusual scenic beauty, scientific interest and importance, and it appears that the public interests will be promoted by reserving these areas with as much land as may be necessary for the proper protection thereof as a national monument;

NOW, THEREFORE, I, WARREN G. HARDING, President of the United States of America, by virtue of the power in me vested by section two of the Act of Congress approved June eight, nineteen hundred and six, 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 prior valid adverse claims, and set apart as a National Monument to be known as Bryce Canyon National Monument, all of the tracts of land in the State of Utah which are shown on the diagram forming a part hereof.

The reservation made by this proclamation is not intended to prevent the use of the lands for National Forest purposes under the proclamation establishing the Powell 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 its preservation or protection as a National Monument is hereby forbidden.

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 eighth day of June, in the year of our Lord one thousand nine hundred and twenty-three, and of the Independence of the United States of America the one hundred and forty-seventh.

WARREN G. HARDING

By the President:
CHARLES E. HUGHES
Secretary of State.

1924 Utah National Park is established by an Act of Congress

CHAP. 305.—An Act To establish the Utah National Park in the State of Utah.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby reserved and withdrawn from settlement, occupancy, or disposal under the laws of the United States and dedicated and set apart as a public park for the benefit and enjoyment of the people, under the name of the "Utah National Park," the tract of land in the State of Utah particularly described by and included within metes and bounds, as follows, to wit:

Unsurveyed sections 31 and 32, township 36 south, range 3 west; surveyed section 36, township 36 south, range 4 west; north half, southwest quarter and west half of the southeast quarter of partially surveyed section 5; unsurveyed sections 6 and 7, west half, west half of the northeast quarter, and west half of the southwest quarter of partially surveyed section 8, partially surveyed section 17 and unsurveyed section 18, township 37 south, range 3 west; and unsurveyed sections 1, 12, and 13, township 37 south, range 4, all west of the Salt Lake meridian, in the State of Utah: *Provided*, That all the land within the exterior boundaries of the aforesaid tract shall first become the property of the United States.

SEC. 2. That the administration, protection, and promotion of said Utah National Park shall be exercised under the direction of the Secretary of the Interior by the National Park Service, subject to the provisions of the Act of August 25, 1916, entitled "An Act to establish a National Park Service, and for other purposes."

SEC. 3. That nothing herein contained shall affect any valid existing claim, location, or entry under the land laws of the United States, whether for homestead, mineral, right of way, or any other purpose whatsoever, or shall affect the rights of any such claimant, locator, or entryman to the full use and enjoyment of his land: *Provided*, That the Secretary of the Interior is hereby authorized to exchange, in his discretion, alienated lands in this and Zion National Park for unappropriated and unreserved public lands of equal value and approximately equal area in the State of Utah outside of said parks.

Approved, June 7, 1924.

1928 Utah National Park's name is changed to Bryce Canyon National Park through an act of Congress

CHAP. 102.—An Act To change the name of the Utah National Park, the establishment of which is provided for by the Act of Congress approved June 7, 1924 (Forty-third Statutes, page 593), to the "Bryce Canyon National Park," and for other purposes.

February 25, 1928.
[S. 1312.]
[Public, No. 74.]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the area within the State of Utah described in the Act of Congress approved June 7, 1924 (Forty-third Statutes, page 593), providing for the establishment of the Utah National Park, shall be, when established as a national park, known as the Bryce Canyon National Park.

Bryce Canyon National Park, Utah.
Utah National Park to be known as.
Vol. 43, p. 593, amended.

SEC. 2. That the east half east half section 25, township 36 south, range 4 west; the east half southwest quarter section 20, and all of sections 21, 29, and 30, township 36 south, range 3 west; all of sections 24 and 25, township 37 south, range 4 west; and all of sections 19 and 30, township 37 south, range 3 west, Salt Lake meridian, be, and the same are hereby, excluded from the Powell National Forest and made a part of the Bryce Canyon National Park, subject to the provisions of the aforesaid Act of Congress approved June 7, 1924.

Areas excluded from Powell National Forest and added to Bryce Canyon Park.
Post, p. 502.

SEC. 3. That unsurveyed sections 28 and 33, township 36 south, range 3 west, and section 20, township 37 south, range 3 west, Salt Lake meridian, public lands of the United States, be, and the same are hereby, added to and made a part of the Bryce Canyon National Park subject to the provisions of the aforesaid Act of Congress approved June 7, 1924.

Other lands added to the Park.

Approved, February 25, 1928.

1931 Boundary Change Proclamation

January 5, 1931.

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Bryce Canyon National Park, Utah.
Preamble.
Statutory provisions.
Ante, p. 582.

WHEREAS Congress by act of June 13, 1930 (Public, No. 352—71st Cong.), entitled "An act to provide for the addition of certain lands to the Bryce Canyon National Park, Utah, and for other purposes," authorized the President of the United States, upon the joint recommendation of the Secretary of the Interior and the Secretary of Agriculture, to add to said park by Executive proclamation any or

all of the following described lands: unsurveyed Tps. 37 and 38 S., R. 4 W., Salt Lake meridian, not now included in said park; and

WHEREAS the said Secretary of the Interior and the said Secretary of Agriculture have jointly recommended the addition to the park of the lands hereinafter described; and

WHEREAS it appears that the public interests would be promoted by including such lands within said park for the preservation of their natural state and outstanding scenic features and for road protection purposes;

NOW, THEREFORE, I, HERBERT HOOVER, President of the United States of America, do proclaim that the lands hereinafter described shall be, and they are hereby, added to and included within the Bryce Canyon National Park and as part of said park shall be, and they are hereby, made subject to the provisions of the act of August 25, 1916 (39 Stat. 535), entitled "An act to establish a National Park Service, and for other purposes," and all acts supplementary thereto and amendatory thereof and all other laws and rules and regulations applicable to and extending over the said park:

SALT LAKE MERIDIAN

Unsurveyed T. 37 S., R. 4 W.: S. $\frac{1}{2}$ sec. 2, S. $\frac{1}{2}$ SE. $\frac{1}{4}$ sec. 3, S. $\frac{1}{2}$, NE. $\frac{1}{4}$ sec. 10, secs. 11, 14, 15, E. $\frac{1}{2}$, E. $\frac{1}{2}$ SW. $\frac{1}{4}$ sec. 16, E. $\frac{1}{2}$ SE. $\frac{1}{4}$ sec. 20, secs. 21, 22, 23, W. $\frac{1}{2}$ sec. 27, sec. 28, E. $\frac{1}{2}$, E. $\frac{1}{2}$ SW. $\frac{1}{4}$ sec. 29, S. $\frac{1}{2}$ sec. 31, sec. 32, and N. $\frac{1}{2}$ sec. 33.

Unsurveyed T. 38 S., R. 4 W.: secs. 5, 6, 7, W. $\frac{1}{2}$ sec. 8, W. $\frac{1}{2}$ sec. 17, sec. 18, E. $\frac{1}{2}$ sec. 19, secs. 20, 21, W. $\frac{1}{2}$ W. $\frac{1}{2}$ sec. 22, W. $\frac{1}{2}$ W. $\frac{1}{2}$ sec. 27, secs. 28, 29, E. $\frac{1}{2}$ sec. 30, E. $\frac{1}{2}$ sec. 31, sec. 32, W. $\frac{1}{2}$, NE. $\frac{1}{4}$ sec. 33, and W. $\frac{1}{2}$ NW. $\frac{1}{4}$ sec. 34.

Nothing herein shall affect any privately owned lands within this area or any valid existing claim, location, or entry on said lands made under the land laws of the United States, but if any of the privately owned lands shall be conveyed to the United States or any existing claim, location, or entry is canceled, the lands so affected shall become a part of the said Bryce Canyon National Park.

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 5 day of January, in the year of our Lord nineteen hundred and thirty-one, and of the [SEAL] Independence of the United States of America the one hundred and fifty-fifth.

HERBERT HOOVER

By the President:
HENRY L STIMSON
Secretary of State.

Appendix B: Related Federal Legislation, Regulations, and Executive Orders

Laws, Regulations, and Executive Orders That Are Important for Managing the Park.

(This list is not all inclusive.)

Legislation and Acts

Bryce Canyon National Park Enabling Legislation and Boundary Change Proclamation – 1923, 1924, 1928, 1931

Archeological and Historic Preservation Act – 1974

Archaeological Resources Protection Act – 1979

Clean Air Act – 1977

Clean Water Act – 1972

Endangered Species Act – 1973

National Park Air Tour Management Act – 2000

National Environmental Policy Act – 1969

National Historic Preservation Act – 1966

National Parks Omnibus Management Act – 1998

National Park Service Organic Act – 1916

Redwood Act, Amending the NPS Organic Act – 1978

Wilderness Act – 1964

Code of Federal Regulations

Title 36, Chapter 1, Part 1, General Provisions

Title 36, Chapter 1, Part 2, Resource Protection, Public Use and Recreation

Title 36, Chapter 1, Part 4, Vehicles and Traffic Safety

Title 36, Chapter 1, Part 5, Commercial and Private Operations

Executive Orders

Executive Order 11514, “Protection and Enhancement of Environmental Quality”

Executive Order 11593, “Protection and Enhancement of the Cultural Environment”

Executive Order 11644, “Use of Off-road Vehicles on the Public Lands”

Executive Order 11988, “Floodplain Management”

Executive Order 11989, “Off-road Vehicles on Public Lands”

Executive Order 11990, “Protection of Wetlands”

Executive Order 12003, “Energy Policy and Conservation”

Executive Order 12088, “Federal Compliance with Pollution Control Standards”

Executive Order 12372, “Intergovernmental Review of Federal Programs”

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”

Executive Order 13007, “Indian Sacred Sites”

Executive Order 13112, “Invasive Species”

Executive Order 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds”

Executive Order 13352, “Facilitation of Cooperative Conservation”

Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management”

NPS Director’s Orders

Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making and DO-12 Handbook*

Order 18: *Wildland Fire Management*

Order 28: *Cultural Resource Management*

Order 41: *Wilderness Stewardship*

Order 47: *Soundscape Preservation and Noise Management*

Order 77: *Natural Resource Protection*

Order 77-1: *Wetland Protection*

Order 77-2: *Floodplain Management*

NPS Management Policies 2006

Appendix C: Inventory of Special Mandates and Administrative Commitments

Special Mandates

1. Recommendation of area of the park as wilderness (December 10, 1975)

Bryce Canyon National Park protects 16,303 acres of recommended wilderness, or about 46% of the park area. The area was recommended by Mitchell Melich, Acting Secretary of the Interior, on December 10, 1971.

2. National Historic Landmark Designation (May 28, 1987)

Bryce Canyon Lodge and the Deluxe Cabins were designated a National Historic Landmark in 1987, recognized for their exceptional national significance. Bryce Canyon Lodge and the Deluxe Cabins are the work of master architect Gilbert Stanley Underwood; they are excellent examples of rustic style architecture encouraged by the National Park Service and built by the railroads in the early 20th century.

3. Stock Driveway (May 4, 1931)

The boundary of Bryce Canyon National Park was adjusted in 1931 by Presidential Proclamation No. 1951 with the provision that “nothing herein shall affect any privately owned lands within this area or any valid existing claim, location, or entry on said lands made under the land laws of the United States or the rights of stockmen to continue to drive stock over the lands now under an existing stock-driveway withdrawal.”

4. Federal Power Act Exemption (June 13, 1930)

“The provisions of the Federal Power Act (16 USC 791a et seq.) shall not apply to lands included in the Bryce Canyon National Park on June 13, 1930, nor to any lands added to said park under the authority of section 402d of this title.” (ch. 480, §2, 46 Stat. 583.)

5. Designation as Class I Area under the Clean Air Act

The 1977 amendments to the Clean Air Act established a program to prevent significant deterioration of air quality related values (including visibility). Under the Prevention of Significant Deterioration section of the law, within class I areas including Bryce Canyon National Park, only the smallest increment of criteria pollutants may be added to the air by a proposed new pollutant source. Under the law, the federal land manager has “an affirmative responsibility to protect the air quality related values (including visibility) of any such lands within a class I area.” Public Law 68-277 established Bryce Canyon National Park as a mandatory class I area.

Administrative Commitments

Name	Agreement Type	Start Date	Expiration Date	Stakeholders	Purpose	Notes
Plant Gathering	MOU	October 14, 2004	October 14, 2009	Southern Paiute Nation; 4 NPS units including BRCA	Support traditional and ceremonial resource uses	Legal authority and NPS policy for renewal under review
Private Land Holding	N/A	N/A	N/A	Owner name withheld for privacy reasons	N/A	2.5 acres NPS Tract 01-104
Private Mineral Holding	N/A	N/A	N/A	Owner name withheld for privacy reasons	N/A	100.0 acres NPS Tract 01-112
Bryce Canyon Water Rights Settlement Agreement	State Court Adjudication	Unknown	Unknown	Bryce Canyon National Park; State of Utah; possible water rights holders	Finalize and settle all existing or outstanding claims to water resources within the park	A great deal of research regarding legal records, recorded water rights and claims to rights must be conducted prior to court adjudication (initiated 10/30/12)
Garkane Energy, Inc. ROW	Right-of-way permit	May 18, 2005	May 18, 2015	Garkane Energy, Inc.	Garkane Energy Inc. has a right-of-way for the sole purpose of operating and maintaining a 69KV electrical power transmission line crossing 2.57 miles of park lands on primarily single pole structures.	Right-of-way Permit No. RW 1330-05-001
Tropic & East Fork Irrigation Company	Right-of-way permit	December 10, 2013	December 10, 2018	Tropic & East Fork Irrigation Company	Tropic & East Fork Irrigation Company has a right-of-way to maintain an underground irrigation water pipeline.	Right-of-way Permit No. RW 1330-14-001

Name	Agreement Type	Start Date	Expiration Date	Stakeholders	Purpose	Notes
Southern Utah University (SUU)	General Agreement	July, 29, 2011	5 years from effective date July 29, 2016	Southern Utah University, Bryce Canyon National Park, the National Park Service, and the U.S. Department of the Interior	Bryce Canyon National Park and SUU have an agreement to establish a cooperative and mutually beneficial working relationship to further the missions of both entities.	Titled: Alliance for Education
Bryce Canyon Natural History Association	Cooperative Agreement	December 13, 2010	December 13, 2015	Bryce Canyon National Park and Bryce Canyon Natural History Association	Provide support to interpretation and education	
Local Interagency Emergency Support	MOU	August 27, 2012	August 27, 2017 (5-year renewal)	Garfield County EMS, Fire and Law Enforcement	Dispatch and Interagency Emergency Services support and assistance	
NPS area-wide dispatch	General Agreement	January 1, 2013	September 30, 2017	Glen Canyon National Recreation Area	Dispatch support to area NPS units	
Southwest Utah Public Health Department	MOU	2012	2013 Renewed annually	Southwest Utah Public Health Department	Interagency cooperation on significant health issues; catastrophic incidents	
National Interagency Law Enforcement	General Agreement	2012	2013 Renewed annually	USFS, BLM, USFWS, and NPS	Provides reciprocal law enforcement support among federal land management agencies	
Utah State Route 12 Easement	Quit claim deed / easement	July 20, 1960	In perpetuity	State of Utah	Utah DOT management and maintenance for State Route 12	Boundaries of easement need to be adjusted to accommodate reconstructed portions of highway; ROW document needed
Tropic Town Water Company	Right of Way	1987	1992	Tropic Town Water Company	Right of Way provides for maintenance of Town potable water supply pipelines and appurtenances	Right of Way renewal is in progress

Appendix D: Literature Cited

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Intermountain Region Foundation Document Recommendation Bryce Canyon National Park

February 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.

Jeffrey S. Bradybraugh
RECOMMENDED
Superintendent, Bryce Canyon National Park
2/19/2014
Date

Janae E. Joss
APPROVED
Regional Director, Intermountain Region
5/14/2014
Date
Acting



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.

BRCA 129/122941
May 2014

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