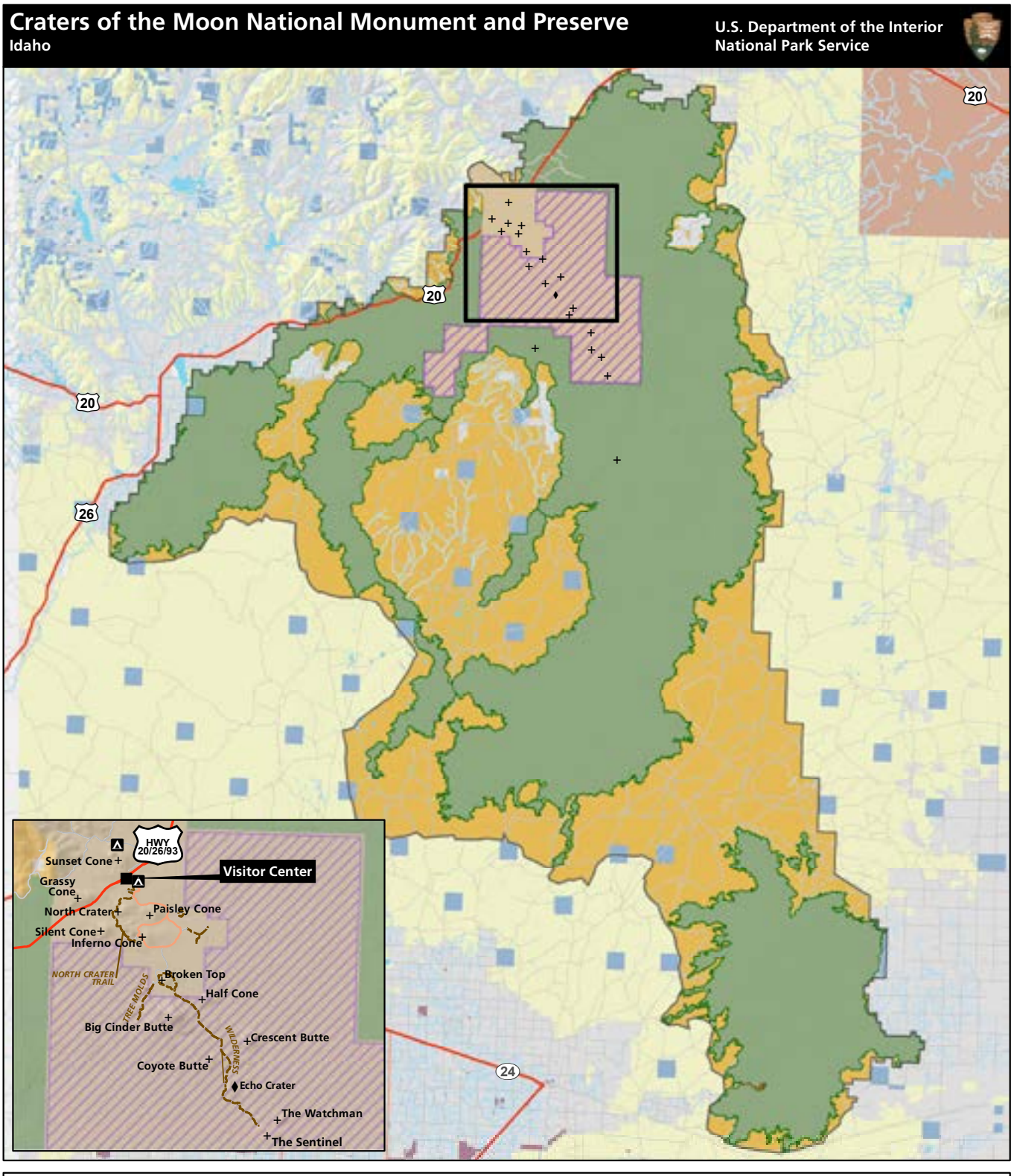
NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR

Foundation Document

Craters of the Moon National Monument and Preserve

Idaho

July 2014



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Contents

Mission Of The National Park Service

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

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

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

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

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

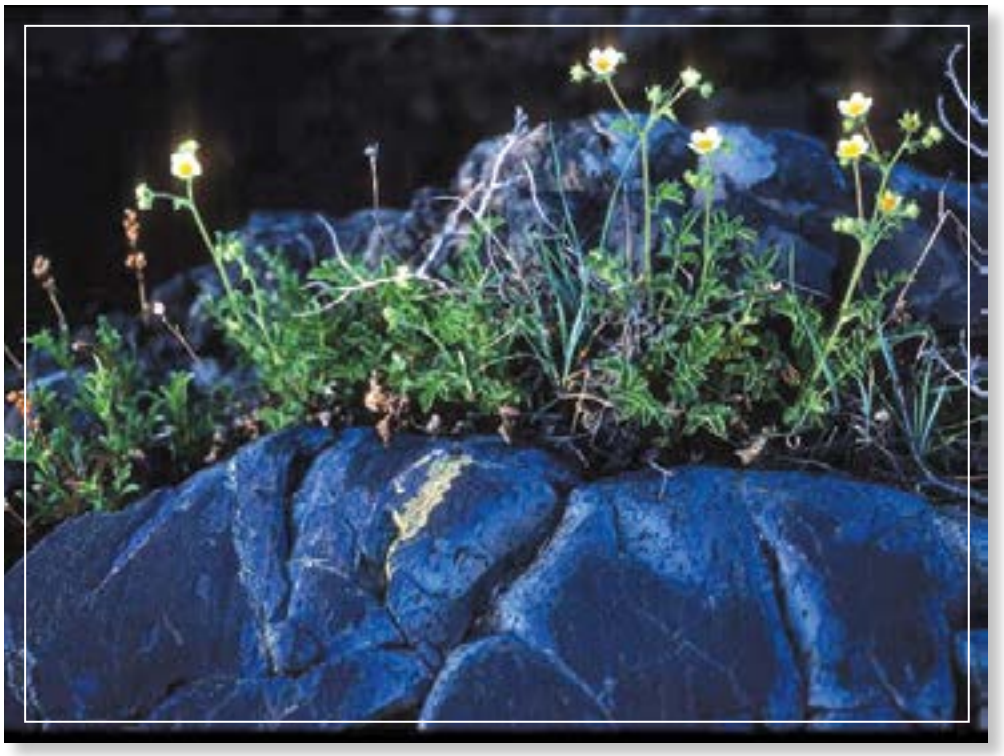
The arrowhead was authorized as the official National Park Service emblem by the Secretary of the Interior on July 20, 1951. The sequoia tree and bison represent vegetation and wildlife, the mountains and water represent scenic and recreational values, and the arrowhead represents historical and archeological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

Introduction

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

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

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



Part 1: Core Components

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

Brief Description Of The Park

Craters of the Moon National Monument and Preserve (the park) is in south central Idaho in Blaine, Butte, Lincoln, Minidoka, and Power counties. It is within a one- to two-hour drive of Twin Falls, Idaho Falls, Pocatello, and other population centers along the Interstate 84 (I-84), I-86, and I-15 corridors. President Calvin Coolidge established Craters of the Moon National Monument on May 2, 1924, for the purpose of protecting the unusual landscapes of the Craters of the Moon Lava Field. This "lunar" landscape was thought to resemble that of the moon and was described in the presidential proclamation as "a weird and scenic landscape peculiar to itself."

Since 1924, the park boundary has been adjusted and expanded numerous times. A 2000 presidential proclamation expanded Craters of the Moon National Monument from roughly 54,000 acres to approximately 753,000 acres to ensure protection of the Great Rift volcanic rift zone and its associated features. The proclamation also placed the lands under the administration of both the National Park Service and the Bureau of Land Management (BLM), with each agency having primary management authority over separate portions. On August 2002, Public Law 107-213 designated the NPS portion of the expanded monument as a national preserve.

The three administrative units at Craters of the Moon include the BLM national monument, the NPS national monument, and the NPS national preserve. Cooperative interagency management of these units enhances public service and protection of nationally significant resources, while retaining many traditional uses of the land. This foundation document applies only to the two NPS-administered units.

The park contains the youngest and most geologically diverse section of basaltic lava terrain found on the Eastern Snake River Plain, an extensive area of volcanic formations that reaches across southern Idaho east to Yellowstone National Park, in Wyoming. It includes three distinct young lava fields: Craters of the Moon, Kings Bowl, and Wapi. The Craters of the Moon Lava Field is the largest basaltic lava field of predominantly Holocene age (less than 10,000 years old) in the conterminous United States.

The park also protects most of the Great Rift Region, which includes the numerous lava flows and other volcanic material from the Great Rift volcanic rift zone. It compares in significance to other volcanic rift zones such as those found in Hawaii and Iceland. The Great Rift varies in width between 1 and 5 miles, extends for more than 50 miles, and is the deepest known land-based volcanic rift in the world.

Many features and structures associated with basaltic volcanism are represented in the Great Rift region, including various kinds of lava flows, volcanic cones, and lava tubes. Other features include explosion pits, lava lakes, squeeze-ups, basalt mounds, an ash blanket, low shield volcanoes, and various lava tube cave features. Some lava flows within the Great Rift volcanic rift zone diverged around areas of older lava and rejoined downstream to form isolated islands of older terrain known as "kipukas." In many instances, the expanse of rugged lava surrounding these small pockets of soil has protected the kipukas from people, animals, and even nonnative plants. As a result, these kipukas represent some of the last undisturbed vegetation communities on the Snake River Plain.

Young (dominantly Holocene) lava flows and other features cover about 450,000 acres of the monument. The remaining 300,000 acres in the monument and preserve are also volcanic in origin, but older in age and covered with a thicker mantle of soil. This older terrain supports a sagebrush (*Artemisia* spp.) steppe ecosystem consisting of diverse communities of grasses, sagebrush, and other shrubs and provides habitat for a variety of wildlife. This area also includes lava tube caves, older volcanic formations, and volcanic buttes.

Approximately 95% of the park is a wilderness study area or designated wilderness. The Craters of the Moon National Wilderness Area, designated in 1970, is located south of U.S. Highway 20/26/93 (U.S. 20/26/93) within the monument. A substantial portion of each of four wilderness study areas within the park includes lava flows administered by the National Park Service. The Bureau of Land Management manages 96,600 acres of the wilderness study area adjacent to the NPS-managed areas.

Both the Great Rift Region and sagebrush steppe ecosystems contain a wealth of cultural resources. Prehistoric hunting and plant gathering areas, along with food storage areas, date back to around 8,000 years ago, well before the last volcanic eruptions, which were probably witnessed by the Shoshone people. Resources from the more recent past represent the land's history of Basque sheepherding camps, cattle grazing, exploration, and recreation.

Most visitor and educational opportunities are located in the northern part of the park near U.S. 20/26/93 between the "gateway" communities of Carey and Arco, Idaho. In addition to guided walks and programs by NPS staff, the park has several self-guided trails with wayside exhibits and a seven-mile loop drive. Park facilities include a visitor center complex, which consists of a campground, museum, and bookstore, as well as the park headquarters.

Park Purpose

The purpose statement identifies the specific reason(s) for establishment of a particular park. The purpose statement for Craters of the Moon National Monument and Preserve was drafted through a careful analysis of its enabling proclamation and legislation and the legislative history that influenced its development. The park was established by executive order on May 2, 1924, (see appendix A for this proclamation, legislation and subsequent amendments). The purpose statement lays the foundation for understanding what is most important about the park.

Craters of the Moon National Monument and Preserve protects a vast "weird and scenic landscape" with remarkable and diverse volcanic features, sagebrush steppe ecosystems, and wilderness, which provides opportunities to explore, understand, and value the rugged and remote high desert landscape of the Great Rift Region.

Park Significance

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

The following significance statements have been identified for Craters of the Moon National Monument and Preserve. (Please note that the sequence of the statements does not reflect the level of significance or priority.)

- Active as recently as 2,000 years ago, the Craters of the Moon lava field is the largest post-ice age basaltic lava field in the lower 48 states. The lava field contains a remarkable and unusual diversity of exquisitely preserved basaltic volcanic features.
- The Great Rift is the deepest known land-based open volcanic rift in the world, and is nearly all contained within the park. It is also one of the longest volcanic rifts in the continental United States.
- Craters of the Moon National Monument and Preserve contains more than 500 kipukas, or isolated vegetation communities surrounded by lava, largely undisturbed by modern human activity. These communities are key benchmarks for scientific study of long-term ecological change in sagebrush steppe ecosystems.
- The combination of harsh, young volcanic terrain and extremes of a high desert climate have produced a diversity of habitats where plant succession is easily observed and where wildlife display remarkable adaptations that allow them to survive.
- As one of the first two simultaneously designated wilderness areas in the national park system, Craters of the Moon National Monument and Preserve is also the largest remaining area within the Snake River Plain that retains wilderness character. The monument and preserve, combined with the BLM-managed monument, encompasses more than one-half million acres of undeveloped federal land.
- Clean air offers visitors expansive scenic views of the high desert and surrounding mountains, which change dramatically with the seasons and from day to the dark night skies.
- For thousands of years, people have explored, used, pondered, and even avoided this vast "weird and scenic landscape." Members of the Shoshone-Bannock Tribe and the descendants of those who passed this way on Goodale's Cutoff on the Oregon Trail retain enduring human connections to the landscape. Craters of the Moon National Monument and Preserve continues to inspire these lasting impressions.

Fundamental Resources and Values

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

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

The following fundamental resources and values have been identified for Craters of the Moon National Monument and Preserve:

- **Geological Features and Processes.** The tremendous diversity of basaltic volcanic geologic features and active geologic processes are one of the defining resources of the park, and led to the designation of Craters of the Moon National Monument and Preserve as a national park unit. Features include the Great Rift (eruptive and noneruptive fissures), cinder cones and flats, spatter cones, lava tubes and caves, and lava flows. While crustal extension and seismicity and past basaltic volcanism helped create the landscape preserved by the park, ongoing geologic processes help perpetuate the natural systems that provide habitat for plants and animals in the park. These secondary geological processes include the mass movements (slumping, soil creep, etc.), windblown (eolian) deposition of loess, and weathering and erosion.

- **Opportunities for Scientific Research and Education.** Promoting discovery and understanding of the unique landscape and park history at Craters of the Moon National Monument and Preserve is important. Scientific research in the park is diverse and includes ongoing investigations of the geology and kipukas to better understand these as benchmarks for study. The park focuses interpretive and educational programs on geology, the prehistoric and historic value of the park, ecosystems, and adaptation. Fostering knowledge and understanding of the park is integral to promoting value and appreciation for the park.

- **Sagebrush Steppe Ecosystems.** The sagebrush steppe ecosystem extends beyond the kipukas to encompass more than 100,000 acres of mapped vegetated lava. Because of its location within the lava fields, the ecosystem, including the range of sagebrush steppe communities and both plants and animals (e.g., greater sage grouse, pygmy rabbits, and sage sparrows), has been isolated from other uses and remains relatively undisturbed. Larger tracts of relict vegetation are remarkable benchmarks that can help scientists understand changes to vegetation communities from recent human activity and the role of natural fire in this valuable ecosystem.
- **Kipukas.** Some lava flows within the Great Rift diverged around areas of older lava and rejoined downstream to form isolated islands of older terrain, called "kipukas." In many instances, the expanse of rugged lava surrounding these often small areas has protected the kipukas from people, livestock, and even nonnative plants. As a result, kipukas contain some of the last nearly pristine and undisturbed vegetation on the Snake River Plain.
- **Life on the Lava.** The fundamental interconnection between geology and life is characteristic of the park. Examples of plants and animals that have unique adaptations to this landscape include pikas, blind cave beetles, and limber pine woodlands and their associated animal species.
- **Wilderness Character.** More than 90% of Craters of the Moon National Monument and Preserve was designated wilderness in 1970 or has been recommended by several presidents for designation. The Craters of the Moon National Wilderness Area was one of the first two designated wilderness areas in the national park system and it is an exemplary area of wilderness. The park possesses highly valued qualities of wilderness character, including untrammeled, natural, and undeveloped areas with outstanding primitive and unconfined recreation, and unique scientific and educational opportunities.
- **Clean Air and Unobstructed Views.** Clean air and unobstructed natural views make possible incredible viewsheds or vistas featuring the geologic story and vast high desert landscape amid towering volcanic cones. Clean air enhances the color and contrast of landscape features, allows visitors to see great distances, provides panoramic views of the naturally dark night skies, and safeguards ecosystem, visitor, and staff health.
- **Past and Present Human Connections to a Harsh Volcanic Landscape.** Craters of the Moon National Monument and Preserve embodies the history of past and present human connections to the stark volcanic landscape. For ages, this rugged and remote volcanic landscape has inspired and provoked strong and varied reactions among many peoples and groups. Numerous recorded cultural resources and sites in the park have yielded artifacts from a variety of chronological periods, dating from at least 8,000 years ago to the present.

Other Important Resources and Values

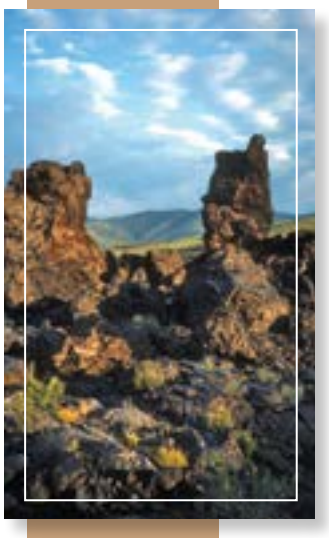
Craters of the Moon National Monument and Preserve contains other resources and values that are not fundamental to the purpose of the park, and may be unrelated to its significance, but are important to consider in planning processes. These are referred to as "other important resources and values" (OIRV).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

The following other important resources and values have been identified for Craters of Moon National Monument and Preserve:

- **Goodale's Cutoff.** Craters of the Moon National Monument and Preserve contains portions of Goodale's Cutoff, an alternate route of the Oregon Trail that skirted the northern edge of the Craters of the Moon Lava Field. The Oregon Trail and portions of Goodale's Cutoff are listed in the National Register of Historic Places. Historic features within the park include portions of the historic trail, as well as cairns, trash heaps, and sheepherder camps associated with the Basque from later use of the trail.
- **Pronghorn Migration Corridor.** The northern portion of the park includes part of the corridor for one of the longest known overland migrations for pronghorn antelope in the American West. This 100-mile-long corridor traverses the park at the base of the Pioneer Mountains to the Beaverhead Mountains in Montana and is used for seasonal travel between summer and winter ranges.
- **Mission 66 Historic Complex.** The headquarters complex, including the visitor center, employee residences, and maintenance building, is eligible for listing in the National Register of Historic Places as an intact example of modern NPS architectural design that groups public and administrative facilities in a headquarters area. This approach typified the NPS Mission 66 Program of the late 1950s and early 1960s.
- **Historic Log Structures.** A log comfort station and log warehouse within the park date to the mid-1930s, and are the only extant rustic architecture-style buildings constructed by the National Park Service in Idaho. These two historic log structures are eligible for listing in the National Register of Historic Places.
- **Little Cottonwood Creek.** Surface water resources are limited in the park. Little Cottonwood Creek and its watershed were added to the park through specific proclamations to provide water for park operations. This area also harbors the most diverse plant and animal communities in the entire park.

- **Developed Area.** Although 95% of the park is designated wilderness or wilderness study area, the developed area, including the visitor center, campground, roads, picnic areas, and trails, is where the vast majority of visitors enjoy and experience Craters of the Moon National Monument and Preserve. The developed area offers visitors of all abilities access to many of fundamental resources and values the park was established to preserve. Amenities within the developed area assist with the educational and recreational opportunities visitors may enjoy.

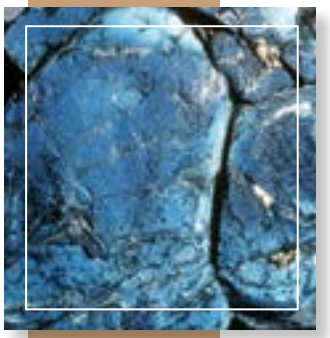
Interpretive Themes



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

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

The following interpretive themes have been identified for Craters of the Moon National Monument and Preserve:



- **Volcanology.** Craters of the Moon provides opportunities for people to experience a remarkably well preserved volcanic landscape.
- **Great Rift.** The Great Rift and its associated features are the most recent reminders of an awesome series of geologic events that began to shape the Snake River Plain 16 million years ago.
- **Kipukas.** Searing lava flows that initially destroyed everything in their path today protect some of the last islands of intact sagebrush steppe communities on the Snake River Plain.
- **Ecosystem.** The geology of Craters of the Moon has created unique and unexpected habitats that provide for the survival of a surprising diversity of plant and animal species. This vast lava plain also provides for critical human needs throughout this high desert region.
- **Wilderness.** Craters of the Moon contains vast areas managed to preserve wilderness characteristics.
- **Scenic Landscape.** Clean air and natural darkness enhance opportunities for visitors to experience the immensity of the landscape in every season and through the star-filled skies at night.
- **Human Connections.** For thousands of years, people have avoided, endured, and pondered this “weird and scenic” landscape.

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 regarding fundamental and other important resources and values change over time, key issues and the analysis of planning and data needs will need to be revisited and revised. Therefore, this part of the foundation document will be periodically updated.

Assessment of Planning and Data Needs

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

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

1. analysis of fundamental and other important resources and values
2. identification of key issues and associated planning and data needs
3. identification of planning and data needs (including spatial mapping activities or GIS maps)

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

Identification of Key Issues and Associated Planning and Data Needs

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

The following five key issues convey the primary challenges for current and future management of Craters of the Moon National Monument and Preserve. These issues are not listed in priority order. Associated planning and data needs identified to address these five key issues are noted in this section. Please see "Planning and Data Needs," below for information on all planning and data needs identified for the park, and the prioritization of those planning and data needs. The criteria used for determining priority needs are described in the section "Planning and Data Needs" below.

Issue 1: Ability to Protect and Manage Expansion Area

Presidential Proclamation 7373 in 2000 expanded the existing boundary from 53,571 acres to approximately 465,000 acres of NPS-managed land (with 273,488 acres administered by the Bureau of Land Management under the National Landscape Conservation System). Despite this, the park's staff has only increased by 1.5 full-time equivalents (FTE) since the expansion. Existing funding and staffing levels are insufficient to manage the area to NPS standards. Current management is focused on the original monument area where most facilities and visitors are located. By comparison, the expansion area, which comprises 88% of NPS land, receives little attention. This lack of funding and staffing affects all park divisions and impacts programs, resources, facilities, infrastructure, and outreach. Lack of NPS presence within the expansion area has resulted in vandalism, safety concerns, illegal access, off-road vehicle (ORV) use, and lack of community awareness regarding the expanded portions of the park.

Among the management problems that exist within the expanded portions of the park are resource issues and safety concerns at Kings Bowl lava field. The Kings Bowl area contains significant geologic features, including Crystal Ice Cave, Kings Bowl, and South Grotto. Prior to being transferred to the National Park Service in 2000, Crystal Ice Cave was operated briefly during the 1970s as a commercial cave under a BLM lease. Since 2011, the cave has been officially closed to visitor use; however, monitoring data suggests illegal access continues. In addition to potential safety hazards posed by entry into the cave, area resources have been degraded by numerous all-terrain vehicle (ATV) social trails and vandalism to signs and interpretive exhibits. These public safety and resource threats are compounded by the distance of the area from NPS administrative facilities—a minimum four-hour round trip is required to reach the site from park headquarters. To improve protection and management of the Crystal Ice Cave and Kings Bowl area a development concept plan is needed, as noted in the 2006 monument management plan. The remainder of the expansion area would continue to be addressed by the 2006 monument management plan, and could be addressed in greater detail in the wilderness stewardship plan and other implementation-level plans.

To support a development concept plan for the Kings Bowl area, GIS data on key geologic features and visitor use data is needed. Determining the frequency of day use visitors through the use of traffic counters and active patrols, in cooperation with the Bureau of Land Management, would improve the ability of the National Park Service to assess noncompliance and illegal activities in the area and assist in determining how to protect area resources.

Associated Planning Needs.

- Kings Bowl development concept plan
- Strategic Plan
- Wilderness stewardship plan
- Wildland fire management plan

Associated Data Needs.

- GIS data on Kings Bowl area geologic features
- Visitor use data for Kings Bowl area

Issue 2: Guidance Needed for Comprehensive Cultural and Natural Resources Management

Craters of the Moon National Monument and Preserve needs a comprehensive strategy to protect, preserve, and prioritize management of cultural and natural resources due to limited funding and staffing for resource management activities. Currently, the park has significant cultural resource management deficiencies (regarding archeology, information about historic periods, and impacts on cultural resources) including lack of documentation and inventory, data collection, and monitoring. Moreover, cultural and natural resource stewardship actions, such as implementing restoration and updating plans, are needed. Many existing plans do not apply to the expansion area. The need for comprehensive guidance includes identifying strategies to improve ecological resiliency within native plant and animal communities as the climate changes. Several earlier documents, including the natural resource condition assessment (2012), provide some of the information needs for park management. Other information still needs to be collected.

In addition to identifying priorities, known cultural resources need to be evaluated regularly, and National Historic Protection Act (NHPA) section 110 surveys need to be conducted. Less than 5% of the park has been intensively surveyed for cultural resources.

Associated Planning Needs.

- Resource stewardship strategy
- Wildland fire management plan

Associated Data Needs.

- State of the Park report
- Archeological resources condition assessment

Issue 3: Protection of Caves and Associated Cave Features

Craters of the Moon National Monument and Preserve contains outstanding cave resources, including fissures and lava tubes. These fundamental resources and their use by bats and people are threatened by white-nose syndrome. White-nose syndrome is a fungus that is jeopardizing bat populations nationwide as it moves across the country. The cave management plan is needed to guide protection of cave resources, including allowing visitor use of the caves while protecting bats.

Associated Planning Needs.

- Cave management plan

Associated Data Needs.

- Bat seasonal distribution/use combined with inventory/identification of hibernacula and an integrated inventory and assessment of caves within the preserve
- Cultural resources inventory and assessment to determine prehistoric human use
- Analysis of the presence of significant cave biota other than bats and geologic features

Issue 4: Continued Protection for Wilderness and Wilderness Study Areas

More than 90% of the park is designated wilderness or wilderness study area. Natural vegetation conditions are a fundamental component of wilderness character. Critical threats to these natural conditions include nonnative invasive plants, which are transforming native plant communities (particularly following wildfires), and climate change impacts, in addition to ongoing stressors, such as excess nitrogen deposition, on iconic species such as the American pika and limber pine. The class I designation of the Craters of the Moon National Wilderness Area under the Clean Air Act also makes air quality a fundamental resource. Air quality in the park remained relatively unchanged (no statistically significant trend) for ozone and nitrogen deposition for the most recent 10-year period analyzed (2000–2009). However, both ozone and nitrogen deposition are a moderate concern at the park.

Concurrent with overall wilderness planning is the need for a wilderness viewshed analysis. Proposed energy project towers near the park that would be visible from some wilderness viewsheds pose a potential threat to the park's wilderness character. A viewshed analysis would determine which wilderness and wilderness study area viewsheds are currently impacted and which are most vulnerable to viewshed impacts from actions on adjacent lands.

Associated Planning Needs.

- Wilderness stewardship plan
- Wildland fire management plan

Associated Data Needs.

- Analysis of wilderness and wilderness study area viewsheds (to be completed as part of the parkwide viewshed analysis)

Issue 5: Ability to Respond to Visitor and Employee Safety and Security Needs

Because there is currently only one law enforcement ranger, staff members in other park divisions are frequently used to assist visitors with first aid, disabled vehicles, complaints, and other visitor assists and emergencies. This is a safety issue because employees from other divisions are not adequately trained or equipped to handle many of these situations. When the current law enforcement ranger is not available for a call, response time to the campground/headquarters area is about 30 to 45 minutes for a Butte County Sheriff's Office deputy.

Development of mutual aid agreements with the Bureau of Land Management and adjoining counties for law enforcement are essential for continued combined management. Expired reimbursable agreements also need to be renewed. Ensuring that resources are available to the park in emergency situations, such as during fires and for law enforcement, is also a critical need. Several contingency plans that would ensure this are out of date or have not been initiated. Even though alarms and sprinkler systems are installed in all occupied buildings, the nearest fire response unit is 30 minutes away.

Associated Planning Needs.

- Continuity of operations plan
- Emergency operations plan update
- Structure fire plan
- Water operations plan
- Search and rescue plan
- Emergency medical services plan
- Security plan
- Fall protection plan
- Hazard communications plan update

Associated Data Needs.

- None identified

Issue 6: Volcanic Hazard Assessment

The recurrence interval of eruptive activity for the Craters of the Moon Lava Field ranges from several hundred years to 3,000 years, but averages 2,000 years. This makes the park due for another eruption. Based on the volcanic hazard assessment for the Idaho National Laboratory located east of the park and the eruptive history of Craters of the Moon, the park might expect lava flows covering from a few hundredths of a square mile to more than 150 square miles, including flows that travel as much as 25 miles from the vent. Fissuring and faulting could extend for miles and there could be broad uplift or collapse of the land surface covering tens of square miles. Hazardous gas releases, such as carbon dioxide and hydrogen sulfide, etc., could affect areas greater than a square mile and be potentially lethal close to the vent or in low areas where the gases could accumulate because of their density. Tephra fall, such as cinders and ash, could impact areas of more than a square mile.

The Bureau of Land Management has made progress on the joint hazards analysis and response plan identified in the 2006 monument management plan, but this plan has not been completed. Phase one included the collection and compilation of available geologic maps and data for the last 30 years; the relevant data on infrastructure, such as utility/transportation corridors, resident population, visitor use statistics, and critical facilities that could be impacted by a volcanic eruption. Data were compiled into a GIS database, and older data sets were digitized into a GIS format. Phase one summarized the geology of the lava fields and the Great Rift volcanic rift zone and the processes that produced the fields. These data reside in the GIS lab at the BLM Shoshone field office. Additional lava flow routing and hazard zone maps need to be generated, including the completion of the volcanic hazards analysis and response plan, to address this parkwide issue.

Associated Planning Needs.

- Volcanic hazards analysis and response plan
- Strategic plan

Associated Data Needs.

- Lava flow routing and hazard zone maps generated for different eruption scenarios

Other Important Issues By Program Area

The following section describes other issues and challenges identified for Craters of the Moon National Monument and Preserve. The information is organized by park program area. Although these issues are not the most immediate concerns at the park, they describe important challenges to be addressed by planning and management.

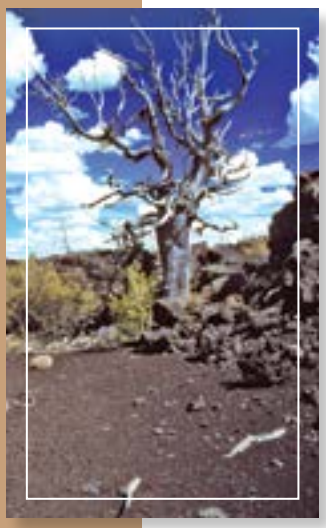
Strategic Planning

Craters of the Moon lacks a multiyear plan for operations and funding that is guided by a long-term vision for the park. A strategic plan would address this need by conducting an operations review, analyzing funding and staffing needs, and by helping to determine annual work plans and goals for the next five years.

Cultural Resources

Insufficient Understanding of Significant Cultural Resources. A wide variety of cultural resources are found in the park; however there is limited understanding of which are most significant. Analysis of these areas through inventory and assessment would enable the park to improve its management by identifying character-defining features and by recommending management actions to ensure that these are preserved. Additionally, few management actions and current documents directly address cultural resource protection, especially in the expansion area.

Expanded Archeological Overview and Assessment for Resources within the Park Interior. The 2006 archeological overview and assessment focused on the preserve and did not cover the interior of the expansion area or areas within the NPS monument. An addendum to this report is needed to identify prehistoric and historic archeological sites on NPS lands. An analysis of the archeological artifacts in the park's collection would help inform this assessment.

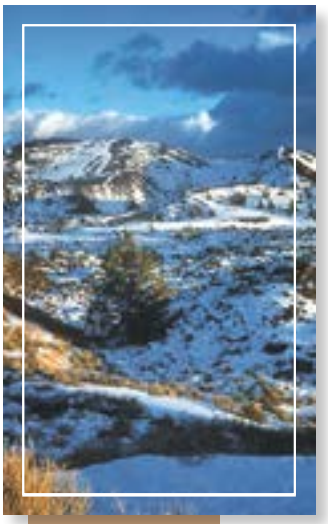


Outdated Ethnographic Overview and Identification of Issues Pertaining to American Indian Tribes. An updated ethnographic overview and assessment of the park is needed to better understand the potential for ethnographic resources related to the Shoshone-Bannock and Shoshone-Paiute tribes that claim the park within their historic cultural area. The former overview did not adequately address the park and does not provide enough information to conduct tribal consultation, nor did it identify opportunities for improving management of significant resources.

Insufficient Protection of Museum Collections. Although the visitor center expansion improved collections storage, a formal curatorial agreement for ongoing museum collections operations management is needed for collections stored at the park. An emergency operations plan is needed to address issues pertaining to museum collections security and fire issues.

Natural Resources

All of the following issues would be addressed and their planning and data needs further defined by a resource stewardship strategy.



Protect Sagebrush Steppe and Associated Rare Species. Sagebrush steppe is a fundamental park resource that includes component rare species (sage grouse and pygmy rabbits) that continue to be negatively impacted by the effects of fire and nonnative invasive plants. Additional threats to this ecosystem that originate outside the park include development and grazing.

Fundamental Resources and Values are Vulnerable to Climate Change Impacts. Higher temperatures, reduced snow cover, increases in insect pests, and reduced availability of water have all been predicted as climate change impacts on native wildlife and plants in the park. One example of critical resources vulnerable to climate change impacts is the pika, identified by the park as a focus of management through other planning efforts.

Fire Impacts to Sensitive Park Resources. Identifying a fire management strategy to protect unique sagebrush steppe vegetation communities and sage grouse habitat is critical to perpetuating these resources. Sagebrush steppe communities are most vulnerable to nonnative invasive annual plants, such as cheatgrass, and noxious perennial weeds.

Protect Vulnerable Limber Pine Ecosystem. Limber pine is a keystone species and a key component of park ecosystems. Native plant communities are a key resource identified in the 2006 monument management plan. Limber pines are part of the "Life on the Lava" fundamental resource and value. More information is needed to understand how to best protect the limber pine ecosystem from white pine blister rust and climate change impacts.

Off-highway Vehicle Impacts on Wilderness Character and Resources. There is little understanding of the extent of resource impacts occurring within the expansion area, which comprises 88% of the park. There are approximately 400 miles of unpaved roads maintained by the Bureau of Land Management. Twenty miles of unauthorized off-highway vehicle trails have been mapped on the Wapi Lava Field. Within this expansion area are significant resources, such as volcanic features of the Great Rift, wilderness study areas, kipukas, and sage grouse that may be negatively affected by illegal off-highway vehicle use.

Modify Boundary Fencing to Reduce Barriers to Seasonal Pronghorn Migration. Seasonal pronghorn migration and other wildlife movement are affected by boundary fencing and park neighbor fencing/barriers. The northern portion of the park includes part of the corridor for one of the longest known overland migrations for pronghorn antelope in the American West. This migration corridor is used for seasonal travel between summer and winter ranges.

Highway Traffic Impacts on Wildlife and Visitor Experience. Highway traffic, particularly an increase in heavy truck traffic on U.S. 20/26/93, is adversely affecting wildlife and visitor use by separating the majority of the park from the otherwise contiguous undeveloped mountain habitat to the north. Direct mortality of wildlife is also occurring. Vehicle traffic also impacts visitor and wildlife experience of the natural soundscape in wilderness. The highway is also a source of weed seed, which is continually reintroduced into disturbed roadside areas.

Interpretation and Education

Lack of Public Awareness of the Expansion Area. Geography, limited fiscal and staffing resources, limited public access, and currently low visitation are the main reasons for lack of public awareness of the expansion area. The lack of NPS staff presence near the southern boundary of the park also contributes to the lack of public awareness of the expansion area. A dedicated year-round education program coordinator position could develop and institute curriculum programming to reach a larger portion of underserved audiences than is currently possible, particularly the large Hispanic community in this part of Idaho. Other approaches could include participation in an interagency visitor center in cooperation with other nearby NPS units and local partners, and the development of a virtual tour available on the web and through other digital media.

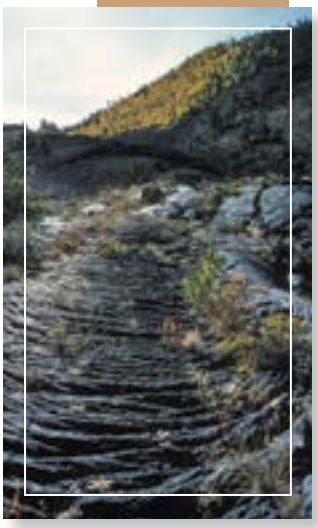
Land Protection

Right-of-Way Viewshed Impacts at Park Boundary. The Idaho Transportation Department has three right-of-way mineral material sites (approximately 300 acres) adjacent to U.S. 20/26/93. If developed, removal of materials could adversely affect lands within the boundary, causing serious impacts on viewsheds and resources along the only major visitor corridor through the area. The 2006 monument management plan directs the National Park Service and Bureau of Land Management to consult with the Idaho Transportation Department to avoid impacts on these material sites.

Partnerships

Cooperation and Coordination between the Bureau of Land Management and the National Park Service. It has been 12 years since Proclamation 7373 instructed the National Park Service and the Bureau of Land Management to "manage the monument cooperatively" and prepare an agreement to share resources. Some progress has been made in recent years; however, opportunity exists for better coordination, despite differing agency missions and the difficulty of transferring funds between agencies. More efficient ways to share law enforcement, resource management, and interpretive services with the Bureau of Land Management in the expansion area are attainable. Implementing the recent Service First legislation and continued development of memorandums of understanding are examples of existing mechanisms to facilitate improved cooperation and coordination.

Lack of Engagement with Gateway Communities. Engaging gateway communities in the expansion area has been difficult, especially in the south part of the preserve. There is little NPS presence in this area, and some community issues and opportunities are unknown. Communities as far away as Aberdeen consider themselves "gateway" communities to the park. Improved community engagement would embrace this and allow for the park to work with the Southern Idaho Tourist Board and other organizations to facilitate planning in the area.



Sustainability and Environmental Quality of NPS Operations

Shortage of Office Space and Housing. The 2012 housing needs assessment documents a shortage of housing (14 beds). A duplex housing unit, capable of housing 8 people, is currently being used as office space for the Resource Management and Visitor and Resource Protection divisions. Housing options for seasonal employees outside the park are extremely limited. If more staff is added, additional office space will also be needed.

Shortage of Water. A projected decrease in annual snow pack in the park's watershed may result in a shortage of potable water, especially during July and August. If the trends of more visitors and critical water levels continue, additional water supply and/or more efficient water conservation measures will be needed. Any future plans for increased water use by visitors or park operations (such as additional park housing) would need to address potential declines in water yields. Data needs to help address this issue include a better assessment of water yield, flow, and use in the park, as well as projections of changes in annual and seasonal precipitation.

Planning and Data Needs

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

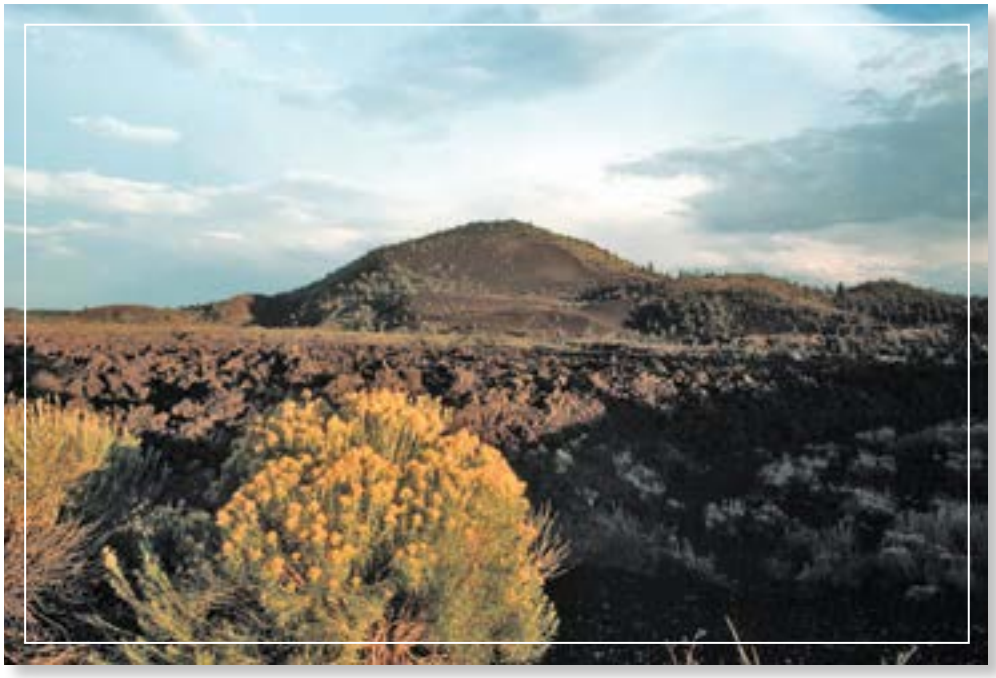
Items considered of the greatest importance were identified as high priority, and other items identified, but not rising to the level of high priority, were listed as either medium- or low-priority needs. These priorities will be used to inform park management efforts to secure funding and support for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

Criteria and Considerations for Prioritization

The following criteria were used to identify priorities for plans and data. Priority was given to plans or data that

- represent a long-standing need as identified in the 2006 monument management plan
- are directly related to the park purpose, significance or fundamental resources and values
- solve an urgent or time sensitive problem, including life, health and/or safety concerns
- would prevent resource degradation
- could be undertaken given existing funding and staffing

Following the "Description of High Priority Planning Needs" are three tables. Table 1 summarizes the high priority plans and table 2 summarizes the high priority data needs. Table 3 summarizes the medium and low priorities planning and data needs.



Description of High Priority Planning Needs

Cave Management Plan. The cave management plan is needed to guide protection of cave resources, including decisions regarding bat populations and white-nose syndrome, an imminent threat to bat populations nationwide. As a result, this plan will address recreational use of caves, improve protection of archeological sites associated with caves, and replace an outdated 1993 plan that did not include National Environmental Policy Act analysis. The cave management plan was identified as a future planning need in the 2006 monument management plan. Bats are one of the vital signs selected for long-term monitoring by the Upper Columbia Basin Network Inventory and Monitoring Program. Monitoring protocols are being developed, and the plan is currently underway.

Kings Bowl Development Concept Plan. The need for the Kings Bowl development concept plan is identified as a future planning need in the 2006 monument management plan and in the issues portion of this document. An inventory of geologic features, including GIS data, and gathering information about day use visitors is also needed. The intent is to collect visitor use data in the Kings Bowl area and throughout the preserve using traffic counters and active patrols (in cooperation with the Bureau of Land Management) to assess noncompliance and illegal activities.

Wilderness Stewardship Plan. The wilderness stewardship plan would replace an outdated 1989 backcountry/wilderness management plan, address a fundamental resource and value, and fulfill a future planning need to incorporate the wilderness study areas identified in the 2006 monument management plan. An associated data need is a parkwide viewshed analysis, which would include land use/land cover mapping data.

Resource Stewardship Strategy. Although the park has a completed natural resource condition assessment, a comprehensive, integrated natural and cultural resources management plan is required by NPS policy and has not been completed. Most cultural resources information has come from cursory or compliance surveys, rather than systematic analysis. Although one systematic archeological resources survey along the NPS-BLM monument boundary occurred following expansion, less than 5% of the park has been surveyed for cultural resources. Because numerous projects and plans have been identified, it is important to prioritize management of cultural and natural resources.

State of the Park Report. Craters of the Moon National Monument and Preserve does not have a State of the Park report. Ideally, this report would be completed following the resource stewardship strategy. The State of the Park report would identify status and trends in the condition of priority resources and values; summarize scientific, scholarly, and park operations data; and highlight park stewardship activities and accomplishments. The report would serve as an internal management tool for assisting in establishing priorities and as an outreach tool for communicating the park's status and needs to the public and stakeholders.

Volcanic Hazards Analysis and Response Plan. Eruption scenarios are probably needed to plan for the safety and security of visitors and employees. The Volcanic Risk Information System, a GIS-based tool developed in Europe and successfully used around the world, could be employed at the park to produce hazard zone maps with predicted flow routes for lava flows based on eruption scenarios. Once this step has been completed, an appropriate response plan could be developed and finalized with appropriate partners.

Strategic Plan. A strategic plan would address the park's need for a multiyear planning document, including annual work plans, an operations review, and analysis of funding and staffing needs. The strategic plan would extend five years.

Wildland Fire Management Plan. A 410,000-acre expansion of the park in 2000 made the previous fire management plan obsolete. The Record of Decision for the 2006 general management plan identified updating this plan as the highest planning priority for the park.

Description of High Priority Data Needs

Bats and Caves Inventory. An inventory of bat seasonal distribution and use, identification of hibernacula, and an integrated natural and cultural resources cave inventory and assessment of caves within the preserve is needed. Emphasis would be placed on caves with known or suspected resources or those most vulnerable to public entry. The inventory would also determine the status of cave dwelling bats. In addition to identification of this in the 2006 monument management plan, this inventory is also prompted by the looming threat of white-nose syndrome and the need to inventory caves to establish a baseline before white-nose syndrome arrives.

Cultural Resources Condition Assessment. A condition assessment of park cultural resources is needed to inform the comprehensive strategies for fundamental and other important cultural resources in a resource stewardship strategy. This assessment would include inventories of caves and surface sites along with the analysis of collected artifacts, which would lead to a better understanding of both prehistoric and historic land use practices.

Parkwide Viewshed Inventory and Analysis. The inventory and analysis of important viewsheds throughout the park will provide information necessary to manage the park's views and vistas, which are fundamental resources and values. Viewshed analysis including wilderness and wilderness study areas will also inform a wilderness stewardship plan and resource stewardship strategy. The viewshed inventory would include land use/land cover mapping data.

GIS Data on Kings Bowl Geologic Features. This GIS data would identify key geologic features to support planning for the Kings Bowl area.

Visitor Use Data for Kings Bowl Area. Determining the frequency of day use visitors through the use of traffic counters and active patrols, in cooperation with the Bureau of Land Management, would help to assess noncompliance and illegal activities and protect resources in the area.

Table 1. Summary of High Priority Planning Needs

Planning Needs	Rationale	Related to an FRV or OIRV?	Related to Key Issue?
Cave management plan	This plan, which addresses wildlife issues, recreational access, and cave protection, is being developed internally, but additional support is needed.	FRV	#3
Kings Bowl development concept plan	This plan would address illegal access and safety concerns at Kings Bowl lava field.	FRV	#1, 3
Wilderness stewardship plan	This plan is identified in the 2006 monument management plan and would address multiple complex related issues related to sagebrush steppe management, an important natural condition of wilderness character.	FRV	#4
Resource stewardship strategy	This plan would address the need for a cultural resources management plan, identify priorities for cultural and natural resources, and fulfill an NPS requirement.	FRV, OIRV	#2
State of the Park report	The State of the Park report would identify status and trends in the condition of priority resources and values; summarize scientific, scholarly, and park operations data; and highlight park stewardship activities and accomplishments.	FRV, OIRV	#2
Volcanic hazards analysis and response plan	This plan would address safety and security of visitors and employees, and fulfill a future planning need identified in the 2006 monument management plan.	FRV	#6
Strategic plan	This plan would establish goals and analyze staffing and financial needs for Craters of the Moon National Monument and Preserve into the future.	FRV, OIRV	# 1, 2, 4, 5, 6
Wildland fire management plan	A 410,000-acre expansion of the park in 2000 made the previous fire management plan obsolete. The Record of Decision for the 2006 general management plan identified updating this plan as the highest planning priority for the park.	FRV	#1, 2, 4

Table 2. Summary of High Priority Data Needs

Data and GIS Needs	Notes and Plan This Data Need Relates To	Related to an FRV or OIRV?	Related to Key Issue?
Bat and cave inventory	Cave management plan: Data collection needs include bat seasonal distribution and use, inventory and identification of hibernacula, and an integrated inventory and assessment of caves within the park.	FRV	#3
Cultural resources condition assessment	Resource stewardship strategy: A condition assessment of cultural resources is needed to inform comprehensive strategies for managing fundamental and other important cultural resources.	FRV	#2
Parkwide viewshed inventory and analysis	Wilderness stewardship plan, resource stewardship strategy: The inventory and analysis of important viewsheds throughout the park would provide information necessary to manage the park's views and vistas, which are fundamental resources and values. Viewshed analysis including wilderness and wilderness study areas would also inform a wilderness stewardship plan and resource stewardship strategy. The viewshed inventory would include land use/land cover mapping data.	FRV	#4
GIS data on Kings Bowl geologic features	Kings Bowl development concept plan: This GIS data would identify key geologic features to support planning for the Kings Bowl area.	FRV	#1
Visitor use data for Kings Bowl area	Kings Bowl development concept plan: Determining the frequency of day use visitors through the use of traffic counters and active patrols, in cooperation with the Bureau of Land Management, would help to assess noncompliance and illegal activities and protect resources in the area.	FRV	#1, 3

Table 3. Summary of Medium and Low Priority Planning and Data Needs

Medium and Low Priority Planning and Data Needs	Priority (Medium, Low)
Cultural Resources – Plans	
Goodale's Cutoff cultural landscape inventory (including treatment options)	M
Ethnographic overview and assessment	M
Historic preservation and treatment guide	M
Administrative history addendum	L
Expanded archeological overview and assessment	L
Cultural Resources – Data	
Archeological survey of Carey and Brass Cap kipukas (PMIS 149460)	M
Archeological survey of Little Cottonwood Creek area and Goodale's Cutoff	L
Section 110 surveys	L
Cultural resources inventory and assessment to determine prehistoric human use	L
Analysis of archeological artifacts in the park's collection to inform the archeological overview and assessment	L
Natural Resources – Plans	
Conservation plan for limber pine (PMIS 166309) (including adding trigger points for management actions associated with vital signs)	M
Vulnerability assessment of limber pine from predicted changes in climate	M
Climate change risk assessment or adaptation-vulnerability assessment	M
Better assessment of water yield, flow, and use in the park	M
Projections of changes in annual and seasonal precipitation	M
Investigate reintroduction of bighorn	L
Soundscape management plan	L
Natural Resources – Data	
Status of nonnative invasive plants (needed to better understand extent of cheatgrass and state-listed noxious weeds)	M
Cave geo-referenced database	M
Identify climate change data needs, such as wildlife use of water holes and changes in plant phenology	M
Inventory wildlife migration barriers into and out of park	M
Status of species most impacted by changes in native plant communities due to wildfire and nonnative invasive species (sage steppe dependent species) and likely climate change scenarios (limber pine, pika, aspen)	M
Trend data on pronghorn at Pronghorn Pass	M
In-stream water quantity data	M
Determine projected seasonal flows and potable water yields based on climate projections	M
Sage grouse movement and connectivity study (to accompany the ongoing DNA feather collecting study and the multi-state connectivity study)	M

Medium and Low Priority Planning and Data Needs	Priority (Medium, Low)
Science-based desired conditions for high-priority species / trigger points for management action	M
Analysis of the presence of significant cave biota other than bats and geologic features	M
Lava flow routing and hazard zone maps generated for different eruption scenarios	M
Data about visitor impacts on geologic features, particularly in high use areas	L
Expand current kipuka inventory	L
Inventory natural resources other than vital signs (such as invertebrates)	L
Pygmy rabbit survey	L
Rare plant inventory (update existing)	L
Research prospectus (identify research needs)	L
Study impact of highway traffic on visitor experience and wildlife (including introduction of noxious weeds)	L
Map extent of migration corridor through park in GIS	L
Fire Management – Plans	
Structural fire management plan	M
Fire Management – Data	
Security and fire protection survey for museum collections	M
Interpretation and Education – Plans	
Update long-range interpretive plan (PMIS 196092)	M
Interpretation and Education – Data	
Conduct visitor survey (2015) to enhance visitor services and understanding (PMIS 156441)	M
Land Protection – Data	
Using BLM records, determine the location and terms of right-of-way grants	M
Determine extent of state and private land inholdings that encompass portions of the lava fields adjacent to the current preserve boundary	L
Visitor and Employee Safety – Plans	
Emergency operations plan (in process)	M
Update law enforcement needs assessment	M
Search and rescue plan	M
Continuity of operations plan	M
Fall protection plan	M
Potable water (operations and maintenance plan)	M
Physical security plan	L
Visitor and Employee Safety – Data	
Facility Management Software System (FMSS) comprehensive condition assessments	L

Part 3: Contributors

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Appendixes

Appendix A: Executive Order and Legislative Acts for Craters of the Moon National Monument and Preserve

Craters of the Moon National Monument was initially established by proclamation of President Calvin Coolidge in 1924 and is administered by the National Park Service. The Craters of the Moon National Wilderness Area was designated by Congress on October 23, 1970. The 661,287 acres of additional federal lands added to the monument by President William Clinton in 2000 (Presidential Proclamation No. 7373) had been managed by the Bureau of Land Management and hunting was permitted on these lands. Under this proclamation the National Park Service manages approximately 411,475 acres of the expansion area that contain nationally significant exposed lava flows while the Bureau of Land Management administers the remaining 273,488-acre portion of the expanded monument as a separate national monument that is part of the BLM National Landscape Conservation System. The 411,475-acre, NPS-managed portion of the monument expansion area was designated by Congress as a national preserve by the act of August 21, 2002.

Establishment of Craters of the Moon National Monument, May 2, 1924 (Presidential Proclamation No. 1694)(43 Stat. 1947)

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

May 2, 1924.

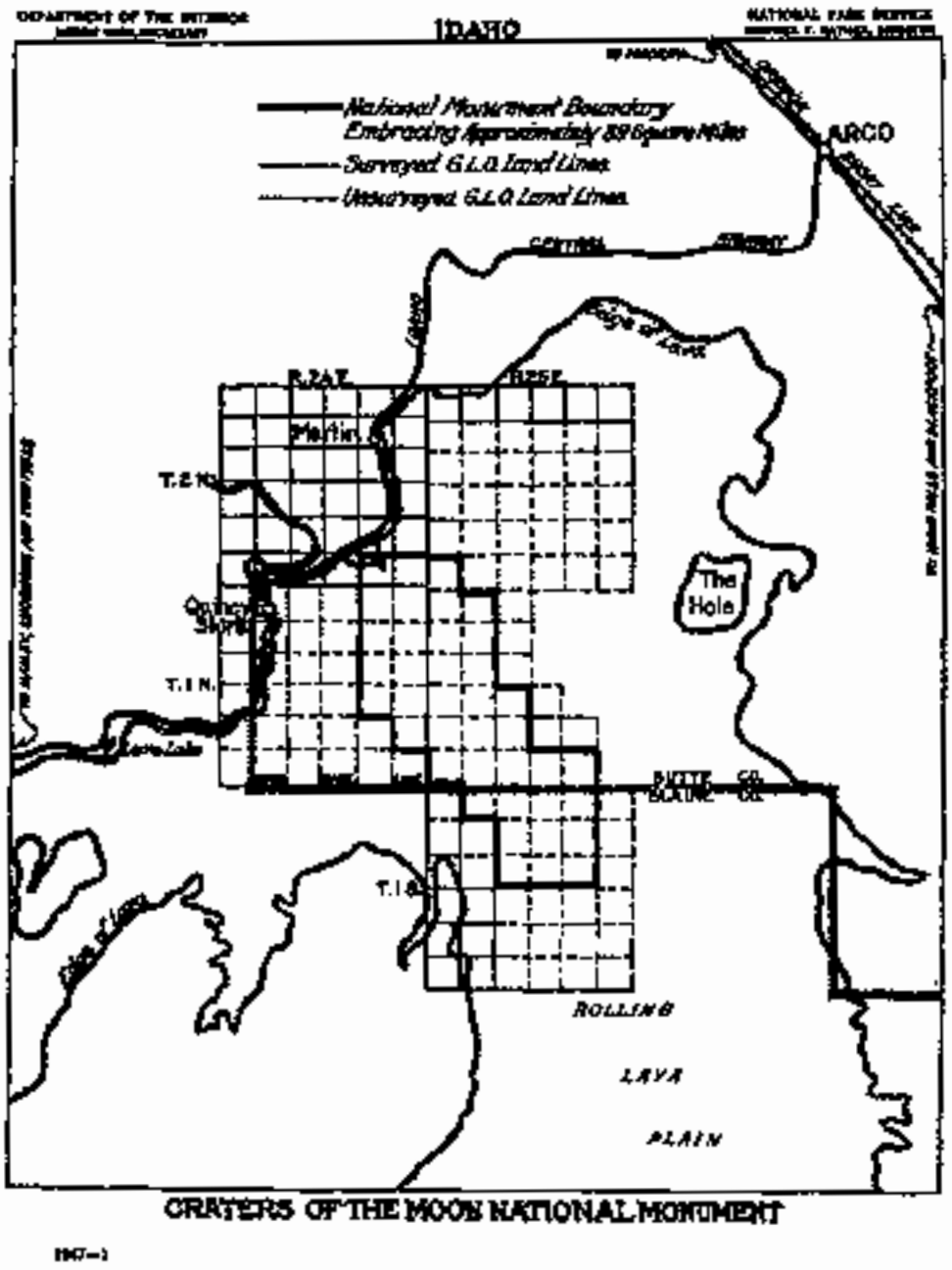
A PROCLAMATION

Craters of the Moon National Monument, Idaho. Proclamation.

WHEREAS, there is located in townships one south, one and two north, ranges twenty-four and twenty-five east of the Boise Meridian, in Butte and Blaine Counties, Idaho, an area which contains a remarkable fissure eruption together with its associated volcanic cones, craters, rifts, lava flows, caves, natural bridges, and other phenomena characteristic of volcanic action which are of unusual scientific value and general interest; and

WHEREAS, this area contains many curious and unusual phenomena of great educational value and has a weird and scenic landscape peculiar to itself; and

WHEREAS, it appears that the public interest would be promoted by reserving these volcanic features as a National Monument, together with as much land as may be needed for the protection thereof.


IDAHO
National Monument Boundary
Embracing Approximately 89 Square Miles
Surveyed G.L.O. Land Lines
Unsurveyed G.L.O. Land Lines
ARCO
R.24E.
R.25E.
Martin
T.2 N.
The Hole
T.1 N.
T.1 S.
ROLLING
LAVA
PLAIN
CRATERS OF THE MOON NATIONAL MONUMENT

1948 PROCLAMATIONS, 1924.

National Monument, Idaho. Vol. 34, p. 2225.

NOW, THEREFORE, I, Calvin Coolidge, President of the United States of America, by authority of the power in me vested by section two of the act of Congress entitled, "An Act for the preservation of American antiquities," approved June eighth, nineteen hundred and six (34 Stat., 225) do proclaim that there is hereby reserved from all forms of appropriation under the public land laws, subject to all valid existing claims, and set apart as a National Monument all that piece or parcel of land in the Counties of Butte and Blaine, State of Idaho, shown as the Craters of the Moon National Monument upon the diagram hereto annexed and made a part hereof.

Removal from withdrawal, etc.

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

Supervision, etc., by Director of National Park Service. Vol. 39, p. 535; Vol. 41, p. 796.

The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of this Monument as provided in the act of Congress entitled, "An Act to establish a National Park Service and for other purposes," approved August twenty-fifth, nineteen hundred and sixteen (39 Stat., 535) and Acts additional thereto or amendatory thereof.

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

DONE in the City of Washington this 2d day of May in the year of our Lord one thousand nine hundred and twenty-four and of the Independence of the United States of America the one hundred and forty-eighth.

[SEAL.]

CALVIN COOLIDGE

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

Designation of Craters of the Moon National Wilderness Area, October 23, 1970 (P.L. 91-504)(84 Stat. 1104)

Public Law 91-504

AN ACT

To designate certain lands as wilderness

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

DESIGNATION OF WILDERNESS AREAS WITHIN NATIONAL PARKS AND MONUMENTS

SEC. 2. In accordance with section 3(c) of the Wilderness Act (78 Stat. 890; 16 U.S.C. 1132(c)), the following lands are hereby designated as wilderness:

(a) certain lands in the Craters of the Moon National Monument, which comprise about forty-three thousand two hundred and forty-three acres and which are depicted on a map entitled

PUBLIC LAW 91-505—OCT. 23, 1970 84 STAT.

"Wilderness Plan, Craters of the Moon National Monument, Idaho", numbered 121-91,000 and dated March 1970, which shall be known as the "Craters of the Moon National Wilderness Area";

(b) certain lands in the Petrified Forest National Park, which comprise about fifty thousand two hundred and sixty acres and which are depicted on a map entitled "Recommended Wilderness, Petrified Forest National Park, Arizona", numbered NP-PF-3320 C and dated November 1967, which shall be known as the "Petrified Forest National Wilderness Area".

Approved October 23, 1970.

Boundary Enlargement of the Craters of the Moon National Monument, November 9, 2000 (Presidential Proclamation No. 7373)(114 Stat. 3418)

Proclamation 7373 of November 9, 2000

Boundary Enlargement of the Craters of the Moon National Monument

By the President of the United States of America

A Proclamation

The Craters of the Moon National Monument was established on May 2, 1924 (Presidential Proclamation 1694), for the purpose of protecting the unusual landscape of the Craters of the Moon lava field. This "lunar" landscape was thought to resemble that of the Moon and was described in the Proclamation as "weird and scenic landscape peculiar to itself." The unusual scientific value of the expanded monument is the great diversity of exquisitely preserved volcanic features within a relatively small area. The expanded monument includes almost all the features of basaltic volcanism, including the craters, cones, lava flows, caves, and fissures of the 65-mile-long Great Rift, a geological feature that is comparable to the great rift zones of Iceland and Hawaii. It comprises the most diverse and geologically recent part of the lava terrain that covers the southern Snake River Plain, a broad lava plain made up of innumerable basalt lava flows that erupted during the past 5 million years.

Since 1924, the monument has been expanded and boundary adjustments made through four presidential proclamations issued pursuant to the Antiquities Act (34 Stat. 225, 16 U.S.C. 431). Presidential Proclamation 1843 of July 23, 1926, expanded the monument to include certain springs for water supply and additional features of scientific interest. Presidential Proclamation 1916 of July 9, 1930, Presidential Proclamation 2499 of July 18, 1941, and Presidential Proclamation 3506 of November 19, 1962, made further adjustments to the boundaries. In 1996, a minor boundary adjustment was made by section 205 of the Omnibus Parks and Public Lands Management Act of 1996 (Public Law 104–333, 110 Stat. 4093, 4106).

This Proclamation enlarges the boundary to assure protection of the entire Great Rift volcanic zone and associated lava features, all objects of scientific interest. The Craters of the Moon, Open Crack, Kings Bowl, and Wapi crack sets and the associated Craters of the Moon, Kings Bowl, and Wapi lava fields constitute this volcanic rift zone system. Craters of the Moon is the largest basaltic volcanic field of dominantly Holocene age (less than 10,000 years old) in the conterminous United States. Each of the past eruptive episodes lasted up to several hundred years in duration and was separated from other eruptive episodes by quiet periods of several hundred years to about 3,000 years. The first eruptive episode began about 15,000 years ago and the latest ended about 2,100 years ago.

Craters of the Moon holds the most diverse and youngest part of the lava terrain that covers the southern Snake River Plain of Idaho, a broad plain made up of innumerable basalt lava flows during the past 5 million years. The most recent eruptions at the Craters of the Moon took place about 2,100 years ago and were likely witnessed by the Shoshone people, whose legend speaks of a serpent on a mountain who, angered by lightening, coiled around and squeezed the mountain until the rocks crumbled and melted, fire shot from cracks, and liquid rock flowed from the fissures as the mountain exploded. The volcanic field now lies dormant, in the latest of a series of quiet periods that separate the eight eruptive episodes during which the 60 lava flows and 25 cinder cones of this composite volcanic field were formed. Some of the lava flows traveled distances of as much as 43 miles from their vents, and some flows diverged around areas of higher ground and rejoined downstream to form isolated islands of older terrain surrounded by new lava. These areas are called "kipukas."

The kipukas provide a window on vegetative communities of the past that have been erased from most of the Snake River Plain. In many instances, the expanse of rugged lava surrounding the small pocket of soils has protected the kipukas from people, animals, and even exotic plants. As a result, these kipukas represent some of the last nearly pristine and undisturbed vegetation in the Snake River Plain, including 700-year-old juniper trees and relict stands of sagebrush that are essential habitat for sensitive sage grouse populations. These tracts of relict vegetation are remarkable benchmarks that aid in the scientific study of changes to vegetative communities from recent human activity as well as the role of natural fire in the sagebrush steppe ecosystem.

The Kings Bowl lava field and the Wapi lava field are included in the enlarged monument. The Kings Bowl field erupted during a single fissure eruption on the southern part of the Great Rift about 2,250 years ago. This eruption probably lasted only a few hours to a few days. The

field preserves explosion pits, lava lakes, squeeze-ups, basalt mounds, and an ash blanket. The Wapi field probably formed from a fissure eruption simultaneously with the eruption of the Kings Bowl field. With more prolonged activity over a period of months to a few years, the Wapi field formed a low shield volcano. The Bear Trap lava tube, located between the Craters of the Moon and the Wapi lava fields, is a cave system more than 15 miles long. The lava tube is remarkable for its length and for the number of well preserved lava-cave features, such as lava stalactites and curbs, the latter marking high stands of the flowing lava forever frozen on the lava tube walls. The lava tubes and pit craters of the monument are known for their unusual preservation of winter ice and snow into the hot summer months, due to shielding from the sun and the insulating properties of the basalt.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as an addition to the Craters of the Moon National Monument:

NOW, THEREFORE, I, William J. Clinton, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as an addition to the Craters of the Moon National Monument, for the purpose of protecting the objects identified above, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Craters of the Moon National Monument Boundary Enlargement" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 661,287 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument. For the purpose of protecting the objects identified above, the Secretary shall prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes.

Lands and interests in lands within the proposed monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The Secretary of the Interior shall prepare a transportation plan that addresses the actions, including road closures or travel restrictions, necessary to protect the objects identified in this proclamation.

The Secretary of the Interior shall manage the area being added to the monument through the Bureau of Land Management and the National Park Service, pursuant to legal authorities, to implement the purposes of this proclamation. The National Park Service and the Bureau of Land Management shall manage the monument cooperatively and shall prepare an agreement to share, consistent with applicable laws, whatever resources are necessary to manage properly the monument; however, the National Park Service shall have primary management authority over the portion of the monument that includes the exposed lava flows, and shall manage the area under the same laws and regulations that apply to the current monument. The Bureau of Land Management shall have primary management authority over the remaining portion of the monument, as indicated on the map entitled, "Craters of the Moon National Monument Boundary Enlargement."

Wilderness Study Areas included in the monument will continue to be managed under section 603(c) of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701-1782).

The establishment of this monument is subject to valid existing rights.

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Idaho with respect to fish and wildlife management.

This proclamation does not reserve water as a matter of Federal law. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation. The Secretary shall work with appropriate State authorities to ensure that water resources needed for monument purposes are available.

Nothing in this proclamation shall be deemed to enlarge or diminish the rights of any Indian tribe.

Laws, regulations, and policies followed by the Bureau of Land Management in issuing and administering grazing permits or leases on all lands under its jurisdiction shall continue to apply with regard to the lands in the monument administered by the Bureau of Land Management.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

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

IN WITNESS WHEREOF, I have hereunto set my hand this ninth day of November, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty-fifth.

WILLIAM J. CLINTON

Designation of the 411,475-acre, NPS-managed Portion of the Monument Expansion Area (Presidential Proclamation No. 7373) as a National Preserve, August 21, 2002 (P.L. 107-213)(116 Stat. 1052)

Public Law 107–213
107th Congress

An Act

Aug. 21, 2002
(H. R. 601)

To redesignate certain lands within the Craters of the Moon National Monument, and for other purposes.

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

16 USC 431 note.

SECTION 1. SPECIAL MANAGEMENT REQUIREMENTS FOR FEDERAL LANDS RECENTLY ADDED TO CRATERS OF THE MOON NATIONAL MONUMENT, IDAHO.

(a) REDESIGNATION.—The approximately 410,000 acres of land added to the Craters of the Moon National Monument by Presidential Proclamation 7373 of November 9, 2000, and identified on the map accompanying the Proclamation for administration by the National Park Service, shall, on and after the date of enactment of this Act, be known as the "Craters of the Moon National Preserve".

(b) ADMINISTRATION.—

(1) IN GENERAL.—Except as provided by paragraph (2), the Craters of the Moon National Preserve shall be administered in accordance with—

(A) Presidential Proclamation 7373 of November 9, 2000;

(B) the Act of June 8, 1906, (commonly referred to as the "Antiquities Act"; 34 Stat. 225; 16 U.S.C. 431); and

(C) the laws generally applicable to units of the National Park System, including the Act entitled "An Act to establish a National Park Service, and for other purposes", approved August 25, 1916 (16 U.S.C. 1 et seq.).

(2) HUNTING.—The Secretary of the Interior shall permit hunting on lands within the Craters of the Moon National Preserve in accordance with the applicable laws of the United States and the State of Idaho. The Secretary, in consultation with the State of Idaho, may designate zones where, and establish periods when, no hunting may be permitted for reasons of public safety, protection of the area's resources, administration, or public use and enjoyment. Except in emergencies, any regulations prescribing such restrictions relating to hunting shall be put into effect only after consultation with the State of Idaho.

Approved August 21, 2002.

LEGISLATIVE HISTORY—H. R. 601:

HOUSE REPORTS: No. 107-34 (Comm. on Resources).
SENATE REPORTS: No. 107-181 (Comm. on Energy and Natural Resources).
CONGRESSIONAL RECORD:
Vol. 147 (2001): May 1, considered and passed House.
Vol. 148 (2002): Aug. 1, considered and passed Senate.

Appendix B: Analysis of Fundamental and Other Important Resources and Values

Analysis of Fundamental Resources and Values

Fundamental Resource or Value	Geological Features and Processes
Related Significance Statements	• Directly related to 1, 2. • Indirectly related to 3, 4, 5, 6, 7.
Current Conditions and Trends	**Conditions** • Most geologic features are undisturbed and in excellent condition and occur within the pristine management zone identified by the monument management plan (2006). • Specific sites exist where particular features may be in less than excellent condition (e.g., spatter cones that have historically seen a lot of visitor use, Big Craters, Inferno Cone, areas adjacent to North Crater Flow Trail, and Cave Area trail). • A few features have been destroyed by past visitor impacts, such as Devil's sewer. • Some sites along U.S. 20/26/93 have been excavated for lava rock (within the boundary of the preserve); these areas total less than one-quarter acre combined. • Kings Bowl caves have been closed since 2011 to comply with NPS policy and mitigate safety issues. • In a few cases, small and/or accessible lava bombs and other basalt rocks have been removed by people. • Outside of areas that are easily accessible, the condition of the geologic features is excellent. **Trends** • Ice deposits in the Crystal Ice Cave and many other caves are being affected by climate change. • Natural erosion and weathering continue to occur. • Geologic features are fairly static in the immediate future, with little obvious change.

Fundamental Resource or Value	Geological Features and Processes
Threats and Opportunities	**Threats** • Unauthorized, primarily small-scale collection of more portable geologic features, and in some cases, undocumented large-scale removal of features. The park has no evidence that any large scale removal has taken place since 2000. • Access to geologic features allows for human-caused disturbances. • Off-highway vehicle or all-terrain vehicle use. • Vandalism to the features by visitors (e.g., chipping rock material, graffiti, chucking rocks). • Use of the Idaho Transportation Department material sites/borrow areas—the department has held legal rights to these areas since the 1940s but hasn't used these rights since 2000. • Climate change poses a major threat to ice deposits in caves. In some cases, water holes (often snow deposits) that used to exist have already been lost. **Opportunities** • Potential land acquisition and land transfer for the northern part of the Great Rift that extends into the Lava Creek watershed, including Black Cap, currently outside park. • Monument management plan (2006) goals include working toward a land exchange with Idaho for state lands, some of which extend into lava flows and would become part of the preserve rather than the BLM monument. • Work with Idaho Transportation Department to acquire rights to borrow areas. • Continue Superintendent's Compendium closures to protect geologic features. • Complete planned North Crater Flow Trail improvements. • Complete planned Lava Flow Campground improvements. • Conduct additional inventory and monitoring of geologic features. • Partner for new geologic research (e.g., U.S. Geological Survey, universities, nongovernmental organizations). • Expand interpretation and education about geologic resources, such as by giving resource protection orientation to all visiting groups. • Expand Teacher-Ranger-Teacher program to increase teacher involvement with the park. • Continue Stay on Trails program, focused on reducing visitor use impacts adjacent to trails. • Increase law enforcement patrols to detect and deter collection of rocks. • Increase law enforcement and hunting patrols to detect off-road vehicle use.
Data and/or GIS Needs	• Expanded cave inventory, including a survey (current project). • Data concerning extent of visitor impacts on geologic features at popular visitor areas, including Kings Bowl and Crystal Ice Cave (could include trail counters/traffic counters). • Data concerning extent of visitor impacts on geologic features at Wapi (off-highway vehicle trespass)—currently have an inventory in areas where repeated off-highway vehicle use is occurring but need additional information about who is using and why. • Additional GIS data for geologic features, such as in Kings Bowl.
Planning Needs	• Cave management plan. • Resource stewardship strategy. • Development concept plan for Kings Bowl.

Fundamental Resource or Value	Geological Features and Processes
Laws and Policies That Apply to the FRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • Superintendent's Compendium enacts closures of portions of geologic areas and caves, including Spatter Cones, Big Craters, and North Crater Flow area • NPS policy to screen visitors to enter caves • State statute in Idaho that protects cave features (Idaho Code 18-7035) • Federal Cave Resources Protection Act of 1988 (FCRPA) • 36 CFR § 2.1—prohibits possessing, destroying, or disturbing mineral resources in park units • NPS *Natural Resource Management Reference Manual 77* • NPS *Management Policies 2006* (§ 4.1, 4.8, 4.8.2, 4.8.2.4) **NPS Policy-level Guidance** • Craters of the Moon National Monument and Preserve's 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 the 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 • The National Park Service manages to perpetuate the natural systems associated with the caves and karst such as drainage patterns, air flows, mineral deposition, and plant and animal communities. Wilderness and cultural resource values will also be protected.

Fundamental Resource or Value	Opportunities for Scientific Research and Education
Related Significance Statements	Related to all significance statements.
Current Conditions and Trends	**Conditions** • The park has a research permit system (servicewide) in place, and the number of permits issued annually varies. • The park partners with other agencies for research (e.g., cave inspection and pine beetle research with the U.S. Forest Service [USFS], Natural Resource Conservation Service, Bureau of Land Management, U.S. Geological Survey, Idaho Department of Fish and Game, etc.) • Inventory and monitoring of vital signs for pika, bats, limber pine, aspen, and others with the NPS Upper Columbia Basin Network. • The park conducts teacher workshops for college credit through a partnership with Boise State University and the College of Southern Idaho. • Teacher-Ranger-Teacher program is in its second year at the park and ongoing. • The park hosts field trips from local schools, universities, home schools, and scout troops, which number 3,000–4,000 children per year. • New partnerships with College of Southern Idaho and the National Park Foundation have led to a new inquiry based education program. **Trends** • Increasing opportunities for scientific and educational research partially through increased park partnerships.
Threats and Opportunities	**Threats** • Funding is limited for scientific research and education. • Staff time to manage research and educational program is limited. • Remote location of the park and distance from schools makes travel to the park difficult. • Time constraints for school districts and teachers make field trips less frequent. • Shrinking research budgets for universities and other agencies limit work they perform with the park. **Opportunities** • Create a research prospectus in order to identify areas needed for studies and help link other people's research toward park objectives. • Partnership with College of Southern Idaho that facilitates in-service and pre-service teachers in the park for inquiry-based learning. • Continue working with Idaho State University on a new education plan that analyzes current offerings and suggests new directions for education in the park. This effort involves an advisory team composed of teachers. • Expand the Teacher-Ranger-Teacher program to create curriculum-based products. • Continue developing the park's citizen science program. • Conduct a Bioblitz in the future to help inventory insects in the park. • Continue development of Craters of the Moon-specific wildlife and plant apps. • Revamp the resource management exhibit in the visitor center to include a focus on wilderness, feature current resource issues, and to be more understandable to the general public.

Fundamental Resource or Value	Opportunities for Scientific Research and Education
Data and/or GIS Needs	• Bat inventory and habitat assessment. • Status of species most impacted by changes in native plant communities. • Inventories of natural resources not targeted by vital signs inventory and monitoring.
Planning Needs	• Research prospectus to identify needed research in the park. • Climate change adaptation vulnerability assessment. • Update long-range interpretive plan (2007).
Laws and Policies That Apply to the FRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • National Parks Omnibus Management Act of 1998, Title II—National Park System Resource Inventory and Management • Director's Order 6: Interpretation and Education • NPS *Management Policies 2006* (§ 2.3.1.4, 4.2, 5.1, 6.3.6, 7.1) **NPS Policy-level Guidance** • A Call to Action initiatives: 2–"Step by Step," 6–"Take a Hike," 7–"Next Generation Stewards," 15–"Class Act," 16–"Live and Learn," 17–"Go Digital," 18–"Ticket to Ride" • 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. • Interpretive and educational services/programs at the park facilitate intellectual and emotional connections between visitors and park resources, foster understanding of park resources and resource stewardship, and build a local and national constituency. Outreach programs through schools, organizations, and partnerships build connections to the park. Curriculum and place-based education inspire student understanding and resource stewardship. Visitors receive adequate information to orient themselves to the park and opportunities for a safe and enjoyable visit. Pretrip information is available for visitors to plan a rewarding trip.

Fundamental Resource or Value	Combined Analysis Table for: Sagebrush Steppe Ecosystem and Kipukas
Related Significance Statements	Directly related to 3, 4. Indirectly related to 5, 7.
Current Conditions and Trends	**Conditions** • Sagebrush steppe ecosystems and kipukas within the park are largely intact, but some nonnative invasive plants have become established, particularly annual cheatgrass. • Fires have occurred that have converted some of the sagebrush to cheatgrass, with cheatgrass becoming more dominant at drier and lower elevations. • New invasive species, such as rush skeletonweed, have been recently discovered and are rapidly spreading across the park. • More than 300 kipukas have been qualitatively inventoried, with a range of poor to good ecological integrity documented. • A vegetation map of the park was produced in 2009. • The park includes four research natural areas (Carey Kipuka, Brass Cap, Big Juniper, and Sand Kipuka research natural areas) that are designated for long-term value as scientific reference areas. Three of these research natural areas were formerly managed by the Bureau of Land Management and are currently managed by the National Park Service. • A portion of the low sagebrush areas in the park in the North End, Carey Kipuka, and Brass Cap Kipuka areas are nominated as a National Natural Landmark. • Some species, such as bighorn sheep, bison, and grizzly bear, have been extirpated from the area. **Trends** • Monitoring data have been collected for some species, such as mule deer, birds, and pikas, as well as for sagebrush steppe vegetation. However, except for birds and mule deer, the extent of the data does not allow for interpretation of trends. • Vegetation type conversion, such as from sagebrush steppe to invasive annual grasslands, is occurring, largely following wildfires. • Breeding bird surveys show that bird populations are generally stable.
Threats and Opportunities	**Threats** • Sagebrush steppe is threatened by nonnative invasive plants and changes in fire frequency and size. • Current and projected climate changes are predicted to result in major changes to vegetation community types and wildlife habitats. • Off-road vehicle use is damaging resources. • Hunting is authorized in the preserve, but the National Park Service lacks information on numbers of hunters and the numbers of animals taken. **Opportunities** • Sagebrush steppe inventory and monitoring protocol implementation is in its second year and will continue. • Plant restoration techniques are being tested for efficacy. • An aggressive invasive plant management program is being coordinated with the Bureau of Land Management and local Coordinated Weed Management Areas. • Additional education and research could be undertaken regarding the sagebrush steppe ecosystem and kipukas.
Data and/or GIS Needs	• Pygmy rabbit survey. • Sage grouse use and seasonal distribution. • Expand upon kipukas inventory. • Mapping the distribution of cheatgrass and other nonnative invasive plants over time. • Invertebrate inventory.

Fundamental Resource or Value	Combined Analysis Table for: Sagebrush Steppe Ecosystem and Kipukas
Planning Needs	• Cave management plan. • Wildland fire management plan. • Resource stewardship strategy. • State of the Park report.
Laws and Policies That Apply to the FRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • Idaho State Noxious Weed law • Clean Air Act of 1963, as amended (42 USC 7401 et seq.) • Clean Water Act of 1972, as amended • Endangered Species Act of 1973 • Executive Order 13112, "Invasive Species" • Federal Noxious Weed Act of 1974, as amended • National Invasive Species Act of 1996 • NPS *Management Policies* 2006 (§ 4.1.5, 4.4.2.4, 4.4.1, 4.4.2, 4.7.2) • Wilderness Act of 1964 • Secretarial Order 3289, "Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources" **NPS Policy-level Guidance** • The National Park Service maintains all native plants and animals as parts of the park's natural ecosystems. • Natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations are preserved 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 park's native plants and wildlife are identified early and proactively addressed through inventory and monitoring. • Sources of air, water, and noise pollution, as well as visitor uses adversely affecting plants and animals, are limited to the greatest degree possible. • Visitors and staff recognize and understand the value of the park's native plants and wildlife. • NPS staff uses the best available scientific information and technology to manage these resources. • Federal- and state-listed threatened and endangered species and their habitats are protected and sustained. Park staff works to minimize the introduction of nonnative species and provides for their control and removal to minimize the economic, ecological, and human health impacts that these species cause. • The National Park Service is to reexamine its approaches to park management and consider what climate change means for its responsibilities to determine desired natural, cultural, and experiential conditions and address the inevitable movement, loss, or gain of species associated with parks. Although "natural conditions" may be difficult to characterize and ineffective as a guide for desired conditions, traditional practices targeted to maintain "natural conditions" in parks (e.g., removing invasive species and other stressors, maintaining natural processes, supporting biodiversity and landscape connectivity, and continuing to build and support system resilience) remain viable management strategies consistent with the NPS need to adapt to climate change.

Fundamental Resource or Value	Life on the Lava
Related Significance Statements	Directly related to 3, 4. Indirectly related to 1, 2, 5.
Current Conditions and Trends	**Conditions** • The park is in the fourth year of monitoring related to understanding pika presence and occupancy. • The park is in the third year of baseline monitoring of limber pines. There is an isolated infestation of white pine blister rust on the north end of the park, and a low level of mountain pine beetle. The attempts in the 1960s to control mistletoe, while perhaps misguided, do not appear to have negatively affected the population in any lasting way. • The park has one year of hibernacula search data for bats, but as a whole, much is still unknown. • Breeding bird surveys show that populations are stable. • The University of Idaho performed a study on landscape-level vegetation change using comparative photos. • A number of juniper and limber pine trees on the lava fields were removed during the early 20th century, possible for firewood; juniper woodlands are more prevalent in the southern portion of the preserve. • Juniper trees up to 700 years old are identified in the expansion legislation and are among the oldest in Idaho. • "Life on the Lava" is one of the park's currently active education programs. • Some species, such as bighorn sheep, bison, and grizzly bear, have been extirpated from the area. **Trends** • Limber pines are generally in stable condition. • Mule deer populations have greatly declined. • Cinder gardens are considered in stable condition. • While wolf, moose, and porcupine are considered rare mammals for this area, they have returned to the park and surrounding area. • Wolves not seen in the area for 85 years have recently been documented in the park.
Threats and Opportunities	**Threats** • Spread of nonnative white pine blister rust poses a serious risk to limber pine. • Climate change impacts, in addition to ongoing stressors such as excess nitrogen deposition, could negatively affect some species, such as pikas, and vegetation through recently observed conditions, such as higher temperatures, reduced snow cover, increases in insect pests, and reduced availability of water. • Highway traffic, particularly an increase in heavy truck traffic, is probably having adverse impacts on wildlife movement and increasing road kill. • Several wildlife species including coyotes, ravens, and marmots are considered predatory or nonprotected by Idaho and are subject to unlimited hunting in the preserve. • Off-road vehicle use damages both plants and animals. • Pronghorn migration and other wildlife may be impacted by fencing and development along migration corridor. • Wildfires increased frequency and size.

Fundamental Resource or Value	Life on the Lava
Threats and Opportunities	**Opportunities** • Acoustic monitoring for bats began in 2013, and will be expanded by the park in coordination with the NPS Upper Columbia Basin Network Inventory and Monitoring Program. • Continue using the "White Nose Syndrome Response Plan Craters of the Moon National Monument and Preserve" (2012) to guide park management to protect bat populations. • Dendrochronology research project may provide additional data regarding ages of limber pine trees and paleoclimate. • Continue working with Idaho Transportation Department to add wildlife crossing signs, change the speed limit on the highway, and pursue mitigations for wildlife including the feasibility of a wildlife undercrossing for the antelope migration corridor. • Acquire data from Idaho Department of Fish and Game about take from hunting and trapping in the preserve. • Acquire information needed to understand how best to protect the limber pine ecosystem from white pine blister rust and climate change impacts. • Continue game cameras and counting of pronghorn migration in the north end in spring and fall. • Reintroduction of bighorn sheep. • Reintroduction of peregrine falcon. • Finish the "Pikas in Peril" vulnerability assessment project for climate change. • Continue partnering with nonprofit land trusts in the area to ensure connectivity between the park and surrounding areas. • Increase law enforcement and hunting patrols to detect and deter off-road vehicle use and hunting violations.
Data and/or GIS Needs	• Study the impact of highway traffic on visitor experience and wildlife. • Inventory wildlife migration/movement barriers in and out of park. • Vulnerability assessment of limber pine in the face of predicted changes in climate. • Develop science-based desired conditions for high-priority species / trigger points for management action. • Rare plant inventory (update existing).
Planning Needs	• Resource stewardship strategy. • Climate change risk assessment or adaptation vulnerability assessment. • Wildland fire management plan. • Cave management plan (in development). • State of the Park report.
Laws and Policies That Apply to the FRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • Superintendent's Compendium cave closures to protect bats • Additionally, see "Laws and Policies that Apply to the FRV" for the "Sagebrush Steppe Ecosystem and Kipukas" **NPS Policy-level Guidance** • See "NPS Policy-level Guidance" for the "Sagebrush Steppe Ecosystem and Kipukas"

Fundamental Resource or Value	Wilderness Character
Related Significance Statements	Directly related to 5,6.
Current Conditions and Trends	**Conditions** • Integrity of wilderness character remains high overall. • Some areas of wilderness are in proximity to developments outside of wilderness that negatively affect opportunities for solitude within the wilderness due to the sight and in some cases sound of agricultural fields, irrigation structures, power lines, rail lines, and highways. • Recreational use of wilderness and wilderness study areas remains very low, resulting in few recreational impacts and allowing greater opportunities for solitude and unconfined recreation. • Nonnative invasive plants, including several state-listed noxious weeds and cheat grass, have infested remote areas of wilderness and have resulted in negative impacts on natural conditions by displacing native plants and degrading wildlife habitat. **Trends** • Most indicators related to undeveloped character and opportunities for solitude and unconfined recreation are stable. • Natural conditions are stable with the exception of expanding nonnative invasive plants in some areas. • Development or changes in land use adjacent to wilderness has been stable, although some developments, such as electrical transmission lines have been proposed. • Increased traffic on U.S. 20/26/93 has greater impact on natural sounds and dark night skies within nearby portions of wilderness.
Threats and Opportunities	**Threats** • A warming climate threatens many aspects of the natural condition of wilderness character, such as sagebrush steppe, pika, aspen, limber pine, and cave ice. • Sixty miles of recommended wilderness boundaries are adjacent to private land and future changes in land use could result in negative impacts to wilderness character. • Nonnative invasive plants, including several state-listed noxious weeds and cheat grass, have spread into remote areas of wilderness and have the potential to spread further with resulting negative impacts on natural conditions. **Opportunities** • A wilderness stewardship plan can help define important elements of wilderness character and strategies to preserve them. • The 50th anniversary of the Wilderness Act provides opportunities to educate visitors to the wilderness resource preserved at Craters of the Moon. • A viewshed analysis can identify key view points within wilderness and vulnerable landscape views outside of wilderness.
Data and/or GIS Needs	• Data concerning extent of visitor impacts on geologic features at Wapi (off-highway vehicle trespass)—currently have an inventory in areas where repeated off-highway vehicle use is but need additional information about who is using and why.
Planning Needs	• Viewshed analysis. • GIS of large-scale infrastructure outside of wilderness boundary—this would allow analysis of viewshed impacts. I&M monitoring of land use protocol (not yet developed) could be expanded to viewshed analysis. • Include land use/ land cover mapping. • Status of nonnative invasive plants.

Fundamental Resource or Value	Wilderness Character
Planning Needs	• Status of species most impacted by changes in native plant communities due to wildfire and nonnative invasive species. • Wilderness stewardship plan – includes possible joint NPS-BLM wilderness study area. • Climate change risk assessment adaption-vulnerability assessment. • Wildland fire management plan. • Resource stewardship strategy.
Laws and Policies That Apply to the FRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • NPS *Management Policies 2006* • Director's Order 28: *Cultural Resource Management* • Director's Order 41: *Wilderness Stewardship* • Wilderness Act of 1964 **NPS Policy-level Guidance** • The National Park Service manages wilderness areas, including those proposed for wilderness designation, "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 of 1964 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 of 1964 specifies that the 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 that have been included within wilderness 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 as wilderness. • Present and future visitors enjoy the unique qualities offered in wilderness. These include the experiences of solitude, remoteness, risk, challenge, self-sufficiency, discovery, and observation of an untrammeled 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 done using techniques and types of equipment necessary to ensure that impacts on wilderness resources and character are minimized. • Ongoing communication about wilderness management policies and projects is maintained with partnering agencies and work will continue to be done with other local and regional groups, communities, agencies, and tribal governments to preserve wilderness values. • The primary qualities that define wilderness character (untrammeled, undeveloped, naturalness, solitude or primitive and unconfined recreation, and other) are monitored and are protected and managed as required.

Fundamental Resource or Value	Clean Air and Unobstructed Views
Related Significance Statements	Directly related to 6. Indirectly related to 3, 4, 7.
Current Conditions and Trends	**Conditions** • Current vistas from the park range from nearly pristine to somewhat modified due to the existence of roads, utilities, and agricultural development visible from some viewpoints. • Vistas are obscured by pollution consisting of fine particles in the air called regional haze. • Overall condition of air quality warrants moderate concern for ozone, visibility, and nitrogen deposition. **Trends** • Park air quality remained relatively unchanged (no statically significant trend) for ozone and nitrogen deposition for the most recent 10-year period analyzed (2000–2009). However, both ozone and nitrogen deposition are a moderate concern at the park. • Climate change projections indicate reduced air quality visibility due to smoke from wildland fires, which could result in a short-term increase in fugitive windblown dust. • Views remain static because there has been little development to present.
Threats and Opportunities	**Threats** • Potential for transmission towers and lines outside of park boundary. Projects are proposed at the southeastern part of park (Mountain States Transmission Intertie [MSTI] Project and Gateway West Transmission Line Project). • Other energy projects, such as oil, gas, solar power, or wind energy are not very likely as preliminary research indicates that there are limited resources in proximity to the park. • Potential for cell phone tower development in the headquarters area / U.S. 20/26/93 corridor has been proposed by three different cell phone companies. • Regional pollution sources, located some distance from the park, can pose a threat to park resources including visibility and vegetation communities that are sensitive to nitrogen deposition or plant species that are sensitive to high ozone levels. Currently, there are no large air pollution sources adjacent to the park. **Opportunities** • Under the Clean Air Act, states must submit a haze reduction plan to ensure that Class I areas are not degraded. Idaho is in the process of developing a plan. The NPS Air Quality Resource Division is consulting with them. This is an opportunity to ensure that the plan adequately protects air quality and visibility at the park. • Partner with Peaks to Crater Scenic Byway to expand interpretation along U.S. 20/26/93. • Continue to educate visitors through exhibits and interpretation programs. • Greening of the Parks program provides information to visitors, as well as the Climate Friendly Parks Program titled "Do Your Part." • Work with other stakeholders, including state air regulatory agencies, county governments, the Environmental Protection Agency, and nonprofit groups regarding land use proposals and air quality concerns, as appropriate. • Work with the Bureau of Land Management in approving plans outside of park boundary, such as reviewing proposals for greenstripping, water storage tanks, transmission lines, and other visual obstructions outside of park boundary.

Fundamental Resource or Value	Clean Air and Unobstructed Views
Data and/or GIS Needs	• Viewshed analysis: would need to be ongoing (also referred to as visibility analysis). This would include analysis within the park developed area and visitor viewpoints, both internal vistas within park and to vistas extending outside of park. • Identify integral vistas (as identified in the Clean Air Act).
Planning Needs	• Resource stewardship strategy. • Wilderness stewardship plan.
Laws and Policies That Apply to the FRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • Clean Air Act of 1963, as amended (42 USC 7401 et seq.) • NPS *Natural Resource Management Reference Manual 77* • NPS *Management Policies 2006* (§ 4.7.1) **NPS Policy-level Guidance** • Air quality in Craters of the Moon National Monument and Preserve 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 Craters of the Moon National Monument and Preserve are clear and demonstrate progress towards national visibility goals. • NPS management and visitor service activities promote conservation of excellent air quality, including healthful indoor air quality in NPS and concession facilities. • Views from Craters of the Moon National Monument and Preserve 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.

Fundamental Resource or Value	Past and Present Human Connections to a Harsh Volcanic Landscape
Related Significance Statements	Direct related to 7. Indirectly related to 1, 4, 6.
Current Conditions and Trends	**Conditions** • Visitor facilities are in good condition and are stabilized. Facilities are well-maintained and staff are friendly and knowledgeable, making the visitors feel welcome. Visitors have expressed appreciation for the relaxed, easily accessible trails to the lava/landscape, which allows for opportunities to ponder and experience new first-hand connections. • "Stay on Trails" campaign has been successful. • Off-trail areas have been stabilized (areas such as walking trails at spatter cones). Trails are better-defined, which helps encourage visitors to stay on trails. • Interpretive exhibits and waysides are in overall fair condition. Media such as newsletters and digital media (Flickr, YouTube, Facebook) is used to connect visitors with interpretative themes. Park uses historic photos, trivia questions, etc., to engage the public. • Goodale's Cutoff is in good condition, but documentation needs to be done. • Access to sites varies with two extremes: a small part of the park in the developed zone within the loop area (from the monument management plan) has very good access, while almost all of the caves (except for five caves in the developed zone) are closed to the public to protect fragile resources. For example, Crystal Cave is currently closed, but there is visitor interest in seeing the site first-hand. Accommodating visitation is problematic. Off-site interpretation, such as wayside exhibits, is used instead. • Shoshone-Bannock Tribes access is good, and they appear to come to the park on a regular basis. • Little information on sacred sites or traditional use and gathering by American Indians is documented and there are no identified traditional cultural properties. • Known archeological sites are rated in fair to good condition. Those sites rated as fair have deteriorated due primarily to natural weathering processes. Human impacts have only been documented at two sites. • Mission 66 complex is in good condition. • Interpretation of archeological sites is done minimally because they're not that accessible and specific sites are not a major part of the interpretative program. • Of the two historic log structures, one is good condition and one is in fair/stable condition. • Historical information is in fair condition because certain aspects are lacking and need updating. Not a lot is known about the extent of the historic livestock grazing and sheep driving that happened in the kipukas and lava flows. • Wilderness designation as a human value at the park allows people to experience it in its pure form. Though the wilderness area is minimally used, there is good access to the wilderness boundary and the wilderness sees mostly day use. • Man-made landscape features such as historic troughs, rock cairns, and developed water holes remain on the landscape, and they serve as features to foster human connections. • Archeological documentation is poor; only 50 sites have been fully documented in the park.

Fundamental Resource or Value	Past and Present Human Connections to a Harsh Volcanic Landscape
Current Conditions and Trends	**Trends** • Accessibility, ability to physically reach the park, and access areas has not changed. • Accessibility to information is improving due to increased use of digital media and online information that is updated daily. Detailed park information, such as scientific reports or a wildflower smart phone application, is now available. • Visitation is static, about 200,000 per year. More local visitors than in the past. • Accessibility to historic and archeological sites is static, unchanging. • Condition of cultural resources is static in the short term. • Shoshone-Bannock Tribes access is static, unchanging. The park continues to make efforts to reach out. Visitation appears to be regular, but accurate visitation or interest is not known.
Threats and Opportunities	**Threats** • Lack of information on archeological sites in the wilderness and wilderness study areas. Only 50 sites have been fully documented in the park. • Lack of NPS presence. All of the park staff works at the north end, and they don't make it to Kings Bowl regularly. Much of the park doesn't have park staff regularly patrolling and monitoring for visitor and resource protection, and for interpretation. • Lack of information on historic periods. • Lack on inventory concerning visitor impacts on all cultural resources. Vandalism, such as looting, may be occurring, but the extent is not well known. • Interpretive signs are being damaged, such as by gunshots. • Increased traffic on the highway impacts soundscape, interferes with the ability to ponder the landscape. **Opportunities** • Improve partnerships with gateway communities, schools, pioneer alliance, and other land managers. • Provide cellular service to improve digital technology and informational media (while minimizing viewshed impacts), such as program schedules and mapping; digital waysides. • Better use of the 24 miles of U.S. 20/26/93 to engage and expose visitors to the monument more. • Display views on an interpretive panel to demonstrate landscape. • Increase law enforcement and hunting patrols to detect off-road vehicle use and hunting violations. • Design, construct, and install park main entrance signs. • Develop interpretive auto guide for preserve and BLM monument.
Data and/or GIS Needs	• Section 110 inventory. • Cultural resources condition assessment. • Archeological survey of the Carey and Brass Cap kipukas. • Conduct visitor survey (2014) to enhance visitor services and understanding.
Planning Needs	• Resource stewardship strategy. • Expanded archeological overview and assessment. • Ethnographic overview and assessment. • Emergency operations plan. • Continuity of operations plan.

Fundamental Resource or Value	Past and Present Human Connections to a Harsh Volcanic Landscape
Planning Needs	• Structural fire plan. • Search and rescue plan. • Physical security plan. Volcanic hazards analysis and response plan. • Update long-range interpretative plan (2007). • Kings Bowl design concept plan. • Goodale's Cutoff cultural landscape inventory, with treatment options. • Potable water operations and maintenance plan. • State of the Park report. • Administrative history addendum.
Laws and Policies that Apply to the FRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • NPS *Management Policies 2006* • NPS *Museum Handbook*, parts I, II, and III • 36 CFR 79 "Curation of Federally-Owned and Administered Archeological Collection" • 36 CFR 800 "Protection of Historic Properties" • *The Secretary of the Interior's Standards for Archeological Documentation* • *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* • *The Secretary of the Interior's Standards for the Treatment of Historic Properties* • National Historic Preservation Act of 1966, as amended (16 USC 470) • Antiquities Act of 1906 • Archeological and Historic Preservation Act of 1974 • Archaeological Resources Protection Act of 1979 • American Indian Religious Freedom Act of 1978 • Historic Sites Act of 1935 • Museum Act of 1955, as amended • Native American Graves Protection and Repatriation Act of 1990 • Director's Order 24: *Museum Collections* • Director's Order 28: *Cultural Resources Management* • Director's Order 28A: Archeology; Native American Graves Protection and Repatriation Act • Executive Order 13007, "American Indian Sacred Sites" • Executive Order 11593, "Protection and Enhancement of the Cultural Environment" • Programmatic Agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (2008) • Director's Order 41: *Wilderness Stewardship* • Wilderness Act of 1964

Fundamental Resource or Value	Past and Present Human Connections to a Harsh Volcanic Landscape
Laws and Policies that Apply to the FRV, and NPS Policy-level Guidance	**NPS Policy-level Guidance** • Cultural landscapes are preserved with their attendant significant physical attributes, biotic systems, and uses (when those uses contribute to historical significance). • Cultural resources that have been included within wilderness 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. Historic structures are inventoried and their significance and integrity are evaluated under National Register of Historic Places criteria. • 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 *The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (unless it is determined through a formal process that disturbance or natural deterioration is unavoidable). • 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. • 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 tribes, Idaho state historic preservation officer and the Advisory Council on Historic Preservation, as appropriate, is conducted. • 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 the Craters of the Moon landscape. • 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.

Analysis of Other Important Resources and Values

Other Important Resource or Value	Goodale's Cutoff
Current Conditions and Trends	**Conditions** • Listed in National Register of Historic Places. • Unimproved road with native surface. • Of the 2.7 miles on NPS lands, 2.5 miles are open to motor vehicle traffic, none open to public motorized use, entirely within the Primitive Zone (monument management plan 2006). • Additional miles of the Goodale's route form the boundary of the preserve and BLM monument. **Trends** • Stable, little change in the trail's environmental setting.
Threats and Opportunities	**Threats** • Looting and theft of historic and pre-contact artifacts. **Opportunities** • An NPS study is under way to determine whether Goodale's Cutoff should be added to the Oregon National Historic Trail.
Existing Information about the OIRV	• *Historic Context Statements, Craters of the Moon*, 1995. • *Emigrant Trails of Southern Idaho,* 1993. • *Jefferies Cutoff: Idaho's Forgotten Trail Route,* 1995. • National Register of Historic Places nomination for Goodale's Cutoff, 1974.
Data and/or GIS Needs	• Archeological survey of Goodale's Cutoff.
Planning Needs	• Goodale's Cutoff cultural landscape inventory (including treatment options).
Laws and Policies that Apply to the OIRV, and NPS Policy-level Guidance	**Laws and Policies that Apply to the OIRV** • See "Laws and Policies that Apply to the FRV" for "Past and Present Human Connections to a Harsh Volcanic Landscape" **NPS Policy-level Guidance** • See "NPS Policy-level Guidance" for "Past and Present Human Connections to a Harsh Volcanic Landscape"

Other Important Resource or Value	Pronghorn Migration Corridor
Current Conditions and Trends	**Conditions** • Monitoring of pronghorn migrating through Craters of the Moon National Monument and Preserve at Pronghorn Pass begun in 2012, indicating a baseline migratory population of approximately 300 animals. • Two miles of sheep fencing across migration corridor was removed or replaced with wildlife compatible design (2009–2012) to reduce impediments to pronghorn and other wildlife movement. **Trends** • No trend data available yet on migrating pronghorn. • In recent years additional conservation easements on private lands along the corridor have established development restrictions which should enhance long-term corridor protection for migrating pronghorns.
Threats and Opportunities	**Threats** • Development of roads, fences, housing, etc. along migration corridor. • Increase in vehicle traffic on roads crossing the migration corridor. **Opportunities** • Collaborate with Pioneer Alliance and others in efforts to protect viability of migration corridor. • Inform public of the significance of long-distance wildlife migration corridors. • Factor migration corridor into any planning for public use on North End. • *A Call to Action* initiative #22 "Scaling UP" promotes NPS involvement in large landscape conservation.
Existing Information about the OIRV	• Migration studies by Wildlife Conservation Society. • Pronghorn Pass monitoring data using cameras.
Data and/or GIS Needs	• Continue monitoring at Pronghorn Pass to provide trend data. • Map extent of migration corridor through monument(s) and preserve in GIS. • Inventory wildlife migration barriers into and out of the park.
Planning Needs	• Resource stewardship strategy. • State of the Park report. • Climate change scenario planning.
Laws and Policies that Apply to the OIRV, and NPS Policy-level Guidance	**Laws and Policies that Apply to the OIRV** • P.L. 107-213 authorizes hunting in the preserve • Idaho Fish and Game Regulations for hunting pronghorn in the preserve • NPS *Management Policies 2006*; 4.4.1.1 "Animal Population Management" and 4.4.3 "Harvest of Animals by Public" • Additionally, please see "Laws and Policies that Apply to the FRV" for "Life on the Lava," "Sagebrush Steppe Ecosystem and Kipukas" **NPS Policy-level Guidance** • Additionally, please see "NPS Policy-level Guidance" for "Life on the Lava," "Sagebrush Steppe Ecosystem and Kipukas"

Other Important Resource or Value	Mission 66 Historic Complex
Current Conditions and Trends	**Conditions** • All eight contributing structures considered in good condition. • Most structures continue to be used for their original design purpose, although the duplex has been used for offices since 2000. • Visitor center expanded in 2005 using compatible design such that the complex continues to be listed in the National Register of Historic Places. **Trends** • Fire protection systems added to all structures (except campground restroom) by 2011.
Threats and Opportunities	**Threats** • Structural fire. • Volcanic eruption. • Earthquakes. **Opportunities** • Replacement of nonhistoric wood shingle trim on duplex and residences with metal porcelain panels to match original architectural detail and provide a more sustainable exterior.
Existing Information about the OIRV	• "Craters of the Moon Historical Structures Overview," 2009. PWRO, NPS, Seattle • Mission 66 nomination form, 2000 • Plan drawings for structures and related archival material in museum • *Historic Context Statements, Craters of the Moon*, 1995.
Data and/or GIS Needs	• Archaeological resources condition assessment.
Planning Needs	• Historic preservation and treatment guide. • Resource stewardship strategy. • State of the Park report. • Structural fire management plan.
Laws and Policies that Apply to the OIRV, and NPS Policy-level Guidance	**Laws and Policies that Apply to the OIRV** • See "Laws and Policies that Apply to the FRV" for "Past and Present Human Connections to a Harsh Volcanic Landscape" **NPS Policy-level Guidance** • See "NPS Policy-level Guidance" for "Past and Present Human Connections to a Harsh Volcanic Landscape"

Other Important Resource or Value	Historic Log Structures
Current Conditions and Trends	**Conditions** • Log restroom in the Lava Flow Campground is considered in good condition and continues to function as originally designed. • Log storage building is in fair condition. • Both structures are potentially eligible for National Register of Historic Places in category of local significance for representation of rustic architecture. • Both structures have been altered little and possess integrity of workmanship, design, and materials. • Most of the equipment and supplies stored in this log storage building were moved to a new building and the structure is no longer used by the maintenance division, though the structure is still used for other storage needs. • Because eligibility of both log structures for the National Register of Historic Places was determined in 2009, preservation as historic structures became the objective and funding is sought. **Trends** • Continued deterioration of the log storage building due to roof leaks and log deterioration. • Log restroom is stable.
Threats and Opportunities	**Threats** • Deterioration of the log storage building unless stabilization work is undertaken on the roof and decaying logs. • Lack of use. **Opportunities** • Preservation of the only two extant rustic-style buildings built by the National Park Service remaining in Idaho. • Relocate and repurpose the log storage building to another site for use as a picnic shelter or other purposes. • Continue to use the log storage building for limited storage.
Existing Information about the OIRV	• "Craters of the Moon Historical Structures Overview," 2009. PWRO, NPS, Seattle. • "Craters of the Moon Administrative History," 1992, NPS, Seattle. • *Historic Context Statements, Craters of the Moon,* 1995.
Data and/or GIS Needs	• Cultural resources condition assessment.
Planning Needs	• Historic structures report. • Resource stewardship strategy. • State of the Park report. • Structural fire management plan.
Laws and Policies that Apply to the OIRV, and NPS Policy-level Guidance	**Laws and Policies that Apply to the OIRV** • See "Laws and Policies that Apply to the FRV" for "Past and Present Human Connections to a Harsh Volcanic Landscape" **NPS Policy-level Guidance** • See "NPS Policy-level Guidance" for "Past and Present Human Connections to a Harsh Volcanic Landscape"

Other Important Resource or Value	Little Cottonwood Creek
Current Conditions and Trends	**Conditions** • Little Cottonwood and Leech Creek watersheds provide all of Crater of the Moon's potable water for visitor use and operations. • Little Cottonwood Creek and Leech Creek are some of the most biologically diverse areas of the park. Biota is an indicator of water quality conditions • Surface water diversions at springs replaced with ground water wells in 2003. • I&M monitoring of water quality in 2010 indicated good conditions. • Watershed boundary fenced to exclude livestock grazing. • Riparian, Douglas fir, and aspen communities create high biodiversity by providing habitat rare elsewhere in the park. **Trends** • Trend data indicate stable water quality conditions. • Trends for in-stream flows not available. • Potable water use has increased due to a leak that was not detected until 2013. The leak is being repaired in Fiscal Year 2013 and water use is expected to trend downward.
Threats and Opportunities	**Threats** • Climate change projected to reduce winter snow pack resulting in reduced summer yields of potable water during peak use periods. • In-stream flows projected to decline as annual snow pack declines. • Burned areas following wildfires could alter runoff rates resulting in high flows and channel cutting/erosion. **Opportunities** • Ensure diversions at spring boxes have been eliminated. • Remove spring boxes, vaults, etc.
Existing Information about the OIRV	• Past water quality data for Little Cottonwood and Leech creeks. • Vegetative cover map.
Data and/or GIS Needs	• In-stream water quantity data. • Determine projected seasonal flows and potable water yields based on climate projections. • Archaeological survey of Little Cottonwood Creek area. • Climate change vulnerability assessments.
Planning Needs	• Resource stewardship strategy. • Climate change scenario planning. • State of the Park report.

Other Important Resource or Value	Little Cottonwood Creek
Laws and Policies that Apply to the OIRV, and NPS Policy-level Guidance	**Laws and Policies that Apply to the OIRV** • NPS *Management Policies 2006* (section 1.6, 4.1, 4.1.4, 4.4.1, 4.6.6, 9.1.5.1) provides general direction for managing park units from an ecosystem perspective • NPS *Natural Resource Management Reference Manual 77* • Clean Water Act of 1972 • Executive Order 11514, "Protection and Enhancement of Environmental Quality" • Executive Order 11988, "Floodplain Management" • Executive Order 12088, "Federal Compliance with Pollution Control Standards" • Special Directive 93-4, "Floodplain Management" (1993) **NPS Policy-level Guidance** • Craters of the Moon National Monument and Preserve's water quality reflects natural conditions and supports native plant and animal communities and administrative and recreational uses. All water in the park meets applicable state standards. All human sources of water pollution, both within and outside the park, that are adversely affecting the park are eliminated, mitigated, or minimized. • Streams will be managed to protect stream processes that create habitat features such as floodplains, riparian systems, woody debris accumulations, terraces, gravel bars, riffles, and pools. • A water-quantity inventory where appropriate is an essential component for aquatic resources management within a national park system unit. • Natural floodplain conditions are preserved or restored. • Long-term and short-term environmental effects associated with the occupancy and modification of floodplains is avoided when practicable. • Natural and beneficial values of wetlands are preserved and enhanced. • The National Park Service implements a "no net loss of wetlands" policy and strives to achieve a longer-term goal of net gain of wetlands across the national park system through the restoration of previously degraded wetlands. • Surface water and groundwater are protected, and water quality meets or exceeds all applicable water-quality standards.

Other Important Resource or Value	Developed Area
Current Conditions and Trends	**Conditions** • All assets are maintained in good condition: Lava Campground; trails; roads; parking areas; water system; waste water system; picnic areas; comfort stations; housing; maintenance facility; visitor center; entrance station; etc. **Trends** • New facilities (e.g., buildings, picnic benches, signs) are added and old facilities are routinely updated, rehabilitated, and maintained as funding allows. • Visitors and employees enjoy well maintained facilities.
Threats and Opportunities	**Threats** • Funding for park facility management is 23% of industry standard (per 2008 park asset management plan). • If funding is static or does not increase park facility condition will degrade over time. • Park management will need to decide which facilities to let deteriorate given current funding constraints. **Opportunities** • Seek non-ONPS funding to augment park funding shortfalls. • Rehabilitate existing infrastructure with more sustainable design to increase life expectancy and decrease operational costs.
Existing Information about the OIRV	• Park asset management plan 2008. • Operation formulation system (OFS # 24207A). • Facility Management Software System.
Data and/or GIS Needs	• FMSS comprehensive condition assessments.
Planning Needs	• None identified.
Laws and Policies that Apply to the OIRV, and NPS Policy-level Guidance	**Laws and Policies That Apply to the FRV** • NPS Organic Act, 1916 • National Historic Preservation Act, section 106 **NPS Policy-level Guidance** • NPS *Management Policies 2006,* section 1.4, "Park Management" • NPS *Management Policies 2006,* section 2.3.1.2, "Management Zoning" • NPS *Management Policies 2006*, section 5.3.5.4.7, "Use of Historic Structures" • NPS *Management Policies 2006,* chapter 8, "Use of the Parks" • NPS *Management Policies 2006,* chapter 9, "Park Facilities"

Appendix C: Inventory of Special Mandates and Administrative Commitments

Special Mandates

Designated Wilderness and Wilderness Study Area

Congressional designation of the 43,243- acre Craters of the Moon National Wilderness Area was enacted on October 23, 1970, making the monument and Petrified Forest National Park the first units within the national park system with designated wilderness areas (Public Law 91-504). The Craters of the Moon Wilderness is entirely within the original monument. Four wilderness study areas (WSAs) have been designated within the boundaries of the monument: the Great Rift, Raven's Eye, Little Deer, and Bear Den Butte. Eighty-four percent of the wilderness study areas are within the national preserve; the rest is managed by the Bureau of Land Management. Presidential Proclamation 7373 transferred portions of the four wilderness study areas to the National Park Service in 2000. The proclamation directed the following: wilderness study areas included in the monument will continue to be managed under section 603(c) of the Federal Land Policy and Management Act of 1976 (43 U.S. Code 17011782). Section 603(c) requires that until Congress determines otherwise, wilderness study areas shall be managed to retain the lands suitability for preservation as wilderness.

Hunting

Congress redesignated the approximately 411,475 acres of the expanded monument under the administration of the National Park Service as a national preserve and has authorized hunting on these lands (Public Law 107-213). Hunting is not allowed on the 53,400-acre original monument, but is allowed on the approximately 411,475-acre national preserve and the approximately 251,000 acres of the BLM administered part of the monument. In consultation with the Idaho Department of Fish and Game, the National Park Service may regulate hunting for purposes of public safety or resource conservation. Case law (National Rifle Association v. Potter) has upheld NPS regulations prohibiting hunting and trapping in units of the national park system unless specifically authorized by federal law. P.L. 107-213 authorizes only hunting; trapping remains a prohibited activity.

Fort Bridger Treaty

Tribal treaty rights were established by 15 Statute 673 between the United States and the Eastern Band of the Shoshone and Bannock Tribes. American Indian tribes rely on BLM public land resources for subsistence and cultural purposes. Tribal treaty rights pursued on public lands within the monument include hunting of large and small game and gathering various natural resources for both subsistence and medicinal purposes.

Clean Air Act – Class I Area Designation

Craters of the Moon National Monument is a designated Class I area under the Clean Air Act. A major purpose of the Clean Air Act is "to preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreational, scenic, or historic value" (42 U.S.C. §7470(2)). Under section 169A, "Congress declares as a national goal the prevention of any existing impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution."

The Clean Air Act bestows an "affirmative responsibility" on the federal land managers to protect these areas from the adverse effects of air pollution. Superintendents are charged with taking management actions consistent with this affirmative responsibility by integrating air resource management into NPS operations and planning and engaging in cooperative conservation efforts to reduce air pollution in these areas. Specifically, the federal land manager is to identify and protect resources sensitive to air pollution, called Air Quality Related Values, including visibility.

Special Designations

Great Rift National Natural Landmark

The Great Rift National Natural Landmark was designated in 1968, and is composed of 171,999 acres. The Great Rift System represents a tensional fracture in Earth's crust that may extend to the crust-mantle interface. It also illustrates primary vegetation succession on very young lava flows. The Great Rift System is unique in North America and has few counterparts in the world.

Research Natural Areas

Carey Kipuka, Brass Cap, Big Juniper, and Sand Kipuka research natural areas are designated for long-term value as scientific reference areas. These research natural areas were formerly managed by the Bureau of Land Management and are currently managed by the National Park Service.

Peaks to Craters Scenic Byway

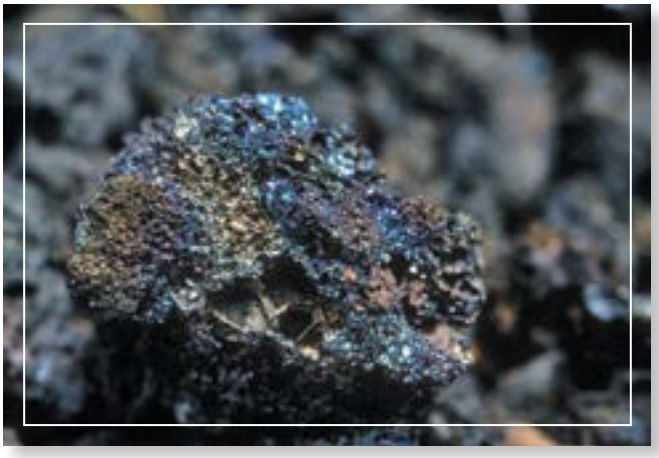
The Peaks to Craters Scenic Byway is a 140-mile route through the heart of Idaho. The byway covers a diverse stretch of road with wetlands, high mountain desert vistas, lava flows, and views of several high peaks. Craters of the Moon National Monument and Preserve is a special attraction of the byway, along with the Lost River Valley and Idaho's highest peak, Mt. Borah.

Administrative Commitments

Name	Agreement Type	Start Date	End Date	Stakeholders	Purpose
General Agreement and Memorandum of Understanding for Craters of the Moon National Monument	Perpetual cooperative agreement	2001		NPS and BLM	To work together to manage these adjoining lands in a manner that is compatible with the mission of each agency. Cooperation between the agencies is implemented both by informal agreements and by formal memorandums of understanding.
Structural fire	Memorandum of understanding	2012	2017	NPS (Craters of the Moon) and the Lost River Fire Protection District	To share mutual resources in the protection of life and property and providing emergency services to the public including, but not limited to, search and rescue, structural and wildland fire control, and emergency medical services. Agreement # MOUR928013001.
Law enforcement	Memorandum of understanding	To be developed		NPS (Craters of the Moon) and BLM	To provide cross designation for each bureau's law enforcement officers to be able to efficiently and effectively assist each other.
Law enforcement	Memorandum of understanding	To be developed		NPS (Craters of the Moon) and county sheriffs of Blaine, Butte, Lincoln, Minidoka, and Power counties.	National Park Service and respective counties to recognize efficiencies and identify protocols for actions and communication of law enforcement activity on NPS lands in each of the counties.
Weed management	Memorandum of understanding	2011	2016	NPS (Craters of the Moon) and BLM (Twin Falls District)	Cooperative weed management.
Water Rights	Federal reserved water rights			NPS and State of Idaho	The state granted the National Park Service federal reserved water rights within the original monument in 1998. The rights provide for domestic, irrigation, or industrial use within the monument, as well as in-stream flow rights on areas including Little Cottonwood and Leech creeks. The Bureau of Land Management has 337 filed water right claims on 18 springs, 192 playa lakes, and 127 reservoirs within the monument. Priority dates of the water rights claims are as early as 1926.

Name	Agreement Type	Start Date	End Date	Stakeholders	Purpose
Idaho Fish and Game Commission	Commission			NPS and Idaho Fish and Game	Establishes regulations and other needed controls on fishing, hunting, trapping, and management of wildlife that are in line with the state's wildlife policy. The Idaho Department of Fish and Game is charged with enforcing fish and game regulations in the state of Idaho. However, the department recognizes the authority of the Law and Order Division of the Shoshone Bannock Tribes of the Fort Hall Indian Reservation to regulate tribal members residing on the reservation when hunting on federally administered and state-administered lands outside the reservation, except when those lands have been specifically closed to hunting by state or federal statute.
Idaho Falls Astronomical Society	Memorandum of understanding			NPS and Idaho Falls Astronomical Society	Five year agreement with Idaho Falls Astronomical Society. Agreement number G9280020003.
Cooperative Week Management Area	Memorandum of understanding	Nov. 2008	Dec. 31, 2013	Blaine County, ID; Idaho Department of Fish and Game; State of Idaho Department of Lands, South Central Area; Idaho Transportation Department; BLM, Twin Falls District; NPS; USFS, Sawtooth National Forest.	Five-year cooperative weed management area with Blaine County- Blaine Cooperative Weed Management Area.
Peaks to Crater Scenic Byway	Cooperative agreement				Idaho Recreation and Tourism Initiative – Be Outside program. Includes Peaks to Crater Scenic Byway
BLM, USFS, Idaho and Southwestern Montana Sub Regional Greater Sage-grouse Planning Strategy Environmental Impact Statement	Memorandum of understanding			BLM, USFS, Idaho and Southwestern Montana, NPS	Cooperating agency status for BLM, USFS, Idaho and Southwestern Montana Sub Regional Greater Sage-grouse planning strategy environmental impact statement.

Name	Agreement Type	Start Date	End Date	Stakeholders	Purpose
Idaho Weed Coordinating Committee	Memorandum of understanding	March 2011	March 2016	State of Idaho, Department of Lands, Agriculture, Transportation, Fish and Game, and Parks and Recreation; Idaho Association of Counties; Idaho Weed Control Association; Idaho Association of Weed Control Superintendents; The Nature Conservancy; The University of Idaho College of Agricultural and Life Sciences; BLM; NPS Pacific West Region; Nez Perce Tribe; U.S. Department of Agriculture, Natural Resources Conservation Service; USFS Regions 1 and 4	Idaho Weed Coordinating Committee. This agreement is not specific to Craters of the Moon National Monument and Preserve, but the park participates.
Craters of the Moon Natural History Association	Cooperating association agreement			NPS, Craters of the Moon Natural History Association	Agreement between the National Park Service and the association to work together to provide park visitors with these valuable interpretive and educational materials to facilitate an expanded appreciation of the national park system. Agreement # CC-CRMO001-06.



Valid Existing Rights

Case Type	Customer Name	Case File Number	Size in Acres	Expiration Date
Federal aid Highway 93	Idaho Transportation Department	IDI-001314	94	Perpetuity
ROW* powerline	Lost River Electric Cooperative	IDI-002855	19	12/16/2019
ROW telephone line	ATC Communications	IDI-020118	6	08/08/2012 [This needs to be renewed.]
ROW snow fence	Idaho Transportation Department	IDI-032380	14	09/09/2017
ROW mineral material site	Idaho Transportation Department	IDI-006614	109	Perpetuity
Federal aid Highway 93	Idaho Transportation Department	IDBL-0047476	87	Perpetuity
ROW mineral material sites	Idaho Transportation Department	IDBL-0047852	156	Perpetuity
Federal aid Highway 93	Idaho Transportation Department	IDBL-0049776	373	Perpetuity
ROW mineral material site	Idaho Transportation Department	IDBL-0052624	40	Perpetuity
Federal aid Highway 93	Idaho Transportation Department	IDBL-0052700	141	Perpetuity
Federal aid Highway 93	Idaho Transportation Department	IDBL-0053778	28	Perpetuity
ROW mineral material sites	Idaho Transportation Department	IDBL-0053709	7	Perpetuity

*ROW = right-of-way

Appendix D: Excerpts from Basics for Wilderness Stewardship for Craters of the Moon Wilderness

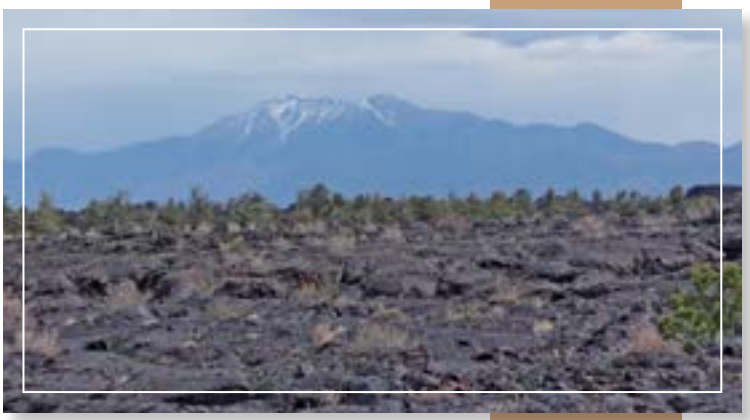
Background Wilderness Information

History of Land Status, Proclamations, and Legislation

Using the authority of the Antiquities Act, 39 square miles (24,960 acres) of Idaho's Snake River Plain were designated Craters of the Moon National Monument by President Calvin Coolidge on May 2, 1924. This designation encompassed just a small part of the vast volcanic landscape of the Snake River Plain's Great Rift. The 1924 proclamation described the area as "*. . .weird and scenic. . .*" with "*. . .phenomena characteristic of volcanic action. . .of unusual scientific value. . .*" The area protects a diverse array of basaltic volcanic features including lava flows, cinder cones, caves, and rift cracks formed by fissure eruptions over a span of 15,000 years. Several boundary adjustments made between 1924 and 1996 increased the overall area to 53,571 acres. President William Clinton used the authority of the Antiquities Act again in 2000 to add 411,475 acres to the existing NPS national monument. Proclamation 7373 also created a Bureau of Land Management administered national monument of the same name on lands adjoining the Craters of the Moon, Kings Bowl, and Wapi lava fields. The proclamation directed the National Park Service and Bureau of Land Management to prepare an agreement to share resources and manage the area cooperatively. In 2002, legislation was passed (PL 107-213) to authorize hunting on the lands added to the NPS monument in 2000. The law also re-designated those lands as Craters of the Moon National Preserve.

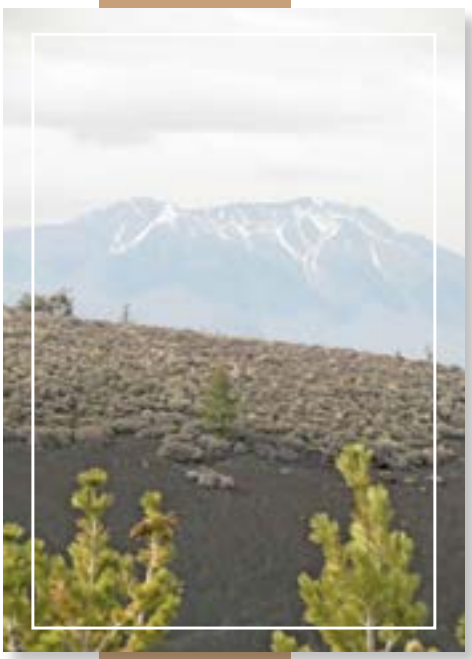
The 1964 Wilderness Act directed the Secretary of the Interior to inventory units of the national park system to determine lands eligible for wilderness designation. Lands within Craters of the Moon National Monument were among the first in the national park system to be recommended to Congress in 1970. Congress responded by designating the 43,243 acre "Craters of the Moon National Wilderness Area" on October 23, 1970 (PL 91-504). At congressional hearings in June 1970, the National Park Service had recommended a smaller area (2,458 fewer acres) that would specifically exclude Big Cinder Butte from wilderness. The NPS plan to extend the existing road from Tree Molds around Big Cinder Butte to provide additional driving opportunities for visitors had been in development for some years. However, several national and state conservation groups testified in support of including Big Cinder Butte in the wilderness area. Congressman Orval Hansen, in whose district Craters of the Moon was located, sponsored the successful bill that ultimately included Big Cinder Butte within the wilderness boundary.[1]

The wilderness boundary recommended by the National Park Service and passed into law included a 1/16-mile-wide "buffer." The wilderness boundary runs parallel to the monument boundary 1/16-mile on the inside rather than along the monument boundary itself. This approach was applied in almost all of the early NPS wilderness recommendations. Its purpose was to provide "travel along the border for management or administration." The terrain along the boundary actually precludes any such travel at Craters of the Moon.



Following passage of the Federal Land Policy Management Act (FLPMA) in 1976, the Bureau of Land Management initiated wilderness inventories on lands that were then within their administration but are now within Craters of the Moon National Preserve. The first phase of the inventories resulted in BLM designation of the 381,800[2] acre Great Rift Wilderness Study Area in 1980. President Ronald Reagan recommended to Congress in 1985 that 322,450 acres of that area be designated as wilderness. Subsequent BLM wilderness inventories on other areas in what is now Craters of the Moon National Preserve resulted in three separate wilderness study areas (Raven's Eye, Little Deer, and Bear Den Butte) encompassing a total area of 113,200 acres. Of these lands, 67,110[3] acres of the Raven's Eye wilderness study area were recommended for wilderness designation by President George H.W. Bush in 1990. Of that area, 37,000 acres are within the national preserve. Once designated wilderness study areas, these lands were managed by the Bureau of Land Management so as not to impair their suitability for wilderness designation in the future[4] per section 603(c) of the Federal Land Policy Management Act.

President Clinton's Proclamation 7373 in 2000 transferred the management of 397,600 acres of wilderness study area lands from the Bureau of Land Management to the National Park Service. The proclamation directed that wilderness study areas continue to be managed under section 603(c) of the Federal Land Policy Management Act in both the BLM and NPS national monuments. Section 603(c) requires that wilderness study areas be managed "*. . .so as not to impair the suitability of such areas for preservation as wilderness*. . ." until Congress determines otherwise. The wilderness study areas transferred to the National Park Service are also managed in accordance with NPS management policies. An additional 96,600 acres of wilderness study area adjacent to the preserve are managed by the Bureau of Land Management in accordance with section 603(c) of the Federal Land Policy Management Act.



Current Land Status

43,243 acres of Craters of the Moon National Monument are designated wilderness in accordance with the provisions of the 1964 Wilderness Act and PL 91-504. Portions of four wilderness study areas totaling 397,600 acres lie within the national preserve. Congress has not yet acted on any of the presidential recommendations for additional wilderness designations. Three state land sections fall either entirely or in part within the national preserve and wilderness study area. The one entire state section (640 acres) lies within the portion of the Raven's Eye wilderness study area recommended for wilderness designation. In Idaho state lands are managed for long-term financial return to maximize revenues to the state. In southern Idaho that typically involves livestock grazing but the state land sections within the national preserve are not suitable for grazing. The Craters of the Moon Monument management plan (2006) recommends pursuing a land exchange with the State of Idaho that would include these sections. Technically there are no private in-holdings in any of the wilderness study areas. However, Huddles Hole, a large 2,100-acre kipuka on the northeast side of the Great Rift wilderness study area, is largely private property used for livestock grazing with a narrow cherry stemmed road corridor providing access.

1. U.S. House of Representatives, Committee in Interior and Insular Affairs Hearings on Designation of Wilderness Areas, May 27, 1969 – June 26, 1970, Serial No. 91-25, pages 463-534
2. Only 335,000 acres of these lands are within Craters of the Moon National Preserve.
3. All 67,100 acres are within Craters of the Moon National Preserve.
4. After 1995, the Bureau of Land Management followed guidance in "Interim Management Policy for Lands under Wilderness Review, Handbook H8550-1."

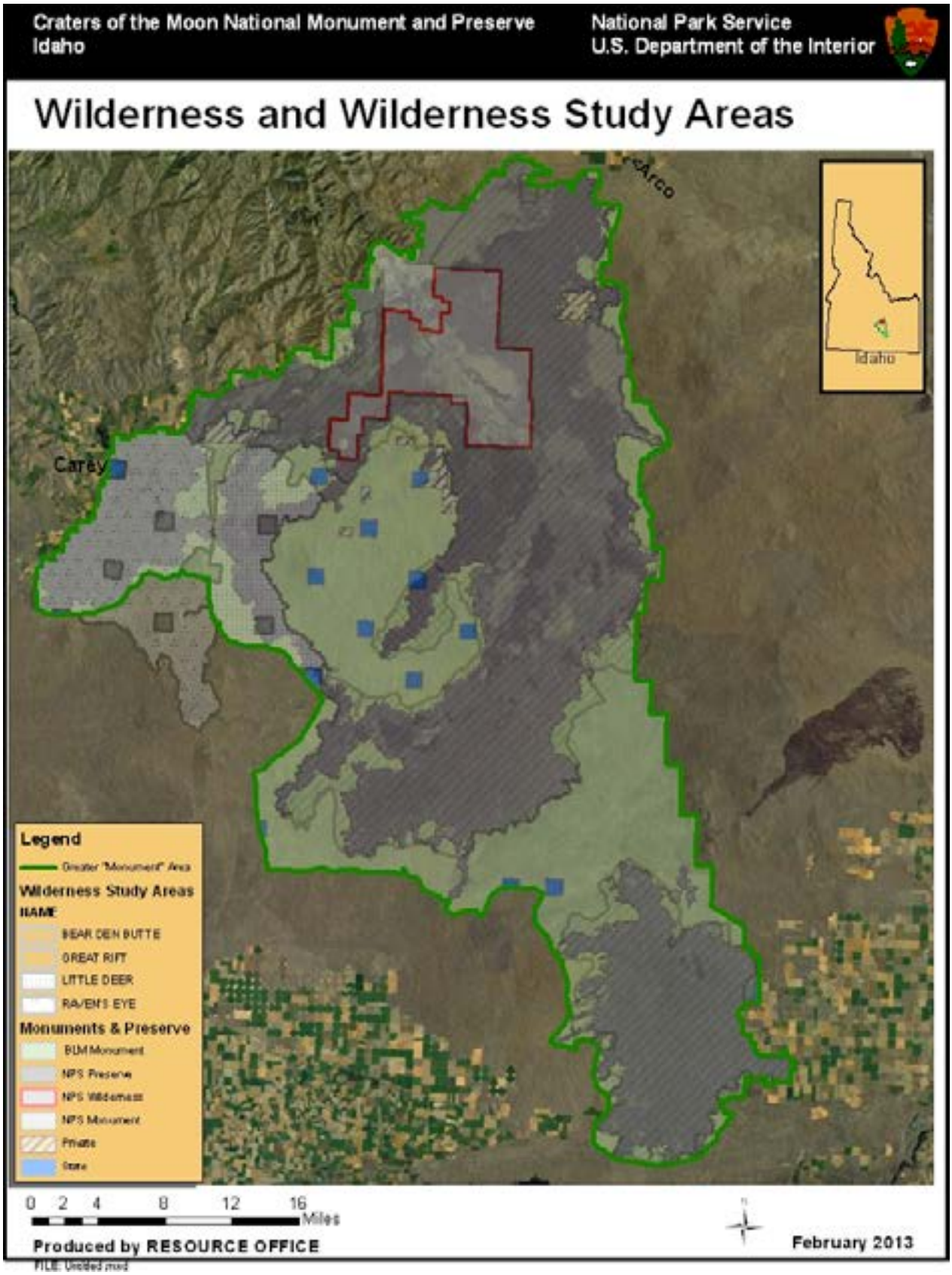
Table 1. Summary of Land Status

Wilderness Areas	NPS Area (acres)	BLM Area (acres)	NPS WSA Area Recommended (acres)
Craters of the Moon National Wilderness Area	43,243	NA	NA
Great Rift wilderness study area	335,000	46,000	322,450
Raven's Eye wilderness study area	37,000	31,300	37,000
Little Deer wilderness study area	21,300	13,900	0
Bear Den Butte wilderness study area	4,300	5,400	0
Total	**440,843**	**96,600**[5]	**359,450**

Administrative Units	Area (acres)
National Monument (NPS)	53,571
National Preserve (NPS)	411,475
National Monument (BLM)	273,488

5. Some of the BLM wilderness study areas are outside but adjacent to the BLM national monument boundaries.

Figure 1. Craters of the Moon Wilderness and Wilderness Study Areas



Wilderness Character Narrative

Introduction

A wilderness character narrative is intended to be a qualitative description and positive affirmation of the unique attributes of a wilderness area. These qualities are defined in brief as follows[6]:

- **Natural:** Wilderness maintains ecological systems that are substantially free from the effects of modern civilization.
- **Undeveloped:** Wilderness retains its primeval character and influence, and is essentially without permanent improvements or modern human occupation.
- **Untrammeled:** Wilderness is essentially unhindered and free from modern human control or manipulation.
- **Solitude or Primitive and Unconfined Recreation:** Wilderness provides outstanding opportunities for solitude or a primitive and unconfined type of recreation.
- **Other Features of Value:** Features that are not covered by the other four qualities, including cultural resources, paleontological resources, and other scientific, educational, scenic, or historical value to wilderness character.

The following wilderness character narrative is intended to familiarize readers with the tangible and intangible resources and values that combine to create the Craters of the Moon Wilderness. The document was created through collaboration by NPS staff and is a record of the shared understanding of wilderness character exemplified by Craters of the Moon National Monument and Preserve. Other more analytical documents, such as wilderness character monitoring measures and stewardship plans, may be derived from the qualitative description and threats to wilderness character identified by this wilderness character narrative.

Overview

First described as "*. . .a weird and scenic landscape peculiar to itself...*" the Craters of the Moon Wilderness[7] encompasses a vast ocean of lava with scattered islands of cinder cones, sagebrush steppe, and woodlands on the Snake River Plain. The plain formed as result of numerous volcanic events over the past 17 million years. Catastrophic eruptions of rhyolitic magma formed massive calderas which were subsequently filled by repeated eruptions of basalt magma more than a mile deep. The lava fields within today's Craters of the Moon National Monument and Preserve represent the most recent eruptions along an area of crustal extension known as "the Great Rift." Having formed between 15,000 to 2,000 years ago, these events were recent enough to have been witnessed by the land's first human residents.

Archeological evidence indicates American Indians regularly visited the lava fields, where they probably came seasonally to hunt game. However, fur trappers, emigrants, miners, and ranchers largely avoided the area due to difficult terrain and the lack of water or other natural resources of economic value. For these reasons the lava fields remained natural, untrammeled, and undeveloped at the beginning of the 20th century.

6. For more details on wilderness character see "Keeping it Wild in the National Park Service, A User Guide to Integrating Wilderness Character into Park Planning, Management, and Monitoring" (NPS 2013) and "Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System" (Landres 2008; available online at: http://leopold.wilderness.net/pubs/654.pdf).

7. Wilderness in this context includes both designated and wilderness study area lands.

Appreciation of the area's scenic and scientific values did not develop until the early 20th century. Both popular and scientific accounts of the area were published in the early 1920s, quickly leading to national monument designation in 1924. Limited visitor use development by the National Park Service largely resulted from a lack of funding. Several proposals to expand the road network were never initiated. Recreational use, which grew to an average of 200,000 visits a year, remained largely confined to the small area of the monument accessible by road.

In 1970, Public Law 91-504 designated 81% of the 53,571-acre national monument as the Craters of the Moon National Wilderness Area and created the first wilderness areas[8] in the national park system. BLM wilderness inventories of surrounding lands, which were later incorporated into the national park system, resulted in 96% of today's 411,627-acre Craters of the Moon National Preserve being classified as wilderness study areas[9].

Little has changed within the lava fields since American Indians first came to hunt game. A visitor today will see the same landscape as they did and experience its rewards and challenges much as they did.

Natural Quality

One of the major themes running throughout the 1964 Wilderness Act is that wilderness should be free from the effects of "*an increasing population, accompanied by expanding settlement and growing mechanization*" and that the "*earth and its community of life… is protected and managed so as to preserve its natural conditions*" (sections 2(a) and 2(c), respectively). Historically, wilderness is strongly associated with protecting and preserving ecological systems from the impacts of modern people[10].

The ecological systems within Craters of the Moon Wilderness remain substantially free from the direct effects of modern civilization. While the wilderness consists of barren or sparsely-vegetated lava fields, a majority of the area is covered by scattered sagebrush steppe, vegetated lava, and limber pine or juniper woodlands. Isolated islands of remnant vegetation protected by surrounding lava flows, called kipukas, act as small, virtually undisturbed havens for native plants and animals. Wildlife ranging from elk to the American pika resides seasonally or year round. Sage grouse display in breeding leks and raise their young in nearby sagebrush steppe habitats both in and outside of the park.

The rugged volcanic landscape has largely shielded pockets of sagebrush steppe plant communities from human activities common outside of the lava fields, such as livestock grazing. Sagebrush steppe habitat throughout the Great Basin and Columbia Basin has been undergoing rapid degradation and fragmentation; these impacts are due to the proliferation of invasive grasses following wildfire, and the conversion of areas to agricultural uses. Thus the vegetated "islands" within the wilderness are important in the context of the Great Basin eco-region as relatively intact remnants of sagebrush steppe that have largely avoided the degradations of grazing, wholesale cheat grass invasion, and dramatically altered fire regimes.

Changes on lands surrounding the Craters of the Moon Wilderness over the past century probably caused the local extinction of several species of wildlife known to have occurred in the wilderness areas into the early 20th century. Historical accounts and skeletal remains found in caves indicate bison, grizzly bears, bighorn sheep, and gray wolves all roamed the area, though none are found in the wilderness today. Notably, two of the missing species are mammalian carnivores, suggesting that the current predator-prey dynamics of the wilderness ecosystem may not match natural conditions. In recent years, gray wolves have been documented in the very northern portions of the NPS monument and could expand their range into the wilderness in the near future.

8. PL 91-504 established wilderness areas in both Craters of the Moon National Monument and Petrified Forest National Park.

9. 87% of the national preserve has been recommended for wilderness designation.

10. USDA/U.S. Forest Service, 2009. Keeping it Wild; An Interagency Strategy to Monitor Trends in Wilderness Character across the National Wilderness Preservation System. Rocky Mountain Research Station, General Technical Report RMRS-GTR-212

Just north of the designated wilderness, Great Rift wilderness study area, and Raven's Eye wilderness study area, U.S. 20/26/93 extends for 24 miles across the northern end of the park. The highway creates an unnatural barrier to wildlife movement to and from the wilderness and the expansive, undeveloped mountainous terrain to the north. This barrier could complicate any future efforts to repopulate the wilderness with the species currently extirpated from the wilderness areas.

A limited amount of livestock grazing occurred within the wilderness, mostly confined to a few decades in the early 20th century. During this era, vast herds of sheep were grazed across Southern Idaho and ranchers searched for new grazing areas. A few managed to take their sheep into isolated kipukas within the lava fields to graze on the native grasses available there. The difficulties of herding sheep across the lava and the lack of water probably kept the scope and intensity of this practice to minimal levels.

While several dozen nonnative invasive plants can be found in the Craters of the Moon Wilderness, only a few pose a substantial risk to natural conditions. Two state-listed noxious weeds (Dyer's woad and leafy spurge) are found in isolated areas of the Great Rift and Raven's Eye wilderness study areas. NPS control efforts have been ongoing since 2004 and have been successful in reducing, but not eradicating, these populations. Another noxious weed, rush skeletonweed, has recently spread via windblown seed into portions of the Raven's Eye, Little Deer and Great Rift wilderness study areas, as well as Carey kipuka in the designated wilderness. To date, its density remains low in the wilderness areas but substantial areas of adjoining BLM lands have untreated skeletonweed infestations. Initial control efforts by the National Park Service were ended due to the extent of those areas infested on adjoining BLM lands. It is likely to continue spreading unchecked until effective control techniques become available.

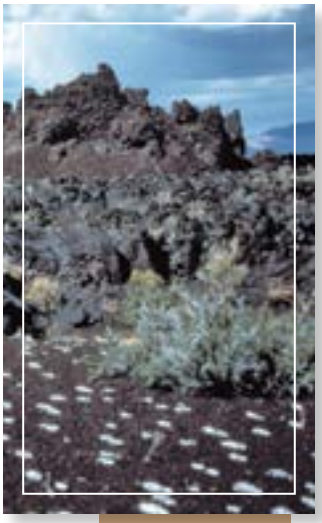
One of the most widespread and potentially threatening impacts on natural conditions comes from cheat grass (*Bromus tectorum*). Nonnative invasive annual grasses such as cheat grass aggressively take hold after wildfires and create a self-perpetuating fire regime that largely eliminates the native plant communities (woodlands, brush, perennial bunch grasses, and forbs) due to increased fire frequency. Wildlife dependent on the habitat provided by those communities, such as Greater sage-grouse, has also declined. While these changes have been limited within the lava fields, they have been extensive on much of the area surrounding the wilderness areas.

Cheat grass is present in almost all areas of the Craters of the Moon Wilderness and its abundance increases dramatically along an elevation gradient that runs from the north to the south[11]. Even the higher elevation sites where cheat grass is usually sparse are susceptible to cheat grass invasion following wildfires. Twelve years post-fire, cheat grass remains abundant in areas burned by the 2000 Echo Crater fire, where cheat grass density was very low prior to the fire.

Air quality in the wilderness has remained good to excellent. The Class I status of the designated wilderness under the federal Clean Air Act is intended to maintain or improve the area's air quality at the levels that existed at the time of the law's enactment (1977). Most of the air quality parameters monitored by the National Park Service have shown either an improving or static trend. The exceptions have been ammonium (a form of nitrogen) and ozone. Both ammonium and ozone have shown a statistically significant degrading trend at Craters of the Moon[12]. Ammonium forms from emissions of ammonia released by agricultural activities, feedlots, fires, and catalytic converters. Deposition of ammonium can act as fertilizers giving some nonnative invasive plants, such as cheat grass, a competitive advantage over native plants.

11. Elevation ranges from 6,500 feet in the north to 4,500 feet in the south, with annual precipitation ranging from 16 inches in the highest elevations to 10 inches in the lowest.

12. National Park Service , 2010; *Air Quality in National Parks, 2009 Annual Performance and Progress Report*, Natural Resource Report NPS/NRPC/ARD/NRR-2010/266.



Projected changes in climate indicate warming temperatures and changes in precipitation with less snow fall. These changes could have profound impacts on the natural quality of wilderness character, particularly the biota. Several species are particularly susceptible to warming temperatures. Limber pine and the America pika currently exist at the lower end of their elevation range. Warmer winter temperatures could allow greater numbers of mountain pine beetles to survive over winter and attack limber pines. Warmer summer temperatures could lead to decreases in soil moisture and higher tree mortality even if overall precipitation increases. Both Clark's nutcrackers and red squirrels are dependent on limber pine seeds for the bulk of their food. Thus a decline in limber pine would directly impact wildlife.

Pikas are vulnerable to climate change for a number of reasons. First, they are physiologically unable to survive high temperatures without access to cooler microclimates, higher temperatures can limit the duration of day time foraging, and where the insulating snowpack is reduced, pikas may die of exposure to even brief periods of sub-zero tempera tures. Pika populations are restricted to isolated talus or lava flows and their ability to disperse is limited. Recent studies at Craters of the Moon indicate pikas are restricted to the highest elevation lava flows[13] and are isolated from other high elevation populations.

Undeveloped Quality

Wilderness is defined in section 2(c) of the 1964 Wilderness Act as "*an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation*," with "*the imprint of man's work substantially unnoticeable*." The basic idea that wilderness is undeveloped runs through every definition of wilderness. The use of motor vehicles, motorized equipment, or mechanical transport are also considered a degradation to the undeveloped quality due to the close association in the legislative history between motorized use, mechanical transport, and people's ability to develop, occupy, and modify wilderness[14].

The undeveloped quality of the Craters of the Moon National Wilderness is excellent. No modern or even historic structures exist within the wilderness. A small number of trails exist within the wilderness but only a fraction of those are even sporadically maintained. In the designated wilderness two trails exist: the four-mile "Wilderness Trail," and the one-mile Tree Molds Trail. The Wilderness Trail was originally a wagon route used to access Little Prairie by sheep herders. Remnants of the sheep grazing activity remain in the form a crude concrete watering trough that had been filled by hand from the nearby water hole. The trail to Little Prairie continued to be used as an administrative Jeep trail prior to wilderness designation in 1970.

NPS signs within the wilderness area are limited to two sites indicating the location of tree molds and lava trees.[15] A number of historic ways (routes created by vehicle use but never constructed or maintained) exist within the wilderness study areas. These were apparently used to access woodlands within the Wapi lava field for firewood cutting or to access kipukas for sheep grazing.

A number of survey markers placed by the General Land Office and the U.S. Geological Survey to mark section corners are to found throughout the wilderness. These are generally inconspicuous and some could be considered historic, having predated establishment of the monument.

13. National Park Service, 2010; *Observed and Projected Ecological response to Climate Change in the Rocky Mountains and Upper Columbia Basin: A Synthesis of Current Scientific Literature* Natural Resource Report NPS/ROMN/NRR-2010/220.

14. USDA/U.S. Forest Service, 2008. *Keeping it Wild; An Interagency Strategy to Monitor Trends in Wilderness Character across the National Wilderness Preservation System.* Rocky Mountain Research Station, General Technical Report RMRS-GTR-212.

15. Tree molds and lava trees are geologic features created when lava engulfed a tree, cooled and left an impression of the tree trunk in the surface of the lava.

In some areas of the wilderness, mostly near the edge of the lava, evidence of past historic use can be encountered. Debris possibly associated with old sheep herder and wood cutting camps from the early 20th century can be found in kipukas within the Wapi lava field and sites such as North Laidlaw Butte (Great Rift wilderness study area). The partial remains of a crude wooden aqueduct designed to transport water almost two miles across the lava fields can still be found between Lava Lake and Paddelford Flat (Great Rift wilderness study area). Spent shell casings from World War II era military aviation target training are widespread but uncommon.

Authorized mechanized transport or use of motorized equipment is limited to the use of helicopters to support wildfire and weed suppression activities. These mechanized activities have generally been limited to operations over small areas for one to two days a year. Supplies and equipment for weed control operations are transported on foot or by pack stock.

Some unauthorized mechanized transport involving off-road vehicles occurs, particularly within the Wapi lava field in the Great Rift wilderness study area. These trails usually only extend into the lava fields for a mile or less before terminating due to inhospitable terrain. In some cases, this activity follows trails used in the early 20th century for wood cutting or sheep grazing. In other cases, day ORV users have pioneered modern routes across the lava. Current estimates by the National Park Service using aerial photography indicate 20 miles of discernible ORV trails on the Wapi lava field. Anecdotal evidence suggests some ORV use continues (NPS patrols in the area have been limited) but may not be intensive in either the numbers of users or frequency of use.

Untrammeled Quality

According to the Wilderness Act, the "untrammeled" quality of wilderness is achieved "*where man himself is a visitor who does not remain,*" and where an environment "*generally appears to have been affected primarily by the forces of nature.*" This quality stresses a freedom from modern human control or manipulation and is compromised even when the wilderness is "manipulated" to sustain or improve another wilderness quality (such as the use of herbicides to rid the landscape of invasive weeds and benefit the natural quality). Any human action that deliberately alters the biophysical resources of wilderness is considered trammeling, which makes restraint an important characteristic of wilderness management.

The Craters of the Moon Wilderness has remained, with limited exceptions, untrammeled by humans. Prehistoric humans appear to have only been seasonal visitors and more modern day humans have done little to manipulate the biophysical environment. The wilderness landscape we view today remains almost entirely a result of "the forces of nature."

Human activity in the Craters of the Moon Wilderness has always been transitory and of minimal intensity. The remaining physical evidence of these past activities are limited to the scattered lithic materials and primitive rock structures of prehistoric hunting camps, rock cairns marking caves or water holes, remnants of a few sheep herder's camps, and a few stumps of limber pine or juniper trees cut for firewood.

The two primary NPS management activities impacting the untrammeled quality of the Craters of the Moon Wilderness are suppression of lightning-caused wildfires and efforts to control nonnative invasive plants. Both are conducted to preserve the natural qualities of wilderness character.

Wildfires caused by lightning do occur within the lava fields but are infrequent and are often contained by natural fire breaks (e.g., lava). Over the past 25 years, three wildfires have exceeded 500 acres (1992 Little Prairie—2,000 acres; 2000 Echo Crater—600 acres; 2012 Lava Tube—550 acres). In all cases, the fires were suppressed using minimum impact techniques that contained the overall size of the fire. In all three of these cases, the fires were natural ignitions and could have doubled or tripled in size had no suppression action been taken. The difficulty of access to these areas within the lava fields typically means firefighters rely on aviation support for transport of hand crews and water drops using air tankers and helicopters. To date, the use of chemical retardants for fire suppression has not been approved, though its use can be authorized by the superintendent if human life or property is at risk.

On an almost annual basis, much larger wildfires[16] caused primarily by lightning, originate on surrounding BLM lands before burning into the national preserve wilderness study areas for a short distance before being contained by natural lava fire breaks. Typically no control actions take place directly on these portions of the fire perimeter. Suppression actions on other areas of these fires limit the overall size of the fire and the total amount of the fire perimeter that might otherwise have extended into the preserve and wilderness study areas. Additionally, neither prescribed fire or fuel reduction projects are authorized in the current fire management plan nor have any taken place within the Craters of the Moon Wilderness to date.

While the vast majority of the Craters of the Moon Wilderness land retains its native plant communities, several invasive nonnative plants have spread into the wilderness. State-listed noxious weeds[17] occur in limited areas of the Great Rift and Raven's Eye wilderness study areas. Active NPS management efforts to contain these weeds using herbicides have been ongoing since 2007 and 2004 respectively. In 2012, approximately 80 acres in the Great Rift and Raven's Eye wilderness study areas were treated with herbicides. Spot application of herbicides using back sprayers has been employed to minimize the amount of herbicide used and impacts to nontarget species. Of all the invasive exotic plants currently present in the area, cheat grass is currently the most extensive and poses the greatest threat to natural ecological systems. At present, control techniques feasible for deployment on a large scale in wilderness are not available and no control efforts have been made in wilderness.

Opportunities for Solitude or Primitive and Unconfined Recreation

The Wilderness Act states in section 2(c) that wilderness has "*outstanding opportunities for solitude or a primitive and unconfined type of recreation.*" What the framers of the Wilderness Act meant by this wording isn't recorded in the legislative history of the act, and there has been much discussion and debate about the meaning of these words among wilderness managers and scholars. Given the content of early wilderness writings, it is likely that solitude was viewed holistically, encompassing attributes such as separation from people and civilization, inspiration, and a sense of timelessness. Primitive recreation has been interpreted as travel by nonmotorized and nonmechanical means that reinforce the connection to our ancestors and our American heritage. However, primitive recreation also encompasses reliance on personal skills to travel and camp in an area, rather than reliance on facilities or outside help. Unconfined recreation encompasses attributes such as self-discovery, exploration, and freedom from societal or managerial controls.[18]

The Craters of the Moon Wilderness contains vast areas where the wilderness visitor will rarely encounter another human. Outstanding opportunities for solitude are easy to find here. Recorded overnight stays in the wilderness total only about 100 annually. The open landscape, while rugged and at times inhospitable (hot and dry in mid-summer then snow-covered for months in the winter), allows unconfined cross-country travel across naturally durable surfaces.

16. In recent decades, wildfires on adjoining BLM lands have averaged more than 20,000 acres with some exceeding 100,000 acres in size.

17. Dyer's woad occurs in the very southern end of the Wapi Lava Field and Leafy Surge in the southern end of the Raven's Eye wilderness study area.

18. USDA/U.S. Forest Service, 2008. Keeping it Wild; An Interagency Strategy to Monitor Trends in Wilderness Character across the National Wilderness Preservation System. Rocky Mountain Research Station, General Technical Report RMRS-GTR-212.

In terms of exposure to the sights and sounds of modern humans, the quality of opportunities for solitude varies depending on location. The Craters of the Moon designated wilderness area is surrounded on three sides by Craters of the Moon National Preserve and the Great Rift wilderness study area. The northern boundary of the wilderness adjoins nonwilderness portions of Craters of the Moon National Monument including the Loop Road and several parking areas that serve trailheads. The sounds and sights of motor vehicles on the Loop Road are sometimes audible and visible from the wilderness. Traffic on U.S. 20/26/93 is both visible and audible from the northern areas of the designated wilderness and the northern portions of the Great Rift wilderness study area. The highway carries a large volume of truck traffic, whose sound carries far greater distances than the sounds of standard passenger vehicles. The distance highway traffic noise carries varies with terrain and environmental conditions, particularly wind speed, but has been noted up to two miles from the highway[19]. Lights from highway traffic are visible from many wilderness locations at night.

Two areas of the Great Rift wilderness study area and one of the Raven's Eye wilderness study area lie adjacent to small communities or developed agricultural land. These modern developments are visible from some locations within wilderness study area s and even designated wilderness. The northeast boundary of the Great Rift wilderness study area lies six miles from Arco[20] and 1.5 miles from irrigated crop lands. The northwestern boundary of the Raven's Eye wilderness study area is within 1.5 miles of Carey[21] and directly adjacent to irrigated crop lands for 15 miles. The northeast side of the Wapi lava field in the Great Rift wilderness study area is directly adjacent to irrigated crop lands for approximately 10 miles. Farm fields, electric transmission lines, pivot irrigation equipment, a railroad track and even distant wind turbines are visible from much of the eastern and southern portions of the Wapi lava field in the Great Rift wilderness study area.

Isolation from sources of light pollution, such as major urban areas, has protected the dark night sky. This is particularly true in the designated wilderness and most of the northern portions of the Great Rift wilderness study area. Natural soundscapes are impacted by highway traffic noise in the vicinity of U.S. 20/26/93, by train traffic from railroad tracks located less than one-tenth of a mile south of the Great Rift wilderness study area, and by occasional aircraft flights over the wilderness. Outside of these specific sources, natural soundscapes retain most their natural condition.

The quality of unconfined recreation is also somewhat diminished by NPS requirements that persons camping in the designated wilderness obtain a permit. While other access points exist, most visitors enter the designated wilderness from the only designated trails at Tree Molds parking area. Access to that trailhead requires paying an entrance fee most of the year. Other NPS management requirements applicable to the designated wilderness limit group size for campers in the designated wilderness to a maximum of 12 persons, restrict stock use to the Wilderness Trail, limit stock groups to 12 head and do not allow for overnight stays with stock. Pets and fires of any kind are prohibited in the designated wilderness. As mandated by the 1916 NPS Organic Act, no hunting or trapping is allowed. Few of these requirements or restrictions apply in wilderness study area s in the national preserve. However, by law trapping is still not permitted[22] in the national preserve and while pets are permitted, the Code of Federal Regulations[23] requires they be kept on a leash unless used for authorized hunting purposes. The Code of Federal Regulations also requires stock use be limited to designated routes[24] and designated routes for stock have not been established in the national preserve.

19. Personal Observation; John Apel.

20. Population 1,000.

21. Population 500

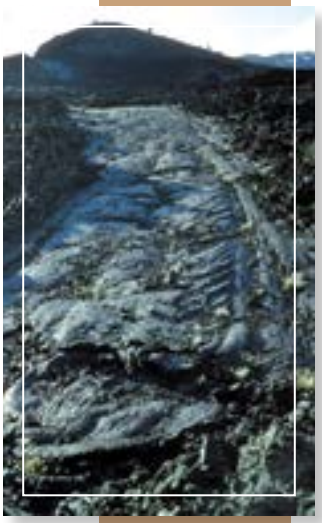
22. Hunting is specifically authorized under Section 1(b)(2) of PL 107-213 but trapping is not.

23. Title 36 of the CFR, 2.15.

24. Title 36 of the CFR, 2.16(b).

Other Features of Value

In many cases, a park may find the above four qualities do not fully express the values and features found in its wilderness areas. A fifth quality, "other features," is based on the last clause of section 2(c) of the Wilderness Act, which states that a wilderness "*may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value*" can be added. Unlike the preceding four qualities that apply throughout every wilderness, this fifth quality is unique to an individual wilderness based on the features that are inside that wilderness.

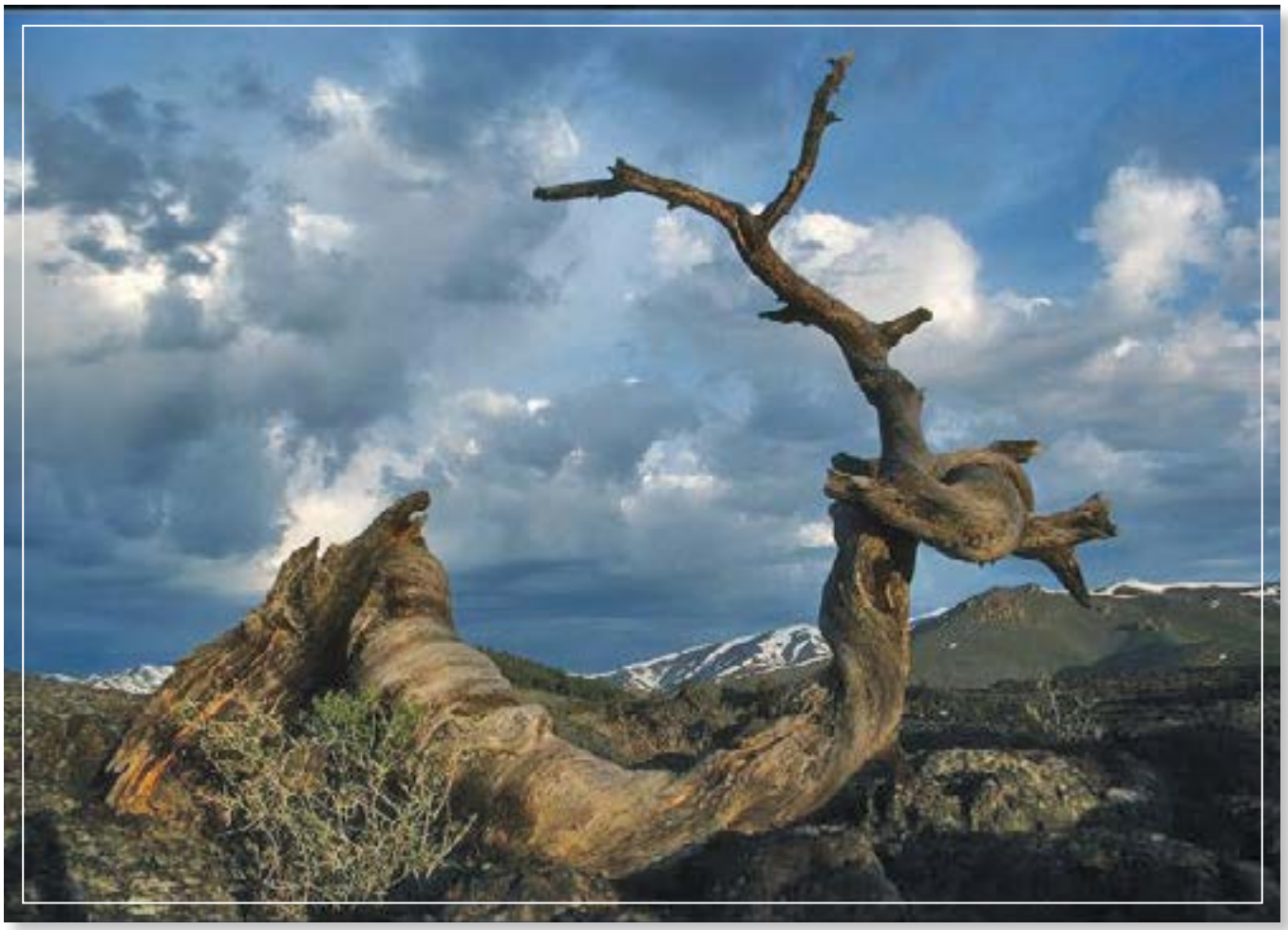


When Craters of the Moon was set aside as a national monument in 1924, President Coolidge stated that the area contained "*Many curious and unusual phenomena of great educational value and has a weird and scenic landscape peculiar to itself.*" A report to the president was written by Secretary of the Interior Stewart L. Udall, proposing designation of the Craters of the Moon Wilderness in 1968. Udall wrote that the wilderness "*contains a remarkable fissure eruption with its associated volcanic cones, craters, rifts, lava flows, caves, natural bridges, as well as other scientific phenomena characteristic of volcanic activity.*" Preserved because of its geological significance, Craters of the Moon National Monument and Preserve, and its wilderness, provides a unique opportunity to study a volcanic landscape and thus includes features of scientific value that contribute to its wilderness character.

Craters of the Moon National Monument and Preserve encompasses almost all of the Great Rift volcanic rift zone. It contains a huge concentration of volcanic landforms and structures along the more than 50-mile zone of fractures and eruptions. A composite field made up of about 60 lava flows and 25 cinder cones, the Craters of the Moon Lava Field is the largest of its type in the lower 48 states. From fissures in the earth's crust, broad sheets and flows of lava have spread across the Snake River Plain. In places the lava has a rope-like viscous appearance known by the Hawaiian name of Pahoehoe. Elsewhere it forms rough, jagged masses known by the Hawaiian name, 'A'ā, meaning "stony rough lava," but also to "burn" or "blaze." It is also the largest and most complex of the late Pleistocene and Holocene basaltic lava fields of the Eastern Snake River Plain. It has nearly every type of feature associated with basaltic systems.

Unique natural features at Craters of the Moon include lava tube caves; Big Cinder Butte, rising 700 feet above the lava fields, one of the largest purely basaltic cinder cones in the world; and the Blue and Green Dragon flows, which are named for their striking lava colors. The contrast between the rough, bleak lava flows and the smooth gentle contours of the cones seen rising up above them forms the essential character of the landscape.

Small-scale features of great interest are lava tubes where great rivers of molten rock welled out across the land. In some of the lava tubes and fissure caves, ice remains year round. Portions of tubes have collapsed leaving natural bridges; elsewhere, collapsed lava lakes create broad uneven sinks in the lava-colored landscape. Casts of trees engulfed by the lava and lava bombs are other interesting phenomena. Lava bombs formed when molten lava ejected into the air cooled in flight.



Pacific West Region Foundation Document Recommendation
Craters of the Moon National Monument and Preserve

May 2014

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

Dan Buckley — May 24, 2014

RECOMMENDED
Dan Buckley, Superintendent, Craters of the Moon National Monument and Preserve | **Date**

for — 6/10/14

APPROVED
Chris Lehnertz, Regional Director, Pacific West Region | **Date**

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

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